1 Introduction

1.1 Purpose of this Final Environmental Impact Statement

The Federal Railroad Administration (FRA) prepared this Final Environmental Impact Statement (FEIS) in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] § 4321 *et seq.*), the Council on Environmental Quality (CEQ) *Implementing Regulations for NEPA* (40 Code of Federal Regulations [CFR] Parts 1500-1508), and the FRA *Procedures for Considering Environmental Impacts* (64 Federal Register [FR] 28545, May 26, 1999, as updated by 78 FR 2713, January 14, 2013). Consistent with those regulations and procedures, this FEIS identifies the direct, indirect, and cumulative effects the proposed Washington Union Station (WUS) Expansion Project (the Project) could have on the human and natural environment. The FEIS also identifies measures to avoid, minimize, or mitigate potential adverse impacts.

The FEIS further documents FRA's compliance with various applicable Federal, state, and local environmental laws and regulations including, but not limited to, Section 106 of the National Historic Preservation Act of 1966 (NHPA) (54 U.S.C. § 603108), Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. § 303 and 23 U.S.C. § 138), and the Clean Air Act of 1970 (42 U.S.C. § 7401 *et seq.*).

1.2 Project and Project Sponsor

Union Station Redevelopment Corporation (USRC) and the National Railroad Passenger Corporation (Amtrak) (collectively, the Project Proponents) jointly proposed and developed the Project. Under a long-term lease with FRA, USRC is responsible for the rehabilitation, redevelopment, and ongoing management and operation of WUS. Amtrak controls the tracks and platforms. The Project includes expanding and modernizing the multimodal transportation facilities at WUS to meet current and future needs while preserving the historic station building. Proposed Project activities include: reconstructing and realigning the tracks and platforms; developing a train hall and new concourse facilities; enhancing WUS accessibility; improving multimodal transportation services and connectivity; and improving and expanding infrastructure and other supporting facilities. The Project Proponents worked together on conceptual design and formal planning for the Project. USRC has principally been developing concept plans while Amtrak has principally been developing improvements to the tracks and platforms.

USRC is the Project Sponsor and as such will be responsible for implementing the Project through final design and construction in coordination with Amtrak. As Project Sponsor, USRC will also be responsible for implementing the measures listed in **Section 7.1**, *Mitigation Measures and Project Commitments*, of this FEIS to avoid, minimize, or mitigate the adverse impacts of the Project.

1.3 Project Area

The Project Area (**Figure 1-1**) covers approximately 53 acres. It includes the existing WUS; the WUS parking garage (including a rental car facility) and bus facility; the rail terminal and railroad infrastructure from north of WUS to the lead tracks to the Eckington and Ivy City Rail Yards (north of New York Avenue NE);[1] the Railway Express Agency (REA) building; and the H Street Bridge. [2]

Each environmental resource assessed in this FEIS has a defined *study area*, which is generally larger than the Project Area to allow for the evaluation of direct and indirect impacts. **Chapter 4**, *Affected Environment*, describes these study areas.

A private developer, Akridge, currently owns certain development air rights above the rail terminal between WUS and K Street NE. Akridge bought these air rights from the U.S. General Services Administration in 2006 for future development. In June 2011, the private air rights property was rezoned and designated as Union Station North (USN) by the D.C. Zoning Commission. This zoning designation allows development to a maximum height of 90 feet above the height of the H Street Bridge for areas closer to the historic station building and a maximum of 130 feet in areas south of H Street NE closest to the bridge and in most of the area north of H Street NE.[3,4] The private developer envisions constructing a mixed-use development on a new concrete deck over the rail terminal.[5] This private air rights development project, including the underlying deck, is a separate project from the WUS Expansion Project. It has a separate private sector project proponent, does not need FRA approvals, and can go ahead independently of the Project. The private air rights development is not part of the Project evaluated in this FEIS. **Figure 1-2** and **Table 1-1** identify controlling interests in the Project Area.

Table 1-1. Current Controlling Interests in the Project Area

Facility or Area	Owner or Controlling Interest
Historic Station Building and Parking Garage/Bus Facility	FRA (owner) / USRC (Lessee)
Rail Infrastructure, including First Street Tunnel	Amtrak
REA Building	Amtrak
Metrorail Station and Tunnel	Washington Area Transit Authority
H Street Bridge	District Department of Transportation
Columbus Plaza	National Park Service
Air Rights between K Street and H Street NE/Air Right south of H Street east of the Parking Garage	Akridge

[1] Neither the Eckington Rail Yard nor the Ivy City Rail Yard is included in the Project Area.

[2] The District Department of Transportation (DDOT) is leading a project to replace the bridge: see *H Street Bridge NE Replacement,* accessed from https://www.hstreetbridgeproject.com/ on August 24, 2023. This is a separate and independent action from the Project.

[3] District of Columbia Municipal Regulations (DCMR) 11-K305. Accessed from https://dcregs.dc.gov/Common/DCMR/RuleDetail.aspx?RuleId=R0019943. Accessed on February 13, 2024.

[4] Greater heights are possible in the 100-foot and 90-foot areas if permitted by the Zoning Commission.

[5] The envisioned private project is known as "Burnham Place."

Figure 1-1. Washington Union Station Expansion Project Area

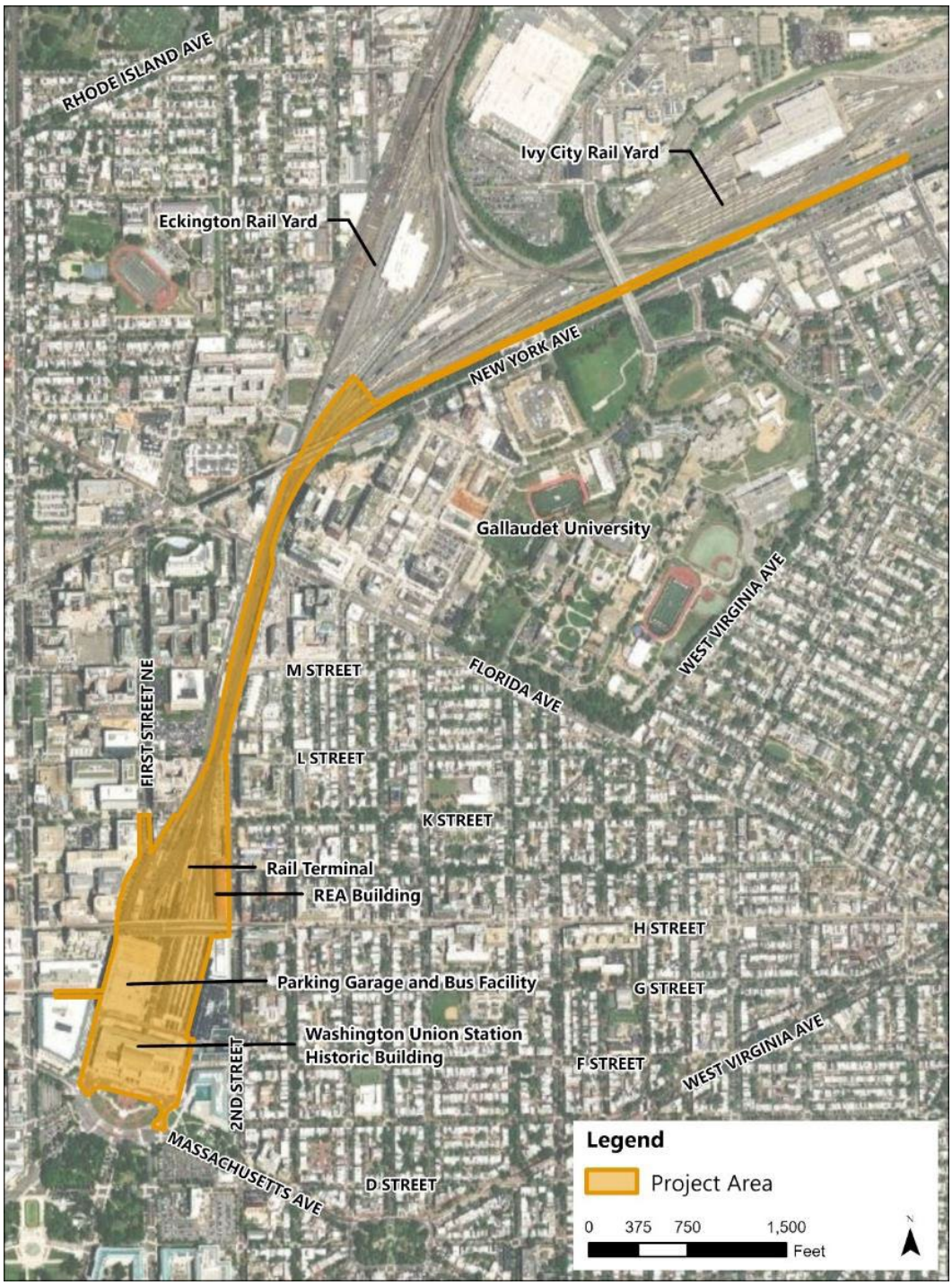
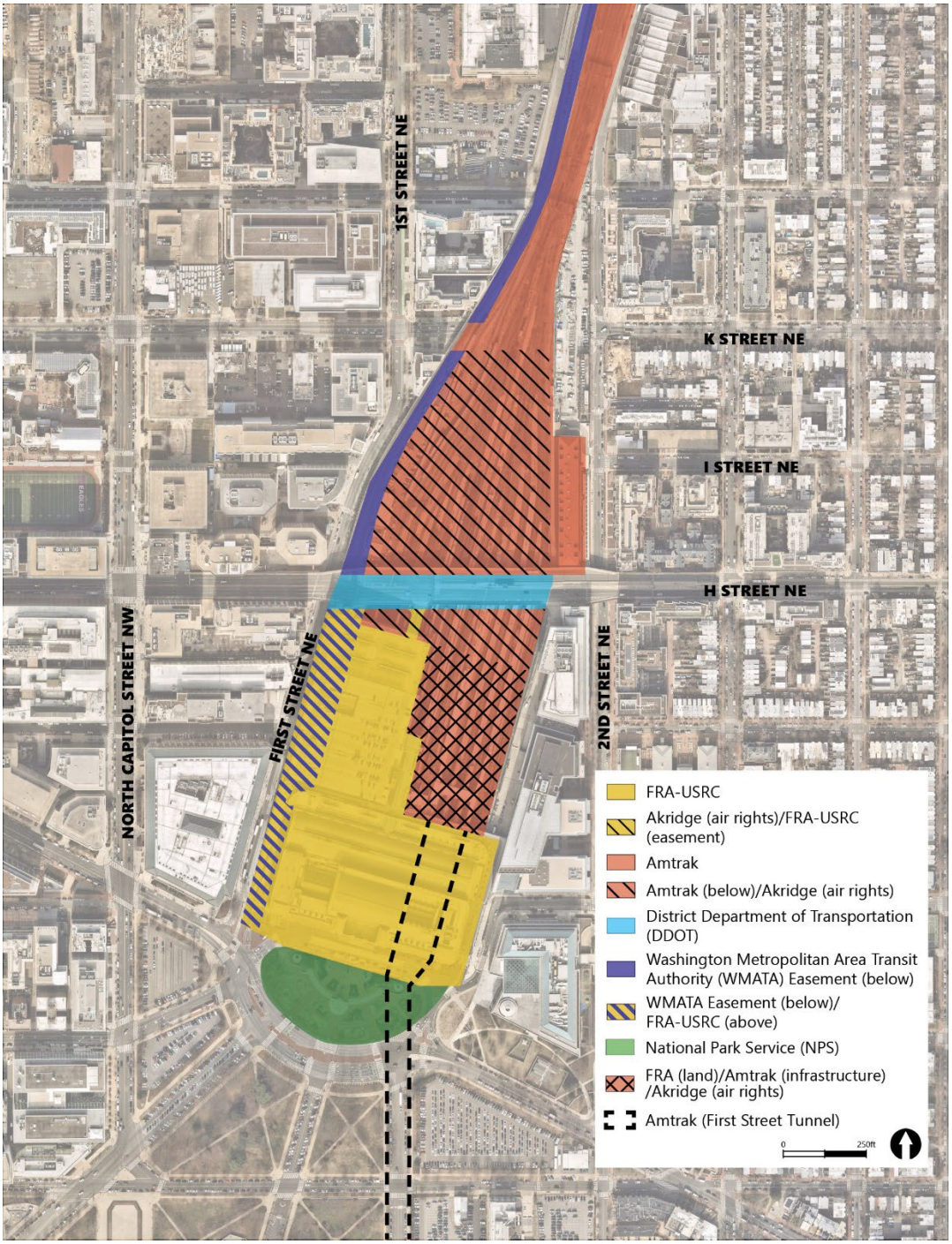


Figure 1-2. Current Controlling Interests in the Project Area[6]



[6] Smaller easements not shown.

1.4 Project Setting

WUS is in the Northeast quadrant of the District, north of the U.S. Capitol Complex and at the intersection of five neighborhoods: The Monumental Core; Capitol Hill; Near Northeast/H Street Corridor (including Swampoodle and the Atlas District); North of Massachusetts (NoMA); and Downtown DC (**Figure 1-3**). WUS sits just north of Massachusetts Avenue. Renowned architect Daniel Burnham designed Columbus Plaza, between the avenue and the historic station building, to be a grand entrance to WUS and the nation's capital.

Today, the National Park Service (NPS) owns and manages Columbus Plaza. The Plaza is semicircular with vehicle entrances to WUS on its outermost edges. The Columbus Fountain stands in the middle of the Plaza, facing the U.S. Capitol building. A 15-foot statue of Christopher Columbus stands in the Plaza since its dedication in 1912. Next to the Plaza is Columbus Circle, the roadway system that includes Massachusetts Avenue NE, Columbus Circle NE, First Street NE, and Union Station Drive NE.

1.5 Union Station History

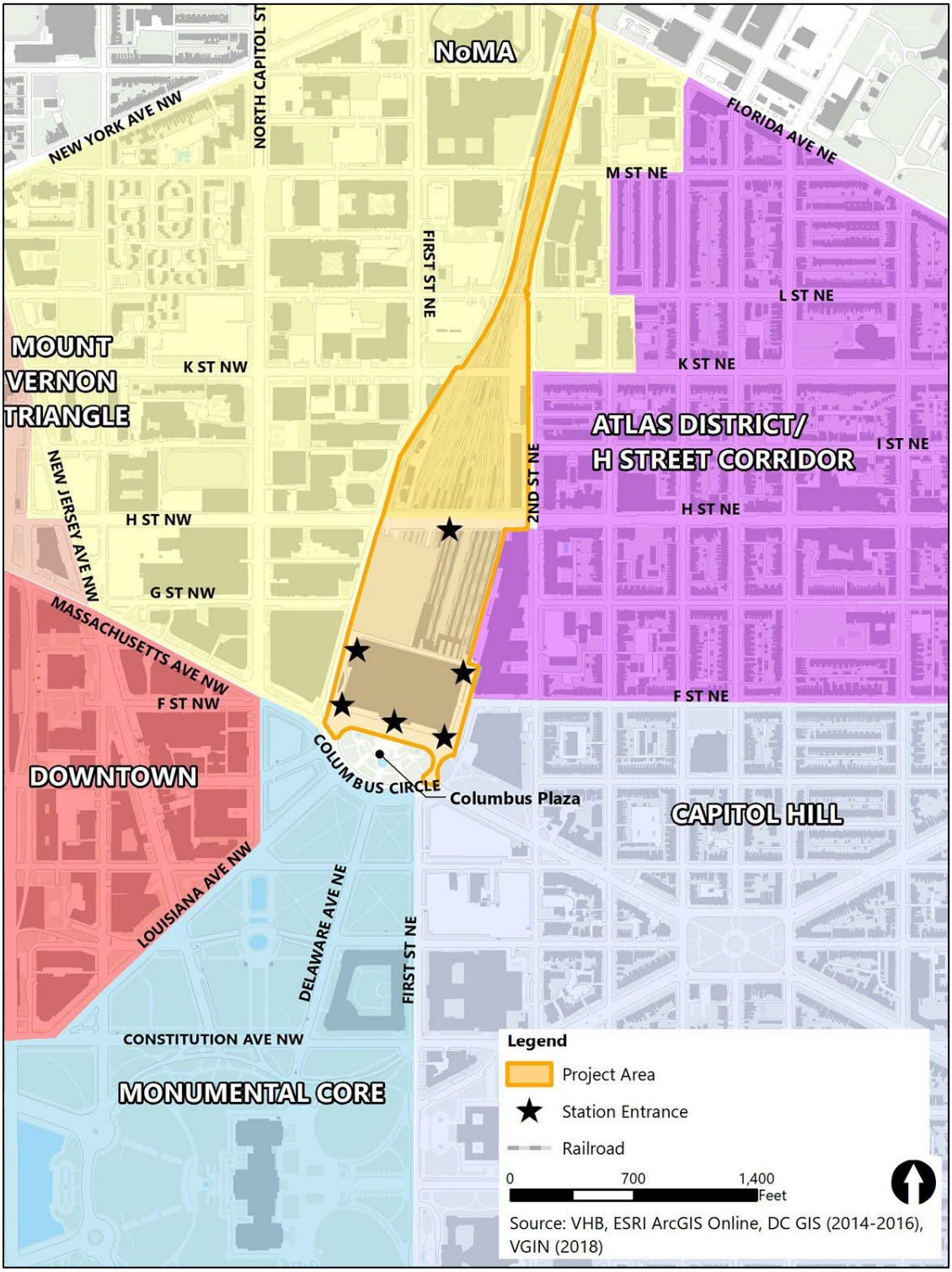
Designed by the architecture firm D.H. Burnham & Company, WUS was constructed between 1903 and 1908 to serve as the central train terminal for the nation's Capital. As passenger rail service declined, WUS was converted into a National Visitor Center by the National Visitor Center Facilities Act of 1968.[7] As WUS deteriorated and passenger rail ridership began to rebound, Congress passed the Union Station Redevelopment Act of 1981 (USRA).[8] The USRA authorized the Secretary of Transportation to rehabilitate and redevelop WUS as a multi-use transportation facility and commercial complex. The USRA articulated the following four goals:

- Preserve the historic station building;
- Restore and run the historic station building as a passenger rail station with facilities for charter, transit, and intercity buses;
- Financially support the continued maintenance and operations of WUS through commercial development; and
- Allow the Federal government to withdraw from active operation and management of WUS as soon as practical and with the least possible expense to the Federal government.

[7] National Visitor Center Facilities Act of 1968, Pub. L. 90-264, 82 Stat. 43 (1968).

[8] Union Station Redevelopment Act of 1981, Pub. L. 97-125, 95 Stat. 1667 (1981).

Figure 1-3. Neighborhoods Adjacent to WUS



The Secretary of Transportation has delegated responsibility for WUS to FRA. The USRA limited the role of FRA in managing WUS by creating USRC in 1983. USRC was to oversee WUS's restoration and redevelopment to transform it into a modern transportation hub as well as a shopping and tourist destination. In 1985, FRA sub-leased WUS to USRC for 99 years. [9] Under this agreement, USRC is responsible for the rehabilitation, redevelopment, and ongoing management and operations of WUS. As part of the 1985 sub-lease, USRC in turn sub-leased most of the station to a real estate development company.[10]

1.6 Project Background

Following the rehabilitation of WUS in the 1980s, rail service improvements and changes to the bus program led to increased and more varied uses of the station. Between 1988 and 1993, the number of daily Maryland Area Regional Commuter (MARC) trains increased from 36 to 70. In 1992, the Virginia Railway Express (VRE) commuter rail service began. Ridership for both services grew considerably in the first decades of the 21st century: VRE ridership grew by 87 percent between 2001 and 2015, while MARC ridership grew by 55 percent.[11] Amtrak service saw substantial growth as it made a series of improvements along the Northeast Corridor, including the introduction of the Acela Express service in 2000. In 2000, 37 percent of rail and airline passengers between New York and Washington took the train. By 2012, that number had jumped to 75 percent.[12]

Since the 1980s rehabilitation, buses have been a significant part of WUS as an intermodal facility, with the type of buses serving the station broadening in recent years. The USRA called for "Restoration and operation of a portion of the historic Union Station building as a rail passenger station, together with holding facilities for charter, transit, and intercity buses in the Union Station complex."[13] While WUS initially served primarily as a facility for tour and charter buses, in 2011 intercity service in the District

[9] Until 1988, FRA leased WUS from Terminal Realty Baltimore Co. and Terminal Realty Penn Co. In 1988, the Federal government, acting through FRA, bought the WUS historic station building, the parking garage, and the underlying real property.

[10] Office of Inspector General. 2014. *Inadequate Planning, Limited Revenue, and Rising Costs Undermine Efforts to Sustain Washington, DC's Union Station*. Accessed from https://www.oig.dot.gov/sites/default/files/FRA%20and%20USRC%20Oversight%20of%20Union%20Station%20Final%20Report%2004-01-14.pdf. Accessed on August 3, 2023.

[11] Ridership numbers provided by MARC and VRE.

[12] Kamga, Camille. 2015. "Emerging travel trends, high-speed rail, and the public reinvention of U.S. transportation." *Transport Policy* 37: 111-120. Accessed from https://www.sciencedirect.com/science/article/pii/S0967070X14002133. Accessed on August 3, 2023.

[13] Section 112(b) of the Union Station Redevelopment Act of 1981, Pub. L. 97-125, 95 Stat. 1667 (1981).

was consolidated there.[14] The Georgetown-Union Station route of the DC Circulator, a District-run transit bus service, uses the bus facility as well.

In 2012, Amtrak released the *Washington Union Master Plan* (Master Plan),[15] the culmination of a collaboration effort with USRC and the private air rights owner. The Master Plan presented a high-level vision for addressing existing deficiencies, supporting future rail service growth at WUS, and accommodating the planning for private air rights development. The Master Plan focused on improving WUS's primary functions, core needs, and customer experience by:

- Increasing capacity: Tripling passengers, doubling train service, and moving towards more sustainable transportation;
- Providing quality: Improving passenger and visitor experience and offering efficient, multimodal transportation options; and
- Enhancing vitality: Providing transportation and economic growth to support Washington, DC as the touchstone of cultural, political, and business opportunity in the region and nation.

The Master Plan was a conceptual vision for WUS and the private air rights development. It did not fully address issues of feasibility and implementation.

Developed by USRC in 2015, the *Historic Preservation Plan* (HPP)[16] is complementary to Amtrak's *Washington Union Master Plan* and offers preservation guidance for future rehabilitation, restoration, and development projects at WUS. The HPP establishes the extent and condition of the remaining historic features of WUS and emphasizes that the design of any future changes and development should protect the historic architectural character of WUS.

In addition to these station-specific planning documents, recently developed plans for passenger rail service also have implications for the Project. Amtrak updated its *Vision for the Northeast Corridor* in 2012.[17] FRA published the *NEC FUTURE Tier I FEIS,* a corridor-wide vision for the future of rail in the Northeast, in 2016,[18] followed by a Record of Decision (ROD) in 2017.[19] MARC updated its *Growth and*

[14] "Union Station to Become Intercity Bus Center." *Washington Post*. July 30, 2011. Accessed from https://www.washingtonpost.com/local/union-station-to-become-intercity-bus-center/2011/07/29/gIQAFcPwjI_story.html. Accessed on August 3, 2023.

[15] Amtrak. 2012. *Union Station Master Plan.* Accessed from https://ggwash.org/files/Washington-Union-Station-Master-Plan-201207.pdf. Accessed on August 24, 2023.

[16] Washington Union Station Historic Preservation Plan Partners. 2015. *Historic Preservation Plan.* Accessed from https://www.usrcdc.com/projects/historic-preservation-plan/. Accessed on August 18, 2023.

[17] Amtrak. 2012. *The Amtrak Vision for the Northeast Corridor.* Accessed from http://www.gcpvd.org/wp-content/uploads/2012/07/Amtrak_Amtrak-Vision-for-the-Northeast-Corridor.pdf. Accessed on August 3, 2023.

[18] Federal Railroad Administration. 2016. *NEC FUTURE Tier I FEIS.* Accessed from https://www.fra.dot.gov/necfuture/tier1_eis/feis/. Accessed on September 26, 2023.

[19] Federal Railroad Administration. 2017. *NEC FUTURE Record of Decision.* Accessed from https://www.fra.dot.gov/necfuture/tier1_eis/rod/. Accessed on September 26, 2023.

Investment Plan in 2012.[20] VRE published a *2040 System Plan Study* in 2014.[21] These plans all contemplate substantial increases in service into and out of WUS. These earlier efforts informed Amtrak and USRC's work on the planning and high-level design of the Project.

1.7 Lead Agency for the EIS

The Federal government, acting through FRA, owns the WUS historic station building and the Claytor Concourse, the parking garage and bus facility and underlying real property, and the rail terminal north of the historic station building. Therefore, FRA is the Lead Agency preparing the FEIS for the proposed Project. FRA's actions relating to the proposed Project may include issuing approvals or providing funding in the future for design or construction. The Preferred Alternative (see **Chapter 3**, *Alternatives*) includes the potential transfer and development of Federally owned air rights above WUS. If such transfer and development does occur in the future, FRA may be involved with the transfer, lease, or disposal of this air rights property as a separate Federal action.[22]

1.8 Cooperating Agencies

As Lead Agency, FRA invited other agencies having jurisdiction by law or agencies with special expertise on resources potentially affected by the Project to be cooperating agencies. The agencies that accepted Cooperating Agency status at the beginning of the EIS process are: The National Capital Planning Commission (NCPC); the Federal Transit Administration (FTA); NPS; and DDOT. On January 24, 2023, NPS indicated that they would no longer serve as a Cooperating Agency due to the lack of Project impacts on lands under their jurisdiction. FRA coordinated closely with the Cooperating Agencies throughout the development of the Draft Environmental Impact Statement (DEIS), Supplemental DEIS (SDEIS), and FEIS (see **Section 8.2.1**, *Cooperating Agencies*, for more details).

- **NCPC** is the Federal government's central planning agency for the National Capital Region. The Commission provides overall planning guidance for Federal land and buildings in the region by reviewing the design of Federal and certain local projects, overseeing long-range planning for future development, and monitoring capital investment by Federal agencies. NCPC is responsible for preserving and enhancing the historical, cultural, and natural features of Federal assets in the National Capital Region under the authority of

[20] Maryland Transit Administration. 2013. *MARC Growth and Investment Plan Update 2013 to 2050.*

[21] Virginia Railway Express. 2014. *VRE 2040 System Plan* Accessed from https://www.vre.org/about/studies-and-reports/2040. Accessed on August 3, 2023. VRE is in the process of updating its system plan: see *System Plan 2050*, accessed from https://www.vre.org/about/studies-and-reports/2050/, accessed on August 24, 2023. Continuing coordination with VRE will ensure that the Station Expansion Project and the updated system plan remain consistent with each other.

[22] Although development of the Federal air rights is not part of the Project, the Project would enable this potential development. Therefore, the reasonably foreseeable impacts associated with the potential future development of the Federal air rights are evaluated in the FEIS as indirect impacts.

40 U.S.C. § 71 *et seq.*, *Physical Development of National Capital*. Under 40 U.S.C. § 8722(d), NCPC has authority to approve the location, height, bulk, number of stories, and size of Federal public buildings in the District. NCPC has approval authority over all land transfers and physical alterations involving Federal property. As applicable, NCPC may rely on this FEIS/ROD in satisfying its obligations under NEPA as they pertain to the Project.

- **FTA** is a modal administration within the United States Department of Transportation. FTA's purview is public transportation and transit systems. FTA has a Federal interest in transit operations. Given the potential for FTA to provide future financial assistance for the Project, FTA opted to adopt the FEIS pursuant to 23 U.S.C. § 139(c)(5) and to jointly issue the FEIS/ROD with FRA.
- **DDOT** manages and maintains the District's publicly owned transportation infrastructure and is the owner of the District's street network. It has jurisdiction over rights-of-way (ROW) in the District, including travel lanes, on-street parking, sidewalk space, and public space between the property line and the edge of the sidewalk nearest to the property line. DDOT follows the *Right of Way Policies and Procedures Manual*[23] to establish a fair and efficient manner to complete the acquisitions or transfers of property, and to issue permits to allow for uses of the ROW that are compatible with overall operations. DDOT is leading a project to replace the H Street Bridge, creating a need for coordination between DDOT and FRA as part of planning for the Project.

1.9 Summary of the NEPA Process for the Project

1.9.1 Draft Environmental Impact Statement

FRA published a Notice of Intent (NOI) to prepare an EIS for the Project in the *Federal Register* on November 4, 2015. The NOI announced the beginning of the environmental review and Scoping process for the Project. The Scoping process ended on January 4, 2016.

On June 4, 2020, FRA made a DEIS for the Project available for public review. The U.S. Environmental Protection Agency (EPA) published a Notice of Availability of the DEIS in the *Federal Register* on June 12, 2020, with a commenting period ending on July 27, 2020. Prior to the expiration of the commenting period, FRA received multiple requests for an extension. In response to these requests, FRA extended the commenting period through September 28, 2020. EPA published an amended notice to that effect in the *Federal Register* on July 2, 2020. The DEIS evaluated the impacts of the No-Action Alternative and six

[23] District Department of Transportation. 2019a. *Right of Way Policies and Procedures Manual. Approved July 31, 2019.* Accessed from https://ddot.dc.gov/sites/default/files/dc/sites/ddot/page_content/attachments/DDOT%20ROW%20Manual%202019-07-31.pdf. Accessed on August 3, 2023.

Action Alternatives (Alternatives A through E and Alternative A-C, with Alternative A-C identified as the Preferred Alternative).

1.9.2 Supplemental Draft Environmental Impact Statement

After the closing of the DEIS commenting period and following review of the agency and public comments received, FRA decided to pause the EIS process to allow the Project Proponents to further coordinate with stakeholders regarding the Project elements. The pause lasted from October 2, 2020, through July 11, 2022. During that time, FRA and the Project Proponents developed a new Action Alternative, Alternative F, to address the public and agency comments received on the DEIS Action Alternatives.

In July 2022, FRA designated Alternative F as the Preferred Alternative and re-initiated the NEPA process. FRA determined that, relative to the Action Alternatives analyzed in the DEIS, the new Preferred Alternative included significant changes with potential to alter the Project's environmental impacts. Therefore, FRA initiated the preparation of an SDEIS in accordance with Paragraph 13 Section (e) of the *Procedures for Considering Environmental Impacts*.

FRA released the SDEIS for public review on May 12, 2023. EPA published a Notice of Availability of the SDEIS in the *Federal Register* on May 19, 2023, with a commenting period ending on July 6, 2023. The SDEIS described the process through which FRA and the Project Proponents developed the new Preferred Alternative and evaluated its impacts. The SDEIS also identified USRC as the Project Sponsor.

1.9.3 Final Environmental Impact Statement and Record of Decision

Pursuant to 49 U.S.C. § 24201 and 23 U.S.C. § 139(n)(2), FRA is issuing a single document consisting of the FEIS and ROD, which also contains the Final Section 4(f) Evaluation. The Section 106 Programmatic Agreement is included with the FEIS/ROD in Appendix F4. 23 U.S.C. § 139(n)(2) directs that "to the maximum extent practicable, the lead agency shall expeditiously develop a single document that consists of a final environmental impact statement and a record of decision, unless (A) the final environmental impact statement makes substantial changes to the proposed action that are relevant to environmental or safety concerns; or (B) there is a significant new circumstance or information relevant to environmental concerns that bears on the proposed action or the impacts of the proposed action."[24]

There have been no substantial changes to the Project or the Preferred Alternative since the issuance of the SDEIS. Nor are there any significant new circumstances or information relevant to environmental concerns that bear on the Project or its impacts. Based on comments received from the owner of the private air rights above the rail terminal on the SDEIS, this FEIS assesses the impact of the Preferred Alternative on property, described in **Section 5.9.3.1**, *Direct Operational Impacts, Property Ownership,*

[24] 23 U.S.C. § 139 (n)(2) - *Efficient environmental reviews for project decisionmaking and One Federal Decision, Accelerated Decision in Environmental Reviews, Single Document*. Accessed from https://uscode.house.gov/view.xhtml?req=%28title:23%20section:139%20edition:prelim%29. Accessed on January 15, 2024.

Land Acquisitions, and Displacements, as major adverse instead of minor adverse in the SDEIS. However, the impact itself (use of approximately 2.9 acres of private air rights for the Project) remains as described in the SDEIS.

As appropriate and practicable, the FEIS updates the data and analyses presented in the DEIS or SDEIS to reflect later developments or newly available information. With these updates, the Preferred Alternative would not result in adverse impacts beyond those identified in the DEIS or SDEIS.

The organization of the FEIS is similar to that of the DEIS and SDEIS and the FEIS covers the same topics. The FEIS addresses the substantive comments received on the DEIS and SDEIS. Because FRA and the Project Proponents developed the Preferred Alternative to address substantive agency and public comments on the Action Alternatives presented in the DEIS, the FEIS considers two alternatives: the No-Action Alternative and the Preferred Alternative. Other changes made in responses to comments include factual corrections, impact analysis refinements, and mitigation measures refinements. **Appendix F3c**, *Responses to Comments on the DEIS and SDEIS*, presents detailed responses to the comments.

2 Purpose and Need

2.1 Introduction

The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] Parts 1500-1508) require that an Environmental Impact Statement (EIS) "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action."[25] This chapter describes Washington Union Station (WUS) and the future challenges that form the basis of the purpose and need for the WUS Expansion Project (the Project).[26]

WUS is the busiest transportation hub in Washington, DC. In a typical year, it accommodates more than 37 million visitors, more than each of the three airports serving the region. WUS is the second-busiest railroad station in the Nation, with almost 50,000 passenger trips per day across intercity and commuter rail services prior to 2020. Altogether, WUS normally supports more than 100,000 rail, transit, and bus passenger trips daily via intercity rail (National Railroad Passenger Corporation [Amtrak]); commuter rail (Virginia Railway Express [VRE] and Maryland Area Regional Commuter [MARC]); Washington Metropolitan Area Transit Authority (WMATA) Metrorail; and intercity buses. WUS also provides facilities for tour buses, local buses, shuttle buses, private cars, rental cars, for-hire vehicles, [27] bicycles, and pedestrians. It is the western terminus of the DC Streetcar.

As railroad service and ridership increase, Union Station Redevelopment Corporation (USRC) and Amtrak are proposing to expand and modernize WUS to meet current and future needs. [28] The Project would address the challenges highlighted in this chapter by improving existing and future station deficiencies by the planned build horizon year of 2040.

[25] 40 CFR § 1502.13. *Environmental Impact Statement, Purpose and Need*. Accessed from https://www.ecfr.gov/current/title-40/chapter-V/subchapter-A/part-1502/section-1502.13. Accessed on August 3, 2023.

[26] Information on WUS in this Chapter refers to pre-2020 conditions. The COVID-19 pandemic and associated impacts on commuter and intercity travel affected WUS in 2020-2022 as it caused a significant reduction in ridership on all rail services. However, current trends in rail travel and for WUS are positive (see for instance: Amtrak, November 29, 2022, *Amtrak Fiscal Year 2022: The Beginning of a New Era of Rail*, accessed from https://media.amtrak.com/2022/11/amtrak-fiscal-year-2022-the-beginning-of-a-new-era-of-rail/, accessed on August 25, 2023; and Virginia Passenger Rail Authority, May 25, 2023, *Amtrak Virginia sets another ridership record in April*, accessed from https://vapassengerrailauthority.org/amtrak-virginia-sets-another-ridership-record-in-april/, accessed on August 25, 2023; and Luz Lazo, "He helped build N.Y.'s Moynihan Train Hall. Now he's rebuilding D.C.'s Union Station," *Washington Post*, August 17, 2023, accessed from https://www.washingtonpost.com/transportation/2023/08/17/doug-carr-dc-union-station-redevelopment/, accessed on August 25, 2023).

[27] "For-hire vehicles" refer to taxis, hired cars, and transportation networking companies such as Uber and Lyft.

[28] See **Section 2.4.1.**1, *Rail Capacity and Service Demands*, for more information.

2.2 Washington Union Station Today

This section describes WUS's existing components and layout, transportation functions, and multimodal ridership and users.

2.2.1 Structures

WUS (**Figure 2-1**) consists of the:

- Historic station building, comprising the historic headhouse with its Main Hall, East Hall, and West Hall as well as the Retail and Ticketing Concourse;[29]
- Claytor Concourse, just north of the historic station building and providing access to trains; an access point to Metrorail;
- Rail terminal, with railroad tracks, platforms, and support facilities;
- Parking garage (which includes the Rental Car Facility);
- Bus facility, on the first level of the parking garage;
- Public circulation areas; and
- Various passenger amenities

2.2.2 Mix of Uses

Along with transportation services, WUS provides approximately 210,000 square feet of retail space (shops, kiosks, and restaurants). It also hosts a variety of civic events, presidential inaugural balls, concerts, and art exhibits.[30] **Table 2-1** describes existing WUS facilities and their uses.

Table 2-1. Mix of Uses at WUS

Existing WUS Facility	Description
Historic Headhouse	The Historic Headhouse (or historic station building) includes the Main Hall, East Hall, and West Hall. It connects to the Retail and Ticketing Concourse.
Main Hall	The Main Hall opens onto Columbus Plaza through the Main Portico. For-hire vehicles, personal vehicles, and tour buses use Columbus Circle to pick up or drop off visitors in the front of the Main Hall. The Main Hall is 26,000 square feet in size.
East Hall	The East Hall contains space for functions and events. The East Hall is 8,000 square feet in size.
West Hall	The West Hall provides a primary entrance into WUS through the Carriage Porch.

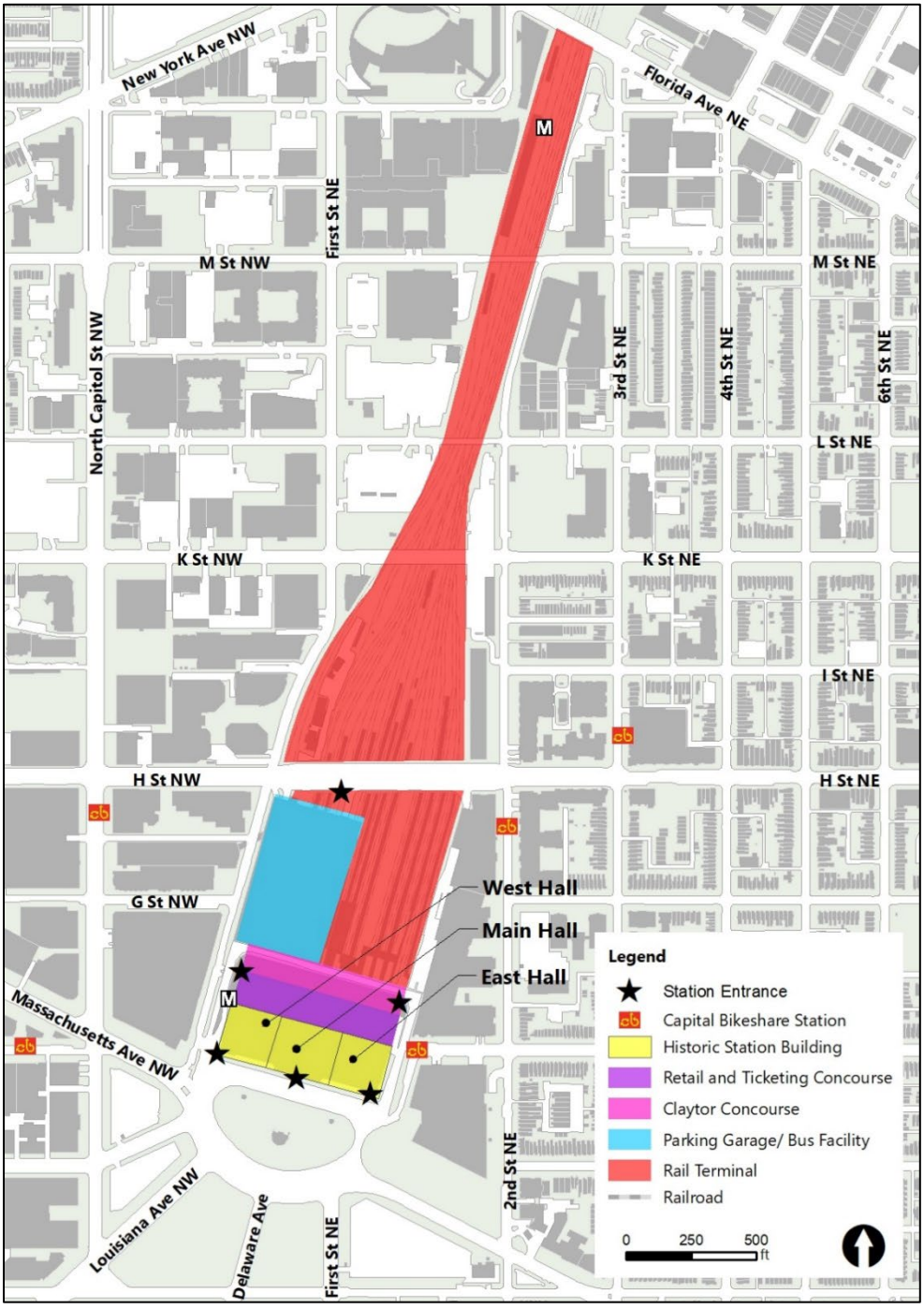
[29] A headhouse is an entrance to a train station that provides access to tracks and platforms.

[30] Union Station Washington DC. *History of Union Station*. Accessed from https://www.unionstationdc.com/History-of-Union-Station//. Accessed on August 3, 2023.

Existing WUS Facility	Description
Retail and Ticketing Concourse	The Retail and Ticketing Concourse contains Amtrak's ticketing counter. It also contains three levels of retail space, including a food court on the lower level and a two-level shopping arcade above it.
Claytor Concourse	The Claytor Concourse dates from the 1980s. It has two levels (main and mezzanine). The main level has boarding gates to the upper-level stub-end platforms, passenger waiting areas, restrooms, retail and food outlets, and access to the Metrorail station. The main level also provides access to Amtrak service areas, Club Acela, and the North Hangar, through which passengers can access the lower-level, run-through platforms. The mezzanine level provides access to the bus facility, parking garage, and Rental Car Facility. It is also connected to the shopping arcade of the Retail and Ticketing Concourse. Existing passenger facilities in the Claytor Concourse are generally overcrowded and uncomfortable. Amtrak 's Concourse Modernization Project (a separate action from the Project, currently in design) is intended "to alleviate congested conditions, enhance passenger comfort and accessibility, while enlivening the space with new architectural finishes and natural light."[31] The Concourse Modernization Project will not be sufficient to allow the Claytor Concourse facilities to adequately handle projected future demands at WUS, however.
Operations Support Spaces	Operations support spaces include areas used for provisioning trains (food and beverage); Amtrak Police facilities; maintenance of railroad systems (such as communication and signals, buildings and bridges, electric traction and track); vehicle maintenance areas; and facilities for both Amtrak and MARC train crews. There are also support spaces for retail operations. There currently are 85,600 square feet of operations support space at WUS. There also is approximately 120,000 square feet of office space in the upper levels of the West and East Halls.
Parking Garage	The parking garage includes public parking spaces and the rental car facility. The parking garage has approximately 2,200 marked spaces.
Rental Car Facility	The rental car facility has space for up to approximately 295 vehicles as well as check-in kiosks for operators.
Bus Facility	The bus facility, located on the first level of the parking garage, has 61 slips (short-term parking spots) serving intercity, tour/charter, and DC Circulator buses. The bus facility also includes operator check-in desks, a small shop, restrooms, and a passenger waiting area. On the same level as the bus facility, there is a cell phone waiting area for passenger pick-up. The offices of Union Station parking garage (USPG), LLC, which operates the parking garage, are located there as well.

[31] Amtrak. *Washington Union Station Concourse Modernization Project*. Accessed from https://www.amtrak.com/washington-union-station-concourse-modernization-project. Accessed on August 3, 2023.

Figure 2-1. WUS Layout



2.2.3 Tracks and Platforms

The rail terminal at WUS has 23 tracks and 14 platforms (See **Table 2-2**). Twenty tracks are used for revenue service and three are used for storage and pooling. The tracks are distributed on two levels: 14 stub-end tracks and seven platforms are located on the upper level (west side of the rail terminal); nine run-through tracks and seven platforms are located on the lower level (east side of the rail terminal). All 14 stub-end tracks (Tracks 7-20) are used for revenue service and are served by MARC and by Amtrak's Acela Express, Northeast Regional, Vermonter, and Capitol Limited trains, which terminate at WUS. Six of the run-through tracks (Tracks 23-28) are used for revenue service by Amtrak regional trains, Amtrak long distance trains (Crescent, Cardinal, Palmetto, Silver Star, and Silver Meteor), and VRE. Currently, all passengers must enter and exit the platforms at their south end.

Table 2-2. Track and Platform Uses at WUS

Track Number	Type of Track
7	Stub-end track, non-electrified, occupied by private cars
8, 9	Stub-end track, non-electrified
10, 11, 12	Stub-end track
13, 14	Stub-end track
15, 16	Stub-end track
17, 18, 19, 20	Stub-end track
22	Run-through track without a useable platform face
23, 24, 25	Run-through track
26	Run-through track
27, 28	Run-through track
29	Run-through track without a useable platform face
30	Stub-end track, non-electrified, used by MARC for mid-day storage and by Amtrak to switch locomotives between diesel and electric power

Source: Washington Union Station Terminal Infrastructure EIS Report: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-b-washington-union-station.

2.2.4 Vehicular Parking

WUS's parking garage is located to the northwest of the historic station building above the westernmost tracks and platforms. The garage is a six-level structure. The bus facility occupies the first level (see **Section 2.2.5**, *Bus Parking and Operations*). The first level also includes a cell phone waiting area. The five other levels provide approximately 2,200 marked parking spaces, including 140 marked spaces for the rental car facility.[32] The lowest deck was completed about 42 years ago and the other levels from

[32] There are 140 marked rental car spaces. However, according to counts taken by USPG, LLC, the garage operator, there are often 295 rental cars parked in the Rental Car Facility and garage. This is due to due to "stacked" parking, that is the practice of tightly parking more than one car within a space. Therefore, total parking garage capacity is approximately 2,450 vehicles.

5 to 10 years later, with the original structure being completed in 1987. The last expansion of the garage dates to the late 2000s.

Access to the garage is from H Street NE via a ramp connected to the H Street Bridge. Vehicles can also reach the garage via the "east ramp," extending from Columbus Circle along the east side of WUS and north of the Claytor Concourse. Exiting vehicles use H Street NE or the "west ramp," which extends along the west side of WUS down to Columbus Circle.

2.2.5 Bus Parking and Operations

The bus facility, on the first level of the parking garage, provides 61 bus slips, 30 of which are permanently reserved (by intercity, tour, and shuttle bus providers). Four slips are available for pick-ups and drop-offs, and 18 are available for hourly and daily use and rental. The D.C. Circulator operates from five slips and there are designated stops for two local tourist bus operators. A handful of unmarked slips in the bus facility accommodate temporary loading and unloading, primarily by tourist buses. In addition, the bus facility currently accommodates oversized vehicles such as vans and recreational vehicles (RVs) for long-term storage and parking. Buses enter and exit the bus facility via H Street NE. Outside the bus facility, "hop-on, hop-off" sightseeing buses use the middle lanes of the Columbus Circle pick-up and drop-off area in front of WUS.

2.2.6 Bicycle/Pedestrian Facilities and Operations

A "Bikestation" is located just west of the historic station building. When operational, the Bikestation provided parking for approximately 100 bicycles as well as bicycle rentals. It is currently vacant. Capital Bikeshare has a station to the east of the historic station building and there are four other Bikeshare stations within a two-block radius of WUS (see **Figure 2-1**).

There are currently six pedestrian entrances into WUS. Four are located on the south side of the historic station building: on First Street NE near G Street NE; under the Portico on the west side of the building; through the central doors; and on the east side of the building, for access to the East Hall offices. There is also an exit to H Street NE through the bus facility and an exit to the Station Place private development (located between Second Street NE and WUS) through a corridor on the east side of the Claytor Concourse.

2.2.7 Vehicular Access and Circulation

Section 2.2.4, *Vehicular Parking* and **Section 2.2.5**, *Bus Parking and Operations* describe vehicular access to the parking garage and bus access. Most pick-up and drop-off activity by personal or for-hire vehicles occurs on Columbus Circle in front of the historic station building. The pick-up and drop-off area on Columbus Circle consists of three bays of two lanes each. Taxi pick-up occurs in the two lanes nearest to WUS, with the vehicles queueing along the east ramp and the west ramp to H Street NE. Taxi passengers wait in the portico in front of the central doors. All other for-hire vehicles and private passenger vehicles use the two outermost lanes for both pick-up and drop-off. As noted above, the middle lanes of the pick-up and drop-off area accommodate hop-on, hop-off buses.

2.2.8 Transportation

WUS is served by seven modes of transportation and more than 30 transportation providers. Modes of transportation include Amtrak intercity rail; VRE and MARC commuter rail; Metrorail[33]; bus (intercity, local, tour, charter, and sightseeing); taxi, for-hire, and personal vehicles; and bicycle. Reflecting this range of modes, prior to the COVID-19 pandemic:

- WUS was one of the Nation's busiest passenger transportation facilities, accommodating nearly 50,000 rail passenger trips per day;
- WUS was the second busiest station on the Amtrak system, handling more than five million passengers annually with more than 16,000 average weekday riders;
- WUS was the third most utilized station on the VRE system, with more than 4,000 average weekday riders;
- WUS accounted for 28,000 average weekday entries and exits for MARC;
- WUS was the region's central intercity and tour/charter bus facility, with 10,000 average daily users; and
- WUS was the most heavily used passenger facility for Metrorail, with 29,000 average weekday entries and exits.

As the effects of the pandemic on mass transportation continue fading, WUS can be expected to return to and exceed such levels of activity.[34]

2.3 Purpose and Need Statement

The purpose of the Project is to support current and future long-term growth in rail service and operational needs; achieve compliance with the Americans with Disabilities Act of 1990 (ADA) and emergency egress requirements; facilitate intermodal travel; provide a positive customer experience; enhance integration with the adjacent neighborhoods, businesses, and planned land uses; sustain WUS's economic viability; and support continued preservation and use of the historic station building.

[33] Access to the Metrorail station (Red Line) is located on the west side of WUS. The WMATA-owned tracks run along the west side of WUS and the rail terminal.

[34] As noted above, current trends in rail travel and for WUS are positive: See Amtrak, November 29, 2022, *Amtrak Fiscal Year 2022: The Beginning of a New Era of Rail*, accessed from https://media.amtrak.com/2022/11/amtrak-fiscal-year-2022-the-beginning-of-a-new-era-of-rail/, accessed on August 25, 2023; Virginia Passenger Rail Authority, May 25, 2023, *Amtrak Virginia sets another ridership record in April*, accessed from https://vapassengerrailauthority.org/amtrak-virginia-sets-another-ridership-record-in-april/, accessed on August 25, 2023; Dan Malouff, July 6, 2023, "With Soaring Metro, DC Streetcar, and VRE Ridership, Washington Region Leads Transit Recovery in US," *Greater Greater Washington*, accessed from https://ggwash.org/view/90163/soaring-ridership-leads-transit-recovery-in-us, accessed on September 26, 2023.

The Project is needed to improve rail capacity, reliability, safety, efficiency, accessibility, and security for both current and future long-term railroad operations at WUS.

2.4 Project Need

Many aspects of WUS in its current condition are inadequate to meet current or anticipated future passenger and station needs. WUS adequately accommodates current rail operations; however, over the long-term, it will need additional capacity to meet future demand. Cumulative train ridership across Amtrak, MARC, and VRE is anticipated to more than double by 2040, which would quickly push WUS beyond its capacity unless substantial efforts are made to prepare for the growth. The *NEC FUTURE* plan anticipates growing ridership and train service in the Northeast Corridor. The planned growth in passenger volumes at WUS would increase congestion on platforms, in queueing areas, and in the hallways connecting the various transportation modes.

WUS's existing platforms and waiting areas do not provide high-quality passenger experience and accessibility. They would also not be able to adequately serve the projected future passenger demand for Amtrak and other rail services. WUS's platforms are adequate for current passenger volumes but they would be unable to accommodate future needs for nearly simultaneous train arrivals and safe and efficient movement of a greater volume of passengers. Furthermore, the existing station platforms are not compliant with current ADA[35] or emergency egress standards.

Multimodal operations and access need improvement, as they are frequently constrained today and will become more so in the future. WUS does not provide a consistently positive passenger experience befitting a central multimodal transportation facility in the nation's capital. Passenger experience needs improving. The layout of the rail terminal restricts connectivity with and between the adjacent neighborhoods to its east and west. The Project would enhance connections with and among these neighborhoods. Finally, to provide for sustainable future operation, preservation, and maintenance, WUS needs to remain financially viable. The following sections provide more details on the needs underlying the Project.

2.4.1 Station Facilities and Operations

Rail capacity, support services, loading facilities, and logistics at WUS meet current needs but will not be sufficient to accommodate future intercity and commuter rail trains and passengers. Internal circulation areas do not have adequate capacity to accommodate existing or future passenger and WUS needs. The demand for parking is expected to change by 2040, driven by evolving transportation mode preferences. The parking supply must reflect these changing preferences.

[35] 42 U.S.C. § 12101 *et seq*. Americans with Disabilities Act of 1990, as amended. Accessed from https://www.govinfo.gov/content/pkg/USCODE-2009-title42/html/USCODE-2009-title42-chap126.htm. Accessed on August 3, 2023.

2.4.1.1 Rail Capacity and Service Demands

The existing rail capacity at WUS is insufficient to meet long-term service needs. Future passenger rail activity is forecasted to exceed the existing capacity. As reflected in the modeling conducted for the *NEC FUTURE Final EIS*, by 2040, FRA anticipates substantial growth in Amtrak, MARC, and VRE ridership over the 2012 baseline levels used for the modeling. A factor in the projected growth is the future introduction by Amtrak of a new "Metropolitan" service providing intercity service along the Northeast Corridor with more frequent stops than existing services. By 2040, Amtrak ridership is expected to be 95 percent above 2012 levels and commuter rail to see even greater ridership growth: compared to 2012 levels, MARC is projected to see a 150 percent increase in daily rides and VRE is likely to expand its ridership by 250 percent (**Figure 2-2**).[36] The growth in commuter rail use is driven by the VRE[37] and MARC[38] investment plans, which call for substantial increases in service into WUS.

2.4.1.2 Accessibility, Security and Life Safety Codes

Initially completed in 1908 and with a rail passenger concourse built in 1988, WUS has systems and facilities that need upgrading to meet modern standards and codes. The existing platforms do not meet ADA requirements for safety zones, vertical circulation, and pedestrian circulation. The platforms also do not allow level boarding[39] and gaps between the platform and the train are excessive. Security systems require modernization. Safety features and performance, including peak platform clearance times, do not fully meet building, fire, and life safety codes.

2.4.1.3 Platforms

Many of the deficiencies of the existing platforms and tracks limit the railroads' operational flexibility and restrict station and track capacity. In their current condition, WUS platforms will not be able to adequately accommodate the projected increase in passenger volumes, nearly simultaneous train arrivals, and movement of through-trains on relatively short headways.[40] The platforms are too short and narrow to serve the longer trains carrying growing passenger volumes. Long dwell times[41] reduce platform capacity and impede the ability to move trains in and out of WUS in a reasonable time. Combined, these factors impair the railroads' ability to provide existing customers with high-quality service and limit their ability to increase service in the future.

[36] Federal Railroad Administration. 2016. *NEC FUTURE FEIS*. Accessed from https://www.fra.dot.gov/necfuture/tier1_eis/feis/. Accessed on September 26, 2023. Some modifications were made based on WUS operating constraints.

[37] Virginia Railway Express. 2014. *VRE System Plan 2040*. Accessed from https://www.vre.org/about/studies-and-reports/2040/. Accessed on August 25, 2023.

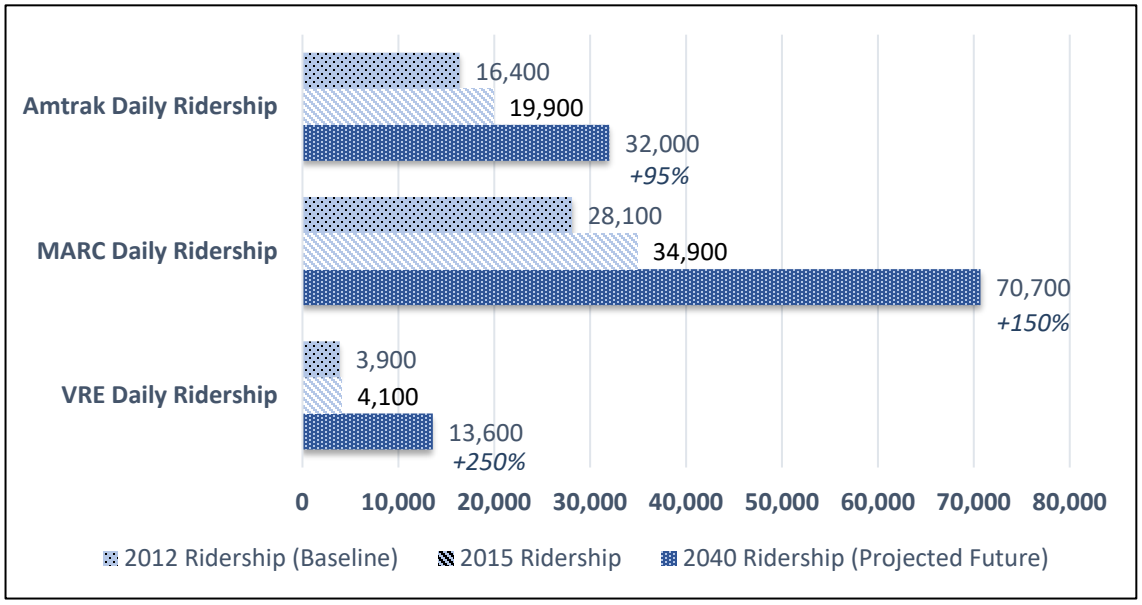
[38] Maryland Transit Administration. 2013. *MARC Growth and Investment Plan Update 2013 to 2050*.

[39] Level boarding is when train interiors are at the same level with station platforms so that passengers do not have to use steps to board the train.

[40] Headways are the times between scheduled trains on a same line or route.

[41] Dwell time is the time that trains sit at platforms during loading/unloading operations.

Figure 2-2. Amtrak, MARC, and VRE Daily Ridership Projections[42]



Current passenger volumes and flows cause access challenges. Platform entry and exit points are very limited. All passengers must enter and exit the platforms from the south (Claytor Concourse) end and there are no other platform entry and exit points**.** Full trains arriving at WUS often discharge large numbers of passengers. For instance, arriving commuter trains (VRE and MARC) can unload up to 1,400 passengers at a time; Amtrak Regional trains can discharge up to 560 passengers; and Acela trains can unload up to 300 passengers. Depending on arrival patterns, nearly 2,000 passengers may arrive on the same platform within 15 minutes. The combination of high passenger volumes and narrow platforms with only one point of egress means that it can take up to 10 minutes to clear the platform of passengers.

The narrow platforms and single point of access and egress also causes conflicts between passengers and Amtrak service staff performing necessary WUS functions, like train and station maintenance, and baggage handling. As a result, conditions on the platforms may become unsafe in the future. [43]

2.4.1.4 Support Services, Loading, Logistics

Space for passenger support functions, such as ticketing, customer service, lost and found, and baggage operations, is too limited to properly accommodate forecasted future operations and ridership. Operations support spaces, which includes areas for the provisioning of trains (food and beverage),

[42] Percentage growth shown in chart represents growth from 2012 to 2040.

[43] Amtrak. 2012. *Union Station Master Plan.* Accessed from https://ggwash.org/files/Washington-Union-Station-Master-Plan-201207.pdf. Accessed on August 24, 2023.

Amtrak Police functions, maintenance of railroad systems (communication and signals, buildings and bridges, electric traction, and track), vehicle maintenance, and facilities for both Amtrak and MARC train crews, are similarly undersized for projected future operations, as are the loading docks. Amtrak's ongoing Concourse Modernization Project will address space issues to some extent, but further expansion will be needed to meet 2040 demand and service levels.

2.4.1.5 Passenger Experience

The experience of passengers arriving at WUS by train can occasionally be unpleasant and fall short of what the experience of arriving at the grand multimodal transportation center of the nation's capital should be. Passengers alight on frequently congested platforms and must make their way to the station via often-congested escalators and circuitous and narrow hallways. They enter WUS through the Claytor Concourse, a commonly overcrowded space with outdated seating areas, poor signage, and undersized restrooms. As previously mentioned, Amtrak has a near-term project planned to expand and improve the Claytor Concourse's waiting and circulation areas, which will address the space deficit and often poor passenger experience in the concourse. However, even with the implementation of this near-term project, the concourse will not be able to adequately accommodate projected 2040 travel demands. Without further improvements, wayfinding, circulation, and passenger experience at WUS will remain below the standards applicable to world-class transportation hubs in cities around the world.

2.4.2 Intermodal Travel

2.4.2.1 Internal Circulation

Normal operations at WUS often result in internal congestion, as passenger flows and queues exceed the capacity of the current configuration. Wayfinding is generally poor due to the lack of clear access and circulation patterns to and between common destinations. Although they generally remain manageable today, issues with flow, circulation, and navigation will worsen as passenger volumes increase. Peak period arrivals could nearly double by 2040 relative to pre-pandemic conditions, with off-peak arrivals also becoming substantially higher than today. This will result in congestion during a greater portion of the day. Even with the Concourse Modernization Project improvements, conditions at some key locations may in the future be reduced to a standstill.

Multimodal transfers can be confusing and challenging, requiring passengers to take indirect routes to reach their destination. The concentration of ingress and egress points on the south side of WUS is a key limiting factor in accommodating increased passenger volumes. Passengers from all directions will be forced into increasingly congested doors. Future congestion in the northern mezzanine of the Metrorail station, which provides access to the Claytor Concourse near existing Gate A, will also affect passenger movements within WUS.

2.4.2.2 Columbus Circle, Taxi Stand, Pick-up and Drop-off Area

Columbus Circle and Union Station Drive NE in front of WUS are commonly congested, with frequent conflicts among pedestrians, bicyclists, vehicles, and other traffic. To reach the front of WUS from the

south, a pedestrian must cross six lanes of active pick-up and drop-off traffic. Bicycle accommodations exist nearby but bicyclists experience conflicts with vehicles and pedestrians at the northeast (F Street NE) and northwest (First Street NE) corners of the pick-up and drop-off area. The north side of Columbus Circle adjacent to WUS presents several points of conflict among pedestrians, bicycles, and vehicles as well.

2.4.2.3 For-Hire Vehicles

The projected growth in rail ridership will overburden the existing for-hire vehicle facilities and exceed their capacity. For-hire vehicles are important for rail passengers at WUS. According to 2015-2016 Amtrak survey data,[44] 30 percent of arriving passengers departed WUS via taxi or other for-hire vehicle, and 20 percent of departing passengers (excluding those who connect to or from another Amtrak train) arrived by taxi or other for-hire vehicle. Substantial queues and delays for taxis are common. Taxis waiting to pick up riders often queue along the full length of the east ramp, roadway behind the Claytor Concourse, and WUS parking garage ramp to H Street NE, leading to queueing on the street itself. The average peak-hour queue is 51 cars long in the morning and 103 cars long in the afternoon. Field observations indicate that some taxis stand in line for up to 46 minutes before picking up passengers. At the pick-up location, the passenger queue can be up to 70 to 80 individuals long in the peak hours.[45] Future demand for for-hire vehicles is expected to grow in proportion with the growth in rail ridership. Accommodating the projected increase in for-hire vehicles traveling to and from WUS will require multiple, efficient pick-up and drop-off locations around the station.

2.4.2.4 Bus Operations: Intercity, Charter, Tour, and Sightseeing Buses

Current users of the WUS bus facility include a range of intercity bus operators, local tour buses, charter coaches, the DC Circulator, Federal government buses, and shuttles. The existing facility can accommodate normal intercity bus demand, although passenger flows and queueing areas are cramped and, for some services, require passengers to cross an active roadway. However, the bus facility is not adequate for forecasted 2040 needs. It is estimated that intercity bus ridership and tour and charter ridership will grow by approximately 50 percent. These projected increases in bus ridership will require more efficient operations and improved passenger facilities to serve charter, tour, and intercity buses. Use of the bus facility by shuttles and for RV storage is not expected to continue. The Union Station Redevelopment Act of 1981[46] states that the WUS complex would serve as a multiple use transportation terminal to include facilities for charter, transit, and intercity buses.

[44] Amtrak. 2015. *eCSI Survey Access/Egress Questions*.

[45] This information, which was developed for and presented in the 2020 DEIS, is based on pre-COVID-19 pandemic field observations. Like other baseline transportation data in this FEIS, it has not been updated because post-2020 conditions were affected by the pandemic and insufficient time has passed to determine which pandemic-related changes are temporary and which may continue in the long-term. Therefore, pre-pandemic data more conservatively represent typical conditions.

[46] Union Station Redevelopment Act of 1981. Accessed from https://www.gpo.gov/fdsys/pkg/STATUTE-95/pdf/STATUTE-95-Pg1667.pdf. Accessed on August 3, 2023.

2.4.2.5 Parking

The WUS parking garage supports short-term, multi-day, and valet parking. Users park there before taking Amtrak trains, visiting the WUS shops and restaurants, going to work in the area, or to make WUS their starting point to visit local sights. There are approximately 2,200 marked spaces in the parking garage. The mezzanine level is currently used for rental vehicles and is leased on a square foot basis. Including these areas, total garage capacity is approximately 2,450 vehicles. Based on data from USPG for the first half of 2019, occupancy rate varied from 37 to 61 percent, steadily increasing from February to June. Regional models indicate a shift away from single-occupancy vehicles by 2040.[47] Existing lease agreements require that at least 1,500 parking spaces and 75 rental car spaces be provided.

2.4.2.6 Neighborhood Integration

WUS is not well integrated within the existing street context, surrounding neighborhoods, businesses, and planned land uses because of poor connectivity with the surrounding neighborhoods. This reduces the quality of pedestrian environments and limits direct access to the historic station building. These issues will intensify as development of nearby properties continues and pedestrian volumes increase.

Because many of the access points to WUS are in the south and the southwest corner of the station, it is difficult for travelers to reach the neighborhoods and employment centers located to the northwest and east such as NoMA (H Street NW, G Street NW, and F Street NW), Capitol Hill/Near Northeast (H Street NE, G Street NE, and F Street NE), H Street Corridor (H Street NE between Second Street NE and 15th Street NE), and the Atlas District (along H Street NE from WUS to the crossroads of 15th Street NE, Bladensburg Road, and Florida Avenue).

To the north, the rail terminal blocks movements between existing and emerging neighborhoods and economic development areas. The H Street Bridge across the terminal is not convenient for pedestrian use. The NoMA, Capitol Hill, and Near Northeast/H Street Corridor neighborhoods have limited access to WUS, with the most direct access point being through the parking garage from H Street NE. Planned future land uses at and near WUS will drive neighborhood changes. They will require new connections to adequately accommodate passengers and visitors and promote neighborhood connectivity. The proposed expansion of WUS, along with nearby existing and planned developments, would improve pedestrian connectivity and neighborhood connections.

2.4.3 Economic Viability

The historic station building needs continuous preservation, rehabilitation, restoration, and reconstruction efforts to maintain its architectural and cultural integrity. Such efforts require a steady revenue stream. Congress passed the Union Station Redevelopment Act in 1981 to preserve the

[47] The District Department of Transportation's *Move DC. The District of Columbia's Multimodal Long-Range Transportation Plan* (accessed from https://movedc.dc.gov/, accessed on August 11, 2023) presents the District's strategy to reduce reliance on single occupancy vehicles.

architecturally significant features of the building and redevelop WUS as a multi-use transportation terminal and a commercial complex. Later, USRC, a 501(c)(3) non-profit organization, became responsible for overseeing this redevelopment. The preservation and maintenance of the historic structures at WUS is one of the primary missions of USRC. Currently, two operations generate most of USRC's revenue: the parking garage and retail activity. The parking garage is USRC's main source of revenue as well as a resource for train riders, station shoppers, local commuters, and visitors to Capitol Hill. USRC reinvests the revenue from the parking garage and the retail space in WUS. Over time, WUS evolved into a popular commercial destination among locals and tourists for shopping and dining. Approximately 210,000 square feet of retail space provide a source of revenue for USRC and WUS historic preservation activities.

3 Alternatives

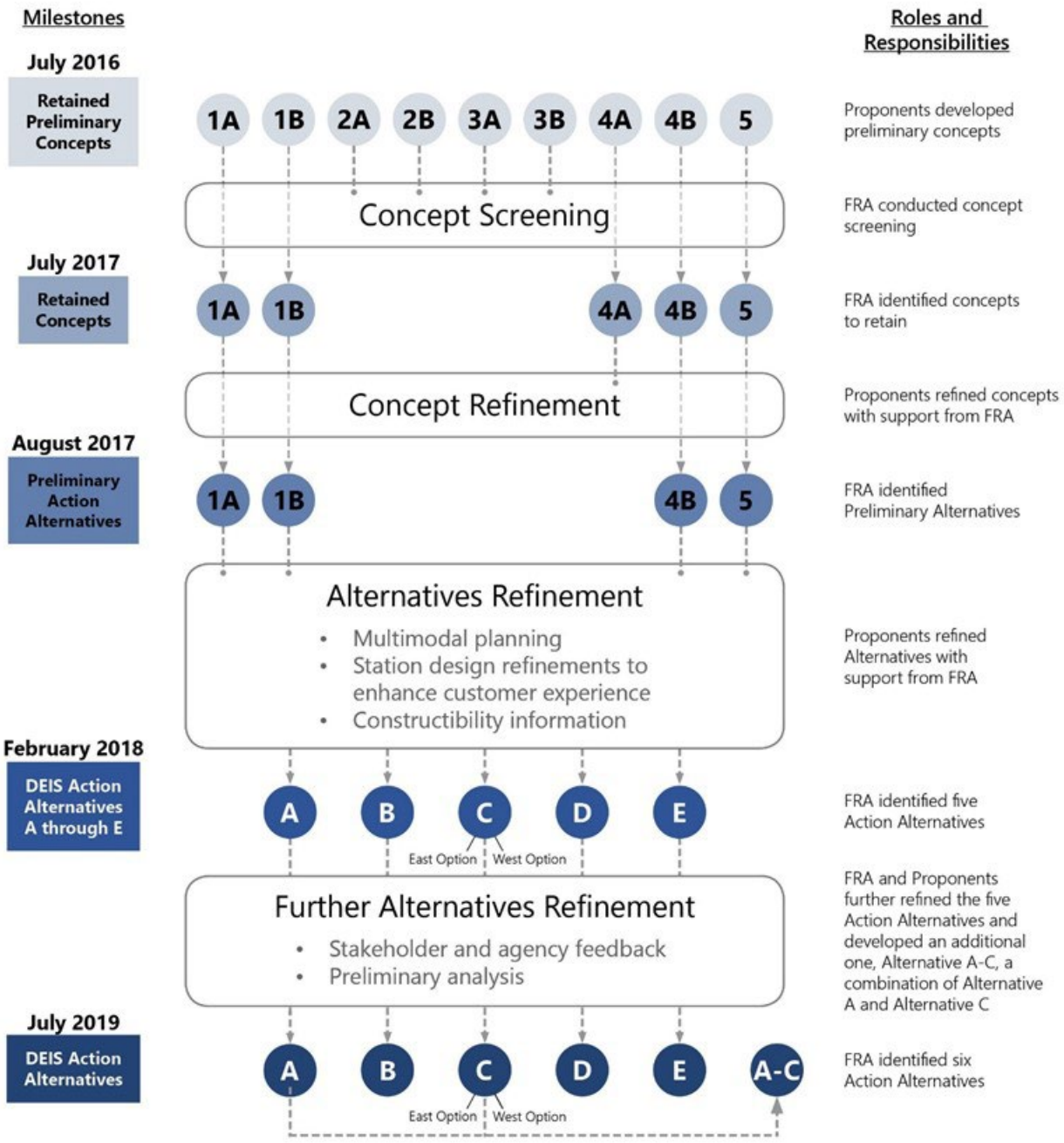
This chapter describes the alternatives evaluated in the Washington Union Station (WUS) Expansion Project (Project) Final Environmental Impact Statement (FEIS):

- **Section 3.1** provides a summary of the alternatives development and screening process that the Federal Railroad Administration (FRA), working with the Project Proponents (Union Station Redevelopment Corporation [USRC] and Amtrak) conducted to define and evaluate a reasonable range of alternatives as required by the National Environmental Policy Act (NEPA) and FRA regulations through the publication of the Draft Environmental Impact Statement (DEIS) for the Project in June 2020.
- **Section 3.2** summarizes the steps taken by FRA and the Project Proponents to address the comments received on the DEIS through the development of a new alternative, Alternative F, and the identification of Alternative F as the Preferred Alternative described in the 2023 Supplemental DEIS (SDEIS) and this FEIS.
- **Section 3.3** addresses the changes made to the Preferred Alternative (Alternative F) in response to the comments on the SDEIS.
- **Section 3.4** describes the No-Action Alternative.
- **Section 3.5** (along with **Appendix F2,** *Description of the Preferred Alternative*) describes the Preferred Alternative.

3.1 Summary of Alternatives Development and Screening Process Through the DEIS

During the first part of the NEPA process for the Project (2015-2020), FRA, working with the Project Proponents, identified six Action Alternatives that were evaluated in the 2020 DEIS. These alternatives were developed through a multi-step process, illustrated in **Figure 3-1**.

Figure 3-1. Concept and Alternative Development and Screening Process Through DEIS



The following sections summarize the process, which included the following steps: [48]

- Identification of Project Elements;
- Concept Development;
- Concept Screening;
- Concept Refinement;
- Alternatives Refinement; and
- Further Alternatives Refinement.

3.1.1 Identification of Project Elements

During the first step, the Project Proponents identified the following Project elements:

- **Historic Station**: The historic station building, listed in the National Register of Historic Places (NRHP), is an important part of the urban fabric of Washington, DC. All concepts preserved the historic station and would sensitively integrate it with the Project.
- **Tracks and Platforms**: The tracks and platforms provide space for trains and their passengers. They serve a core function of WUS. Amtrak initially evaluated 21 options for tracks and platforms and identified two that would meet 2040 demand: Terminal Infrastructure (TI) Option 14 and Option 16.[49] Both options would provide 19 revenue tracks, including seven run-through tracks. TI Option 14 would feature 30-foot-wide platforms with an opening to provide light and air for a concourse beneath the track level. TI Option 16 would feature a large central platform with the potential to accommodate openings for skylights at track level to let light into the concourse below. Though both TI options would be adequate, FRA chose to advance TI Option 14 through the NEPA process because of anticipated operational benefits. TI Option 16 remains available as a potential refinement at a later stage of Project design.
- **Bus Facility**: Intercity and tour/charter bus services are long-established transportation modes at WUS. The Project Proponents initially identified and evaluated thirteen options for a new bus facility, including five off-site options.[50]

[48] This process is described in more detail in Chapter 3 of the DEIS, available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-chapter-3-alternatives.

[49] DEIS Appendix B, *Washington Union Station Terminal Infrastructure EIS Report* (Appendix D), available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-b-washington-union-station, provides more information on the TI options considered.

[50] The Project Proponents originally estimated 2040 peak bus demand to be 47 active spaces, compared to 61 total spaces in the existing facility. Active spaces are spaces available for active operations. These include buses entering the facility, loading or unloading passengers, and departing within less than two hours. This projected demand was based on information available at the time it was developed. It was subsequently refined and updated twice: during the Concept Refinement step, as explained in

- **Train Hall**: A monumental train hall is an architectural feature that adds air and light to the main train concourses and train platforms. It enhances passenger and visitor experience and is a common feature at large train stations across the world. The Project Proponents initially identified four train hall options.
- **Parking**: Parking at WUS serves Amtrak and bus passengers, WUS users, and car rental companies. The Project Proponents initially identified and evaluated eleven options for a new parking facility, including five off-site options.[51]
- **Concourses and Retail**: Concourses provide circulation space for passengers as well as room for retail, which contributes revenue for WUS maintenance and operations. Circulation space and retail opportunities in concourses enhance passenger experience. The Project Proponents initially identified and evaluated ten concourse options. Ultimately, they developed a single concourse option featuring two east-west and two north-south concourses.
- **For-Hire Vehicles**: For-hire vehicle facilities provide WUS users and visitors with a range of transportation options. The Project concepts to incorporate for-hire vehicles included pick-up and drop-off areas at the front of the historic station; in an underground facility; on the same level as H Street NE; and on First and Second Street NE. The Project Proponents identified and evaluated 17 options for pick-up and drop-off areas.
- **Bicycle and Pedestrian Access**: Ensuring quality bicycle and pedestrian access is essential for a multimodal facility in an urban environment. All concepts and alternatives the Project Proponents envisioned included enhancements to bicycle and pedestrian access to, and circulation within, WUS as well as new opportunities for bicycle parking. The Proponents identified and evaluated six new entrances to WUS.

3.1.2 Concept Development

During the Concept Development step, the Project Proponents developed a total of 18 preliminary concepts by variously combining the eight Project elements. All preliminary concepts had elements in common, including preservation of the historic station, the new tracks and platforms, and the new concourses. The Project Proponents evaluated the concepts based on feasibility and whether they

Section 3.1.4, *Concept Refinement*, and during the development of the Preferred Alternative, as explained in **Section 3.2.2,** *Post-DEIS Refinements*. The final demand analysis providing the basis for the size of the bus facility in the Preferred Alternative is documented in Section 3, *Bus Program*, of **Appendix F1,** *Multimodal Refinement Report*. The analysis in **Appendix F1** supersedes and replaces the analyses documented in the DEIS and associated appendices.

[51] The Project Proponents originally estimated 2040 peak parking demand to be 2,730 spaces for Amtrak passengers, WUS users, and rental car companies. This projected demand was based on information available at the time it was developed. It was subsequently refined and updated twice: during the Concept Refinement step, as explained in **Section 3.1.4**, *Concept Refinement*, and during the development of the Preferred Alternative, as explained in **Section 3.2.2,** *Post DEIS Refinements*. The final parking demand analysis is documented in Section 1, *Parking Program*, of **Appendix F1,** *Multimodal Refinement Report*. The analysis in **Appendix F1** supersedes and replaces the analyses documented in the DEIS and associated appendices.

would help achieve a set of design goals derived from the Project's Purpose and Need. The *Concept Development and Evaluation Report* (CDR), completed in July 2016, documents this evaluation.[52]

FRA retained nine preliminary concepts for further consideration. **Table 3-1** provides brief characterizations of these nine concepts. The eliminated preliminary concepts included below-grade tracks that Amtrak determined it did not need to meet its operational requirements. All preliminary concepts required placement of some Project elements within the privately owned air rights.

Table 3-1. Preliminary Concepts Retained for Screening (July 2016)

Concept	Tracks and Platforms	Train Hall Orientation	Parking	Bus
Concept 1A	Options 14 or 16	North-south	Above ground southwest of H Street Parking for 1,664 vehicles	Southwest of H Street 34 active bus slips
Concept 1B	Options 14 or 16	North-south	Below the tracks Parking for 2,497 vehicles	Southwest of H Street 34 active bus slips
Concept 2A	Options 14 or 16	North-south	Above ground southeast of H Street Parking for 1,936 vehicles	Southeast of H Street 48 active bus slips
Concept 2B	Options 14 or 16	North-south	Below the tracks Parking for 2,497 vehicles	Southeast of H Street 48 active bus slips
Concept 3A	Options 14 or 16	North-south	Above ground north of H Street Parking for 1,827 vehicles	North of H Street 42 active bus slips
Concept 3B	Options 14 or 16	North-south	Below the tracks Parking for 2,497 vehicles	North of H Street 42 active bus slips
Concept 4A	Options 14 or 16	North-south	Above ground to the north of H Street Parking for 1,827 vehicles	North of H Street 42 active bus slips
Concept 4B	Options 14 or 16	East-west	Below the tracks Parking for 2,497 vehicles	North of H Street 42 active bus slips
Concept 5	Options 14 or 16	East-west	Below the tracks Parking for 2,497 vehicles	In east-west train hall 40 active bus slips

[52] USRC and Amtrak. July 2016. *Final Concept Development and Evaluation Report*. Available at: https://railroads.dot.gov/rail-network-development/environment/environmental-reviews/washington-union-station-expansion-3 as Appendix A3 of the DEIS.

3.1.3 Concept Screening

In the Concept Screening step, FRA screened the preliminary concepts based on the Project's Purpose and Need. The July 2017, *Concept Screening Report* (CSR) documents the Concept Screening step.[53]

FRA first determined that the nine preliminary concepts were reasonable and feasible. Then, FRA conducted an initial assessment of whether each concept would meet the Purpose and Need. The assessment was based on a "yes or no" review of whether, at a minimum, the concepts addressed the different aspects of the Purpose and Need. FRA found that all the concepts met the Purpose and Need.

Following this initial review, FRA further assessed the nine preliminary concepts for the degree to which they would meet the Purpose and Need. For this assessment, FRA developed and used the following set of screening criteria:

- Provides needed platform/rail capacity and rail operational requirements;
- Achieves compliance with the ADA and emergency egress requirements;
- Meets future multimodal capacity needs;
- Meets operational needs of multimodal facilities and minimizes impacts on roadways;
- Improves internal circulation;
- Supports quality of train hall experience and quality of concourse experience;
- Enhances integration with adjacent businesses, neighborhoods, and future land uses;
- Sustains the station's economic viability;
- Preserves and maintains the historic Union Station building and urban environment; and
- Offers ease of construction and maintains station operations during construction.

FRA presented the preliminary screening results to members of the public, Cooperating Agencies, interested agencies, and Section 106 Consulting Parties in a series of meetings held in October 2016. When identifying the concepts that it would retain for further refinement, FRA considered the comments received in those meetings and during a comment period that ended on November 6, 2016. Members of the public, cooperating agencies, and interested agencies provided comments on the preliminary concepts, including general opinions; preliminary discussion of the concepts' potential environmental impacts; and suggestions for approaches that FRA and the Project Proponents may not have considered. Public and agency input yielded suggestions that called for further investigation during the Concept Refinement and Alternatives Refinement steps.

FRA evaluated the concepts holistically and selected the concepts it would retain based on their average performance under the different criteria. Based on the screening process and comments received, FRA

[53] FRA. July 31, 2017. *Washington Union Station Concept Screening Report*. Available at: https://railroads.dot.gov/rail-network-development/environment/environmental-reviews/washington-union-station-expansion-3 as Appendix A4 of the DEIS.

retained Concepts 1 (both A and B), 4 (both A and B), and 5 for further refinement and evaluation of their suitability for analysis in the DEIS.

3.1.4 Concept Refinement

During the Concept Refinement step, FRA worked with the Project Proponents to refine the five retained concepts based on public and agency comments. The issues and suggestions considered during Concept Refinement were:

- Bus access via the New York Avenue Viaduct;
- Underground bus facility;
- Metrobus/commuter bus using the bus facility;
- Placing elements outside the rail terminal footprint, including parking under Columbus Plaza;
- Repurposing the existing Retail and Ticketing Concourse;
- Bus program size;
- Parking program size;
- An alternative Concept 5 that would separate buses from the train hall;
- Reinstating the ends of the existing Retail and Ticketing Concourse;
- Alternative below-ground parking options; and
- Bus facility on First Street NE.[54]

During the Concept Refinement step:

- FRA and the Project Proponents considered nine potential off-site locations for the bus and parking elements: two Architect of the Capitol (AOC) parking lots; Columbus Plaza and Circle (underground); Postal Square Building; U.S. Government Publishing Office (GPO) Warehouse #4; lot at First and L Streets NE, south side; lot at First and L Streets NE, north side; lot at North Capitol Street and K Street; and GPO parking lot. Review indicated that none of these locations was a reasonable option for siting bus or parking elements.[55]
- FRA and the Project Proponents reduced the size of the parking and bus elements based on a review and refinement of the anticipated demand and the adoption of a dynamic management approach for the operation of the bus facility, with a 30-minute dwelling time

[54] For more details, see Section 6, *How Has FRA Advanced Concepts to Preliminary Alternatives?* of the *Washington Union Station Concept Screening Report* available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-a4-concept-screening-report.

[55] For the analysis, refer to Section 6.4, *Element Options Outside the Railyard Footprint, including Parking under Columbus Plaza*, of the *Washington Union Station Concept Screening Report*, available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-a4-concept-screening-report.

limit.[56] On this basis, FRA and the Project Proponents determined that a 25-slip bus facility (down from 47) could adequately meet 2040 bus demand at WUS and that a 1,600-space garage could meet the 2040 parking demand (down from 2,730 spaces).[57]

The outcome of the Concept Refinement step was four Preliminary Alternatives, as listed in **Table 3-2**.[58] FRA eliminated one concept, Concept 4A, from further consideration because in this concept, the refined bus and parking programs could not be accommodated together without creating an inefficient vehicle parking layout and the need for circulation ramps that would cause additional impacts on private property.

Table 3-2. Preliminary Alternatives (August 2017)

Concept	Preliminary Alternative	Tracks and Platforms	Train Hall Orientation	Parking	Bus
1A	**1A**	Options 14 or 16	North-south	Above ground southwest of H Street Parking for 1,664 vehicles	Southwest of H Street 26 active bus slips
1B	**1B**	Options 14 or 16	North-south	Below the tracks Parking for 1,888 vehicles	Southwest of H Street 26 active bus slips
4B	**4B**	Options 14 or 16	East-west	Below the tracks Parking for 1,888 vehicles	North of H Street 29 active bus slips
5	**5**	Options 14 or 16	East-west	Below the tracks Parking for 1,888 vehicles	In east-west train hall 25 active bus slips

3.1.5 Alternatives Refinement

During the Alternatives Refinement step, the Project Proponents, with support from FRA, further developed the preliminary alternatives to better address issues raised by agency and public comments

[56] Dynamic management involves sharing bus slips across operators and dynamically assigning the available slips to specific buses as needed to make optimal use of the available space. This approach allows for more bus movements with fewer slips. The DEIS referred to this approach as "active management." The currently preferred industry terminology is "dynamic management." This is the term used in the SDEIS and this FEIS.

[57] These projections were based on information available at the time they were developed. The projections were further refined and updated during the development of the Preferred Alternative, as explained in **Section 3.2.2,** *Post DEIS Refinements*. The final bus and parking demand analysis is documented in **Appendix F1,** *Multimodal Refinement Report*. The analyses in **Appendix F1** supersede and replace the analyses documented in the DEIS and associated appendices.

[58] FRA documented this outcome in Section 7, *What are the Preliminary Alternatives?* of the of the *Washington Union Station Concept Screening Report* available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-a4-concept-screening-report. Figure 7-1 through Figure 7-4 of the Report illustrate the four preliminary alternatives listed in **Table 3-2**.

and to advance the quality of the design of the alternatives.[59] The Project Proponents and FRA investigated the following topics:

- Cost and Constructability;
- Amtrak's operational space;
- Continued use of the existing WUS parking garage;
- Traffic operations on H Street NE;
- K Street access and operation;
- Bicycle and pedestrian access;
- Modification to the train hall;
- Modifications to the parking garage and bus facility north of H Street;
- Design refinement to enhance passenger experience;
- Bus and other multimodal uses on First Street NE;
- Columbus Circle Roadways modifications; and
- WMATA Metrorail Station

As a result of this review, FRA and the Project Proponents made several refinements to the Preliminary Alternatives and identified five Action Alternatives (named Alternative A through E) for future analysis in the DEIS. See **Table 3-3** for a summary characterization of these five Action Alternatives.

All Action Alternatives included the reconstruction of the rail terminal (TI Option 14) and the construction of four new concourses; pedestrian and bicycle access improvements; and pick-up/drop-off areas on First Street NE, Second Street NE, in front of the historic station building, and adjacent to the train hall. The Action Alternatives primarily differed with regard to the size or location of the train hall, bus facility, and parking facility, as shown in **Table 3-3**. Alternative C had two options (East Option and West Option) depending on the location of the above-ground parking facility and the bus facility on the east or west side of the rail terminal.

FRA shared the Action Alternatives, as well as the No-Action Alternative, with the agencies and the public in March 2018.

[59] The Alternative Refinement step is described in Section 8, *What Issues will be considered during Alternatives Refinement?*, of the of the *Washington Union Station Concept Screening Report* (available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-a4-concept-screening-report) and in Section 2, *Preliminary Alternatives Planning and Design Refinements*, of the January 2020 *Action Alternatives Refinement Report* (AARR). The AARR is available at: https://railroads.dot.gov/rail-network-development/environment/environmental-reviews/washington-union-station-expansion-3. as Appendix A5.

3.1.6 Further Alternatives Refinement

After the March 2018 presentation of the Action Alternatives, FRA analyzed their environmental impacts and continued constructability analysis and coordination with stakeholders and agencies. The initial results of the impacts analysis and stakeholders and agencies coordination indicated that the following issues warranted further consideration:

- Excavation depth and complexity of construction;
- Location of the intermodal uses relative to the historic station building;
- Traffic operations on the H Street Bridge and the public street network;
- Impacts to the privately owned air rights above the rail terminal; and
- Quality of the urban setting at the deck level.

Based on coordination with the District Department of Transportation (DDOT) about traffic operations on the H Street Bridge, FRA and the Project Proponents investigated how the different vehicular modes serving WUS would circulate on the deck-level roads connecting to H Street NE. To improve operations on the bridge, DDOT recommended that WUS adopt, to the extent possible, a one-way circulation pattern on the deck, with as few left-turning movements in and out of H Street as possible. Alternatives A through E incorporated this recommendation.

In their review of the Action Alternatives, the District of Columbia State Historic Preservation Office (SHPO) expressed concerns about potential adverse historic preservation and urban design effects from the provision of daylighting features above the off-centered Central Concourse, resulting in an asymmetrical development to the north of the station. To address this concern and avoid the impression of precluding appropriate design solutions north of WUS, FRA and the Project Proponents delineated a Visual Access Zone and a Daylight Access Zone for those Action Alternatives with an east-west train hall. The "Visual Access Zone" would be free of Project elements between H Street and the train hall; the "Daylight Access Zone" would also remain mostly free of Project elements, but skylights would be installed within it to provide the new station concourse underneath with natural light. The access zones are located within the private air rights and are not a part of the Project, but the Project would not preclude their development as part of the private air rights development as a civic space.

Further, after reviewing the major elements of each Action Alternative – including below-and above-ground parking, train hall, and bus facility – in light of the five issues identified above, the Project Proponents and FRA developed an additional Action Alternative, Alternative A-C. This alternative, which would combine elements of Alternative A (bus facility and above-ground parking combined into a multimodal surface transportation center located to the southwest of the H Street Bridge; no below-ground parking) and Alternative C (east-west train hall) addressed each of the five issues. Consistent with the screening process conducted for the other Action Alternatives, FRA determined that Alternative A-C would meet the Project's Purpose and Need and retained it for analysis in the DEIS along with

Alternatives A through E. **Table 3-3** briefly characterizes the six Action Alternatives evaluated in the DEIS.[60]

Table 3-3. DEIS Action Alternatives

Preliminary Alternative	Action Alternative	Train Hall	Parking Facility	Bus Facility
1A	**A**	North-south	Above ground, southwest of H Street NE 1750 spaces	Above-ground, southwest of H Street NE (below parking) 26 slips
1B	**B**	North-south	Below-ground on two levels 2,000 spaces	Above-ground, southwest of H Street N 26 slips
4B	**C**	East-west	East Option: Above-ground, northeast of H Street NE and on one level below ground 750 spaces and 900 spaces, respectively	East Option: Above-ground, northeast of H Street NE, and bus pick-up/drop-off area next to the train hall 17 and 9 slips, respectively
			West Option: Above-ground, northwest of H Street NE and on one level below ground 710 spaces and 900 spaces, respectively	West Option: Above-ground, northwest of H Street NE, and bus pick-up/drop-off area next to the train hall 19 and 9 slips, respectively
5	**D**	East-west	Above ground, south of K Street NE and on one level below ground 750 and 900 spaces respectively	South of H Street wrapped around the train hall 27 slips
	E	East-west	Below-ground on two levels 2,000 spaces	South of H Street wrapped around the train hall 27 slips
Not Applicable	**A-C**	East-west	Above ground, southwest of H Street NE 1,600 spaces	Above-ground, southwest of H Street NE (below parking) up to 40 slips on two levels.

After considering the Purpose and Need for the Project as well as stakeholder, agency, and public input, FRA and the Project Proponents identified Alternative A-C as the Preferred Alternative. At that stage of the EIS process, Alternative A-C was best responsive to the full range of issues and concerns raised during the development and preliminary analysis of the Action Alternatives and it met the Project's Purpose and Need as well as or better than the other Action Alternatives.

[60] Detailed descriptions are provided in Chapter 3, *Alternatives*, of the DEIS: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-chapter-3-alternatives.

3.2 Development of the Preferred Alternative

This section summarizes the steps taken by FRA and the Project Proponents to address the comments received on the DEIS, which resulted in the development of a new alternative, Alternative F, and its identification as the new Preferred Alternative described in the 2023 SDEIS.

3.2.1 Comments on the 2020 DEIS

The comment period for the 2020 DEIS lasted from June 4, 2020, through September 28, 2020, for a total of 116 days.[61] Additionally, FRA hosted an online public hearing on July 14, 2020. During the review period, FRA received a total of 145 comments, including 122 written comments and 23 verbal comments submitted at the public hearing.[62] Commenters included elected officials; Federal and District agencies or organizations; private organizations, advocacy groups, and businesses; and private individuals.

Most of the comments on the 2020 DEIS were about various aspects of Alternative A-C. **Section 8.6.2**, *Summary of Comments on the DEIS*, summarizes these comments. The following briefly characterized the comments relevant to the development of Alternative F.

- **Parking Capacity and Location**: Comments focused on the size of the parking program, requesting its reduction or elimination. Most comments advocating for a smaller parking program also opposed placing parking above ground or recommended placing it below ground.
- **Bus Facility Capacity and Location**: Comments focused on the size of the bus facility, finding it either too small or too large. Comments also opposed the proposed dynamic management approach and associated 30-minute dwelling time limit.
- **Pick-up and Drop-off**: Comments advocated for a centralized pick-up and drop-off facility in addition to the locations already provided in Alternative A-C. They also recommended that this centralized facility be located underground.
- **Urban Design**: Often in conjunction with requests to reduce or eliminate parking and relocate the proposed parking and bus facilities, comments found that Alternative A-C did not make the most of the urban design opportunities offered by the Project and fail to provide for a space commensurate with the historic and archaeological significance of WUS and did not integrate well with the surrounding neighborhoods.

[61] Council on Environmental Quality regulations implementing the National Environmental Policy Act at 40 Code of Federal Regulations (CFR) § 1506.11 (d) and FRA' s *Procedures for Considering Environmental Impacts* at 64 *Federal Register* 28545, 5 May 26, 1999, as updated by 78 FR 2713, January 14, 2013 (under which the 2020 DEIS was prepared) provide for a minimum review period of 45 days.

[62] "Comment" as used here refers to a discrete written or verbal communication from a person, organization, or group of persons or organizations. One comment may address several topics and contain multiple items calling for separate responses. The same person or organization may have submitted several comments. Comments ranged in length and complexity from brief emails to a 650-page submission presenting alternative design solutions and impact analyses.

- **Pedestrian and Bicycle Access**: Comments focused on the need for more and better multimodal access, including pedestrian and bicycle access to reduce the need for automobile parking. Specific recommendations included providing protected bike lanes or paths; secured and covered bike parking; secured lockers for storing valuables; and more Capital Bikeshare stations.

3.2.2 Post-DEIS Refinements

In light of the comments received on the 2020 DEIS, FRA paused the NEPA process on October 5, 2020. FRA and the Project Proponents reviewed the comments and identified areas where the approach to the Project elements could be refined while remaining consistent with the Purpose and Need. FRA and the Project Proponents identified the following areas for refinement: parking and pick-up and drop-off; the bus facility; opportunities for air rights development; traffic circulation; urban design and building massing; and visual and aesthetic quality. *Refinement Process***,** below, describes the coordination process through which the Project elements' design was updated and refined; *Updates and Refinements*, below describes the results of the refinement process.

3.2.2.1 Refinement Process

Refinement Framework

Consistent with comments recommending a more integrated approach to urban design, FRA coordinated with Akridge, the owner of the private air rights above the rail terminal, on planning issues affecting both the Project and the future private air rights development. In 2021, FRA and the Project Proponents met with Akridge in a series of workshops to discuss and coordinate various elements of both projects. The refined approaches to the train hall, bus facility, multimodal transportation planning, and civic space planning described in **Section 3.2.2.2**, *Updates and Refinements*, emerged in part from this effort.

During the pause in the NEPA process, FRA and the Project Proponents also continued coordinating with DDOT and the District of Columbia Office of Planning (DCOP) to discuss transportation and planning issues. The Project team met monthly to bi-weekly with these agencies to discuss key issues such as the bus facility; the parking program; pick-up and drop-off circulation; traffic management strategies, and transit bus activity. In a letter to FRA dated December 17, 2021, DDOT indicated their support for the proposed refinements.

Simultaneously, FRA and the Project Proponents conducted discussions with intercity bus carriers to further develop the bus program. CoachUSA/Megabus, Greyhound, BestBus, Peter Pan, and the Guild of Professional Tour Guides were involved in those conversations. The primary purpose of this coordination effort was to improve FRA and the Project Proponents' understanding of bus operations, including peak holiday operations, and to receive feedback on iterations of the bus program during the design refinement process.

Stakeholder Engagement

Beginning in Fall 2021, FRA and the Project Proponents engaged with a broader range of Project stakeholders through targeted briefings to offer updates and opportunities to provide feedback on the refinements. FRA and the Project Proponents briefed the following stakeholders: the Mayor's Office; the Deputy Mayor for Planning and Economic Development office; DDOT; DCOP; SHPO; NCPC staff; Commission of Fine Arts (CFA) staff; the Federal Transit Administration (FTA); and Advisory Neighborhood Commission (ANC) 6. Subsequently, FRA presented the Project to the Section 106 Consulting Parties on March 2, 2022, and to the Cooperating Agencies on March 4, 2022.[63]

In the spring of 2022, FRA and the Project Proponents identified further refinements to reduce construction costs and duration. Following these further refinements, FRA and the Project Proponents presented the Project to CFA at CFA's June 16, 2022, public information meeting. In its written response, dated June 22, 2022, CFA noted that the updated design is highly responsive to previous comments.[64]

FRA and the Project Proponents presented the Project to NCPC for comments at NCPC's July 7, 2022, public meeting. In its written response, NCPC expressed its support for the updated Project design and commended FRA and the Project Proponents for developing a design that is substantially responsive to previous comments.[65]

3.2.2.2 Updates and Refinements

This section describes the updates and refinements FRA and the Project Proponents made to the Project elements through the process summarized above, in response to the comments received on the 2020 DEIS.

Parking Facility

To address comments calling for reconsideration of the parking program, FRA and the Project Proponents reviewed the demand analysis that provided the basis for the parking program presented in the 2020 DEIS. After the publication of the DEIS, more recent usage data became available, covering the years 2017, 2018, and 2019. FRA and the Project Proponents updated their demand projections based on these new data, using the same methodologies as the original projections. The update also incorporated additional data from Amtrak passenger surveys and an updated mode share factor derived

[63] The following Section 106 Consulting Parties attended the March 2 meeting: SHPO; Advisory Council on Historic Preservation; Architect of the Capitol; CFA; FTA; NCPC; District Council member Charles Allen; DDOT; ANC6; Washington Metropolitan Area Transit Authority; Maryland Area Regional Commuter (MARC); Virginia Railway Express (VRE); National Trust for Historic Preservation; DC Preservation League; DC Chapter of National Railway Historical Association; Committee of 100 on the Federal City; Capitol Hill Restoration Society; CoachUSA/Megabus; and Akridge. The following agencies attended the March 4 meeting: DDOT; FTA; and NCPC.

[64] https://www.cfa.gov/records-research/project-search/cfa-16-jun-22-1

[65] https://www.ncpc.gov/review/archive/2022/07-07/

from DDOT's 2014 *Move DC* plan,[66] which called for a 13 percent reduction in automobile trips in the District relative to a projected 2040 baseline.

These updates resulted in a revised demand projection of approximately 860 spaces, including long-term parking, short-term parking, rental car parking, and WUS office parking. This projected demand is 46 percent less than the demand assumed in the 2020 DEIS.[67]

During the parking demand analysis update, FRA and the Project Proponents further confirmed that at least some parking should be maintained at WUS to accommodate a range of station users. Such users include those traveling in the early morning or late evening, when no or limited transit options are available. Other users include those who cannot easily use alternative transportation options. Some short-term parking should also be available for passenger matching activity, events at the station, and to support visitor access to the Capitol area as envisioned by the Union Station Redevelopment Act of 1981.

As part of the refinement process, FRA and the Project Proponents initially considered a two-level below-ground parking facility, sharing the space with a below-ground pick-up and drop-off facility on the first level (see *Pick-up and Drop-off* below). Options for access to the facility included a two-way ramp on First Street NE; an inbound one-lane ramp on G Street NE; an outbound one-lane ramp on G Place NE; and an inbound ramp on K Street NE. After further review, to reduce cost and construction duration, FRA and the Project Proponents eliminated the second below-ground level. As a result of this change, the below-ground facility could only accommodate from 400 to 550 parking spaces. There was no longer a need for a ramp on K Street, eliminating this option. Additionally, in response to a review by DDOT, a single bidirectional ramp on G Street NE replaced the unidirectional G Street and G Place NE ramps originally considered. The ramp on G Street NE required the elimination from the Project of the bus slips proposed at this location in the 2020 DEIS. Additionally, the updated parking program would provide an opportunity to accommodate electric vehicle (EV) charging. The number of charging spots would be determined during design.

Bus Facility

FRA and the Project Proponents also reviewed the scale and location of the bus facility to address comments on the bus program. FRA and the Project Proponents coordinated with the bus carriers to receive additional input about schedules, operating assumptions, and peak operating demand data to inform reconsideration of bus facility operations.

FRA and the Project Proponents evaluated a range of potential growth rates for bus service to 2040. On this basis, FRA and the Project Proponents developed a program of 38-39 bus slips. FRA and the Project Proponents also identified a location for the bus facility that they had not considered in the 2020 DEIS.

[66] District Department of Transportation. 2014. *Move DC. The District of Columbia's Multimodal Long-Range Transportation Plan*. Accessed from https://movedc-dcgis.hub.arcgis.com/documents/DCGIS::2014-movedc-part-1-strategic-multimodal-plan/explore. Accessed on February 9, 2024.

[67] Refer to **Appendix F1**, *Multimodal Refinement Report*, for a detailed discussion. The projected parking demand must be distinguished from the amount of parking provided by the Project, as explained further down in this section.

The new east to west oriented bus facility would be located immediately adjacent to the train hall and integrated into the deck. This location would facilitate the integration of the bus facility with the train hall and the remainder of WUS; allow for efficient bus circulation; and free up space on the deck for civic space development. The facility would provide an opportunity for electric bus charging infrastructure.

Based on feedback from carriers and the tour bus industry, FRA and the Project Proponents also evaluated how the facility would manage peak events, such as the Thanksgiving season or major events in the District. An evaluation of peak event demand showed that the proposed program could accommodate estimated annual peak intercity travel events, such as major holidays. However, a few times a year, additional space may be required to accommodate exceptional tour and charter bus peak loads associated with special events, such as the Cherry Blossom Festival or large demonstrations. In such cases (four to 10 days per year), the demand could exceed the 38-39 proposed slips. FRA and the Project Proponents determined that the pick-up and drop-off area on the H Street deck level in front of the train hall could accommodate approximately 15 additional buses during these exceptional peak events.

Pick-up and Drop-off

FRA and the Project Proponents revised the Project design to include a below-ground, centralized pick-up and drop-off facility, as several 2020 DEIS commenters suggested. This facility would be co-located with parking on one below-ground level with access ramps on G Street NE and First Street NE (see *Parking Facility* above). In addition, an exit ramp along the east side of WUS would provide access from the queuing area of the facility to the front of the station. Some pick-up and drop-off space would continue to be provided on First and Second Streets NE, in front of WUS, and at the deck level (next to the train hall, above the bus facility).

Urban Design

FRA and the Project Proponents coordinated with Akridge on opportunities to enable a civic space on the H Street deck level. This coordination effort is consistent with the Project's purpose of integrating the Project with adjacent land uses. It is also responsive to comments about achieving a shared vision for the civic and urban space around the station.

This coordination effort focused on developing an approach to the Project elements at the H Street deck level that would enhance opportunities for the creation of a civic space commensurate with WUS's historic and architectural significance, centered on the historic station building. Moving parking below ground and integrating the bus facility into the deck would make it possible to establish a strong visual connection between the station and H Street. It would also allow for an overall site design respectful of the symmetry of WUS. The private air rights developer would be primarily responsible for the design of the civic space and would be responsible for its construction, which would occur in conjunction with the development of the private air rights. Project elements within the space, such as skylights to provide the passenger concourse below with daylight, would be placed and designed in collaboration with the private air rights developer.

Pedestrian and Bicycle Access

The refinements made in response to comments on the DEIS included two new ramps to provide enhanced pedestrian and bicycle access opportunities on the west and east sides of WUS, respectively. These ramps would replace the existing west and east ramps currently providing access to and from the parking garage. The west ramp would facilitate pedestrian and bicycle access from the front of WUS and First Street NE to H Street and the air rights development on the deck level. To maintain needed operational flexibility, the ramp could be used to move cars from H Street NE to First Street NE when planned or unplanned closures require it. This would be an infrequent occurrence. Most of the time, the ramp would function as an exclusively pedestrian and bicycle pathway.[68]

The east ramp would facilitate bicycle and pedestrian access from Columbus Circle and the east side of WUS to the bus facility. It would occasionally provide an alternative exit for buses when the exit to H Street NE is unavailable, for instance during planned maintenance activities or unplanned, emergency situations. Such occasions would be rare. The development of this feature led to the elimination of the vehicular southbound ramp from the deck to F Street NE proposed in the 2020 DEIS. New bicycle parking would be provided in the undercroft of the ramps as well as in the H Street Concourse, and near the entrances from First and Second Streets NE.

3.2.2.3 Purpose and Need Analysis

FRA used the screening process described in **Section 3.1.3**, *Concept Screening,* of the 2020 DEIS to assess whether the Project, after incorporation of the refinements described in Section **3.2.2.2**, *Updates and Refinements*, would meet the Purpose and Need. **Table 3-4** summarizes this assessment.

Table 3-4. Purpose and Need Assessment

Purpose and Need Element	Analysis
Support current and future long-term growth in rail service and operational needs?	Yes. With the refinements, the Project would provide the needed platform/rail capacity and rail operational requirements.
Achieve compliance with the Americans with Disabilities Act (ADA) and emergency egress requirements?	Yes. With the refinements, the Project would achieve compliance with the ADA and emergency egress requirements, which would be incorporated in Project design.
Facilitate intermodal travel?	Yes. With the refinements, the Project would provide facilities that meet future multimodal capacity needs. It would improve internal circulation by keeping these facilities close to the front of the station.

[68] The west ramp could also potentially connect to a future "greenway" north of H Street NE if one is provided as part of the separate development of the private air rights in that area.

Purpose and Need Element	Analysis
Provide a positive customer experience?	Yes. With the refinements, the Project would provide a new train hall and concourses with room for enhanced amenities. It would closely integrate the bus facility with the train hall, keeping multimodal uses close to the front of WUS.
Enhance integration with the adjacent neighborhoods, businesses, and planned land uses?	Yes. With the refinements, the Project would provide an enhanced opportunity for a civic space on the deck north of the station through the placement of the bus facility in the deck and coordination with the private air rights developer.
Sustain the station's economic viability?	Yes. With the refinements, the Project would provide additional space for retail, commercial, and station uses to generate revenue to maintain the station's economic viability.
Support continued preservation and use of the historic station building?	Yes. With the refinements, the Project would preserve and maintain use of the historic station building. All new elements would be constructed north of the historic Retail and Ticketing Concourse. Circulation patterns, including space for pick-ups and drop-offs in front of the station, would ensure the continued use of the historic headhouse.

The Project with the refinements described in this section would meet the Purpose and Need. Therefore, FRA identified the Project with the refinements as Alternative F and retained it for evaluation in the SDEIS as the new Preferred Alternative (replacing the 2020 DEIS Alternative A-C). Alternative F was the Preferred Alternative because:

- It would meet the Purpose and Need for the Project as well or better than Alternative A-C (see **Table 3-4**); and
- It addresses the major concerns and comments about the Project expressed during review of the 2020 DEIS, including:
  - **Comments on the size of the parking program and location of the parking facility**: Alternative F would provide a smaller parking facility and it would place all parking below ground. Access to and from the facility would be on the west side of WUS.
  - **Comments on the size and location of the bus facility**: Alternative F would provide enough bus slips to meet future demand based on updated projections developed by FRA and the Project Proponents. The east-west orientation of the bus facility would make for a more efficient layout and circulation. Exiting buses could turn left onto westbound H Street instead of having to turn right and go to the east. The facility would be integrated into the deck and directly connected to the train hall, allowing for full integration with the remainder of the station and freeing space on the deck for development of a civic space commensurate with WUS's setting.

- **Comments on pick-up and drop-off activity**: Alternative F would provide a centralized, below-ground pick-up and drop-off facility that is anticipated to accommodate about half of all pick-ups and drop-offs at the station, resulting in less activity at street- or deck-level pick-up and drop-off areas, including on Second Street NE. Access to and from the facility would be on the west side of WUS.
- **Comments on urban design**: Alternative F would enhance opportunities for achieving a symmetrical civic space behind the station that is commensurate with WUS's historic significance; the extent of available space was defined in coordination with the private air rights developer.
- **Comments on pedestrian and bicycle access**: Alternative F would provide enhanced pedestrian and bicycle access via two ramps on the west and east sides of WUS, respectively, that would connect development on the deck (west ramp) and the bus facility (east ramp) with the front of WUS. Alternative F would also provide additional space for bicycle parking and storage.

Table 3-5 presents a summary comparison of Alternative A-C and Alternative F.

Table 3-5. Comparison of Alternative A-C and Alternative F [69]

Alternative A-C	Preferred Alternative
Tracks and Platforms	
Nineteen tracks (12 stub-end tracks and 7 run-through tracks)	Same
Concourses	
Four new concourses	Same
Loading	
Upgraded dock on First Street NE and new dock on Second Street NE	Same
Pedestrian and Bicycle Access	
Pedestrian and bicycle access in front of WUS, and on First, Second, and H Streets NE	Same, plus pedestrian and bicycle ramps on west and east sides of the station, respectively, and additional bicycle parking and storage

[69] This comparison is between Alternative A-C and Alternative F as it was when FRA identified it as the Preferred Alternative. As explained below in **Section 3.3**, *Comments on the SDEIS and Changes Made to the Preferred Alternative*, in response to comments on the SDEIS, the description of the Preferred Alternative has since been revised to specify that the bus facility would have 39 slips.

Alternative A-C	Preferred Alternative
Parking	
1,600 cars in six above-ground levels at location of existing parking garage	400 to 550 cars on one below-ground level
Pick-up and Drop-off	
Pick-ups and drop-offs in front of WUS, on deck next to train hall, on First Street NE, and on Second Street NE	Same, plus below-ground pick-up and drop-off facility anticipated to accommodate about half of the total station-related pick-ups and drop-offs
Bus Facility	
Up-to-40-slip facility on two levels above ground at location of existing parking garage Six additional bus slips on G Street NE	38-39 slips in new east-west facility integrated into the deck on one level. No bus slips on G Street NE. Deck-level pick-up and drop-off area available in time of unusually high travel demand with room for approximately 15 additional buses
Train Hall	
East-west train hall	Same, but larger and better integrated with bus facility and surroundings
Vehicular Access and Circulation	
First Street NE one-way from Massachusetts avenue to I Street NE Northbound one-way west ramp from First Street to deck Southbound one-way east ramp from deck to front of WUS and F Street NE Two new intersections (east intersection and west intersection) on H Street Bridge; west intersection would be offset Separate bus facility exit on H Street, right (eastbound) turns only	First Street NE one-way from Massachusetts Avenue to G Street NE and two-way north of G Street NE Two-way ramp on G Street NE and two-way ramp on First Street NE for access to the below-ground facility One-way southbound ramp from below-ground facility to front of WUS on east side of the station No ramp from deck to F Street NE Two new intersections on H Street Bridge (east intersection and west intersection), both fully aligned No separate bus facility exit; buses would use the above intersections, with full range of movements allowed for inbound and outbound buses

Alternative A-C	Preferred Alternative
Urban Design	
Above-ground parking garage and bus facility on the deck north of WUS, impeding the development of a symmetrical civic space commensurate with WUS's historic and architectural significance.	No above-ground parking or bus facilities, enhancing opportunities for the development of a symmetrical civic space commensurate with WUS's historic and architectural significance.

3.3 Comments on the SDEIS and Changes Made to the Preferred Alternative

FRA made the SDEIS available for public comments from May 12 through July 6, 2023. During the review period, FRA received a total of 59 comments, including 50 written comments and nine verbal comments submitted at the public hearings.[70] Commenters included elected officials; Federal and District agencies or organizations; private organizations, advocacy groups, and businesses; and private individuals (see **Section 8.9**, *SDEIS Publication and Public Hearing*, of this FEIS for more details). **Section 8.10**, *Summary of Public and Agency Comments on the SDEIS*, summarizes the comments received.

The comments were generally in support of the Preferred Alternative and/or required no significant changes or modifications to the alternative. The Preferred Alternative described in this FEIS is the same as the Preferred Alternative described in the SDEIS, with the following minor changes:

- The SDEIS described the bus facility as having 38 to 39 slips in the SDEIS. The description of the Preferred Alternative in this FEIS (**Section 3.5**, *Description of the Preferred Alternative*, and **Appendix F2**, *Description of the Preferred Alternative*, Section F.6, *Bus Facility*) was revised to specify that the bus facility would have 39 slips, in response to a comment from the bus operators.
- The SDEIS stated that in the Preferred Alternative, there would be no space for hop-on/hop-off bus operations in front of WUS. Micro-modeling of curbside operations in front of WUS (see **Section 5.5.3.1**, *Direct Operational Impacts, Vehicular Traffic, Curbside Analysis*) conducted during the preparation of this FEIS indicated that the central lanes in front of WUS could accommodate these operations. The description of the Preferred Alternative in **Appendix F2**, *Description of the Preferred Alternative*, Section F.9.2, *Front of WUS,* was amended accordingly.
- The SDEIS used the term "public space" to refer to the space that could be developed as part of the private air rights development to the north of WUS, within the "Visual Access

[70] As noted above, "comment" refers to a discrete written or verbal communication from a person, organization, or group of persons or organizations. One comment may address several topics and contain multiple items calling for separate responses. Also, the same person or organization may have submitted several comments.

Zone" and "Daylight Access Zone" defined in the Preferred Alternative. To refer to the same space, the FEIS uses "civic space," because "public space" has a regulatory meaning in the District that would not apply to the space in question. This editorial change was made everywhere this space was referenced, including in **Section 3.5**, *Description of the Preferred Alternative*.

- The assumptions regarding the use mix of the private air rights development in the Preferred Alternative described below in **Section 3.5**, *Description of the Preferred Alternative*, were adjusted to reflect the construction of 385,000 square feet of hotel uses (453 keys) instead of 608,000 square feet (716 keys), based on a comment from the private developer.

None of those changes or corrections meaningfully affected the anticipated impacts of the Preferred Alternative.

3.4 Description of the No-Action Alternative

NEPA requires the consideration of a No-Action Alternative, which is an alternative reflecting the conditions that would exist if the proposed action were not implemented. The No-Action Alternative reflects the state of the environment in the absence of the Project in the horizon year of 2040. The future state of the environment includes the effects of projects that would result in changes to existing conditions in the Project Area and have independent utility relative to the Project. Where no changes are anticipated to occur, the No-Action Alternative consists of the continuation of existing conditions at WUS and in the Project Area.

The No-Action Alternative would not meet the Project's Purpose and Need. In particular, the No-Action Alternative would not adequately support current and future long-term growth in rail service and operational needs, as it would make no changes to the existing track and platform configuration. For the same reason, it would fail to achieve compliance with the ADA. In addition, under the No-Action Alternative, overall station operations and facilities would be maintained in its current state, which would not sufficiently support intermodal travel and result in a degraded customer experience as passenger volumes grow over time. The following sections describe the various components of the No-Action Alternative.

3.4.1 Continuing Conditions at WUS

Under the No-Action Alternative, many aspects of WUS would stay unchanged relative to existing conditions and would continue, including:

- Station Structures: No major new infrastructure would be built for WUS. Routine maintenance and repairs would continue.

- Mix of Uses: The current mix of uses at WUS would continue, including approximately 208,000 square feet of retail space, 120,000 square feet of office space, and 85,600 square feet of Amtrak support areas.
- Parking: Parking would remain southwest of H Street NE within the existing garage, capable of accommodating approximately 2,450 cars (including rental cars). Access to the garage would continue to be from H Street NE (west intersection) and Columbus Circle (east ramp). Exit would continue to be through H Street NE via the west intersection and through the ramp running parallel to First Street along the west side of the station (west ramp).
- Buses: The existing 61-slip bus facility, located in the existing parking garage southwest of H Street NE, would continue to be used. Buses would continue to enter the facility via the H Street west intersection and to exit through the bus-only exit ramp to H Street NE.
- For-Hire Vehicles/Pick-up and Drop-off: Taxis would continue to have approximately 24 spaces, distributed across the two northernmost lanes of Columbus Circle, for taxi pick-ups and drop-offs only. Non-taxi for-hire vehicles would continue to share with private vehicles the approximately 24 spaces available in the two southernmost traffic lanes of the circle.
- Bicycles: Bikeshare facilities would remain on the east side of WUS at F Street NE, with 54 Bikeshare spaces.
- Pedestrians: Pedestrians would continue to enter or exit WUS via the WMATA Metrorail First and G Street entrances, the southwest portico and front of the historic station building, and the H Street bus facility.
- Intercity and Commuter Operations and Ridership: Operations by Amtrak, VRE, and MARC trains would continue but with increased passenger volumes and levels of service ranging from 6 percent for VRE to 24 percent for Amtrak, as summarized below.

3.4.2 Projected Increases in Ridership and Levels of Service

Anticipated increases in rail ridership in the No-Action Alternative are based on regional modeling performed for the Northeast Corridor (NEC) FUTURE Final EIS (2017) and a 2025 Operating Plan developed by Amtrak.[71] NEC FUTURE is FRA's comprehensive plan for improving the Northeast Corridor from Washington, DC, to Boston, MA. FRA conducted extensive ridership modeling for the NEC FUTURE FEIS. This modeling identified No-Action Alternative ridership estimates for the Northeast Corridor. For this EIS, FRA adjusted these No-Action Alternative estimates based on Amtrak's 2025 Operating Plan to represent the railroad growth possible without the railroad improvements included in the Project. **Table 3-6** shows the adjusted ridership estimates and changes in levels of service in the No-Action Alternative.

[71] The 2025 Operating Plan is presented in Appendix D of the *Washington Union Station Terminal Infrastructure EIS Report*, which is available as Appendix B of the DEIS at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-b-washington-union-station.

Table 3-6. Passenger and Train Volumes by Service in the No-Action Alternative

Service	Existing Passenger Volumes	2040 Passenger Volumes	Train or Bus Volumes Increase over Existing
Amtrak	16,400 daily 5.033 million annually	21,800 daily (+33%) 6.694 million annually	+24%
MARC	28,100 daily 7.683 million annually	37,900 daily (+35%) 9.483 million annually	+11%
VRE	3,900 daily 1.06 million annually	4,900 daily (+26%) 1.378 million annually	+6%

3.4.3 Near-term Station and Track Improvements at WUS

USRC and Amtrak have identified several station and track improvement projects programmed for the next few years and with likely completion dates prior to 2040. These projects are independent of the Station Expansion Project. **Table 3-7** lists the near-term station and track improvement projects included in the No-Action Alternative.

Table 3-7. Station and Track Improvement Projects Included in the No-Action Alternative

Station and Track Improvements	Description	Design Completion	Construction Completion Year(s)
General Garage Restoration	Ongoing structural repairs and maintenance to the mezzanine rental car level and levels 1-4 of the parking garage.	Complete	2024
Rehabilitate Track 22	Rehabilitate engine storage track to provide revenue service and improve operational flexibility.	Complete	2023
Amtrak Police Relocation	Relocate personnel to REA Building; construct new one-story patrol facility.	Ongoing	2023
Relocate Satellite Commissary	Replace refrigerated storage area from under H Street Bridge.	Ongoing	2025
Concourse Modernization Project	Fully renovate the Claytor Concourse and North Hangar. Expand passenger areas and add a new Club Acela lounge.	Ongoing	~2028

Station and Track Improvements	Description	Design Completion	Construction Completion Year(s)
Sub-basement Utility Relocation and Back of House Reconfiguration	Precursor to Sub-basement Track-bed Replacement. Relocate electrical and plumbing utilities and reconfigure operations and storage space in the east basement.	2024	2027
Sub-basement Track-bed Replacement	Repair track-bed support elements in the sub-basement.	2024	2031
Substation 25A Relocation	Relocate and replace substation; sectionalize overhead catenary to improve operational flexibility.	Ongoing	2027
Crew Base Renovation	Renovate and potentially expand the existing Transportation Building for operational functions.	2021	2027

3.4.4 Transportation Projects within the Project Area

Transportation projects in the Project Area that are independent of the WUS Project and have completion dates earlier than 2040 include:

3.4.4.1 VRE Midday Storage Replacement Facility Project

The VRE Midday Storage Replacement Facility Project would replace the current storage space leased from Amtrak at the Ivy City Coach Yard in the District. The project involves planning, designing, and constructing a permanent midday storage facility for VRE trains traveling to the District. VRE intends to use the facility to store commuter trains on weekdays between the inbound morning commute and the outbound afternoon commute. The Federal Transit Administration completed the environmental review for this project in 2019. Construction is scheduled for 2025-2033.[72]

[72] Virginia Railway Express. *New York Avenue Midday Storage Facility.* Accessed from https://projects.vre.org/project?Project=New%20York%20Avenue%20Midday%20Storage%20Facility. Accessed on August 27, 2023.

3.4.4.2 H Street Bridge Replacement

The H Street Bridge extends from North Capitol Street to Second Street NE. DDOT, in conjunction with the Federal Highway Administration (FHWA), is planning to replace the bridge because the deck is reaching the end of its useful life. The new bridge would continue to accommodate the DC Streetcar and be consistent with the proposed new tracks and platforms at WUS. DDOT published a Final Environmental Assessment and Finding of No Significant Impact for this project in 2022.[73] Construction is anticipated to be completed by 2039.[74]

3.4.4.3 Metrorail Station Improvements

WMATA's 2011 Access and Capacity Improvement Study identified phased projects that would address capacity problems at the Union Station Metrorail station.[75] The No-Action Alternative includes only the "Phase 0" improvements, which are due to occur within the timeframe of the Project.

Phase 0 is a scaled-down version of the "partial-build" options identified in the 2011 study. In Phase 0, WMATA would expand and relocate the entrance from First Street into the North Mezzanine. The new ramp would be outside of the station, above the First Street sidewalk. Moving the ramp outside would make room for additional fare gates and circulation space inside. Stairs would connect the North Mezzanine level to the Claytor Concourse.

Red Line operations at the WMATA Metrorail Station by 2040 are expected to include 100 percent eight-car train operations at three-minute headways, consistent with regional modeling assumptions and WMATA direction to FRA.

3.4.5 Private Air Rights Development

In 1997, Congress directed the General Services Administration to sell, at auction, the Federally owned air rights above the railroad infrastructure to the north of the historic station building for development purposes.[76] In 2002, a private developer, Akridge, won the public auction, completing the transaction in 2006. Through this transaction, the private developer acquired air rights for a 14-acre area starting 70 to 80 feet above sea level and extending from north of the historic station to K Street NE, excluding the

[73] District Department of Transportation and Federal Highway Administration. 2022. *H Street Bridge NE Replacement Final Environmental Assessment*. Accessed from https://www.hstreetbridgeproject.com/final-ea-and-fonsi/. Accessed on August 11, 2023.

[74] DDOT. *H Street Bridge NE Replacement. Timeline*. Accessed from https://www.hstreetbridgeproject.com/projecttimeline/. Accessed on August 27, 2023.

[75] Washington Metropolitan Area Transit Authority. 2011. *Union Station Access and Capacity Improvement Study Project Report. 2011*. Accessed from https://www.wmata.com/initiatives/plans/upload/Final-Union-Station-Project-Report-Feb182011.pdf. Accessed on August 27, 2023.

[76] *Balanced Budget Act of 1997* (Public Law 105-33). Accessed from https://www.govinfo.gov/content/pkg/PLAW-105publ33/pdf/PLAW-105publ33.pdf. Accessed on February 13, 2024.

areas currently occupied by the Claytor Concourse, vehicular ramps, WUS's bus and parking facility, and the H Street Bridge.

Following the acquisition, DCOP developed the Union Station North (USN) Zoning District specifically for the private air rights. On June 3, 2011, the District issued a Notice of Final Rulemaking setting forth the USN Zoning District regulations.[77] The USN Zoning District encompasses a total of 14 acres consisting of the following lots: Square 717, Lot 7001 and 7002 (area north of H Street NE) and Square 720, Lots 7000 and 7001 (area between H Street NE and WUS), east of the existing parking garage. The USN Zoning Regulations set matter-of-right heights for buildings within the private air rights. These range from a maximum of 90 feet above the height of the H Street Bridge for areas closer to the historic station building to a maximum of 130 feet in those areas south of H Street NE closest to the bridge and most of the area north of H Street NE.[78] All development in the USN zone is subject to design review by the District's Zoning Commission.

In the areas where maximum permitted heights are below 130 feet, the Zoning Commission may permit, subject to review criteria, height increases of up to 20 feet. The USN District allows a mix of uses consistent with the uses permitted in similar zones in downtown, DC, with the stipulation that 100 percent of the ground floor uses along the H Street Bridge must be retail, service, or arts uses.[79] The regulations set a maximum nonresidential floor area ratio (FAR) of 5.5 with no minimum requirements for parking.[80,81] At all heights, an additional 20 feet of inhabitable penthouse are permissible.

DCOP, in official submittals to the Metropolitan Washington Council of Governments for the purposes of regional modeling identified within the 2030 development horizon the construction of a mixed-use development project in the privately owned air rights (Burnham Place).[82] On this basis, the No-Action Alternative includes the development of the private air rights.

On May 31, 2016, the private developer submitted two development scenarios to FRA to illustrate how it might pursue development of the air rights if the Project were not to proceed.[83] In its transmittal to FRA, the developer reserved the right to adjust this approach in the future. One scenario had more

[77] District of Columbia Register Volume 58 No. 22 Section 11-105. Accessed from https://www.dcregs.dc.gov/Common/DCR/Issues/IssueCategoryList.aspx?CategoryID=7&IssueID=230. Accessed on February 13, 2024.

[78] District of Columbia Municipal Regulations (DCMR) 11-K300-328. Accessed from https://dcregs.dc.gov/Common/DCMR/RuleList.aspx?ChapterNum=11-K3. Accessed on February 13, 2024.

[79] DCMR 11-K313 and 11K-314 (see link above).

[80] The floor area ratio is the ratio of a building's total floor area to the size of the lot on which the building is built.

[81] DCMR 11-K308 and 11-K311 (see link above).

[82] District of Columbia Office of Planning. *Development Activity by Select TAZs Surrounding Union Station – Washington D.C. as of 4th Quarter 2015*. August 2016.

[83] Letter from Akridge to FRA dated May 31, 2016.

residential development while the other had more office development, both being consistent with the zoning (see **Table 3-8**).

Table 3-8. Estimated Allocation Scenarios for the Private Air Rights Development

Component	Scenario 1	Scenario 2
Residential	1,050,000 square feet (sf)	1,660,000 sf
Hotel	410,000 sf	410,000 sf
Office	2,160,000 sf	1,560,000 sf
Retail	120,000 sf	130,000 sf
Total	3,740,000 sf	3,760,000 sf
Parking	1,320 spaces	1,290 spaces

The impact analysis uses Scenario 1 because this scenario would have greater impacts on traffic than Scenario 2.[84] For the purposes of the No-Action Alternative, based on information from the developers, FRA has assumed that the private air rights development would consist of:

- 14 acres of development on two overbuild decks (south and north of H Street NE);
- Buildings with heights in accordance with DCMR 11-K305 (up to 130 feet above the elevation of H Street NE);
- Approximately 3.7 million square feet of development, including 2.1 million square feet of office space; 1.05 million square feet of residential space, 410,000 square feet of hotel space, and 120,000 square feet of retail space;
- FAR of 6.5;
- Access from H Street NE via three intersections;
- Internal road network;
- Open space; and
- Parking to serve the development.

The conceptual drawings and information provided by the private developer in support of the zoning application did not include information on the utilities and infrastructure required to deck over the rail terminal, tracks, and platforms. The development would likely require modifications to the existing platforms and canopies to integrate column and footing placement and would require new systems under the decks to support fire and life safety. These new systems would include fire suppression and

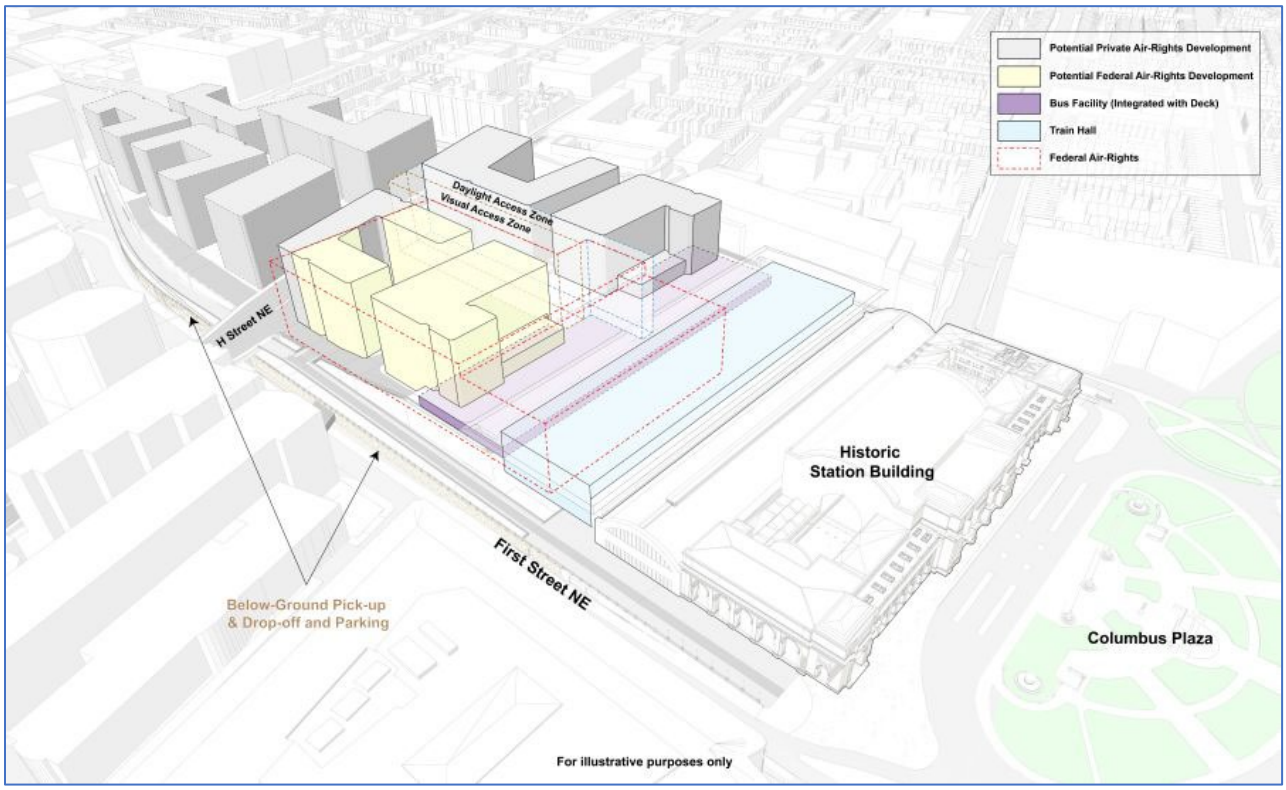
[84] This is because of the larger amount of office space under Scenario 1. Per the Institute of Transportation Engineers (ITE) Trip Manual 10th Edition, 1,000 square feet of office space generate more trips than the same amount of residential uses.

safety systems and new egress locations, as well as ventilation systems to remove train exhaust and smoke from the rail terminal. Amtrak would have to authorize all work within the rail terminal.

3.5 Description of the Preferred Alternative

The Preferred Alternative features an east-west train hall north of the historic station building that would replace the existing, non-historic Claytor Concourse. It includes a one-level, east-west bus facility integrated into the deck and directly connected to the train hall. Parking and a pick-up and drop-off facility would be located on one below-ground level below the new central, First Street, and H Street Concourses. Space on the H Street level north of the train hall would allow for establishing a central civic space as part of the development of the private air rights. In the Preferred Alternative, the historic station would continue to be the monumental focal point, the "gateway to the nation's capital," and a primary pedestrian entrance and pick-up and drop-off location. **Figure 3-2** illustrates the key features of the Preferred Alternative; summary descriptions are provided after the figure. More detailed descriptions are available in **Appendix F2**, *Description of the Preferred Alternative*.

Figure 3-2. Illustration of the Preferred Alternative



- **Rail Infrastructure**: The rail terminal would be reconstructed to replace the existing tracks and platforms with 19 new tracks: 12 stub-end tracks on the west side and seven run-through tracks on the east side, along with associated platforms.

- **Concourses**: Four new concourses would be provided to facilitate public access and circulation: east-west Concourse A (integrated with the train hall); east-west H Street Concourse; north-south Central Concourse; and north-south First Street Concourse. The new concourses would cover approximately 330,000 square feet.
- **Structures**: The east-west train hall would be approximately 150,000 square feet; it would cover the train engines and part of the first car on all the tracks. The bus facility would be approximately 122,500 square feet; it would be integrated within the deck.
- **Mix of Uses:** New retail space would be approximately 64,000 square feet; the Amtrak and related support areas would be approximately 379,400 square feet (mostly north of H Street NE).
- **Parking:** Parking (including for rental cars) would be provided on one below-ground level parking facility shared with a pick-up and drop-off facility. There would be space to park approximately 400 to 550 cars. Access to and from the parking facility would be via ramps on G Street NE and First Street NE.
- **Buses:** The one-level integrated bus facility would connect directly to the train hall, facilitating access and intermodal transfers. The bus facility would have 39 slips. In times of unusually high demand, buses would make use of the deck-level pick-up and drop-off area adjacent to the train hall, which would provide the equivalent of approximately 15 bus slips, for a total peak capacity of 54 spots. Buses would access the bus facility via H Street NE and a new intersection on the east side of the H Street Bridge. Buses would exit back to H Street NE via a new intersection on the west side of the bridge.
- **For-Hire Vehicles/Pick-up and Drop-off:** A pick-up and drop-off facility would be provided on one below-ground level, shared with the parking facility. Access would be via the ramps on G Street NE and First Street NE described above for parking. In addition, there would be an exit ramp on the east side of WUS allowing taxis to drive to the front of the station to pick up passengers. The facility would provide the equivalent of approximately 60 pick-up and drop-off spaces. Pick-up and drop-off areas would also be provided in front of WUS, on First and Second Streets NE near H Street NE, and at deck-level next to the train hall, above the bus facility.
- **Bicycles:** Bicycle access would be facilitated by two ramps, one on the west side and one on the east side of the station. Parking and storage for approximately 900 bicycles would be provided beneath the ramps and in the H Street Concourse near the entrances from First and Second Streets NE. Additional Bikeshare spots would also be provided (approximately 100).
- **Pedestrians:** Pedestrians would access WUS via the existing Metrorail station's First and G Street NE entrance; the southwest portico of WUS; the front of the station; and from H Street NE. New entrances would be located under the H Street Bridge and on the sides of the train hall. Headhouses would be provided at deck level on both sides of the H Street

Bridge. Pedestrian access would also be facilitated by the two previously mentioned ramps on the west and east sides of the station.

- **Visual and Daylight Access Zones:** A "Visual Access Zone"(area free of Project elements between H Street and the train hall) and a "Daylight Access Zone" (area in which skylights would be installed to provide the new station concourse underneath with natural light) would enable the establishment of a centralized civic space on the H Street deck. The private air rights developer would have primary responsibility for the design of the civic space and would implement it, in coordination with the Project Sponsor for the Project elements and shared elements supporting the Project, such as the skylights.
- **Intercity and Commuter Operations and Ridership:** Levels of service would grow along with projected demand. Train volume increases relative to existing levels would range from 148 percent (Amtrak) to 187 percent (VRE).
- **Property Acquisition**: Approximately 2.9 acres of private air rights would be needed to accommodate various elements of the Preferred Alternative.[85,86]
- **Potential Development of Federal Air rights**: [87] The Federal air rights above the rail terminal not needed for the Project would be made available for potential future transfer and development by the demolition of the existing parking garage. For the purposes of the SDEIS, it is assumed that the Federal air rights development would consist of approximately 500,000 square feet of mixed uses, including 175,000 square feet of residential uses; 310,000 square feet of office uses; and 15,000 square feet of retail uses. [88]
- **Estimated Construction Cost**: The Preferred Alternative would cost approximately $8.8 billion to construct.[89]
- **Estimated Construction Duration**: Construction of the Preferred Alternative is estimated to take 13 years. The construction would occur in four main phases, moving from east to west

[85] Additionally, as noted above, daylighting features for the underlying concourse would be installed within the area identified as the "Visual Access Zone," in coordination with the private air rights developer.

[86] Based on coordination with the developer, the private air rights development in the Preferred Alternative would consist of approximately 979,250 square feet (1,031 units) of residential uses; 1,060,000 square feet of office uses; 85,000 square feet of retail uses; and 385,000 square feet (453 keys) of hotel uses.

[87] The Federally owned air rights area corresponds approximately to the location of the existing parking garage. Although development of the Federal air rights is not part of the Project, such development may result from the Project. Therefore, the possible impacts associated with potential future development of the Federal air rights are evaluated in the EIS as indirect impacts.

[88] FRA developed these assumptions during the refinement process summarized in **Section 3.2,** *Development of the Preferred Alternative*. They are consistent with the USN zoning that applies to the adjacent private air rights. FRA determined that a change to USN zoning in the Federal air rights parcel was reasonably foreseeable based on coordination with DCOP; the limitations of the existing zoning (PDR-3 precludes residential development), which is inconsistent with the adjacent USN zoning; and the goals of DCOP and other stakeholders to promote a symmetrical development north of the historic station.

[89] This rough-order-of-magnitude estimate is for the construction of the Project alone, including track work north of K Street NE and excluding costs associated with the private air rights deck. This estimate is subject to future refinement.

of the rail terminal. During each phase, a set of tracks would be taken out of service. Between Phases 1 and 2, there would be a one-year period (Intermediate Phase) during which work would only occur in the First Street Tunnel underneath the historic station building. A more detailed description of construction phasing is provided in **Appendix F2**, *Description of the Preferred Alternative*, Section F11, *Construction Methods and Activities*. **Table 3-9** shows the duration of each phase.

Table 3-9. Construction Phases and Durations

Phase	Total Duration (Approximate Excavation Duration)
Phase 1	2 years 4 months (5 months)
Intermediate Phase	12 months (none)
Phase 2	2 years 8.5 months (10 months)
Phase 3	2 years 8.5 months (11 months)
Phase 4	4 years 3 months (2 years 1 month)
Total	13 years (4 years 3 months)

4 Affected Environment

4.1 Introduction

This chapter describes the affected environment for the Washington Union Station (WUS) Expansion Project (the Project). The term "affected environment" refers to the current natural, cultural, and social characteristics of an area that could potentially be affected, both directly and indirectly, because of a proposed Federal action (in this case, the Project). Council on Environmental Quality (CEQ) regulations at 40 Code of Federal Regulations (CFR) § 1502.15 require that the description of existing conditions be succinct, and that data and analyses be commensurate with the importance of the potential impacts. This chapter uses a wide range of data sources to describe existing conditions within the Study Area for each resource. The resources analyzed include:

- Natural Ecological Systems
- Water Resources and Water Quality
- Solid Waste Disposal and Hazardous Materials
- Transportation
- Air Quality
- Greenhouse Gas Emissions and Resilience
- Energy Resources
- Land Use, Land Planning and Property
- Noise and Vibration
- Aesthetics and Visual Quality
- Cultural Resources
- Parks and Recreation Areas
- Social and Economic Conditions
- Public Safety and Security
- Public Health, Elderly and Persons with Disabilities
- Environmental Justice

Evaluating and documenting existing conditions is a multi-step process that involves regulatory and data review for each of the resources considered. The description of existing conditions focuses on the Project Area and resource-specific Study Areas. Covering approximately 53 acres, the Project Area consists of the direct footprint of the Project (**Figure 1-1**). It includes all areas that construction of the Project would physically disturb. Study Areas are areas that the Project may directly or indirectly affect. The extent of each Study Area varies according to the resource under consideration and the scope of the potential impacts. Depending on the resource and where potential impacts may occur, a Local Study Area and a larger Regional Study Area may be defined.

4.2 Natural Ecological Systems

Natural ecological systems include vegetation, common and protected wildlife, wetlands, and floodplains. This section provides an inventory of natural ecological systems commensurate to their quality or quantity, the Project's potential to affect them, and the extent to which they are protected by applicable laws and regulations.

4.2.1 Regulatory Context and Guidance

Policies, regulations, and guidance that pertain to natural ecological systems include:

- Endangered Species Act of 1973 (16 United States Code [U.S.C.] § 1531 et seq.) and implementing regulations (50 CFR Part 402);
- Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. § 668);
- Migratory Bird Treaty Act of 1918 (16 U.S.C. § 703-711) and implementing regulations (50 CFR Part 10);
- Clean Water Act (CWA) of 1972 (22 U.S.C. § 1251) and implementing regulations (40 CFR § 110-112);
- CWA Section 404 (33 U.S.C. § 1344) and implementing regulations (33 CFR Parts 320-330, 40 CFR Part 230);
- Coastal Zone Management Act of 1972 (16 U.S.C. § 1451-1464);
- Executive Order (EO) 11990, Protection of Wetlands (42 Federal Register [FR] 26961);
- EO 11988, Floodplain Management (42 FR 26951); and
- *Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federally Landscaped Grounds* (60 FR 40837).

4.2.2 Study Area

The Local Study Area for natural ecological systems includes the Project Area from the historic station building to K Street NE, with a 150-feet buffer (**Figure 4-1**). The Regional Study Area includes areas of the District surrounding the Local Project Area out to approximately 1,000 feet.

4.2.3 Methodology

The description of existing natural ecological systems is based on information available from the District's Department of Energy and Environment (DOEE), the National Park Service (NPS), and the U.S. Fish and Wildlife Service, complemented by field observations.

4.2.4 Existing Conditions

4.2.4.1 Wetlands

Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas.[90] Wetlands are among the Waters of the United States as defined in 33 CFR Part 328, along with estuaries, rivers, lakes, and tributary streams.

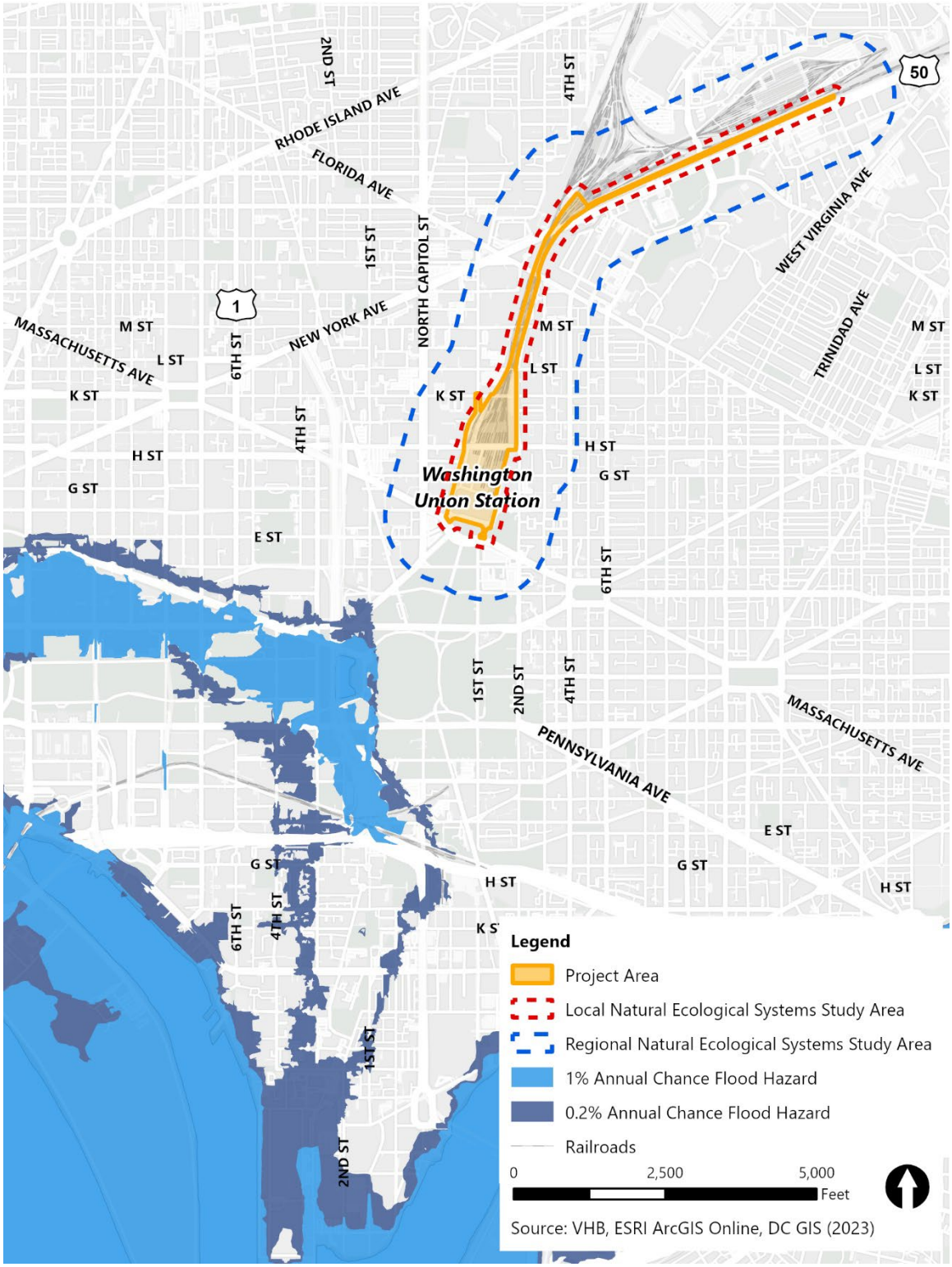
The Local and Regional Study Areas are fully developed. There are no wetlands or other Waters of the United States within either Study Area.

4.2.4.2 Floodplains

A floodplain is any land area susceptible to inundation from any water source (44 CFR Part 59). Based on Federal Emergency Management Agency flood insurance rate mapping (September 27, 2010) (see **Figure 4-1**), neither the Local Study Area nor the Regional Study Area is in a 100-year floodplain (1 percent chance of flooding in any given year) or a 500-year floodplain (0.2 percent chance of flooding any given year).

[90] U.S. Environmental Protection Agency. *How Wetlands are Defined and Identified under CWA Section 404*. Accessed from https://www.epa.gov/cwa-404/section-404-clean-water-act-how-wetlands-are-defined-and-identified. Accessed on July 21, 2023.

Figure 4-1. Natural Ecological Systems Study Area



4.2.4.3 Vegetation, Wildlife, and Protected Species

The Local and Regional Study Areas are fully urbanized and lack any natural vegetation or habitat. The only notable vegetation consists of 26 ornamental shade trees (*Zelkova serrata*) on the eastern sidewalk of First Street NE, between G Street and K Street and ten trees of the same species on the western side of Second Street NE, between G Street and the H Street Bridge. Common urban-dwelling songbirds such as house sparrows (*Passer domesticus*) or common starlings (*Sturnus vulgaris*) likely use these trees. No Federally listed plant or animal species, or habitat for such species, are within the Local or Regional Study Area. Neither Study Area contains any habitat usable by bald eagles (*Haliaeetus leucocephalus*) for nesting or foraging.

Federally listed threatened and endangered species with potential to occur in the study area include the endangered northern long-eared bat.[91] However, due to the lack of habitat in the study area, the Project would have *no effect* on the species.[92]

4.2.4.4 Coastal Zone Management

The District is not part of the Federal Coastal Zone Management Program and does not have a designated coastal zone. Therefore, the Federal consistency requirements of the Coastal Zone Management Act do not apply to the Project.[93]

4.3 Water Resources and Water Quality

There are no natural bodies of surface water in or near the Project Area. Therefore, this section focuses on the following water resources: groundwater; stormwater; wastewater; and drinking water. These resources are regulated under both Federal and District policies for the protection of water quality.

4.3.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that may pertain to water resources and are most relevant to the Project include:

- Clean Water Act (CWA), as amended (33 U.S.C. § 1251-1376) 401 and 402;
- Safe Drinking Water Act of 1974 (42 U.S.C. § 300f);

[91] Official threatened and endangered species list letter obtained from the U.S. Fish and Wildlife Service (USFWS) through their Information for Planning and Consultation (IPaC) website (see **Appendix F6,** letter dated August 23, 2023).

[92] See **Appendix F6,** letter dated August 25, 2023.

[93] National Oceanic Atmospheric Administration. Coastal Zone Management Programs. Accessed from https://coast.noaa.gov/czm/mystate/. Accessed on August 16, 2023.

- U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit;[94]
- Energy Independence and Security Act of 2007 (Public Law 110 – 140); and
- EO 13508, Chesapeake Bay Protection and Restoration;

District policies, regulations and guidance that may pertain to water resources include:

- DC Water Pollution Control Act of 1984, as amended (DC Law 5-188);[95]
- DC Storm Water Permit Compliance Amendment Act of 2000 (DC Law 13-311);[96]
- DC Municipal Regulations, Title 21 Water and Sanitation;[97]
- DOEE Stormwater Management Guidebook;[98]
- DC Green Area Ratio (GAR);[99]
- DC Water Green Infrastructure Utility Protection Guidelines;[100]
- DC Water *Project Design Manual* Volume 3, Infrastructure Design;[101]
- *Sustainable DC 2.0 Plan*;[102] and
- *The Comprehensive Plan for the National Capital: District Elements*.[103]

[94] U.S. Environmental Protection Agency. 2017. *National Pollutant Discharge Elimination System*. Accessed from https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents. Accessed on August 16, 2023.

[95] District of Columbia Law 5-188. *Water Pollution Control Act of 1984*. Accessed from https://code.dccouncil.gov/us/dc/council/laws/5-188. Accessed on July 21, 2023.

[96] District of Columbia Law 13-311. *Storm Water Permit Compliance Amendment Act of 2000*. Accessed from https://code.dccouncil.gov/us/dc/council/laws/13-311. Accessed on July 21, 2023.

[97] District of Columbia Municipal Regulations. Title 21, *Water and Sanitation*. Accessed from http://dcrules.elaws.us/dcmr/t21. Accessed on July 21, 2023.

[98] District Office of Energy and Environment. *2020 Stormwater Management Guidebook*. Accessed from https://doee.dc.gov/swguidebook. Accessed on July 21, 2023.

[99] As described in Subtitle C of the District's 2016 Zoning Regulations.

[100] DC Water. 2013. *Green Infrastructure Utility Protection Guidelines*. Accessed from https://www.dcwater.com/sites/default/files/Green%20Infrastructure%20Utility%20Protection%20Guidelines.pdf. Accessed on July 21, 2023.

[101] DC Water and Sewer Authority. 2001. *Project Design Manual Volume 3, Infrastructure Design.* Accessed from https://www.dcwater.com/sites/default/files/Project%20Design%20Manual%20Volume%203%20Infrastructure%20Design.pdf. Accessed on July 21, 2023.

[102] District of Columbia. 2019. *Sustainable DC 2.0 Plan*. Accessed from https://sustainable.dc.gov/sdc2. Accessed on August 14, 2023.

[103] District of Columbia Office of Planning. 2021a. *The Comprehensive Plan for the National Capital: District Elements*. Accessed from https://planning.dc.gov/node/637932. Accessed on August 14, 2023.

Discharges from DC Water stormwater and combined sewer systems are permitted under two NPDES permits:

- Municipal Separate Storm Sewer System (MS4): NPDES Permit Number DC0000221 - Authorization to Discharge under the NPDES Municipal Separate Storm Sewer System Permit. Effective June 22, 2018.
- Blue Plains Advanced Wastewater Treatment Facility (Blue Plains) and combined sewer system: NPDES Permit Number DC0021199. Effective August 25, 2018.

4.3.2 Study Area

The Local Study Area for water resources extends 500 feet from the Project Area to encompass adjacent connections to the DC Water stormwater, water supply, and wastewater infrastructure (**Figure 4-2**). The Regional Study Area is the Chesapeake Bay Watershed within the District.

4.3.3 Methodology

The information in this section was compiled from available sources, including NPDES permits; water quality reports; Geographic Information System (GIS) mapping; geotechnical investigations; District stormwater, wastewater, and water plans; and WUS user information (for estimating wastewater generation and water demand).[104]

4.3.4 Existing Conditions

4.3.4.1 Groundwater

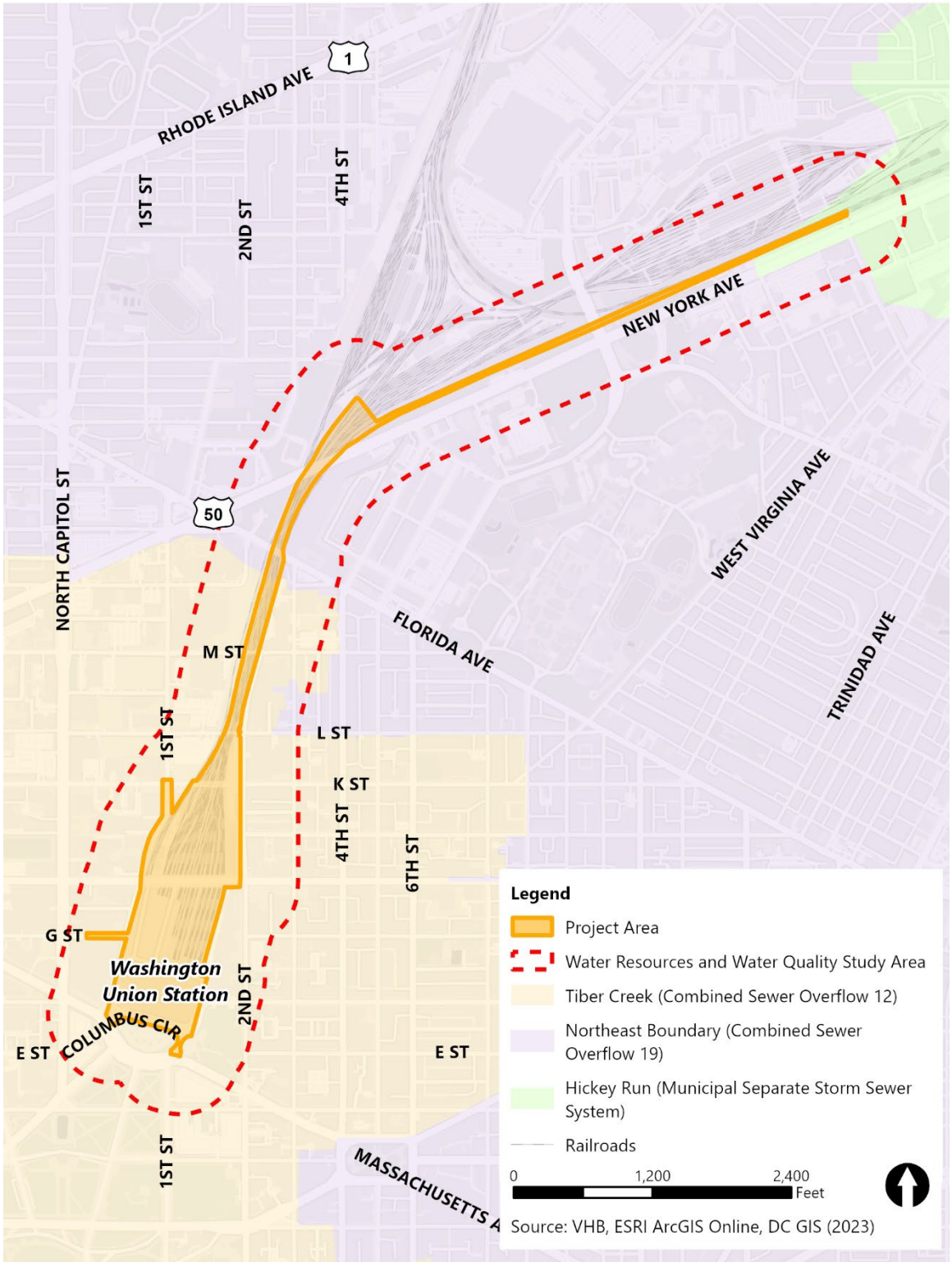
The Local Study Area lies within the Northern Atlantic Coastal Plain Aquifer System, which underlies a population of 21 million people in six states (New York, New Jersey, Pennsylvania, Maryland, Virginia, North Carolina) and the District. This aquifer system is the seventh largest source of groundwater for public supply in the United States.[105]

Locally, groundwater occurs in two aquifers in the sediments underlying the Project Area. Shallow alluvial sediments form an unconfined aquifer covering much of the southern portion of the District, including the Project Area. Deeper silty sands from a second, productive confined aquifer. The two aquifers may be hydraulically connected in the Project Area. Given the densely urbanized character of the Local Study Area, recharge potential is limited.

[104] WUS wastewater generation/demand and water usage/demand are based on pre-COVID pandemic data, which reflects the typical baseline or existing condition of WUS under normal circumstances.

[105] United States Geological Survey. 2017. *Groundwater Quality in the Northern Atlantic Coastal Plain Aquifer System*. Accessed from https://www.usgs.gov/news/groundwater-quality-northern-atlantic-coastal-plain-aquifer-system. Accessed on July 21, 2023.

Figure 4-2. Water Resources and Water Quality Study Area



There are no public groundwater supplies or wellhead protection areas in the Local Study Area. Based on a review of past and ongoing data, groundwater surface in the Project Area south of the H Street Bridge lies at approximately 15 feet above sea level (asl). North of the H Street Bridge, groundwater level rises from approximately 15 feet asl to approximately 25 feet asl at the northern end of the Project Area. Local groundwater levels may be influenced by past or ongoing dewatering for construction activities and underground infrastructure.[106]

A 2017 geotechnical investigation found that groundwater samples taken from the shallow alluvial aquifer contained no total petroleum hydrocarbons, diesel range organics (TPH-DRO), polychlorinated biphenyls (PCBs), or poly-aromatic hydrocarbons (PAHs). Various concentrations of arsenic, cadmium, chromium, and lead were detected at levels that exceed the DOEE Groundwater Quality Standards or EPA Groundwater Maximum Contaminant Levels. However, no metal concentrations in groundwater exceeded DC Water's sewer discharge limits.[107]

4.3.4.2 Stormwater

Hydrologic Characteristics

Land cover in the Local Study Area consists of 28 acres of impervious surface and 25 acres of ballasted track, which is assumed to sit atop an impervious subbase. Existing soils are categorized as "urban land" or unknown. Geotechnical investigations at WUS in 2013 and 2016 found fill extending down to 13 to 44 feet below ground surface.[108, 109]

The Local Study Area is relatively flat, sloping slightly from north to south at a 2-percent average slope. The highest elevation is 104 feet at the northeast end and the lowest elevation is 28 feet, on First Street in the southwest section of the Local Study Area.

Catchment Areas

The Local Study Area is located within the Tidal River subwatershed of the Anacostia River watershed. The Anacostia River is an 8.7-mile tidal river formed by the convergence of the Northwest Branch and the Northeast Branch in Prince George's County, MD. The Anacostia river flows into the Potomac River, which in turn is a tributary of the Chesapeake Bay.

Stormwater runoff from the Local Study Area drains to combined sewer infrastructure through the combined sewer system (CSS) or through the MS4. The CSS collects rainwater runoff, domestic sewage,

[106] Wood Environment and Infrastructure Solutions. 2019. *Preliminary Report of Aquifer Pump Test and Seepage Analysis, Union Station, Washington, D.C.*

[107] Amec Foster Wheeler. 2018. *Interim Environmental Sampling Report, Aquifer Pump Test and Seepage Analysis Project, Washington Union Station*.

[108] Langan Engineering and Environmental Services, Inc. 2013. *Geotechnical Engineering Report, Washington Union Station Platform 27/28 Elevator Project*.

[109] Amec Foster Wheeler. 2017. *Washington Union Station Preliminary Report of Geotechnical Study*.

and industrial water in the same stream. During large storm events, the combined flow discharges directly to surface waters via Combined Sewer Overflow (CSO) outfalls.

Stormwater flows from the Project Area are not currently routed through any structural Best Management Practices (BMPs) such as retention ponds or erosion and sediment control systems. Combined flows from the southwest portion of the Project Area are conveyed in the Tiber Creek trunk sewer to either Blue Plains or, during large storm events, to CSO No.12 in the Anacostia River. Combined flows from the railroad corridor to the northeast are conveyed by the Northeast Boundary trunk sewer to either Blue Plains or CSO No.19 in the Anacostia River. Approximately 7,000 square feet of the Project Area flow to the MS4 in the Hickey Run watershed, which is a tributary of the Anacostia River approximately 1 mile downstream of the District-Maryland line (see **Figure 4-2**).

Stormwater Retention Volume

The District's regulated Stormwater Retention Volume (SWRv) is the runoff resulting from 1.2 inches of rainfall on surfaces within a project limit of disturbance (LOD). [110]

Table 4-1 shows the existing SWRv for the Project Area, calculated in accordance with DOEE guidelines.

Table 4-1. Stormwater Retention Volume for the Project Area

Drainage Area	Paved Area[1] (acres)	Compacted Area (acres)	Natural Area (acres)	Total Area (acres)	SWRv
Tiber Creek (CSO 12)	26.9	16.6	0	43.4	129,243
Northeast Boundary (CSO 19)	1.1	8.7	0	9.8	13,906
Hickey Run (MS4)	0	0.2	0	0.2	178
TOTAL	28.0	25.5	0	53.4	143,327

1. LOD defined as the Project Area boundary

4.3.4.3 Wastewater

DC Water owns and operates the wastewater collection system in the District, including approximately 1,800 miles of sanitary and combined sewers conveying flows to Blue Plains. Blue Plains has the capacity to treat an average of 384 million gallons per day (MGD) of raw sewage and treats approximately 300 MGD on an average day; Blue Plains discharges the treated raw sewage to the Potomac River. During

[110] District Department of Energy and Environment. *2020 Stormwater Management Guidebook*. Accessed from https://doee.dc.gov/swguidebook. Accessed on July 21, 2023. The District's SWRv of 1.2 inches represents the 90th percentile rainfall event. This is a lower threshold that required by the Energy Independence and Security Act (EISA), under which Federal development or redevelopment projects must incorporate to the *maximum extent technically feasible* stormwater management measures that maintain or restore the pre-development hydrology of the site. Performance or design goals based on the pre-development hydrology can be established based on retention of the 95th percentile rainfall event (EPA. December 2009. *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*. Accessed from https://www.epa.gov/sites/production/files/2015-09/documents/eisa-438.pdf. Accessed on July 21, 2023).

large rain events, DC Water combined sewer flows are released to 53 CSO outfalls, as permitted under DC Water's NPDES Permit No. DC0021199.

Combined stormwater and wastewater flow from the southwest portion of WUS drain to the Tiber Creek trunk sewer, which services the center of the District and discharges to either Blue Plains or, during large storms, to CSO outfall #12 in the Anacostia River. Combined flows from the railroad corridor to the northeast are conveyed by the Northeast Boundary trunk sewer to either Blue Plains or, during large storms, to CSO outfall #19 in the Anacostia River.

DC Water is implementing the Clean Rivers Project to reduce CSOs into the Anacostia River. In March 2018, DC Water completed the Anacostia River Tunnel, one of four components of the project. When complete, the Clean Rivers Project will reduce CSOs to the Anacostia River by 98 percent. DC Water is recently completed and is operating the Northeast Boundary Tunnel (NEBT), which is the final segment of the project. The NEBT is expected to reduce the chance of flooding in its service area from a 50 percent to a 7 percent chance.

4.3.4.4 Drinking Water

The Washington Aqueduct, a Federally owned and operated water supply agency, withdraws water from the Potomac River at Great Falls and Little Falls and treats it at two drinking water treatment plants in the District (Dalecarlia and McMillan). DC Water purchases treated drinking water from the Washington Aqueduct and distributes it to its customers. DC Water maintains a network of more than 1,300 miles of pipes serving homes and buildings across the District.[111] WUS receives domestic and fire water supply from two DC Water water mains below K Street and Second Street.

Drinking water usage at WUS in 2017 averaged 91,800 gallons per day, based on water bills, or approximately 1.9 gallon per day per passenger.[112] Water demand can be assumed to equal wastewater demand plus 10 percent to account for consumption, system losses, and other uses. Based on average daily water demand in 2017, estimated wastewater demand for WUS can be estimated at approximately 83,500 gallons per day, or 1.7 gallons per day per passenger.

4.4 Solid Waste Disposal and Hazardous Materials

This section describes existing conditions pertaining to solid waste disposal, including hazardous materials.

[111] DC Water. *DC Water website*. Accessed from https://www.dcwater.com/drinking-water. Accessed on July 21, 2023.

[112] Water bills for WUS provided by Union Station Redevelopment Corporation. Unit flow rates for water and wastewater calculated as total demand divided by the number of passengers. Estimated 2017 wastewater flow calculated as 2017 water demand divided by 1.1. Rail terminal usage includes Amtrak, Maryland Area Regional Commuter (MARC), and Virginia Railway Express (VRE) ridership, for a total of 48,300 passengers.

Hazardous materials are hazardous substances as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)[113]; hazardous wastes as defined by the Resource Conservation and Recovery Act (RCRA)[114]; asbestos; PCB; lead; and petroleum products. The Occupational Safety and Health Administration (OSHA) also defines hazardous materials as any substance or chemical that is a health hazard or a physical hazard.[115] U.S. Department of Transportation (DOT) hazardous materials defined a 49 U.S.C. § 5102 include explosives; radioactive material; infectious substances; flammable or combustible liquids, solids, or gas; toxic, oxidizing, or corrosive materials; and compressed gas.

Solid waste is any "garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material resulting from industrial, commercial, mining, and agricultural operations, and from community activities."[116] Solid waste includes construction debris and excavated soils, and encompasses hazardous waste regulated by RCRA.

RCRA Hazardous waste pertains to solid waste that is either a RCRA-listed hazardous waste or meets the RCRA-defined characteristics of hazardous waste, which are ignitability, corrosivity, toxicity, and reactivity. Non-hazardous waste is solid waste not defined as hazardous waste by RCRA.

More detailed information on solid waste disposal and hazardous materials in the Study Area and sources of information are available in Appendix C2, *Washington Union Station Expansion Project Affected Environment Technical Report*, of the DEIS.[117]

4.4.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that pertain to solid waste and hazardous materials and are most relevant to the Project include:

- RCRA Solid Waste Regulations (40 CFR Parts 239 through 282);
- EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Regulations (40 CFR Part 61);
- Toxic Substances Control Act (TSCA) PCB regulations (40 CFR Part 761);
- TSCA, 15 U.S.C. § 2601-2692 including the Asbestos Hazard Emergency Response Action;

[113] 42 U.S.C. § 9061 *et seq*. (1980). Accessed from https://www.govinfo.gov/content/pkg/USCODE-2011-title42/html/USCODE-2011-title42-chap103.htm. Accessed on July 21, 2023.

[114] 40 CFR § 261. *Resource Conservation and Recovery Act (RCRA)*. Accessed from https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol27/xml/CFR-2012-title40-vol27-part261.xml. Accessed on July 21, 2023.

[115] 29 CFR § 1910.1200. *Occupational Safety and Health, Hazard Communication*. Accessed from https://www.gpo.gov/fdsys/granule/CFR-1999-title29-vol6/CFR-1999-title29-vol6-sec1910-1200. Accessed on July 21, 2023.

[116] U.S. Environmental Protection Agency. *Criteria for the Definition of Solid Waste and Solid and Hazardous Waste Exclusions*. Accessed from https://www.epa.gov/hw/criteria-definition-solid-waste-and-solid-and-hazardous-waste-exclusions. Accessed on July 21, 2023.

[117] Available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-c2-affected-environment.

- OSHA Lead in Construction Standard (29 CFR § 1926.62);
- OSHA Standards for Hazardous Materials (29 CFR Parts 1910 and 1926);
- CERCLA as amended (42 U.S.C. § 9601 et seq.);
- RCRA and Superfund Amendments and Reauthorization Action (42 U.S.C. § 6901 et seq);
- Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. § 116);
- Oil Pollution Act of 1990 (33 U.S.C. § 2701 et seq); and
- U.S. Department of Transportation (DOT) Hazardous Materials Transportation act of 1975 as amended (49 U.S.C. § 5101-5127).

District policies, regulations, and guidance that pertain to solid waste and hazardous materials include:

- DOEE, Control of Asbestos, Title 20 District of Columbia Municipal Regulations (DCMR) 800;
- Asbestos Notification Form, DOEE, Air Quality Division;
- District of Columbia Hazardous Waste Regulations, 20 DCMR Chapters 40 through 54;
- Green Construction Code, Sections 406 and 503 of Title 12K of the District of Columbia Municipal Regulations (12K DCMR 406, 503);
- DOEE Control of Asbestos, Title 20 DCMR 800;
- District of Columbia Illegal Dumping Enforcement Amendment Act of 1994, DC Law 10-117, DC Official Code 8-901 et seq.
- *Sustainable DC 2.0 Plan*;[118] and
- *The Comprehensive Plan for the National Capital: District Elements*.[119]

4.4.2 Study Area

The Local Study Area for solid waste and hazardous materials consists of the Project Area (**Figure 1-1**) where Project-related solid waste would be generated or handled. It is unlikely that solid waste and hazardous materials present at a regional level would require handling or storage within the Project Area. Therefore, a Regional Study Area was not considered.

[118] District of Columbia. 2019. *Sustainable DC 2.0 Plan*. Accessed from https://sustainable.dc.gov/sdc2. Accessed on August 14, 2023.

[119] District of Columbia Office of Planning. 2021a. *The Comprehensive Plan for the National Capital: District Elements*. Accessed from https://planning.dc.gov/node/637932. Accessed on August 14, 2023.

4.4.3 Methodology

A profile of current solid waste disposal practices and a baseline for existing solid waste and hazardous materials generation and disposal was developed for the Local Study Area based on available data and environmental database searches.

4.4.4 Existing Conditions

4.4.4.1 Solid Waste and Hazardous Materials

Based on information provided by the National Railroad Passenger Corporation (Amtrak), in 2016 WUS generated 800 tons of municipal solid waste (trash or garbage comprised of everyday items discarded by the public) and 7.2 tons of recyclables. [120] In 2018, the District produced 1,139,846 tons of solid waste.[121] Other recycled wastes included, but were not limited to, lead-acid batteries, fluorescent lamps, oily solids/debris, paint (latex and oil-based), and non-hazardous solid waste.

A recycling/waste report completed by Sustainable Solutions Group for WUS provided additional solid waste disposal quantities. According to this report, approximately 1,145 tons of solid waste and 415 tons of recycled waste were removed from WUS between January and August 2017. Approximately 27 percent of solid waste was recycled.

Some hazardous materials used for operation and maintenance are stored at WUS. The Tier II Emergency and Hazardous Chemical Inventory for January to December 2015 identified the following hazardous materials:

- 211.2 gallons of diesel fuel in two aboveground storage tanks (ASTs);
- 3,990 gallons of ethyl alcohol in one AST;
- 801.6 gallons of gasoline in one AST;
- 1,000 pounds of halite in bags;
- 6,200 pounds of lead-acid batteries;
- 22.6 gallons of transformer oil in one AST; and

To control vegetation, Amtrak applies herbicide (such as, for example, Opensight®, Esplanade 200 sc, or Oust Extra) over storage areas, fence lines, tracks, and roadways in the Project Area. Amtrak addresses

[120] This reflects pre-COVID pandemic solid waste generation at WUS. Because post-2020 conditions were affected by the pandemic and insufficient time has passed to determine which pandemic-related changes are temporary and which may continue in the long-term, pre-pandemic data more conservatively represent typical conditions at WUS.

[121] District of Columbia Department of Public Works. 2018. *Solid Waste Diversion Annual Report. Calendar Year 2018*. Accessed from https://dpw.dc.gov/sites/default/files/dc/sites/dpw/page_content/attachments/CY%2018%20Diversion%20Report%20Final%203%2010%2021.pdf. Accessed on August 16, 2023.

accidental spills and releases in compliance with their Spills Prevention, Control, and Countermeasures (SPCC) Plan, which outlines spill response actions and preventable measures.

Historically, asbestos cement was used for conduit pipes along the tracks at WUS. A May 2005 Asbestos Abatement Plan documented the removal of 3,200 linear feet of asbestos-cement conduit. A 2008 survey at two sub-platform areas at WUS where several hundred linear feet of piping were located found no asbestos-containing materials (ACM).

4.4.4.2 Hazardous Materials Releases and Hazardous Waste Generation

On September 9, 2015, WUS was assigned EPA identification number DCD 938970716 for the property's listing as an RCRA Conditionally Exempt Small Quantity Generator (CESQG), more recently known as a Very Small Quantity Generator (VSQG), and the associated generation of ignitable waste, corrosive waste, and lead.

A review of state and Federal databases recording oil or hazardous material releases and the generation of hazardous waste found records for five sites wholly or partially within the Project Area:

- Washington Union Station, 50 Massachusetts Avenue NE;
- Amtrak Parking, 900 Second Street NE;
- Station Place, 100 F Street NE;
- Station Place, 600 Second Street NE; and
- Florida Avenue Dump, 300 New York Avenue NE.

Detailed information from this review for each location is available in Section 4.5.1.1, *Database Report*, of Appendix C2, *Washington Union Station Expansion Project Affected Environment Technical Report,* of the DEIS.[122] Based on the findings of the database search, environmental concerns in or next to the Project Area can be classified by potential level of risk to the environment (high, moderate, or low), as follows.

High Risk: Former Underground Storage Tanks (USTs) and Spills, and Hazardous Materials Generated and Stored Identified Within the Project Area

The listings below are considered to present a high risk to environmental conditions within the Project Area based on the high number of listings, types of hazardous material released, and types of hazardous materials generated and stored.

- USTs: Four USTs formerly located at WUS and ranging from 1,000 to 5,000 gallons in capacity were once used for petroleum products. In addition, 13 USTs were formerly located

[122] Available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-c2-affected-environment.

at 100 F Street NE, ranging from 500 to 15,000 gallons in capacity and used for storage of petroleum products. All these USTs are closed but no closure reports are available.

- Spills: Two Leaking UST (LUST) reported in 2002 were listed as closed for 100 F Street NE and closed/no further action for 600 Second Street NE. In addition, multiple Emergency Response Notification System listings were identified at WUS and 900 Second Street NE (Amtrak parking lot) related to hazardous materials spills of diesel, fuel oil, unknown chemicals, vehicular fluids, and transformer fluids.
- Hazardous Materials Generated and Stored: Amtrak and Walgreens are listed as CESQGs (VSQGs) due to on-site storage and generation of hazardous pharmaceuticals. The former Florida Avenue Dump at 300 New York Avenue NE is identified as being partially located on the northern portion of the Project Area and is listed in the Comprehensive Emergency Response, Compensation, and Liability Information System database.

Moderate Risk: Active Railroad Right-of-Way Within the Project Area

The presence of the railroad right-of-way and lack of sampling data to confirm potential impacts from releases of hazardous materials into soil or groundwater is considered a concern and a moderate risk to environmental conditions. Railroad tracks have been present within the Project Area since at least 1907. Railroad rights-of-way are often impacted with residual oil and hazardous materials (OHM), including metals, pesticides, and petroleum constituents such as PAHs and PCBs. Sources of OHM may include creosote- or arsenic-laced railroad ties, herbicides, lubricating oils, diesel fuel, and diesel exhaust. Fill of unknown origin may contain debris, coal, coal ash, coal slag, or other potential contaminants. Fill in the Project Area consists of a mixture of clays, silts, and gravels along with minor amounts of construction debris such as brick and concrete fragments.

Low Risk: Hazardous Building Materials

Building materials do not typically present a concern when intact under normal use conditions. Therefore, this concern is considered a low risk to environmental conditions within the Project Area. Based on the age of the structures located in the Project Area (pre-1980), ACM as well as lead-based paint, mercury switches, PCB-containing light ballasts, and other hazardous building materials may be present. These materials would require special handling if the pre-1980 structures in the Project Area are demolished or renovated.

4.4.4.3 Adjoining Property Listings

Environmental concerns identified on 14 adjoining properties, which have the potential to impact the Project Area, were classified as moderate risk. Twelve LUST sites are located next to the Project Area, three of which have not achieved regulatory closure. Their current condition is unknown. Although the remaining LUST sites have achieved regulatory closure, no closure reports or confirmatory analytical results were available. Additional listings identified near the Project Area include CESQG (VSQG), Facility Index System, Voluntary Cleanup Program, and Brownfield properties. Although the databases yielded

limited information, the generation or storage of hazardous materials and documented contamination at adjoining properties must be noted.

4.5 Transportation

The Federal Railroad Administration's (FRA) *Procedures for Considering Environmental Impacts*[123] states that an Environmental Impact Statement (EIS) should consider impacts on both passenger and freight transportation by all modes, with local, regional, and national perspectives. Consistent with this requirement, this section describes existing conditions for a variety of transportation modes at WUS to provide a baseline against which the potential impacts as they relate to transportation can be assessed. Existing conditions pertaining to railroad (including Amtrak, Virginia Railway Express [VRE], and Maryland Area Regional Commuter [MARC] Train); bus (intercity, tour/charter, and sightseeing [including hop-on/hop-off buses and daily sightseeing coaches] [124]); transit (Metrorail, Streetcar, and Metrobus); bicycle; pedestrian; for-hire;[125] and private vehicle modes are assessed.

4.5.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that pertain to transportation include:

- *The Comprehensive Plan for the National Capital: Federal Elements, Transportation*, amended in 2021, prepared by the National Capital Planning Commission (NCPC).[126]

District Policies, regulations, and guidance that pertain to transportation include:

- *The Comprehensive Plan for the National Capital: District Elements, Transportation*, adopted in 2006 and amended in 2011 and 2021, prepared by the District of Columbia Office of Planning; [127]
- District Department of Transportation (DDOT) *Design and Engineering Manual*;[128]

[123] Federal Railroad Administration. 1999. *Procedures for Considering Environmental Impacts (64 FR 28545)*. Accessed from https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/1217/FRAEnvProcedures.pdf. Accessed on August 21, 2023.

[124] Hop-on/hop-off sightseeing buses provide scheduled routes that allow tourists to visit different sites in Washington, DC and surrounding areas either by continuously riding the bus in a loop, or by getting off the bus at certain stops and then getting back on to continue with their visit. Daily sightseeing buses are coach-style buses that provide scheduled service to certain tourists destinations. Currently, hop-on/hop-off buses serve the front of WUS while daily buses are located in the existing bus facility.

[125] In the District and in this FEIS, "for-hire vehicles" refers to all vehicles where the passenger pays for a ride, including taxis, livery/car service, and transportation networking companies (TNCs) such as Uber and Lyft.

[126] National Capital Planning Commission. 2021. *The Comprehensive Plan for the National Capital: Federal Elements.* Accessed from https://www.ncpc.gov/plans/compplan/. Accessed on August 18, 2023.

[127] DC Office of Planning. 2021. *The Comprehensive Plan for the National Capital: District Elements.* Accessed from https://planning.dc.gov/page/comprehensive-plan. Accessed on July 21, 2023.

[128]District Department of Transportation. 2019b. *Design and Engineering Manual.* Accessed from https://ddot.dc.gov/page/design-and-engineering-manual. Accessed on July 21, 2023.

- DDOT *Pedestrian Safety and Work Zone Standards – Covered and Open Walkways*;[129]
- DDOT *Public Realm Manual*;[130]
- DDOT *DC Temporary Traffic Control Manual*;[131]
- DDOT *Guidance for Comprehensive Transportation Review*;[132]
- DDOT *Environmental Manual*, 2nd Edition;[133] and
- *Safe Accommodation for Pedestrian and Bicyclists* Rule (DCMR 24-3315)

Regional Policies, regulations, and guidance that pertain to transportation include:

- Metropolitan Washington Council of Governments (MWCOG) Transportation Planning Board's (TPB) *2014 Constrained Long-Range Transportation Plan (CLRP);*[134] and
- MWCOG TPB *Visualize 2045*.[135]

4.5.2 Study Area

The Local Study Area for transportation (**Figure 4-3**), includes the Project Area and the adjacent roadway network, along with 35 study intersections near WUS. **Table 4-2** lists the study Intersections.[136]

[129]District Department of Transportation. 2007. *Pedestrian Safety and Work Zone Standards – Covered and Open Walkways.* Accessed from https://dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/pedestrian_safety_and_work_zone_standards_covered_and_open_walkways_july_2010.pdf. Accessed on July 21, 2023.

[130]District Department of Transportation. 2011. *Public Realm Manual.* Accessed from https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/ddot_public_realm_design_manual_2011.pdf. Accessed on July 21, 2023.

[131]District Department of Transportation. 2006. *D.C. Temporary Traffic Control Manual – Guidelines and Standards.* Accessed from https://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/ddot_work_zone_temporary_traffic_control_manual_2006.pdf. Accessed on July 21, 2023.

[132]District Department of Transportation. *Guidance for Comprehensive Transportation Review (CTR). January 2022*. Accessed from https://ddot.dc.gov/sites/default/files/dc/sites/ddot/CTR%20Guidance%20-%20January%202022%20Version%202.0.pdf. Accessed on February 14, 2024.

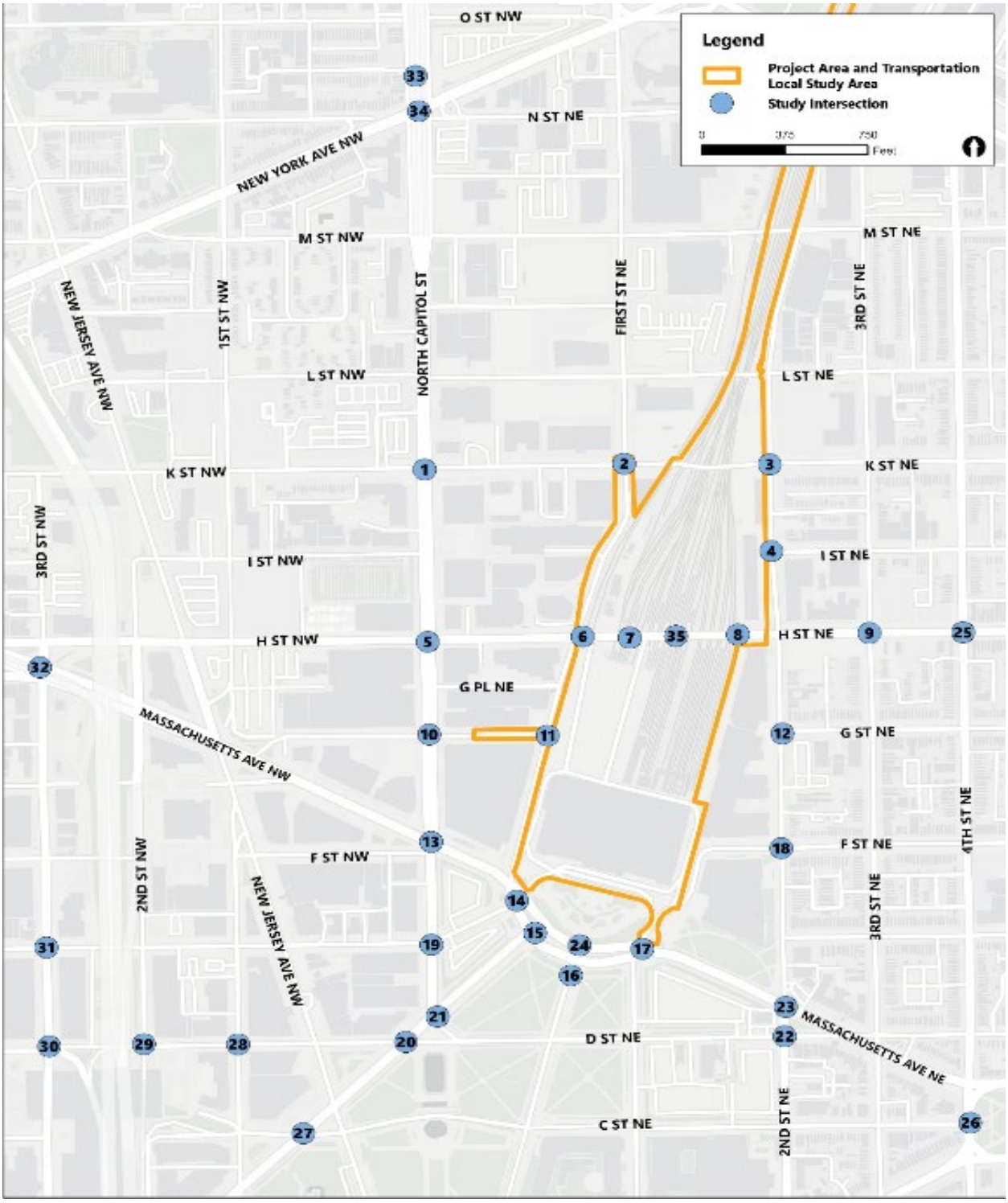
[133] District Department of Transportation. 2012. *DDOT Environmental Manual.* Accessed from https://ddotsites.com/documents/environment/DDOT_EnvironmentalManual_2012.pdf. Accessed on February 14, 2024.

[134] Metropolitan Washington Council of Governments (MWCOG). *TPB Constrained Long-Range Transportation Plan. 2014 CLRP and FY 2015-2020 TIP*. Accessed from http://www1.mwcog.org/clrp/resources/KeyDocs_2014.asp. Accessed on July 21, 2023.

[135] MWCOG. 2022. *Visualize 2045*. Accessed from https://visualize2045.org/plan-update/approved-2022-plan/. Accessed on September 19, 2023.

[136] These intersections include intersections of streets controlled by the AOC. These streets may be subject to closure by the AOC at any time.

Figure 4-3. Transportation Local Study Area



Note: Key Intersection numbers refer to **Table 4-2.**

Table 4-2. Study Intersections

I #	Intersection	#	Intersection
1	North Capitol Street and K Street	**19**	North Capitol Street and E Street
2	First Street and K Street NE	**20**	Louisiana Avenue and D Street NW
3	Second Street and K Street NE	**21**	Louisiana Avenue and North Capitol Street
4	Second Street and I Street NE	**22**	Second Street and D Street NE
5	North Capitol Street and H Street	**23**	Second Street and Massachusetts Avenue NE
6	WUS Garage Entrance and H Street NE/Future New West Intersection	**24**	Massachusetts Avenue and Delaware Ave NE
7	WUS Bus Exit and H Street NE	**25**	4th Street and H Street NE
8	Kaiser Permanente Entrance and H Street NE/Future New East Intersection	**26**	Massachusetts Avenue, C Street NE, and 4th Street NE
9	H Street and 3rd Street NE	**27**	Louisiana Ave and C Street NW
10	North Capitol Street and G Street	**28**	First Street and D Street NW
11	First Street and G Street NE	**29**	I-395 Tunnel at Second Street and D Street NW
12	Second Street and G Street NE	**30**	3rd Street and I-395 On-Ramp and Indiana Avenue and D Street NW
13	North Capitol Street, Massachusetts Avenue, and F Street	**31**	3rd Street and E Street NW
14	E Street, Massachusetts Avenue, and First Street NE	**32**	3rd Street, Massachusetts Avenue, and H Street NW
15	Louisiana Avenue and Massachusetts Avenue NE	**33**	North Capitol Street (Southbound Ramp) and New York Avenue
16	Delaware Avenue and Massachusetts Avenue NE	**34**	North Capitol Street (Northbound Ramp) and New York Avenue
17	First Street and Massachusetts Avenue NE	**35**	Future Central Intersection on H Street between North Capitol Street and 3rd Street NE
18	Second Street and F Street NE		

Traffic conditions and coordination with DDOT were the basis for the identification of these intersections. The Regional Study Area is the MWCOG area of jurisdiction. MWCOG is the local Metropolitan Planning Organization that includes local jurisdictions in Maryland, the District, and Virginia.

4.5.3 Methodology

The existing conditions analysis is based on a review of current transportation modes and conditions; the most recent data available for each data source at the time of analysis (2018); traffic counts taken to characterize existing levels of service (LOS) at the study intersections; and field observations. The base year for the existing conditions analysis is 2017. The analysis made use of the most recent data then available for each data source projected forward to 2017, if necessary, except where past data are consistent with expected 2017 levels.[137] These data reflect pre-COVID-19 pandemic conditions. They have not been updated because post-2020 conditions were affected by the pandemic and insufficient time has passed to determine which pandemic-related changes are temporary and which may continue in the long term. Therefore, with respect to transportation, pre-pandemic data more conservatively represent typical conditions.

The analysis focuses on activity during the morning (AM) and evening (PM) peak hours. These were identified based on total activity for all transportation modes. The station-wide AM peak hour is 8:00 AM to 9:00 AM and the station-wide PM peak hour is 4:30 PM to 5:30 PM. In certain instances, the analysis further identifies mode-specific peak hours or periods.

The existing conditions analysis drew from a variety of data sources:

- **Trains and Platforms:** Ridership data, schedules, and platform occupancy data;
- **Bus facility:** Bus counts, reservation, passenger counts, fleet, ridership, bus movements, passenger behavior, and schedules;
- **Parking:** Parking counts and Amtrak ridership garage usage;
- **Transit:** Transit ridership and schedule for Washington Metropolitan Area Transit Authority (WMATA) Metrobus and Metrorail, and for DC Circulator;
- **Bicycle:** Bicycle counts, plans, Bikeshare counts and usage;
- **Pedestrian:** Pedestrian volumes in and near WUS;
- **Traffic:** Traffic counts at study intersections, roadway conditions, signal timing, Amtrak ridership surveys, Metropolitan Police Department (MPD) and DDOT crash data, DC Vision Zero traffic safety plan; and

[137] Traffic counts that predated 2017 were grown to 2017 levels using a 0.5 percent annual growth factor, consistent with the growth factor used to project forward to 2040 in the 2040 transportation impact analysis.

For-Hire Vehicles: Usage and dwell time for taxis and transportation networking companies (TNCs); TNCs are companies such as Uber or Lyft).

4.5.4 Existing Conditions

4.5.4.1 Commuter and Intercity Railroads

With 37 million annual riders, WUS is busier than any of the region's three commercial airports. Three passenger railroads serve WUS: Amtrak, MARC, and VRE. Because WUS is the southernmost electrified station on the East Coast, all Amtrak and VRE trains heading southward of it currently operate using diesel engines. Amtrak is currently procuring dual-mode (diesel and electric) intercity trainsets (Airo) that will be utilized by all Northeast Corridor Northeast Regional trains and all regional Amtrak trains operating south of WUS. This will eliminate the engine change at WUS for all Amtrak trains except long-distance trains. Trains from the north and continuing south make use of the "run-through" tracks and switch from electric to diesel engines at the station.

Amtrak

Amtrak provides intercity railroad service to and from WUS. Eighty-five percent of Amtrak's ridership originating or terminating at WUS travels on either the Acela Express or the Northeast Regional trains. The remaining 15 percent use long-distance services.

Acela provides high-speed, business-class service between the District and Boston, Massachusetts. Northeast Regional trains provide frequent-stop service between the District and Boston with extensions southward to Lynchburg, Norfolk, and Newport News, Virginia. Several long-distance trains serve or originate from WUS. The Capitol Limited to Chicago via Pittsburgh and Cleveland; and the Vermonter to St. Albans, Vermont originate at WUS. The Cardinal to Chicago, via Cincinnati and Indianapolis; Silver Service to Florida; the Palmetto to Savannah; the Crescent to New Orleans; and the Carolinian to Charlotte all originate in New York City and stop at WUS.

In 2015, annual Amtrak ridership at WUS was 5.08 million. Projected 2017 ridership was 5.14 million. Weekdays on average see higher ridership (16,394) than Saturdays and Sundays (10,105 and 14,998 respectively).[138] On average, Amtrak operates 93 daily weekday trips at WUS. Amtrak trains operate throughout the day, with peak period trips accounting for approximately 41 percent of all trips and midday trips accounting for approximately 32 percent. Most of the scheduled trips serving WUS originate and terminate at WUS.

The overall peak hour of weekday Amtrak ridership is between 5:00 PM and 6:00 PM, with nearly 2,000 boarding's and alightings.[139] On Saturdays, the overall peak hour is between 9:00 AM and 10:00 AM (1,200 boardings and alightings). On Sundays, the overall peak hour is between 4:00 PM and 5:00 PM

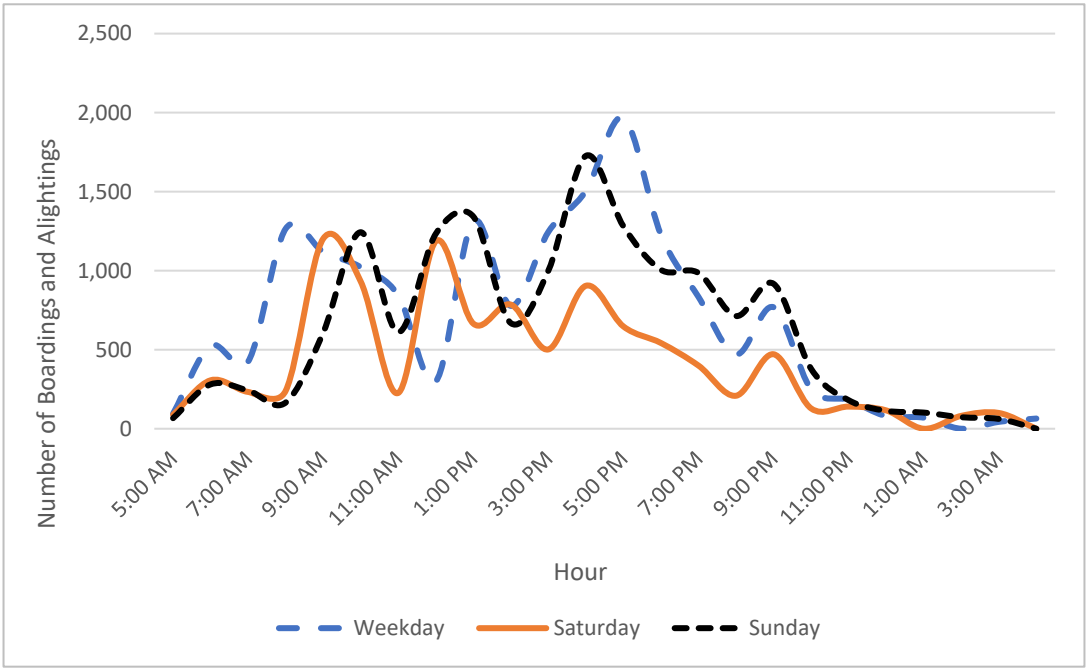
[138] Amtrak. 2015. *Amtrak Union Station Ridership by Train Time*.

[139] A boarding refers to a passenger getting onto a transit vehicle, in this case a train. An alighting refers to a passenger disembarking from a transit vehicle.

(1,700 boardings and alightings). Weekdays typically have three distinct periods with relatively high levels of ridership activity: 8:00 AM to 11:00 AM; 1:00 PM to 2:00 PM; and 3:00 PM to 7:00 PM.

Figure 4-4 illustrates average daily boardings and alightings by hour and service day. Amtrak's highest ridership trips are all on the Northeast Regional Line.

Figure 4-4. Fiscal Year 2015 Amtrak Average Daily Ridership at WUS by Hour and Service Day



Source: Amtrak. 2015. *Amtrak Union Station Ridership by Train Time*.

MARC

MARC provides commuter rail service between the District, Maryland, and West Virginia. Three MARC lines serve WUS: the Brunswick Line (diesel), Camden Line (diesel), and the Penn Line (electric). The Brunswick Line runs from WUS to Martinsburg, West Virginia, with a spur to Frederick, Maryland. The Camden Line connects WUS and the Baltimore-Camden Station. The Penn Line operates between WUS and Perryville, Maryland via Baltimore-Penn Station. MARC service currently uses WUS's western stub-end tracks.

Across the three MARC lines, average weekday WUS ridership over twelve months in 2014-2015 was approximately 15,745 passengers (**Table 4-3**). Based on ridership trends, 2017 numbers are not expected to have changed substantially. Data are unavailable from MARC regarding overcrowding of trains. However, in the *MARC Growth and Investment Plan Update 2013 to 2050*, crowded rush hour trains are cited as a challenge. **Table 4-4** shows MARC train operations, points of service, and trips during peak service.

Table 4-3. MARC Commuter Rail Average Daily Ridership at WUS by Route and Service Day

	Average WUS Weekday Ridership	Average WUS Saturday Ridership	Average WUS Sunday Ridership
MARC Penn Line	10,796	1,067	853
MARC Camden Line	2,013	-	-
MARC Brunswick Line	2,936	-	-
MARC Total	15,745	1,067	853

Source: MARC Ridership Data by Line, 2014-2015.

Table 4-4. MARC Train Operations, Points of Service, and Trips

MARC Train	Operations at WUS	Points of Service	Number of Trips Served Weekday Peak: AM	Number of Trips Served Weekday Peak: PM
Penn Line	Weekday Peak, Midday, Evening, Weekend	Perryville Baltimore, MD BWI	8 Southbound to WUS	11 Northbound to points of service
Camden Line	Weekday Peak	Baltimore	5 Westbound to WUS	6 Eastbound to points of service
Brunswick Line	Weekday Peak, One Evening Trip	Martinsburg, WV	8 Eastbound to WUS	8 Westbound to points of service

VRE

VRE operates two lines on weekdays only that both terminate at WUS: the Fredericksburg Line and the Manassas Line. VRE uses diesel locomotives and operates on the run-through tracks on the east end of the rail terminal. In Fiscal Year 2015 (FY2015), VRE had a total of 18,589 riders across all lines and stations. The estimated 2017 WUS ridership was 4,352 riders daily and 1.09 million riders annually.

The Fredericksburg Line provides weekday peak service from Spotsylvania County, Virginia. In the northbound direction (Spotsylvania to DC), six trips serve WUS in weekday AM peak periods (6:30 AM to 9:00 AM). In the southbound direction (DC to Spotsylvania), seven trips serve WUS in weekday PM peak periods (3:00 PM to 7:00 PM).

The Manassas Line provides peak weekday service from Broad Run in Prince William County, Virginia. In the northbound direction (Manassas, Virginia to DC), five trips serve WUS in weekday AM peak periods (6:24 AM to 8:39 AM). In the southbound direction (DC to Manassas), six trips serve WUS in weekday PM peak periods (3:45 PM to 6:50 PM).

In the middle of the day, VRE stores its trains in the Ivy City yards, owned by Amtrak. As a result, VRE trains cross multiple tracks in the morning and afternoon to stage trains, affecting the operations of the WUS rail terminal.

Based on 2014 data, on weekdays, approximately 4,333 persons rode VRE trains at WUS, with slightly more passengers riding in the outbound direction than in the inbound direction. The Manassas Line had

higher ridership than the Fredericksburg Line. **Table 4-5** shows average weekday VRE ridership at WUS by route and direction.

Table 4-5. VRE Commuter Rail Average Weekday Ridership at WUS by Route and Direction

	Inbound	Outbound
VRE Fredericksburg	879	1,124
VRE Manassas	1,128	1,202
Total	2,007	2,326

Source: VRE, 2014.[140]

Based on 2015 data, two trips on the Manassas Line and three trips on the Fredericksburg Line experienced overcrowding during the mid-week peak.[141] One additional trip on the Manassas Line was nearing capacity. The five overcrowded trips were during the PM peak period in the outbound direction. The most severely overcrowded trip was the 3:10 PM Fredericksburg Line trip, which experienced passenger loads at 123 percent of seated capacity.

4.5.4.2 WMATA Metrorail

WUS is served by the WMATA Union Station Metrorail station (WUS Metrorail station), located on the Red Line and directly west of the WUS. Entrances to WUS from the Metrorail station are in the western colonnade, Claytor Concourse, and the food court. The WUS Metrorail station is the busiest station in the system, with 28,762 entries and 29,251 exits for the month of October 2015. On Saturdays, entries total 9,577 and exits total 8,744. On Sundays, entries average 8,211 and exits average 6,876.[142]

The WUS Metrorail station has north and south mezzanine entrances leading to the WMATA platforms. The south mezzanine experiences the highest passenger traffic on weekdays, with 14,962 entries against 13,800 for the north mezzanine.[143] In 2009, the most recent year for which data are available, WMATA indicated that it could take passengers up to 5 minutes and 35 seconds to travel from the WMATA platform level to the train platform level because of queueing at escalators.[144]

Table 4-6 shows 2015 peak-hour ridership data for the Red Line Metrorail segments centered on WUS. In the AM peak period (8:00 AM to 9:00 AM), ridership was higher in the westbound direction (toward

[140] Virginia Railway Express. 2014. *FY14 VRE Ridership by Station*.

[141] Virginia Railway Express. 2015. *VRE Performance Measures Report*.

[142] Washington Metropolitan Area Transit Authority. *October 2015 Metrorail Faregate Data*. Recent data indicate that 2023 ridership remains well below pre-pandemic levels: see *Station Average Daily January-June 2023*, accessed from https://www.wmata.com/initiatives/ridership-portal/, accessed on September 29, 2023: total average daily ridership at the Union Station Metrorail Station was 12,465 in June 2023.

[143] Washington Metropolitan Area Transit Authority. 2011. *Union Station Access and Capacity Study.* Accessed from https://www.wmata.com/initiatives/plans/upload/Final-Union-Station-Project-Report-Feb182011.pdf. Accessed on August 27, 2023.

[144] Washington Metropolitan Area Transit Authority. 2011. *Union Station Access and Capacity Improvement Study.* Accessed from https://www.wmata.com/initiatives/plans/upload/Final-Union-Station-Project-Report-Feb182011.pdf. Accessed on August 27, 2023.

Glenmont). In the PM peak period (5:00 PM to 6:00 PM), the ridership was higher in the eastbound direction (toward Shady Grove), with a notable drop-off east of WUS.

Table 4-6. WUS Peak Hour Ridership by Red Line Segment

Segment	Eastbound (To Glenmont)		Segment	Westbound (To Shady Grove)	
	AM Peak (8 AM – 9 AM)	PM Peak (5 PM – 6 PM)		AM Peak (8 AM – 9 AM)	PM Peak (5 PM – 6 PM)
Judiciary Square to Union Station	5,071	9,948	**NoMA-Gallaudet to Union Station**	8,499	2,592
Union Station to NoMA-Gallaudet	1,955	7,776	**Union Station to Judiciary Square**	10,378	5,275

Source: WMATA, 2015.[145]

4.5.4.3 DC Streetcar

The DC Streetcar (Streetcar) is operated by DDOT on a 2.4-mile track that connects WUS to H Street NE and Benning Road up to the Kingman and Heritage Islands Park. The closest stop to WUS is located on H Street NE, behind the station. It is accessible from the bus facility. To reach the platform, pedestrians must cross to the center median (signalized crossing) and walk approximately 200 feet. The Streetcar operates seven days a week. Based on the latest DC Streetcar ridership report, a total of 304,024 passengers rode the DC Streetcar March 2020 through February 2021, with peak ridership in March 2020.[146] The peak year of ridership since the DC Streetcar began service was March 2018 through February 2019 with 1,178,334 riders.

4.5.4.4 Intercity, Tour/Charter, Transit, and Commuter Buses

WUS's existing bus facility features 61 slips (short-term parking spots). It is the largest bus facility in the Washington, DC region. Vehicular access to the WUS bus facility is via H Street NE. The facility presently offers long-term storage of buses and large vehicles such as box trucks, mobile communications trucks (television trucks), and recreational vehicles. Shuttle buses serving the United States Citizenship and Immigration Service and Gallaudet University also use the WUS bus facility.

Intercity carriers that serve WUS include Greyhound, Flixbus, Peter Pan, Megabus, Martz Bus, Washington Deluxe, and Best Bus. The WUS bus facility served between 130,000 and 284,000 monthly riders from August 2013 to December 2015.[147] Megabus consistently had the highest ridership, followed

[145] Washington Metropolitan Area Transit Authority. *May 2015 Passenger Load Data*.

[146] District of Columbia. DC Streetcar Ridership Reports. Accessed from https://dcstreetcar.com/riders-guide/ridership-report/. Accessed on August 24, 2023.

[147] August 2013 to December 2015 data provided by Union Station Redevelopment Corporation (USRC).

by Greyhound, Washington Deluxe, and Best Bus. Greyhound served 754,632 passengers in calendar year 2014. Megabus reported 1.478 million riders for that same period. Overall ridership decreased in 2015, which may be partially attributable to falling gas prices.

Tour and charter buses use the WUS bus facility to drop off and pick up visitors at the station. Rental data from the month of May in three successive years (2013, 2014, and 2015) indicate that between 2,100 and 2,381 buses rented a spot that month. Daily bus counts taken by Union Station Parking Garage (USPG) between May 26 and June 17, 2016, found that, on weekdays, the initial peak takes place in the 11:00 AM hour and averages 11 buses per hour. The evening peak occurs at 5:00 PM, with 12 buses per hour on average. On weekends, the midday peak period occurs in the 12:00 PM hour, with nine buses per hour and the PM peak period occurs in the 5:00 PM hour, with nine buses per hour. In any one hour, the number of reservations peaked at 27. Facility use is very low in the overnight hours.

Daily sightseeing coach buses provide scheduled service from WUS to popular tourist attractions such as Gettysburg, Mount Vernon, and the monuments on the National Mall at night. These bus services occupy two slips in the bus facility. Hop-on/hop-off sightseeing buses (Old Town Trolley) use the middle lanes of Union Station Drive NE in front of WUS.

Transit and commuter bus service is provided at and near WUS in the Local Study Area by WMATA, the Maryland Transit Administration (MTA), DC Circulator, OmniRide (Prince William County), and Loudoun County Transit (LCT). Twelve Metrobus routes and three DC Circulator routes operate in the Local Study Area.[148] All routes provide local service except Metrobus Route X9. The local bus routes in the Local Study Area serve WUS from either Massachusetts Avenue NE near Columbus Circle or North Capitol Street. Metrobus Route X2, which has the highest ridership in the entire Metrobus system, is the only route in the Local Study Area that is overcrowded. The buses that stop and lay over in Columbus Circle contribute to congestion in the circle during peak periods. **Table 4-7** shows detailed information on Metrobus and DC Circulator ridership.

Weekday peak periods for Metrobus and DC Circulator are 6:00 AM to 9:00 AM and 3:00 PM to 7:00 PM. Most routes operate seven days a week. Several Metrobus routes only operate during weekday peak periods, including Routes 97, X1, and X9. Metrobus Route 13Y only operates during early AM weekend hours to serve passengers traveling to and from Ronald Reagan Washington National Airport and Crystal City/Pentagon City in Arlington County, Virginia before the Metrorail system opens.

The Georgetown to WUS (GT-US) Circulator, the National Mall (NM) Circulator, and the Congress Heights to WUS (CH-US) Circulator operate seven days a week. The DC Circulator uses the WUS bus facility for its GT-US route. This route regularly uses three to four bus slips. As of December 2016, approximately 120,000 riders used the GT-US route monthly. Monthly, approximately 65,000 riders used the CH-US Circulator service that serves WUS from Massachusetts Avenue NE while 17,000 riders used the NM Circulator service that serves WUS from E Street NE.

[148] Route X1 was suspended during the COVID-19 pandemic and remains so.

Table 4-7. Metrobus and DC Circulator Average Ridership by Route and Service Day

Route	Weekday	Saturday	Sunday
X2	16,583	11,570	8,532
80	8,550	3,232	2,438
GT-US	7,281	-	-
96	5,629	4,037	3,035
D8	5,498	3,028	1,937
P6	5,425	2,644	1,994
D6	5,263	2,372	1,654
X9	2,358	-	-
97	1,949	-	-
NM	1,882	-	-
CH-US	2,501	1,229[1]	
D4	1,608	967	844
X8	1,539	649	489
X1	889	-	-
13Y	-	89	69

1. Daily average for the weekend.
Source: WMATA, 2015[149]; DDOT, 2016 and 2019.[150]

4.5.4.5 Vehicular Parking

Current Parking Garage Usage and Occupant Behavior

WUS has a parking garage for private vehicles, including monthly parking and rental cars. USPG operates the bus facility and parking garage on behalf of Union Station Redevelopment Corporation (USRC). There are approximately 2,200 marked parking spaces on four levels in the garage. Rental car companies also use large, unmarked areas (see **Section 4.5.4.6** below). Altogether, total garage capacity is approximately 2,450 vehicles. Review of USPG data indicates that the garage operates above or near 90 percent occupancy on most weekdays throughout the year. [151]

Retail/Tourism/Short-term Visitor Parking

USRC's lease agreement with Union Station Investco, LLC (USI), which manages WUS retail, stipulates the provision of 600 parking spaces in the garage. Per USPG parking data, an average of around 860 parkers keep their vehicles in the facility between 1 and 5 hours.

[149] Washington Metropolitan Area Transit Authority. *Metrobus Ridership by Route and Trip Data 2015*. DDOT provided additional data for the CH-US Circulator in 2019.

[150] District Department of Transportation. 2016. *DC Circulator Dashboard (2018)*.

[151] Appendix A6, *Parking Program Technical Memorandum*, of the DEIS, available at https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-a6-parking-program.

4.5.4.6 Rental Cars

The WUS parking garage supports 51,800 square feet of rental car facilities used by Enterprise Car Rental and Carshare; Avis/Budget Car Rental; and Hertz Car Rental. Zipcar and Maven operate out of regular parking spaces. The garage features approximately 85 marked parking spaces for rental cars and three large areas used for cleaning rental vehicles and providing simple maintenance. Information from USPG provided in April 2017 indicate that the average occupancy of the rental car facility is around 275, up from 260 in 2016.[152] Rental car operators indicated that current conditions are cramped and lead to vehicle accidents.[153] Field observations confirmed that when the facility is near capacity, vehicles are "stacked," meaning that multiple vehicles are parked in a single parking space to maximize parking per square foot, with very limited room left for vehicles to maneuver.

4.5.4.7 For-Hire Vehicles

For-hire vehicles at WUS include traditional taxis, limousines, and TNCs like Uber and Lyft, which conduct pick-ups and drop-offs along Union Station Drive in front of WUS. Pick-ups and drop-offs also occur on First, Second, and H Streets NE.

There are designated taxi lanes for passenger pick-up in Columbus Circle in front of WUS, which taxis enter via H Street NE. USPG manages day-to-day taxi operations, with taxi dispatchers at the WUS front entrance to manage the flow. Taxi lane operations vary. When there is no passenger queue, taxis line up in a single file. When there is a passenger queue, taxis queue in both lanes.

On average, taxis pick up 1.2 passengers per vehicle in the AM peak hour (8:00 AM to 9:00 AM) and 1.3 passengers in the PM peak hour (4:30 PM to 5:30 PM). The average queue length is 51 vehicles, approximately 1,270 feet, in the AM peak hour. In the PM peak hour, it is 103 vehicles, approximately 2,579 feet. The District discourages taxi queueing on H Street and enforcement is conducted regularly. Passenger queueing is longest directly after Amtrak trains arrive at WUS. The maximum observed passenger queue was approximately 70 persons in the AM peak hour and approximately 80 persons in PM peak hour.[154]

Detailed information on the operation of TNCs is not available because these companies provide only limited public operational data. Based on DDOT data, approximately 4,100 TNC pick-ups and 5,300 drop-offs occur daily at WUS.

[152] Union Station Parking Garage email correspondence to VHB, April 12, 2017. Once rental cars are factored in, the total capacity of the existing parking garage is approximately 2,450 cars.

[153] Union Station Parking Garage email correspondence to VHB, April 11, 2016.

[154] Taxi pick-up may shift to different locations when construction or rehabilitation activities are occurring at WUS. Observations were conducted when "normal" operations were in place, with taxi pick-up happening in front of the main entrance of WUS and taxis queueing along the east ramp.

4.5.4.8 Private Pick-up and Drop-off

Private passenger vehicles routinely pick up and drop off passengers in Union Station Drive NE. The two outermost lanes are reserved for vehicles picking up and dropping off passengers. In the PM peak period, USPG Traffic Control personnel direct traffic and ensure cars are not idling in this lane.

The maximum total number of vehicles entering the pick-up/drop-off area from 3:30 PM to 4:30 PM was 385. Private automobiles had the highest average dwell time, as it took passengers an average of 62.3 seconds to enter or exit a vehicle. The longest queue for the pick-up/drop-off area was in the PM peak period, with approximately 1,755 feet or 70 vehicles.

4.5.4.9 Loading

WUS receives daily deliveries of goods at two separate loading dock facilities, one on First Street NE between Massachusetts Avenue NE and G Street NE; and the other on H Street NE to the east of the railroad tracks. The second loading facility is shared with the adjacent Station Place private development. Based on counts from April 2017, an average of 48 vehicles use the H Street NE loading dock daily and an average of 43 vehicles use the First Street NE loading dock daily. A mix of vehicles use the loading docks. The First Street loading dock provides access for Amtrak vehicles, including Red Cap service, Package Express, and Food Court suppliers.[155] The H Street NE loading dock primarily serves WUS retail. The hour with the peak average loading for both docks is 10:00 AM to 11:00 AM, with an average of 12 vehicles. The 8:00 AM to 9:00 AM and 9:00 AM to 10:00 AM hours average 8 and 9 vehicles, respectively.

4.5.4.10 Pedestrians

Since WUS is in the center of the District, it experiences high volumes of pedestrian activity. Pedestrian counts taken on April 6, 2016, found the following:

- AM pedestrian activity inside WUS follows train arrival patterns. The peak 5-minute period was 8:40 AM to 8:45 AM. External pedestrian activity gradually rose until approximately 8:40 AM, which matches commuter flows.
- Midday pedestrian activity increased between 11:30 AM and 12:30 PM, then declined after 1:15 PM, corresponding with lunch time at WUS' restaurants. The peak 5-minute period inside WUS was 12:40 PM to 12:45 PM, with some spikes due to train arrivals. External pedestrian activity was stable throughout the midday period.
- PM pedestrian activity peaked at approximately 5:15 PM then decreased afterward. The peak 5-minute period inside WUS was 5:10 PM to 5:15 PM. Smaller peaks also occurred,

[155] In a comment on an early draft of this document, DDOT indicated that the agency regularly receives complaints about delivery activities on First Street next to the City Post Office building because there is insufficient clearance for some trucks to access the loading dock.

likely associated with arrival and departure of trains. The external pedestrian activity remained relatively stable throughout the PM.

The greatest concentration of pedestrians in the peak 5-minute periods were in the northwestern quadrant of WUS, where passengers can connect from trains serving WUS to Metrorail. Some additional peaks were noted on the escalator connecting the WUS concourse to the bus garage level, primarily associated with charter and intercity bus passengers entering and exiting WUS.

Outside of WUS, a substantial number of pedestrians use the crosswalks on First Street on the west side of WUS near Columbus Circle, particularly in the AM and PM peak periods. Pedestrian counts found 434 people crossing this area during the AM peak of 8:40 AM to 8:45 AM; 314 during the midday peak of 12:15 PM to 12:20 PM; and 487 during the PM peak of 5:10 PM to 5:15 PM. Many pedestrians do not use the crosswalks to cross the street.

4.5.4.11 Bicycles

Bicycle circulation is accommodated through on-road facilities and off-road shared-use paths. The Metropolitan Branch Trail (MBT), which carries high volumes of commuter and recreational bicycle traffic, runs along the west side of Second Street NE between L Street NE and F Street NE and on an elevated structure parallel to the Metrorail tracks north of L Street NE. The MBT connects the regional bicycle network in the northeast and northwest parts of the District with that in Maryland.

Part of the MBT includes a Cycle Track on First Street NE between M Street and Massachusetts Avenue that connects to the NoMA neighborhood. On-street bike lanes connect WUS, NoMA, Capitol Hill, and points east via G Street NE, I Street NE, and M Street NE. Bike lanes also connect WUS and downtown via E Street NW. On-street bike lanes on 4th Street NE and 6th Street NE provide north-south connections in the NoMA and Capitol Hill neighborhoods east of WUS. There is also a westbound bike lane on Columbus Circle.

Counts taken in July and August 2015 determined the AM peak hour for bicycle activity to be 8:15 AM to 9:15 AM for both roadway segments considered. In the PM, the peak hour was 5:00 PM to 6:00 PM for First Street NE and 5:15 PM to 6:15 PM for Massachusetts Avenue NE. Massachusetts Avenue had a higher number of riders during the AM and PM peak hours compared to riders on First Street NE. There were more southbound riders during the AM peak hour and more northbound riders during the PM peak hour (**Table 4-8**). Peak hour levels were estimated to be 10 percent higher in 2017 than in 2015, reflecting growing bicycle activity in the District.

Table 4-8. AM and Peak Hour Bicycle Activity, 2015 Counts and 2017 Estimates

On Street	Between	Peak Hour	North-Bound	South-Bound	AM Peak Hour Total (2015)	2017 Total Estimate
First Street NE	G Place NE / Massachusetts Ave NE	8:15 AM-9:15 AM	32	95	127	140
Massachusetts Avenue NE	Louisiana Ave NE/ E Street NE	8:15 AM-9:15 AM	82	99	181	199
First Street NE	G Place NE / Massachusetts Ave NE	5:00 PM-6:00 PM	64	51	115	127
Massachusetts Avenue NE	Louisiana Ave NE/ E Street NE	5:15 PM-6:15 PM	143	74	217	239

Source: DDOT, 2015. Counts conducted on July 28, 2015, and August 8, 2015.

Bikestation Washington DC, located west of historic station building on First Street NE, used to provide staffed bicycle parking at WUS. The facility provided space for more than 100 bicycles; private changing rooms and day-use lockers for rent; and bicycle rentals, repairs, and retail sales. It has ceased operation and is currently unused.

Bike rentals are available through Capital Bikeshare and several other companies. The Capital Bikeshare station at WUS, located on F Street NE in front of WUS, has 54 bicycle docks, making it one of the largest docking stations in the regional system. Additional Capital Bikeshare stations in the Local Study Area are located at North Capitol Street and F Street NW (21 docks), Second Street and G Street NE (19 docks), and North Capitol Street and G Place NE (17 docks). Bike and Roll provides bike rentals and bike tours from the Bikestation. Tours, including evening tours, are offered on a seasonal basis. Bike rentals are available year-round, weather permitting.

DDOT allows private dockless bikeshare providers to operate in the District. These services allow users to rent and park bicycles in a location of their choice. Representative usage data for these services are currently not available. Site visits confirmed that dockless bikes are available near WUS.

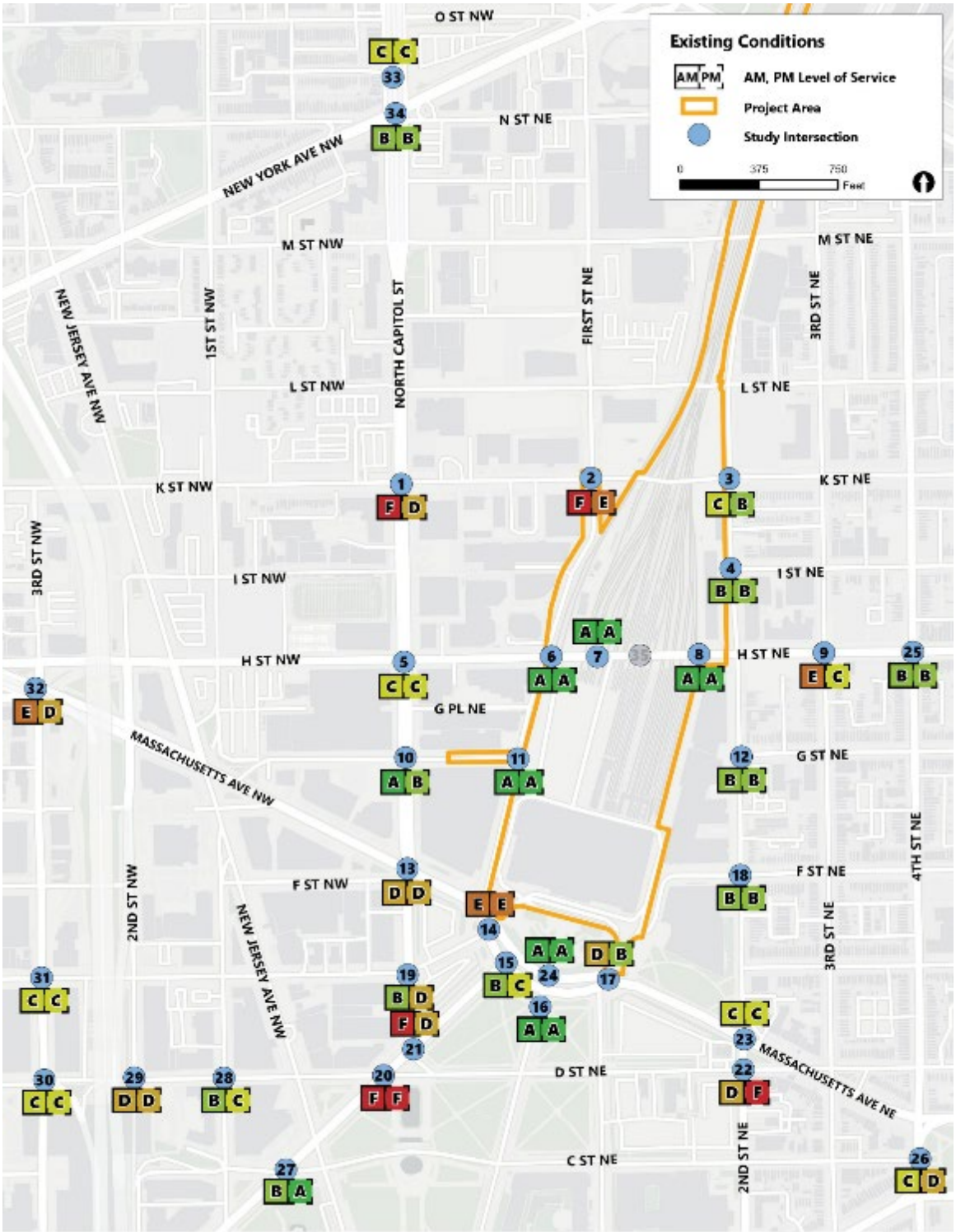
4.5.4.12 Vehicular Traffic

The road network around WUS consists of principal and minor arterials, collectors, and local streets. H Street, North Capitol Street, and Massachusetts Avenue (west of North Capitol Street) are principal arterials. E Street, K Street, and Massachusetts Avenue (east of North Capitol Street) are minor arterials. D Street, F Street, First Street, Second Street, and Delaware Avenue are collectors. The remaining streets within the Local Study Area are local streets.

The capacity analysis results for the 34 study intersections (see **Figure 4-5**) found that most of these intersections operate at an acceptable LOS except for the following ones, which operate at LOS F:

- North Capitol Street and K Street in the AM peak hour, due to heavy westbound and southbound traffic volumes.

Figure 4-5. Existing Levels of Service at Study Intersections



- First Street and K Street NE in the AM peak hours, also because of high westbound and southbound traffic volumes.[156]
- Louisiana Avenue and D Street NW in both peak hours because of heavy westbound and eastbound traffic volumes.
- Louisiana Avenue and North Capitol Street during the AM peak hour, due to the high volume of southbound vehicles attempting to turn right onto Louisiana Avenue from North Capitol Street.
- Second Street and D Street NE in the PM peak hour, because of heavy northbound and southbound traffic volumes.

LOS range from "A" being the best to "F" being the worst based on the average delay vehicles experience to clear the intersection. For signalized intersection, LOS F corresponds to an average delay greater than 80 seconds. For stop-controlled intersections, it corresponds to an average delay greater than 50 seconds. LOS E (average delay between 56 and 80 seconds for signalized intersections and between 36 and 50 seconds for stop-controlled ones) is typically considered the acceptable LOS threshold in the District.

LOS for the 34 study intersections are presented in Section 5.5.13, *Vehicular Traffic*, of Appendix C2, *Washington Union Station Expansion Project, Affected Environment Technical Report,* of the DEIS.[157]

4.5.4.13 Transportation Outside the Local Study Area

This section provides a broad overview of the existing transportation infrastructure in the Regional Study Area.

Regional Passenger Railroad Infrastructure

WUS sits in the middle of the region's intercity and commuter passenger railroad infrastructure. In the Regional Study Area, there are Amtrak stations at Rockville and New Carrollton in Maryland, and at Alexandria, Manassas, and Quantico in Virginia. Amtrak Northeast Regional service (with the exclusion of Rockville) and various Amtrak long-distance trains serve these stations. Multiple stations for the MARC and VRE commuter services are located within the Regional Study Area. A VRE railyard is in Prince William County, Virginia.

[156] Since 2017, DDOT has completed a "road diet" on K Street NE east of Second Street NE. This may have lowered LOS performance further.

[157] Available at: https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-draft-eis-appendix-c2-affected-environment.

Regional Transit Network

The region has a robust transit network. The WMATA Metrorail system consists of six lines and 91 stations, all within the Regional Study Area. As of 2016, annual ridership was 748,000.[158] WMATA's Metrobus system serves most of the region. Local jurisdictions provide additional transit bus service. These local services include: DC Circulator (District of Columbia); Ride On (Montgomery County, Maryland); The Bus (Prince George's County, Maryland); ART (Arlington County, Virginia); Driving Alexandria Safely Home (DASH bus) (Alexandria, Virginia); Fairfax Connector (Fairfax County, Virginia); The Q (Fairfax City, Virginia); OmniLink (Prince William County, Virginia); and LCT (Loudoun County, Virginia).

Regional Road Network

The regional road network is notable for high levels of traffic congestion. Major roadways within the Regional Study Area include various parkways and highways. Notable parkways, most under the control of NPS, include the George Washington Memorial Parkway; the Clara Barton Parkway; the Rock Creek and Potomac Parkway; the Baltimore-Washington Parkway; and Suitland Parkway. Major interstates and limited access highways include I-495 (the Capital Beltway), I-95, I-66, I-270, MD 200 (the Intercounty Connector), and U.S. 50.

Regional Bicycle Infrastructure Network

The region has a bicycle infrastructure network running throughout various jurisdictions. As of 2015, the District had 60 miles of bicycle lanes; Arlington County had 24 miles; and Montgomery County had 17 miles.[159] The MBT, which is a partially completed hiker-biker trail, extends from First and L Streets NE in the District to Silver Spring, Maryland.

4.5.4.14 Transportation Safety

Pedestrians and bicyclists face safety problems as they cross six lanes of traffic in front of WUS. There are also high pedestrian volumes at an un-signalized crosswalk in the southwest section of Union Station Drive, near the intersection with Massachusetts Avenue NE. The front of WUS and H Street are a challenge for bicyclists because of garage traffic and, for H Street, the grades, traffic volumes, and lack of accommodations. Union Station Drive does not have bicycle lanes and bicyclists must use the middle bus lane.

Seventy-two vehicle accidents occurred across all modes from 2012 to 2016 in front of WUS.[160] Approximately 5,465 reported vehicular accidents occurred in the Local Study Area, of which 10 percent

[158] Washington Metropolitan Area Transit Authority. 2016. *Metrorail Average Weekday Passenger Boardings*. Accessed from https://www.wmata.com/initiatives/plans/upload/2016_historical_rail_ridership.pdf. Accessed on August 14, 2023.

[159] National Capital Region Transportation Planning Board. 2015. *Bicycle and Pedestrian Plan for the National Capital Region.* Accessed from https://www.mwcog.org/documents/bicycle-and-pedestrian-plan/. Accessed on August 14, 2023.

[160] Metropolitan Police Department of the District of Columbia, Crash Data Management System – COBALT. Accessed from http://opendata.dc.gov/. Accessed on July 17, 2018.

resulted in injury and 3 percent were serious but not fatal. The intersections with the highest accident incidence were on roadways with high traffic volumes: North Capitol Street/H Street, North Capitol Street/New York Avenue, New York Avenue/First Street NE, and New York Avenue/Florida Avenue NE. Each had more than 100 vehicle accidents between 2012 and 2016. These locations, as well as several intersections on K Street NE east of the rail terminal overpass, had the highest incidence of vehicle accidents resulting in major injury.

Approximately 3 percent of all crashes in the Local Study Area involved a bicyclist or pedestrian being struck by a vehicle. The North Capitol Street corridor between H Street and New York Avenue had the highest incidence of pedestrian/bicycle crashes, with the intersection of North Capitol Street and New York Avenue having the most pedestrian/bicycle crashes of any single intersection in the Local Study Area. Other locations with relatively high numbers of cross-modal conflicts include First Street NE, which runs along the west side of the Project Area and features a Cycle Track; and First Street NW between D Street NW and New York Avenue.

4.6 Air Quality

This section describes existing conditions as they pertain to air quality as defined by the EPA under the Clean Air Act (CAA) of 1970 (42 U.S.C. § 7401 *et seq.*) and its amendments. Air quality refers to the condition of the ambient air and is determined through the measurement of air pollution. Ambient air is defined as the portion of the atmosphere (outside of buildings) to which the public has access. Air pollutant is a general term that refers to substances that degrade the quality of the atmosphere. Air pollution is the accumulation of air pollutants above standards and is of concern because of its demonstrated effects on human health. Urban air pollution is typically caused by mobile sources or stationary sources. Mobile sources include cars, trains, or trucks. Stationary sources include boilers or generators.

Under the CAA, EPA has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants to protect public health and welfare. There are six criteria air pollutants of nationwide concern because of their potential effect on public health and the environment: Carbon monoxide (CO); sulfur dioxide (SO_2); nitrogen dioxide (NO_2); ozone (O_3); particulate matter sized 10 micrometers or less (PM_{10}) and sized 2.5 micrometers or less ($PM_{2.5}$); and lead (Pb). EPA designates areas where measured concentrations of a given criteria pollutant are below the NAAQS as being in attainment for that pollutant. Areas where concentrations of a criteria pollutant are above the NAAQS are nonattainment areas. Areas recently moved from nonattainment to attainment status are maintenance areas.

The General Conformity Rule (see **Section 4.6.1**, *Regulatory Context and Guidance*) requires a federal agency to demonstrate to the State air agency, and the general public, that emissions caused by projects they propose will not interfere with the State's ability to attain and maintain the NAAQS. The General Conformity Rule applies to any Federal action in a nonattainment area. Under CAA section 176(c)(1)(A) and (1)(B), a federal agency must conform to the purpose of the applicable SIP, meaning that the proposed Federal activities will not cause any new violation of the NAAQS, increase the frequency or severity of any NAAQS violation, or delay timely attainment of the NAAQS or interfere with any interim

milestones or schedules. In recognition that Actions that result in insignificant emissions increases would not conflict with the applicable State Implementation Plan (SIP) the EPA developed de minimis thresholds based on an area's attainment designation. If the total of reasonably foreseeable direct and indirect emissions from the Federal action are below the applicable *de minimis* threshold rates, the emissions are exempt from the provisions of the General Conformity regulations. If a project would cause emissions of a criteria pollutant that exceed the applicable *de minimis*, a Conformity Determination must be performed.

The District was formerly nonattainment for CO and particulate matter; however, since the preparation of the DEIS, the area was redesignated to maintenance status when monitoring data showed pollutant concentrations achieved the NAAQS. Conformity requirements for both pollutants ceased in 2015 as CO had reached the end of its 20-year maintenance period and 1997 $PM_{2.5}$ NAAQS was revoked under the new $PM_{2.5}$ NAAQS State Implementation Plan (SIP) requirement rule. As such, *de minimis* thresholds are no longer applicable to CO and particulate matter emissions and a conformity determination is not required for these pollutants.

4.6.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance pertaining to air quality and relevant to the Project and the analysis in this Section include:

- CAA of 1970 (42 U.S.C. § 7401);
- Conformity Rule (40 CFR Parts 51 and 93);
- NAAQS (40 CFR Part 50);
- FRA *Procedures for Considering Environmental Impacts* (64 Federal Register [FR] 28545);
- Control of Hazardous Air Pollutants from Mobile Sources 2007 (72 FR 8427);[161]
- Federal Highway Administration (FHWA) *Updated Interim Guidance on Mobile Source Air Toxic Analysis in National Environmental Policy Act (NEPA) Documents*;[162]
- FHWA Technical Advisory T6640.8A;[163]

[161] U.S. Environmental Protection Agency. 2007. *Final Rule for Control of Hazardous Air Pollutants from Mobile Sources*. Accessed from https://www.epa.gov/mobile-source-pollution/final-rule-control-hazardous-air-pollutants-mobile-sources. Accessed on August 16, 2023.

[162] Federal Highway Administration. 2016. *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. Memorandum. Accessed from https://www.fhwa.dot.gov/environMent/air_quality/air_toxics/policy_and_guidance/msat/. Accessed on August 16, 2023.

[163] Federal Highway Administration. 2018. FHWA Technical Advisory T6640.8A. Accessed from https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx. Accessed on August 16, 2023.

- EPA *Guideline for Modeling Carbon Monoxide from Roadway Intersections*;[164]
- EPA's *Using Motor Vehicle Emission Simulator* (*MOVES) 2014 in Project-Level Carbon Monoxide Analyses*; and[165]
- EPA's *Emission Factors for Locomotives* guidance (EPA-420-F-09-025).[166]
- District policies, regulations, and guidance pertaining to air quality and relevant to the Project include:
- 20 DCMR 20-1 through 20-15, Air Quality, including 20 DCMR 20-2, General and Non-Attainment Areas Permits;[167]
- 20 DCMR 605, Control of Fugitive Dust;[168]
- 20 DCMR 900, Engine Idling;[169]
- 20 DCMR 1501, General Conformity; and[170]

[164] U.S. Environmental Protection Agency. 1992. *Guideline for Modeling Carbon Monoxide from Roadway Intersections*. Accessed from https://nepis.epa.gov/Exe/ZyNET.exe/2000F7L2.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1991+Thru+1994&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C91thru94%5CTxt%5C00000014%5C2000F7L2.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL. Accessed on August 16, 2023.

[165] U.S. Environmental Protection Agency. 2015. *Using MOVES2014 in Project-Level Carbon Monoxide Analyses*. Accessed from https://nepis.epa.gov/Exe/ZyPdf.cgi?Dockey=P100M2FB.pdf. Accessed on August 16, 2023.

[166] U.S. Environmental Protection Agency. 1997. *Emission Factors for Locomotives*. Accessed from https://nepis.epa.gov/Exe/ZyNET.exe/P1001Z8C.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1995+Thru+1999&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C95thru99%5CTxt%5C00000022%5CP1001Z8C.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL. Accessed on August 16, 2023.

[167] 20 District of Columbia Municipal Regulations Chapters 20-1 through 20-15, *Air Quality*. Accessed from http://dcrules.elaws.us/dcmr/t20. Accessed on August 16, 2023.

[168] 20 District of Columbia Municipal Regulations Chapter 6, *Control of Fugitive Dust*. Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/aqd.revch6_.pdf. Accessed on August 16, 2023.

[169] 20 District of Columbia Municipal Regulations Chapter 9, *Engine Idling*. Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/chapter9revised.pdf. Accessed on August 16, 2023.

[170] 20 District of Columbia Municipal Regulations Chapter 15, *General Conformity*. Accessed from http://dcrules.elaws.us/dcmr/20-1501. Accessed on August 16, 2023.

- 20 DCMR 7, Volatile Organic Compounds and Hazardous Air Pollutants.[171]

4.6.2 Study Area

The Local Study Area for air quality includes portions of the District near the air emission sources associated with the Project where the public has access to ambient air. It coincides with the Local Study Area for transportation (**Figure 4-3** above) to capture emissions from both stationary sources in the Project Area and mobile source emissions from roadway traffic associated with the Project.

The Regional Study Area (**Figure 4-6**) encompasses the jurisdictions that are members of MWCOG. This is the area within which MWCOG conducts regional air quality modeling.[172]

4.6.3 Methodology

Regional climate and meteorological conditions in the Regional Study Area were determined based on publicly available data from the National Oceanic and Atmospheric Administration and the National Weather Service. This information includes data on historical temperatures, precipitation, wind speeds, and distributions.

Existing ambient air quality conditions are described based on DOEE and EPA air quality monitoring data from sources such as the Ambient Air Monitoring Network Plans and the EPA AirData Database.

4.6.4 Existing Conditions

4.6.4.1 Regional Climate Setting

Regional climate and meteorological conditions can substantially affect air quality. Emission, transport, and dispersion of pollutants are highly dependent on wind speed, wind direction, air temperature, precipitation, humidity, and other meteorological factors. The District has a humid subtropical climate with hot and humid summers, cold winters, light snowfall, and annual precipitation occurring throughout the year.[173] Between 1991 and 2020, average monthly temperatures ranged from a low of 37.5 degrees Fahrenheit (˚F) in January to a high of 81 ˚F in July.[174] Predominant wind direction is from the west-northwest.

[171] 20 District of Columbia Municipal Regulations Chapter 7, *Volatile Organic Compounds and Hazardous Air Pollutants*. Accessed from https://dcregs.dc.gov/Common/DCMR/RuleList.aspx?ChapterNum=20-7&ChapterId=467. Accessed on August 16, 2023.

[172] Metropolitan Washington Council of Governments. FY 2017-2022 *Transportation Improvement Program - Amendment to Constrained Long-Range Transportation Plan (CLRP)*. November 2016. Accessed from http://www1.mwcog.org/clrp/resources/KeyDocs_2016.asp. Accessed on August 16, 2023.

[173] Vetmed Uni Vienna. 2017. *Koppen Classification: Cfa*. Accessed from http://koeppen-geiger.vu-wien.ac.at/usa.htm. Accessed on August 16, 2023.

[174] National Weather Service. 2022. *DCA Normals, Means, and Extremes*. Accessed from http://www.weather.gov/lwx/dcanme. Accessed on August 16, 2023.

Figure 4-6. Air Quality Regional Study Area

4.6.4.2 Ambient Air Quality

EPA has designated the District as a marginal nonattainment area for the 8-hour O_3 standard in an O_3 Transport Region; and a moderate maintenance area for CO and $PM_{2.5}$.[175] **Table 4-9** presents 2022 background concentrations of criteria pollutants in the ambient air measured at the monitoring location closest to the Project Area (McMillan Reservoir, 2500 First Street NW) as well as the corresponding NAAQS. Concentrations of all criteria pollutants were below the NAAQS. Concentrations of O_3 approached the NAAQS.

Table 4-9. 2022 Background Air Quality Concentrations (McMillan Reservoir Monitoring Location)

Pollutant	Averaging Period	Concentration	NAAQS
CO (parts per million [ppm])	8-hour	1.3	9
	1-hour	1.9	35
NO_2 (parts per billion [ppb])	1-hour	45	100
	Annual	9	53
O_3 (ppm)	8-hour	0.067	0.070
$PM_{2.5}$ (micrograms per cubic meter [µg/m^3])	Annual	6.9	12.0
	24-hour	17	35
PM_{10} (µg/m^3)	24-hour	0	150
SO_2 (ppb)	1-hour	4	75
Lead (µg/m^3) [1]	3-month	-	0.15

Source: EPA. 2022. *Air Quality Design Values*. Accessed from https://www.epa.gov/air-trends/air-quality-design-values. Accessed on February 28, 2024.
[1] Lead is no longer monitored in or around the District.

4.7 Greenhouse Gas Emissions and Resilience

This section reviews existing conditions pertaining to greenhouse gas (GHG) emissions, changing climate conditions, and resilience to changing precipitation patterns, sea level rise, and the frequency and intensity of extreme weather events.

GHGs are gases that trap heat in the atmosphere. Gases that are considered GHGs affect air quality and climate change. Some major GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (hydrofluorocarbons, perfluorocarbons, etc.). The precise sources of these pollutants, their effects on human health and general welfare, as well as their final disposition in the atmosphere vary considerably. Because CO_2 is the most common GHG, emissions are often measured in CO_2

[175] U.S. Environmental Protection Agency. *Nonattainment Areas for Criteria Pollutants (Green Book)*. Accessed from https://www.epa.gov/green-book. Accessed on August 16, 2023.

equivalent (CO_2e). For a given GHG, CO_2e is the amount of CO_2 that would have the same warming effect.

4.7.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that pertain to GHG and resilience that are relevant to the Project include:

- EO 13783, Promoting Energy Independence and Economic Growth;
- EO 13677, Climate Resilient International Development;
- EO 13834, Efficient Federal Operations;
- EO 14008, Tackling the Climate Crisis at Home and Abroad;
- EO 14057, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability;
- Environmental Protection Agency (EPA) *Greenhouse Gas Endangerment Finding*;[176] and
- EPA and USDOT *Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards* (2010 & 2012).[177,178]

District policies, regulations and guidance that pertain to GHG and resilience include:

- *Sustainable DC 2.0 Plan*;[179] and
- *Climate Ready DC*.[180]
- DC Law 22-257, *Clean Energy DC Omnibus Amendment Act of 2018*.

[176] U.S. Environmental Protection Agency. December 15, 2009. *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act (74 F.R. 66495).* Accessed from https://www.epa.gov/sites/production/files/2016-08/documents/federal_register-epa-hq-oar-2009-0171-dec.15-09.pdf. Accessed on August 16, 2023.

[177] U.S. Environmental Protection Agency & U.S Department of Transportation. May 7, 2010. *Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards* (75 F.R. 25324). Accessed from https://www.gpo.gov/fdsys/pkg/FR-2010-05-07/pdf/2010-8159.pdf. Accessed on August 16, 2023.

[178] U.S. Environmental Protection Agency & U.S Department of Transportation. October 15, 2012. *2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards* (77 F.R. 62624). Accessed from https://www.gpo.gov/fdsys/pkg/FR-2012-10-15/pdf/2012-21972.pdf. Accessed on August 16, 2023.

[179] District of Columbia. 2019. *Sustainable DC 2.0 Plan*. Accessed from https://sustainable.dc.gov/sdc2. Accessed on August 16, 2023.

[180] District Department of Energy and Environment. November 2016. *Climate Ready DC Plan: The District of Columbia's Plan to Adapt to Changing Climate.* Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/CRDC-Report-FINAL-Web.pdf. Accessed on August 16, 2023.

4.7.2 Study Area

The state of scientific knowledge of the dispersion and health effects of GHG emissions has not sufficiently advanced to accurately consider them as microscale levels; therefore, a Local Study Area was not defined for GHG. The GHG Regional Study Area is the same as the Air Quality Study Area and is the defined jurisdiction of MWCOG (**Figure 4-6**). For climate change impacts and resiliency, the Local Study Area includes the Project Area and surrounding areas within one-half mile (**Figure 4-7**). The Regional Study Area for resiliency is the same as for GHG.

4.7.3 Methodology

Global, national, and regional trends in GHG emissions and climatic changes were reviewed to characterize the existing conditions. Existing local and regional GHG emissions, including the operations and maintenance of WUS and climate change issues, were considered.

4.7.4 Existing Conditions

4.7.4.1 Greenhouse Gas Emissions and Climate Trends

Climate and meteorological conditions can substantially affect air quality and GHG emissions across the region. These regional conditions and resulting potential impacts to the natural and built environment are summarized in the Intergovernmental Panel on Climate Change's latest synthesis report,[181] the *U.S. Third National Climate Assessment*, and *Climate Ready DC*.[182]

The District's 2019 GHG emissions inventory found 7,170,450 metric tons of CO_2e in the District, a reduction of 32 percent compared to District emissions in 2006.[183] Buildings and energy use produced the majority of CO_2e emissions (4,955,274 metric tons of CO_2e or 69 percent). Transportation accounted for 24 percent CO_2e emissions in the District, and emissions related to waste, water and wastewater, and fugitive emissions made up the remaining 7 percent of emissions. The District has set a GHG reduction target of 56 percent by 2032 and carbon neutrality by 2045.[184] The 2032 benchmark is approximately 4,614,141 metric tons of CO_2e.

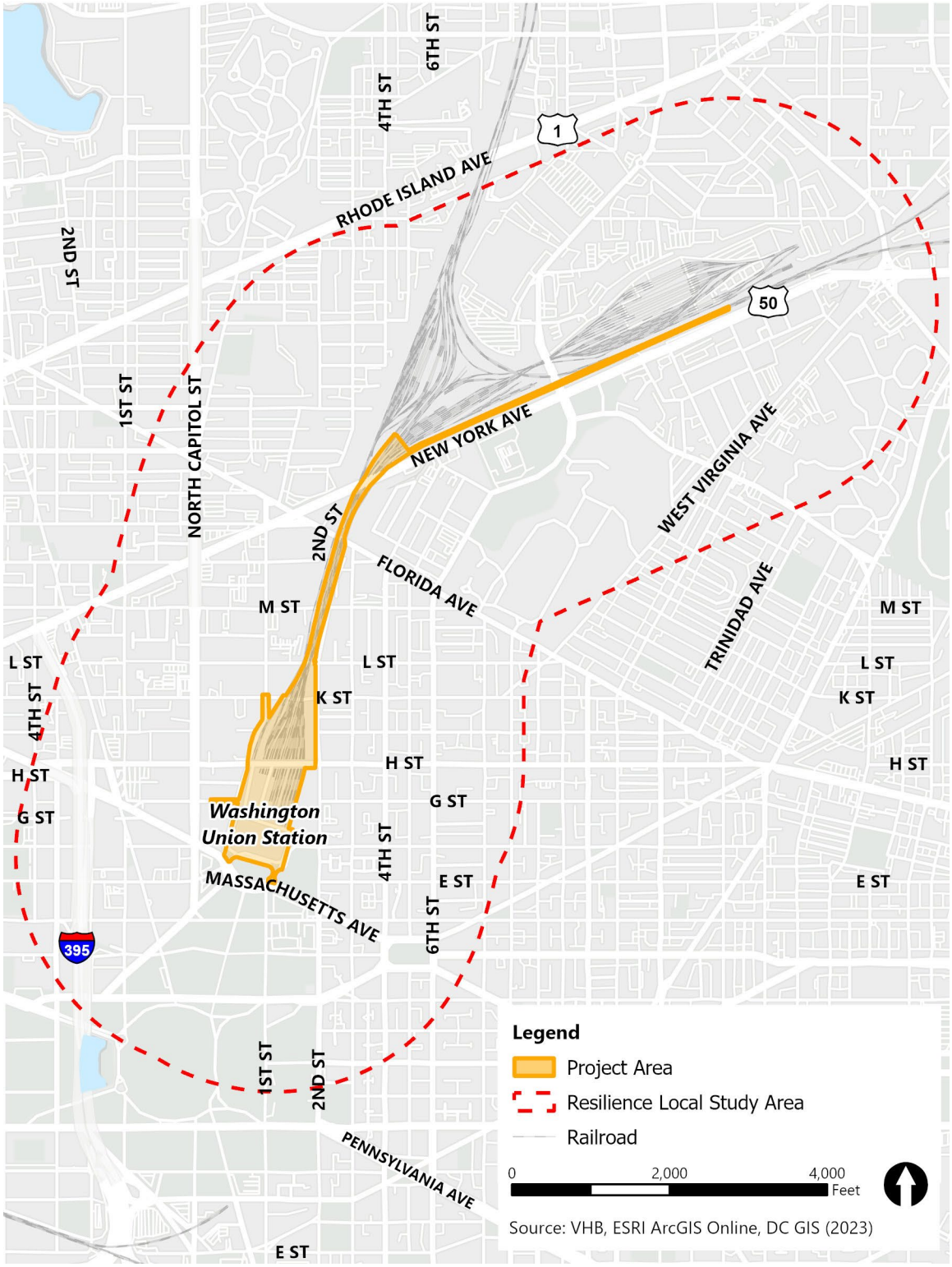
[181] Intergovernmental Panel on Climate Change. 2014. *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Accessed from http://ar5-syr.ipcc.ch/. Accessed on August 16, 2023.

[182] District Department of Energy and Environment. November 2016. *Climate Ready DC Plan: The District of Columbia's Plan to Adapt to Changing Climate.* Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/CRDC-Report-FINAL-Web.pdf. Accessed on August 16, 2023

[183] District Department of Energy and Environment. 2020. *District of Columbia Greenhouse Gas Inventory 2006-2020*. Accessed from https://doee.dc.gov/service/greenhouse-gas-inventories. Accessed on August 16, 2023.

[184] District Department of Energy and Environment. *Clean Energy DC: The District of Columbia Climate and Energy Action Plan. August 2018*. Accessed from https://doee.dc.gov/cleanenergydc. Accessed on August 16, 2023. *Carbon Free DC* (https://storymaps.arcgis.com/stories/034104405ef9462f8e02a49f2bd84fd9) is the District's strategy to become carbon neutral by 2045 and achieve the goals defined in Clean Energy DC

Figure 4-7. Resilience Local Study Area



4.7.4.2 Regional and District Climate Trends

The Northeast region has recorded an increase in average annual temperature of almost 2˚F between 1895 and 2011. Most of the southern portion of the Northeast region is projected to experience more days per year above 90˚F by mid-century.[185] The Northeast has also experienced a 70 percent increase in precipitation volume during extreme storm events. The frequency and intensity of heavy downpours will likely continue through the end of the century.

Sea level in the Northeast region has risen approximately 1 foot since 1990 due to the melting of Greenland and West Antarctic ice sheets and the thermal expansion of the oceans, exceeding the global average of 8 inches, resulting in increased regional coastal flooding. Sea level rise will likely continue to accelerate local land subsidence, which will pose a major coastal flooding threat.[186]

Consistent with regional trends, the District's average annual temperature has increased by more than 2˚F in the last 50 years. The District experiences an average of 30 dangerously hot days per year (highs greater than 95˚F). As average temperature is projected to continue rising, the District is expected to experience hot days and heatwaves more frequently. District annual precipitation volumes have not changed but more precipitation has been occurring in the fall and winter, and less in the summer.[187]

The Potomac River and Anacostia River water levels have risen 11 inches in the past 90 years, resulting in a 300 percent increase of flooding along riverfronts.[188] As the land along the shores of the Potomac and Anacostia Rivers sinks, sea level is rising, allowing extreme high tides to reach farther inland. At the official tide gauge along the District's Southwest Waterfront, sea level has risen six or seven inches during the last 50 years. If current trends continue, sea level in the District is likely to rise 16 inches to 4 feet in the next century.[189] The District will likely become more vulnerable to storm surge flooding from coastal storms and hurricanes.

[185] U.S. Global Research Program. 2014. *National Climate Assessment*. Accessed from https://nca2014.globalchange.gov/report. Accessed on August 16, 2023.

[186] Horton, et al. 2014: Ch. 16: *Northeast. Climate Change Impacts in the United States: The Third National Climate Assessment*. Accessed from https://nca2014.globalchange.gov/report. Accessed on August 16, 2023.

[187] District Department of Energy and Environment. 2016. *Climate Ready DC: The District of Columbia's Plan to Adapt to a Changing Climate.* Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/CRDC-Report-FINAL-Web.pdf. Accessed on August 16, 2023.

[188] District of Columbia Department of Energy & Environment. 2016. *Climate Ready DC: The District of Columbia's Plan to Adapt to a Changing Climate*. Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/CRDC-Report-FINAL-Web.pdf. Accessed on August 16, 2023.

[189] U.S Environmental Protection Agency. November 2016. *Climate Change Indicators in the United States: What Climate Change Means for the District of Columbia*. Accessed from https://nepis.epa.gov/Exe/ZyPDF.cgi/P100Q5CG.PDF?Dockey=P100Q5CG.PDF. Accessed on August 16, 2023.

4.8 Energy Resources

This section describes the existing conditions pertaining to energy use at WUS. The discussion focused on operation-related energy use. This includes energy used at WUS (including the parking garage) for lighting, plug loads, operations-related equipment, heating, and cooling. The energy used at WUS is predominantly generated using fossil fuels, which emit GHGs and air pollutants.

4.8.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that pertain to energy resources include:

- Sections of 42 U.S.C. (energy conservation, decreased dependence on foreign oil, use of alternative fuels, and increased efficiency in energy use);[190]
- EO 13834 Efficient Federal Operations;[191]
- Energy Independence and Security Act of 2007;[192]

District policies, regulations, and guidance that may pertain to energy resources include:

- The District of Columbia Energy Conservation Code (ECC);[193]
- The Green Building Act of 2006;[194]
- 2017 District of Columbia Building Codes.[195]
- 2017 District of Columbia Green Construction Code.[196]
- Green Area Ratio (GAR)[197]

[190] 42 U.S.C. *The Public Health and Welfare*. Accessed from http://uscode.house.gov/browse/prelim@title42&edition=prelim. Accessed on August 16, 2023.

[191] EO 13834 Regarding Efficient Federal Operations. Accessed from https://www.fedcenter.gov/programs/eo13834/. Accessed on August 16, 2023. Note that EO 13834 was revoked by EO 13990 except for Sections 6, 7, and 11.

[192] *Summary of the Energy Independence and Security Act*. Accessed from https://www.epa.gov/laws-regulations/summary-energy-independence-and-security-act. Accessed on August 16, 2023.

[193] District of Columbia Department of Buildings. *2017 District of Columbia Energy Conservation Code*. Accessed from https://dob.dc.gov/sites/default/files/dc/sites/dob/publication/attachments/2017%20DC%20Energy%20Code.pdf. Accessed on February 9, 2024.

[194] District of Columbia. *Green Building Act of 2006*. Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/Green_Building_Act_of_2006_B16-515.pdf. Accessed on August 24, 2023.

[195] District of Columbia Department of Buildings. *2017 Building Codes*. Accessed from https://dob.dc.gov/node/1615636. Accessed on October 26, 2022.

[196] District of Columbia Department of Buildings. *2017 Green Construction Code*. Accessed from https://dob.dc.gov/sites/default/files/dc/sites/dob/publication/attachments/2017%20DC%20Green%20Construction%20Code.pdf. Accessed on February 9, 2024.

[197] District Department of Energy and Environment. *Green Area Ratio*. Accessed from https://doee.dc.gov/service/green-area-ratio-overview. Accessed on October 26, 2022.

- The Clean and Affordable Energy Act of 2008;[198]
- DC Law 22-257, *Clean Energy DC Omnibus Amendment Act of 2018*;
- DC *Sustainable DC 2.0 Plan*;[199] and
- DC *Clean Energy DC: The District of Columbia Climate and Energy Action Plan*.[200]

4.8.2 Study Area

The Local Study Area for energy resources is the portion of the Project Area extending from the front of WUS up to K Street (**Figure 4-8**) to account for operation-related energy use within the Project Area. The Regional Study Area includes the District.

4.8.3 Methodology

The data sources used to describe energy use at WUS include utility bills from the local electric utility, Pepco, and bills from the Capitol Power Plant.[201]

4.8.4 Existing Conditions

4.8.4.1 Electricity

WUS uses locally supplied electricity from Pepco at an average of 1,260,000 kilowatt hours (kWh) of electricity per billing period (nine billing periods per year). In 2015, WUS (including the parking garage) used approximately 11,400,000 kWh. The electricity used at WUS is primarily generated from fossil fuels (approximately 60 percent from coal, natural gas, and oil).[202]

[198] *Clean and Affordable Energy Act of 2008*. Accessed fromhttps://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/CAEA_of_2008_B17-0492.pdf. Accessed on August 24, 2023.

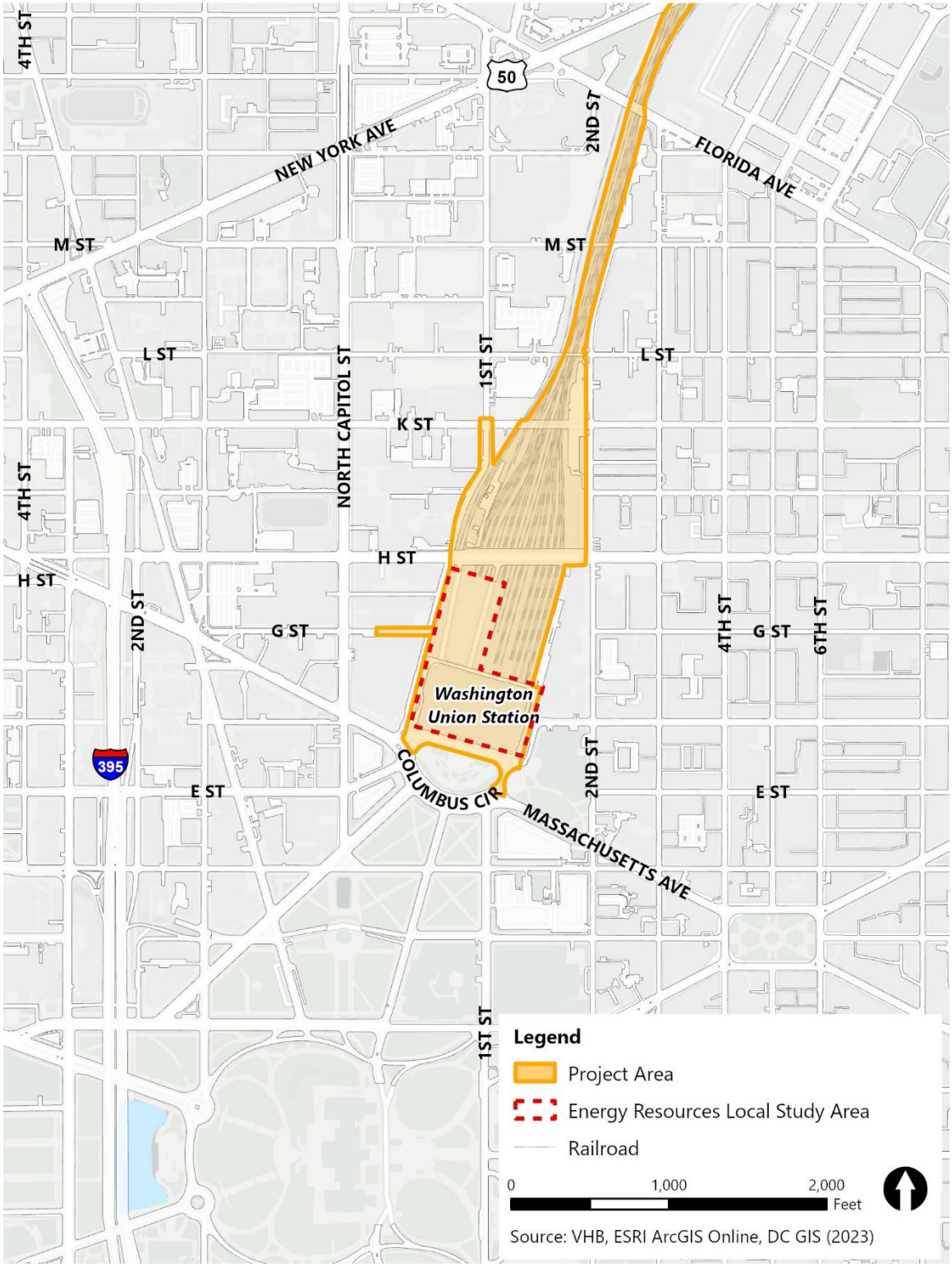
[199] District of Columbia. 2019. *Sustainable DC 2.0 Plan*. Accessed from https://sustainable.dc.gov/sdc2. Accessed on August 14, 2023.

[200] District Department of Energy & Environment. *Clean Energy DC: The District of Columbia Climate and Energy Action Plan*. *August 2018.* Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/page_content/attachments/Clean%20Energy%20DC%20-%20Full%20Report_0.pdf. Accessed on August 16, 2023.

[201] WUS energy use is based on pre-COVID pandemic data, which reflects the typical baseline or existing condition of WUS under normal circumstances.

[202] Pepco. 2022. District of Columbia Environmental Fuel Source Information. Accessed from https://www.pepco.com/SiteCollectionDocuments/MyAccount/MyBillUsage/BillInserts/2023/Pepco%20DC%20Enviro%20Fuel%20Mix%20Insert_2023-A.pdf. Accessed on September 19, 2023.

Figure 4-8. Energy Local Study Area



4.8.4.2 Heating

Architect of the Capitol (AOC)'s Capitol Power Plant provides steam used to heat WUS. The plant uses natural gas to generate its steam. In 2014, heating WUS consumed approximately 15,900 thousand pounds of Capitol Power Plant steam. The highest steam consumption occurred from January through March, which are the coldest months of the year. Approximately 19 billion British Thermal Units (BTUs) of natural gas were used to produce the 15,900 thousand pounds of steam that heated the facility in 2014.

4.8.4.3 Cooling

WUS is cooled using chilled water from the Capitol Power Plant. The plant chillers run on electricity. In 2014, WUS consumed 30,999,659,000 BTUs of chilled water for cooling. The highest level of consumption took place in July 2014 (4,922,527,000 BTUs) and the lowest one in February 2014 (1,019,348,000 BTUs).

4.9 Land Use, Land Planning and Property

This section describes existing conditions pertaining to land use, land planning, and property. It identifies existing land uses, property ownership, local zoning, development, and master plans pertinent to the Project.

4.9.1 Regulatory Context and Guidance

Policies, regulations, and guidance that pertain to land use, land planning, and property include:

- NCPC, *Comprehensive Plan for the National Capital – Federal Elements*; [203]
- Council of the District of Columbia (DC Council) *Comprehensive Plan for the National Capital – District Elements*;[204]
- District of Columbia *Zoning Regulations* 2016;[205]
- *Mount Vernon Triangle Action Agenda*;[206]

[203] National Capital Planning Commission. 2021. *Comprehensive Plan for the National Capitol: Federal Elements*. Accessed from https://www.ncpc.gov/compplan/. Accessed on August 16, 2023.

[204] District of Columbia Office of Planning. 2021a. *The Comprehensive Plan for the National Capital: District Elements*. Accessed from https://planning.dc.gov/node/637932. Accessed on August 14, 2023.

[205] District of Columbia. 2016. *DC Municipal Regulations, Title 11 – Zoning Regulations of 2016*. Accessed from https://www.dcregs.dc.gov/Common/DCMR/ChapterList.aspx?TitleId=32. Accessed on August 16, 2023.

[206] District of Columbia Office of Planning. 2003. *The Mount Vernon Triangle Action. Creating a Vibrant new Downtown Neighborhood.* Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/Mount%20Vernon%20Triangle%20Action%20Agenda.pdf. Accessed on August 16, 2023.

- *NoMa Vision Plan and Development Strategy*;[207]
- *Northwest One Redevelopment Plan*;[208]
- *H Street Corridor Strategic Development Plan*;[209]
- *Move DC 2021;*[210]
- *Downtown East Re-Urbanization Strategy*;[211]
- *Ward 5 Works*;[212] and
- *Florida Avenue Market Small Area Plan*.[213]

4.9.2 Study Area

The Local Study Area for land use, land planning, and property is the Project Area and, south of K Street, the zoning districts within one-half mile of the Project Area. North of K Street, where the Project Area consists solely of railroad tracks, the Local Study Area includes zoning districts within only one-quarter mile of the Project Area (**Figure 4-9**).

The Regional Study Area includes the neighborhoods adjacent to the Project Area. Its outer limits are the limits of the Atlas District/H Street Corridor, Capitol Hill, the Monumental Core, NoMA,[214] and the Mount Vernon Triangle neighborhoods (**Figure 4-9**).

[207] District of Columbia Office of Planning. 2006a. *NoMA Vision Plan and Development Strategy.* Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/Section%25201-%2520Introduction.pdf. Accessed on August 16, 2023.

[208] District of Columbia Office of Planning. 2006b. *Northwest One Redevelopment Plan.* Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/NorthwestOneFinal.pdf. Accessed on August 16, 2023.

[209] District of Columbia Office of Planning. 2004. *Revival.* The *H Street NE Strategic Development Plan.* Accessed from https://planning.dc.gov/publication/h-street-corridor-revitalization-main-page. Accessed on August 16, 2023.

[210] District Department of Transportation. 2021b. *Move DC. The District of Columbia's Multimodal Long-Range Transportation Plan*. Accessed from https://movedc.dc.gov/. Accessed on August 16, 2023.

[211] District of Columbia Office of Planning. 2019. *The Downtown East Re-Urbanization Strategy*. Accessed from https://planning.dc.gov/downtown-east. Accessed on August 14, 2023.

[212] District of Columbia Office of Planning. 2014. *Ward 5 Works*. Ward 5 Industrial Land Transformation Study. Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/W5_07142014_FINALfinalSmallest.pdf. Accessed on August 14, 2023.

[213] District of Columbia Office of Planning. 2009. *Florida Avenue Market Small Area Plan*. Accessed from https://planning.dc.gov/publication/florida-avenue-market-small-area-plan-main-page. Accessed on August 14, 2023.

[214] North of Massachusetts Avenue.

Figure 4-9. Land Use, Planning, and Property Local and Regional Study Areas

4.9.3 Methodology

Existing land use conditions and local zoning and master plans in the area were identified using data from the DC Office of Planning (DCOP). Master plan information from NCPC was also consulted. Property ownership was determined using data from the District Office of Zoning (DCOZ) and the Office of Tax and Revenue. Information on zoning districts was based on the DCOZ and the District's Municipal Regulations.

Near-term development projects in the Study Area were identified using information from DCOP, District Department of Consumer and Regulatory Affairs,[215] DCOZ, the District Zoning Commission, the District Board of Zoning Adjustment, the District Office of the Deputy Mayor for Planning and Economic Development, the Mount Vernon Triangle Business Improvement District (BID), the NoMA BID, the Capitol Hill BID, and Advisory Neighborhood Commissions.

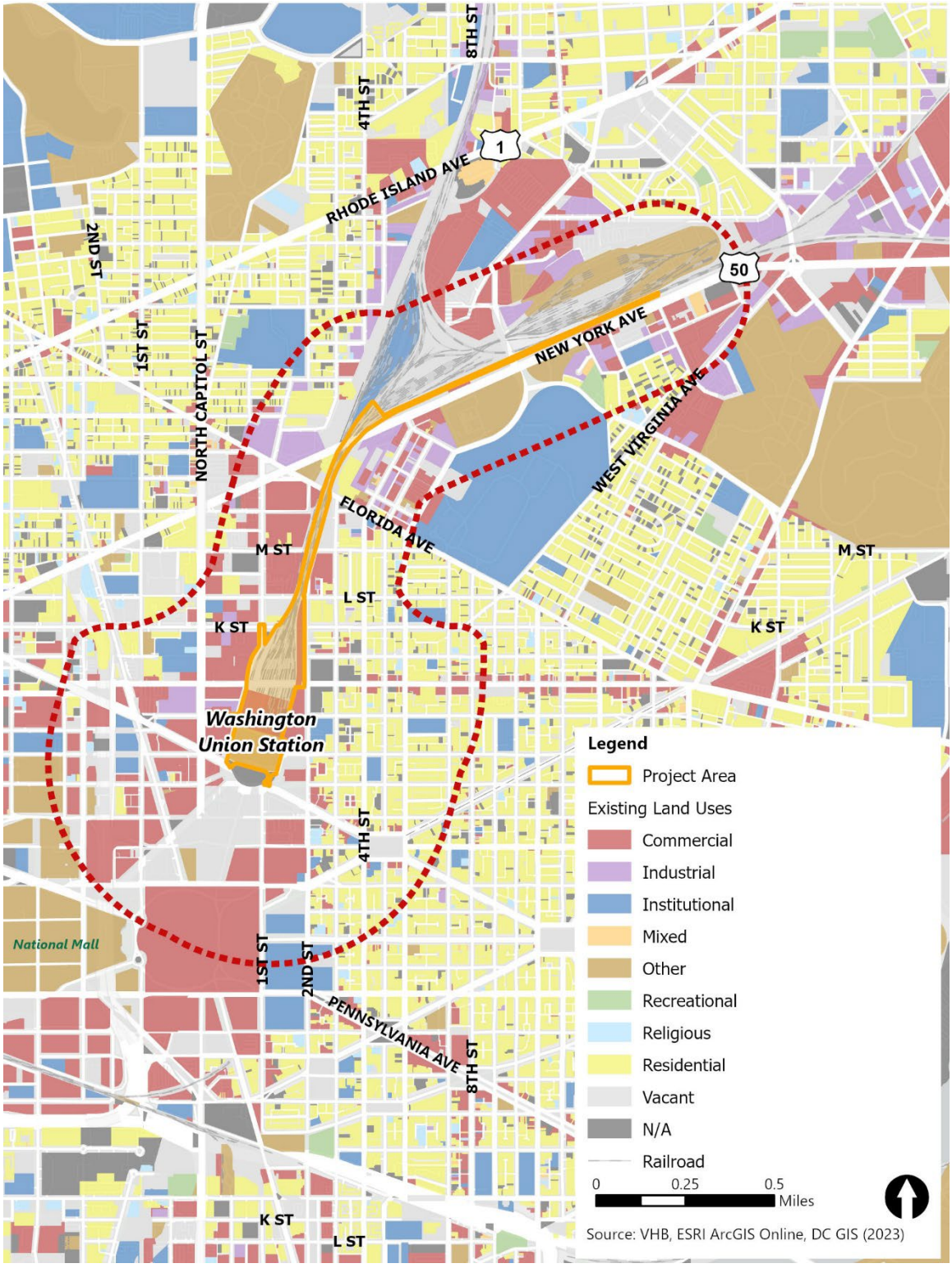
4.9.4 Existing Conditions

4.9.4.1 Land Use, Zoning, and Local and Regional Planning

WUS is an active transportation hub, intercity and regional rail hub, shopping destination, and office space. The parking garage and bus facility serve intercity, tour, and charter buses, as well as private vehicles. WUS has approximately 108,000 square feet of retail uses. The Federal government, acting through FRA, owns the WUS historic station building and the Claytor Concourse; the parking garage and bus facility and underlying real property; and the rail terminal north of the historic station building; this property is leased to USRC. As Federal property, they are not subject to local zoning. However, they have been zoned under the Production, Distribution, Repair (PDR)-3 zone, which permits high-density commercial and PDR activities employing a large workforce. **Figure 4-10** shows the diversity of land uses in the Local Study Area around WUS. To the south is the Monumental Core of Washington. This area includes Columbus Plaza, a park managed by NPS immediately adjacent to WUS. Further south from Columbus Plaza are surface parking lots and parks, congressional office buildings, and the U.S. Capitol Building, all managed by the AOC.

[215] In 2022, the Department of Consumer and Regulatory Affairs was replaced by two new agencies: the Department of Buildings and the Department of Licensing and Consumer Protection.

Figure 4-10. Local Study Area Land Uses



In recent years, land use in the Local Study Area has undergone intense development activity. Development is also planned for the privately owned air rights above the WUS rail terminal. This area has a special zoning designation of Union Station North (USN), which permits maximum heights from 90 to 130 feet above the crest of the H Street Bridge sidewalk, with 20 feet of inhabitable penthouse potential. The zoning designation supports mixed uses for residential, retail, hotel, and office. Altogether, development activity in the Local Study Area is expected to deliver approximately 18,000 residential units, 1,200,000 square feet of retail, 7,300,000 square feet of office space, 1,233 hotel rooms, and 3,214,000 square feet of mixed-use space.[216]

The Local and Regional Study Areas overlap with several neighborhoods, as shown in **Figure 4-9** above. These neighborhoods consist of varying land uses and property types. The following paragraphs briefly characterize the neighborhoods. Because both the Local and the Regional Study Areas include parts of each neighborhood, these brief descriptions address both study areas, as specified.

- **Capitol Hill:** This historic neighborhood extends to the southeast of WUS between F Street NE to the north; 11th and 14th Streets NE to the east; the Southeast Freeway (I-695) to the south; and the U.S. Capitol Complex to the west. Within the Local Study Area, it includes rowhouses along residential streets as well as denser residential and commercial uses. Adjacent to WUS are the Thurgood Marshall Federal Building and the Securities and Exchange Commission Building. Within the Regional Study Area, the neighborhood is predominantly residential, characterized by rowhouses along with commercial (largely along 8th Street SE and Pennsylvania Avenue) and educational uses. It is largely zoned RF-1, a zoning that promotes rowhouses. The neighborhood has a BID.
- **Atlas District/H Street Corridor:** The corridor is bounded by Second Street NE to the west, Florida Avenue NE to the north, 15th Street NE to the east, and F Street NE to the south. The H Street Corridor within both the Local and the Regional Study Areas has mixed commercial and residential uses and is an active street with many restaurants and bars. Off H Street, the neighborhood is largely comprised of rowhouses with some local education uses. While much of the neighborhood is zoned RF-1, H Street, the main entertainment district, is within the H Street Mixed Use zone, with different sub-districts that promote either housing, neighborhood retail, or entertainment uses. The corridor also has several Planned Unit Developments where specific development proposals are approved by the District's Zoning Commission.[217]
- **NoMA:** This neighborhood is bounded by New York Avenue, Florida Avenue, the WUS tracks, Massachusetts Avenue, and New Jersey Avenue. It will be the densest mixed-use

[216] As noted above, development projects in the Study Area were identified using information from DCOP, District Department of Consumer and Regulatory Affairs, DCOZ, the District Zoning Commission, the District Board of Zoning Adjustment, the District Office of the Deputy Mayor for Planning and Economic Development, the Mount Vernon Triangle BID, the NoMA BID, the Capitol Hill BID, and Advisory Neighborhood Commissions.

[217] Planned Unit Developments can be approved in many parts of the District, subject to a finding by the Zoning Commission that the proposed development would not be inconsistent with the District's Comprehensive Plan.

neighborhood in the District at full build out. Most of it is within the Local Study Area. Near WUS, NoMA is largely commercial and residential, with institutional uses more distant. The Postal Square Building, owned by the United States Postal Service (USPS), the U.S. Government Publishing Office (GPO) Warehouse #4, and the District's Housing Authority headquarters are in this area. The areas near WUS are zoned D-5, a downtown zone that promotes high-density commercial and mixed uses. Within the Regional Study Area, NoMA is notable for a mix of office and residential mixed-use development, with some Federal uses, and parking lots that are awaiting redevelopment. The neighborhood has a BID.

- **Mount Vernon Triangle:** Mount Vernon Triangle is the area bounded by New York Avenue NW, New Jersey Avenue NW, Massachusetts Avenue NW, and 7th Street NW. The neighborhood has a Community Improvement District (CID) with the same footprint. The area is fast-changing and is characterized by a mixture of residential and office buildings with ground-floor retail and some remaining surface parking lots slated for redevelopment. The neighborhood is largely zoned D-4-R, which promotes high-density residential and mixed-use development and requires ground floor windows and entrances. The neighborhood has a BID.
- **Monumental Core:** The Monumental Core includes the U.S. Capitol Complex, the National Mall, and the Smithsonian museums. Some private office uses are present, in addition to Federal office buildings and headquarters. Much of the land is Federally owned and in Federal use, and therefore, not subject to zoning. Other areas are designated as D-4 zones, which are areas that provide for the orderly development and use of lands and structures in areas the Comprehensive Plan generally characterizes as Central Washington and appropriate for a high-density mix of office, retail, service and residential, entertainment, lodging, institutional and other uses, often grouped in neighborhoods with distinct identities.[218]
- **Areas Adjacent to the Tracks:** The tracks north of K Street, which are within the Project Area, are owned by Amtrak via its subsidiary, the Washington Terminal Company. The part between K Street and Florida Avenue NE is zoned MU-9, permitting high-density mixed-use activities.[219] Between Florida Avenue NE and the end of the tracks within the Project Area, the tracks are zoned PDR-3.

  Between K Street and Florida Avenue, uses immediately adjacent to the east side of the tracks are primarily mixed-use residential development, with new structures just south of Florida Avenue completed as recently as 2022. On the west side of the tracks there are high density office, residential, and mix use buildings, with some parking lots.

[218] District of Columbia Office of Planning. *Downtown (D) Zones – D-4*. Accessed from https://handbook.dcoz.dc.gov/pages/downtown-d-zones. Accessed on August 17, 2023.

[219] District of Columbia Office of Planning. *Mixed-Use (MU) Zones – MU-9*. Accessed from https://handbook.dcoz.dc.gov/pages/mixed-use-mu-zones. Accessed on August 17, 2023.

Between Florida Avenue and the northern limit of the Project Area, adjacent land uses are largely industrial, including Union Market, the WMATA Brentwood facility, Amtrak Wedge Yard, Ivy City Yard, and the Brentwood light industrial area. These areas are zoned PDR-4 and are owned by transportation agencies including WMATA and Amtrak; private entities; and USPS. Other nearby uses on the east side include Gallaudet University and commercial and residential uses in the Ivy City neighborhood. The areas on the east side of the tracks are zoned PDR, or RF-1, allowing for rowhouse uses. Properties are largely privately owned, but the Federal government owns parcels along New York Avenue that are used for NPS maintenance activities or leased to other entities.

4.10 Noise and Vibration

This section describes existing noise and vibration levels near WUS.

4.10.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that pertain to noise and vibration that are relevant to the Project include:

- FRA High-Speed Ground Transportation Noise and Vibration Impact Assessment;[220]
- Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual;[221] and
- FHWA, Procedures for Abatement of Highway Traffic Noise and Construction Noise (23 CFR Part 772).[222]

District of Columbia (District) policies, regulations, and guidance include:

- DDOT Noise Policy[223] (January 2011); and
- District Noise Ordinance (DCMR Chapter 20-27).

[220] Federal Railroad Administration. 2012. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*. Report DOT/FRA/ORD-12/15. Accessed from https://www.fra.dot.gov/eLib/Details/L04090. Accessed on August 17, 2023.

[221] Federal Transit Administration. September 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. Accessed from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed on August 24, 2023.

[222] 23 CFR Part 772 *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. Accessed from https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0772.htm. Accessed on August 17, 2023.

[223] District Department of Transportation. January 10, 2011. *District Department of Transportation Noise Policy.* Accessed from http://ddotsites.com/documents/environment/Files/References/14_DDOT_Noise_Policy.pdf. Accessed on August 17, 2023.

4.10.2 Study Area

4.10.2.1 Study Area for Operational Noise and Vibration

The operational noise and vibration Local Study Area includes the Project Area and noise- and vibration-sensitive receptors within 600 feet from the Project Area. It also includes receptors within 200 feet from roads in the traffic Study Area and from designated truck routes (**Figure 4-11**).

4.10.2.2 Study Area for Construction Noise and Vibration

The Study Areas for construction noise and vibration extend from the Project Area to locations where noticeable noise and vibration effects may occur. The stationary source construction noise Study Area encompasses land within 500 feet from the edge of the Project Area (see **Figure 4-12**). It is based on the most stringent applicable stationary noise limit (65 A-weighted decibel [dBA] Lmax); the maximum sound emissions from construction equipment excluding pile driving (90 dBA at 50 feet); and sound propagation conditions (which include intervening buildings).

The stationary source construction vibration Study Area is subsumed within the construction noise study area. It extends 200 feet from the edge of the Project Area. It is based on the most stringent limits for potential human annoyance (65 vibration decibels [VdB]) and the maximum vibration emissions from construction equipment (typical pile driving, 104 VdB at 25 feet).

The mobile source construction noise Study Area was defined based on the transportation Local Study Area (see **Figure 4-3**) and the location of established truck routes in the District. The Study Area includes receptors 200 feet from the roads anticipated to be used by construction trucks. It is approximately bounded by D Street (to the south); 3rd Street (to the east south of M Street); 6th Street (to the east north of M Street); Brentwood Parkway and New York Avenue (to the northeast); R Street, Harry Thomas Way NE, and Eckington Place NE (to the northwest); and North Capitol Street (to the west).

The mobile source construction vibration Study Area was defined similarly to the mobile source construction noise Study Area, except that it includes receptors within 50 feet of the roadways where there is potential for perceptible vibration and human annoyance from heavy trucks.

Figure 4-11. Operational Noise and Vibration Local Study Area

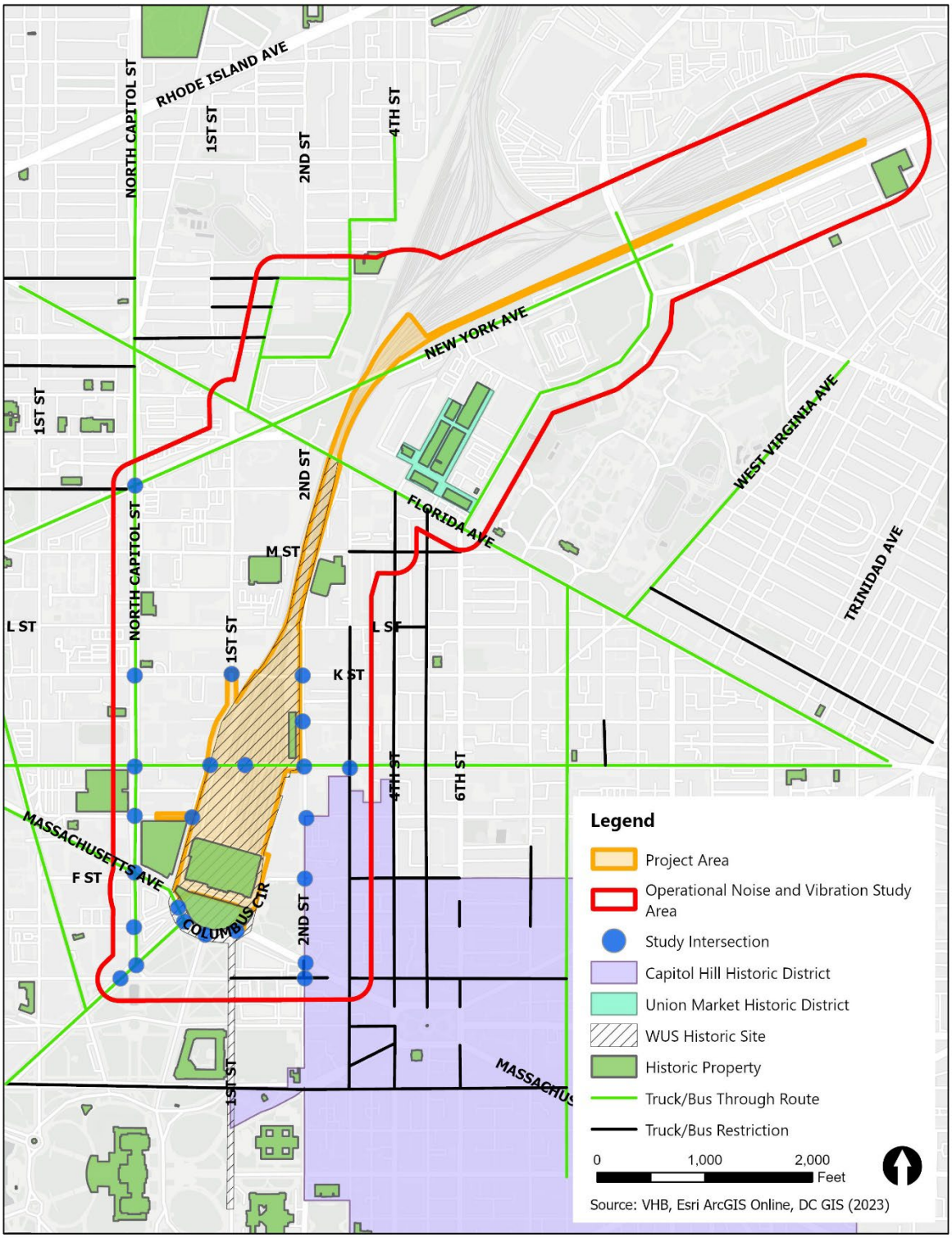
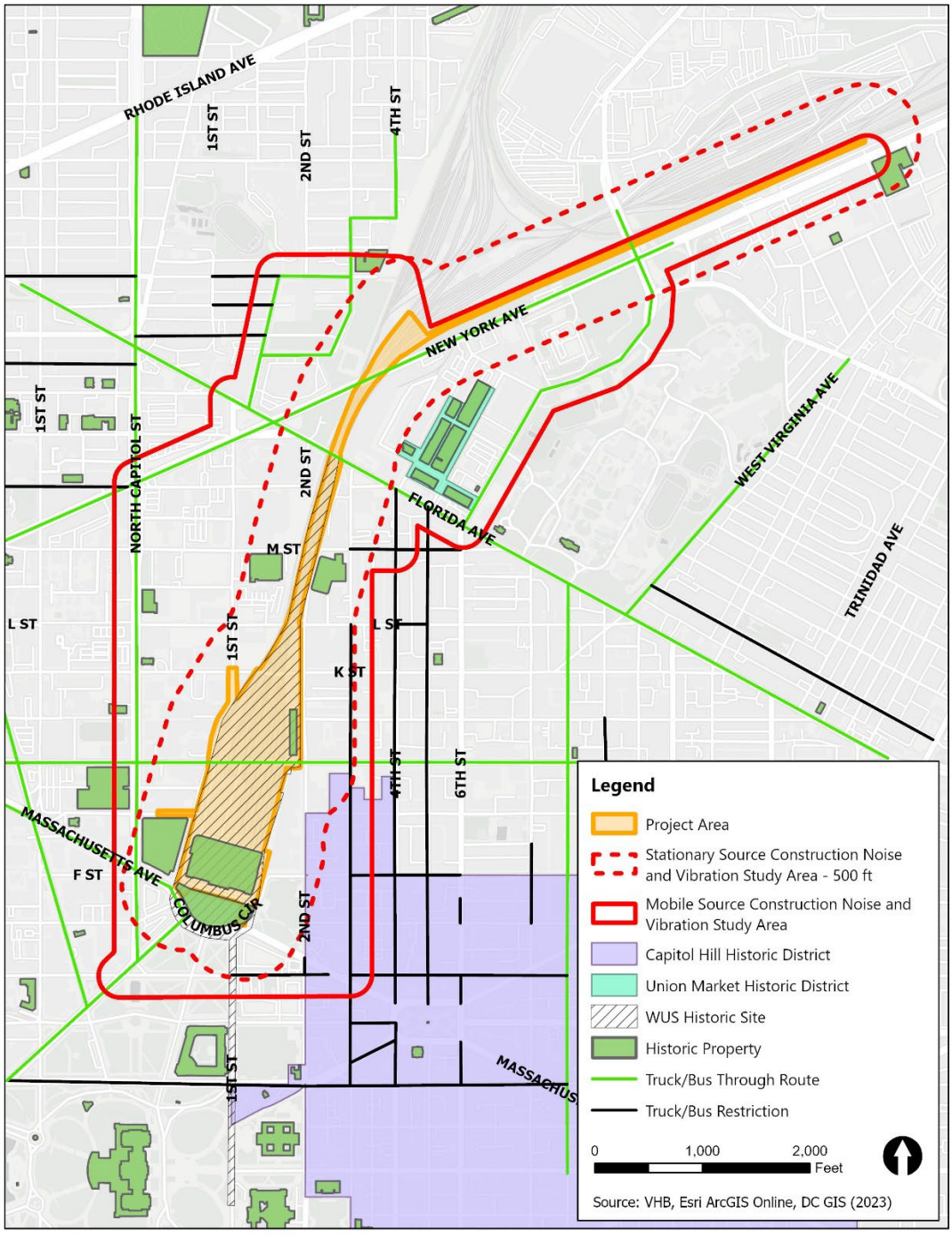


Figure 4-12. Construction Noise and Vibration Study Areas[224]



[224] The Stationary and Mobile Vibration Study Areas are subsumed within the Construction Study Areas depicted in the figure; they are not shown but are as described in **Section 4.10.2.2,** *Study Area for Construction Noise and Vibration*, above.

4.10.3 Methodology

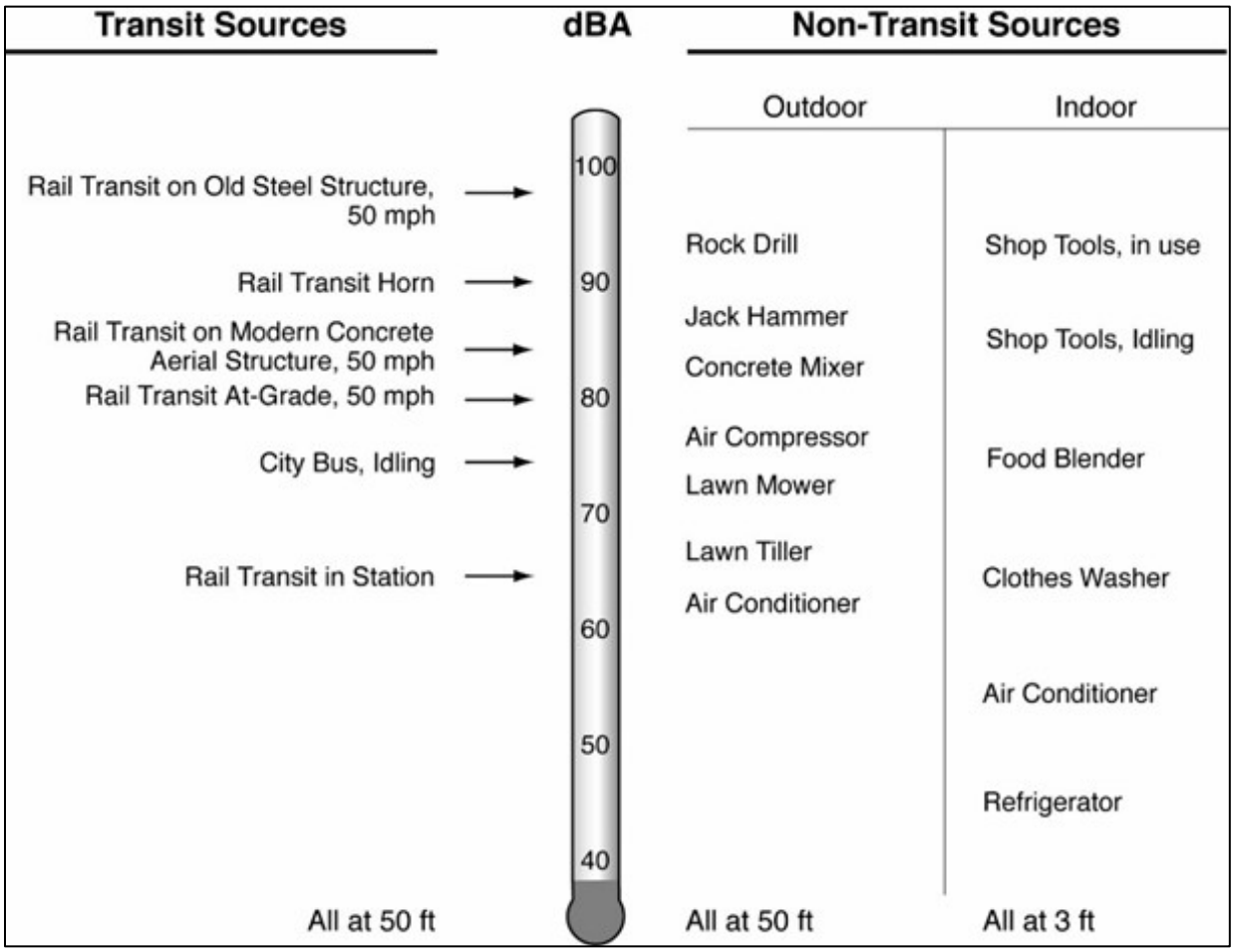
Because people can hear certain frequencies or pitches of sound better than others, sound levels are typically measured and reported using a descriptor called dBA. The dBA descriptor weighs different frequencies of sound to correspond to human hearing. Sound is also dynamic and fluctuates over time. Depending on the source and type of sound, different metrics (ways of measuring) are used to characterized sound levels:

- **Maximum A-weighted Level (Lmax)** represents the highest sound level generated by a source. For mobile sources, the maximum level typically occurs when the source is closest to the measurement location.
- **Energy-average Level (Leq)** is the level of continuous sound over a given period that would deliver the same amount of energy as the actual, varying sound exposure. The Leq metric accounts for how loud the noise event is during the period, how long it lasts, and how many times it occurs.
- **Day-night Average Level (Ldn)** is a single value that represents the sound energy over a 24-hour period with a 10-decibel (dB) penalty applied to sound that occurs between 10:00 PM and 7:00 AM when people are more sensitive to noise. Ldn accounts for how loud events are, how long they last, how many times they occur, and whether they occur at night.
- **Sound Exposure Level (SEL)** describes the cumulative noise exposure from a single noise event over its entire duration. In calculating SEL, the noise exposure is normalized to a time duration of one second so events with different durations can be compared in terms of their sound energy.

For context, **Figure 4-13** shows typical Lmax noise levels from various transit and non-transit sources.

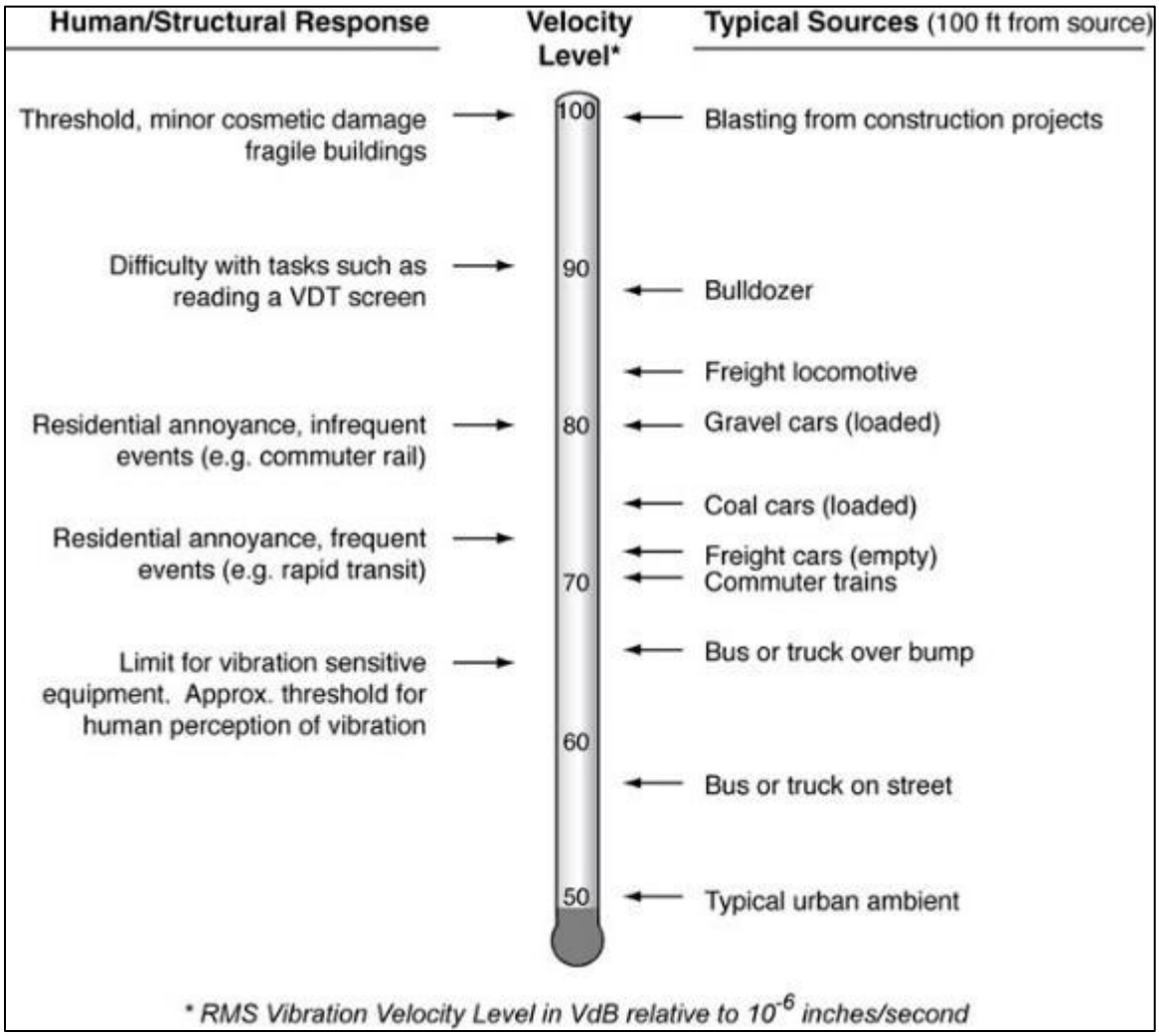
Some activities, including train operations and the operation of construction equipment, also generate ground-borne vibration (defined as the oscillatory motion of the ground). Vibration may be perceptible and disturb people or sensitive activities in nearby buildings. Humans generally respond to vibration in a low frequency range between approximately 4 and 80 hertz (Hz). Vibration levels are expressed in decibel notation as “VdB” to differentiate them from sound decibels. **Figure 4-14** shows typical ground-borne vibration velocity levels from transportation and construction sources and the typical human and structural response.

Figure 4-13. Typical Lmax for Transit Sources and Non-Transit Sources[225]



[225] Federal Transit Administration. September 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. Accessed from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed on August 24, 2023.

Figure 4-14. Typical Ground-Borne Vibration Levels[226]



[226] Federal Transit Administration. September 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. Accessed from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed on August 24, 2023.

The process to evaluate existing conditions for noise and vibration included: identifying noise and vibration-sensitive uses; understanding the predominant existing sources of noise and vibration; and characterizing the resulting noise and vibration conditions through measurements and modeling.

Noise receptors are categorized based on their use as defined by FTA (see **Table 4-10**). Vibration-sensitive land uses are like noise-sensitive land uses except that only interior locations are considered. Historic properties are categorized based on their use.

Table 4-10. FTA Land Use Categories and Noise Metrics for Impact Assessment[227]

FTA Land-Use Category	Noise Metric (dBA)	Description of Land-Use Category
1	Outdoor Leq[1]	Land where quiet is an essential element of its intended purpose. Example land uses include preserved land for serenity and quiet, outdoor amphitheaters and concert pavilions, and national historic landmarks with considerable outdoor use. Recording studios and concert halls are also included in this category.
2	Outdoor Ldn	This category is applicable all residential land use and buildings where people normally sleep, such as hotels and hospitals.
3	Outdoor Leq[1]	This category is applicable to institutional land uses with primarily daytime and evening use. Example land uses include schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities are also included in this category.

1. Leq for the noisiest hour of related activity during hours of noise sensitivity.

4.10.3.1 Measurement

Measurements were taken at locations representative of a cluster of sensitive uses (**Figure 4-15**). Existing noise conditions were then predicted at all receptor locations based on the measurements, FTA modeling procedures, and the FHWA Traffic Noise Model (TNM). All noise measurements were conducted with equipment that meets American National Standards Institute Type I accuracy.

Noise measurements were conducted at 19 locations. They included 17 short-term measurements taken over 1-hour periods, with simultaneous observations and counts of train activity, transit operations, and traffic conditions (volumes and speeds). Long-term (24-hour) noise measurements were taken at two locations to determine the relationship between short-term (1-hour Leq) and long-term (24-hour Ldn) noise levels.

[227] Federal Transit Administration. September 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. Accessed from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed on August 24, 2023.

Figure 4-15. Noise and Vibration Measurement Locations

At measurement sites representative of FTA Noise Category 3 land uses (such as museums, parks, and libraries), the 1-hour noise measurement took place during a peak period between 6:00 AM to 9:00 AM or 3:00 PM to 7:00 PM. Category 3 receptors were assessed based on the peak transit hourly Leq noise level. At measurement sites representative of FTA Noise Category 2 land uses (such as residences and hotels), three 1-hour measurements were taken during the morning peak (6:00 AM to 9:00 AM), midday (10:00 AM to 4:00 PM), and nighttime (10:00 PM to 7:00 AM) periods. The measurements were used to estimate the Ldn according to the methods outlined in Appendix D of *FTA's Noise Guidance Manual*.

For measurement locations representative of Category 3 institutional receptors, measurements were conducted for 1 hour during a peak transit period (morning or afternoon) to determine the peak-transit Leq. For measurement locations representative of Category 3 residential receptors, measurements were conducted for three 1-hour periods, including a late night/early morning, peak, and mid-day period to determine the peak-transit Leq and estimate the Ldn.

Short-term measurements included observations of train operations, traffic counts by vehicle classification, and vehicle travel speeds. The contribution from different sources was determined through monitoring.

Vibration measurements were conducted at five exterior ground-level locations to determine the maximum vibration levels from train passbys. Measurements were conducted for 1 hour at each site and recorded train type, speed, track, and consist.

4.10.3.2 Modeling

Existing operational noise conditions throughout the Study Area were modeled using the Cadna-A sound prediction software based on measurements results, train and streetcar operations, and the traffic data from **Section 4.5.4.12**, *Vehicular Traffic*.

4.10.3.3 Existing Sources of Noise and Vibration

Existing noise and vibration sources were identified through a review of VRE, MARC, Amtrak, and Metrorail's train schedules and the number of operations throughout a 24-hour period.

4.10.4 Existing Conditions

4.10.4.1 Noise and Vibration Sensitive Land Uses

Noise and vibration sensitive receptors in the Study Areas include multi-family condominiums, townhouses, apartments, hotels, museums, medical facilities, schools, TV studios, and parks.

4.10.4.2 Existing Noise and Vibration Sources

The predominant sources of noise and vibration in the Study Areas observed during measurement activities included railroad operations at WUS and traffic on the adjacent roadways. The following paragraphs describe these sources and their noise and vibration characteristics.

Railroad Operations

Rail operations are the predominant source of noise and vibration at receptors near the rail terminal and tracks. Sources of noise and vibration associated with railroad operations included train movements, diesel-electric locomotives idling, and auxiliary equipment, such as radiator cooling fans and on-board Heating, Ventilation and Air-Conditioning equipment operating on passenger coaches and locomotives. Occasional car coupling activities generated short noise events. Other noise sources included general maintenance activities such as the cleaning and servicing of trains. Some trains sounded their bells when approaching or departing WUS. Commuter trains do not typically sound their horn, but they may do so under emergency conditions. The DC Streetcar generally sounded its bell during departure.

Trains operate at low speeds (approximately 10 miles per hour) in and out of WUS and generally below 20 miles per hour throughout the Study Areas. The tracks include both continuously-welded-rail and jointed rail segments, with many track turnouts. Jointed rail and track turnouts introduce gaps in the rail running surface that increase noise and vibration. The rail corridor is elevated on retained fill between the northern end of the rail terminal and Florida Avenue, after which it transitions to grade north of New York Avenue. For receptors at ground-level near the rail corridor, the retained fill structure typically shields line of sight to the trains, which has an attenuating effect on noise levels.

Traffic

Past approximately 100 feet of the tracks, road traffic was the predominant source of noise. Traffic noise varies with volumes, speeds, and the proportion of trucks or buses. The speed limit in most of the Study Areas is 20 miles per hour (mph), unless otherwise marked (New York Avenue is 35 mph).[228] Peak AM and PM vehicle volumes were approximately 1,500 to 2,000 vehicles per hour along most principal and minor arterial roads. Traffic noise from principal arterial roads typically ranged from 60 to 70 dBA (Leq).

Noise Measurements

Table 4-11 shows ambient noise measurements and predominant noise sources at each measurement location. At the 1-hour locations, noise levels ranged from approximately 51 dBA to approximately 79 dBA.

[228] District Department of Transportation. *Twenty MPH 20 MPH Default Speed Limit Frequently Asked Questions*. Accessed from https://ddot.dc.gov/page/twenty-mph-20-mph-default-speed-limit-frequently-asked-questions. Accessed on August 18, 2023.

Table 4-11. Existing Ambient Noise Measurement Results

Site Number	Distance to Tracks (Feet)	Location	Duration	Period	Leq (dBA)	Ldn (dBA)	Predominant Noise Source
N1	650	Columbus Circle Park	1 hour	Afternoon Peak	61.5	59.5[1]	Traffic on Columbus Circle NE Train operations are not audible at this location
N2	625	Postal Museum	1 hour	Afternoon Peak	65.0	63.0[1]	Traffic on First St NE
N3	25	WUS Taxi Loop	1 hour	Night	66.3	71.3[2]	Train operations including locomotives idling and traffic on the taxi loop
			1 hour	Morning Peak	72.1		
			1 hour	Midday	67.9		
N4	525	Residences (Capitol Hill Historic District)	1 hour	Night	59.7	65.0[2]	Traffic on Second St NE Train operations are not audible at this location
			1 hour	Morning Peak	63.3		
			1 hour	Midday	64.1		
N5	50	Kaiser Permanente Medical Facility	1 hour	Night	71.1	76.1[2]	Railroad operations
			1 hour	Morning Peak	71.3		
			1 hour	Midday	74.9		
N5a	Overhead	H Street NE	30 mins	Peak	76.3	74.3[2]	Railroad operations Traffic noise on H St NE
N6	625	CNN Television Studio	1 hour	Peak	71.6	69.6[2]	Traffic on H Street NE Noise from Metro trains are occasionally audible, but do not contribute substantially to the overall noise environment
N7	450	Historic residences	1 hour	Night	51.1	56.2[2]	Trains at WUS Traffic on Second Street and 3rd Street NE
			1 hour	Morning Peak	53.1		
			1 hour	Midday	54.9		
N8	250	Storey Park Apartments	1 hour	Peak	65.8	63.8[1]	Traffic on L Street NE and train operations
N9	200	Historic residences	1 hour	Night	58.2	63.3[2]	Trains at WUS and traffic on Second St NE
			1 hour	Morning Peak	61.4		

Site Number	Distance to Tracks (Feet)	Location	Duration	Period	Leq (dBA)	Ldn (dBA)	Predominant Noise Source
			1 hour	Midday	61.8		
N10	15	Metropolitan Branch Trail	1 hour	Night	72.9	77.8[2]	Metro trains operating within approximately 15 feet of the microphone location
			1 hour	Morning Peak	74.9		
			1 hour	Midday	75.6		
N11	15	Central Armature Works	24 hours	24 hours	See **Figure 4-16**	71.5	Railroad operations
N12	15	Metropolitan Branch Trail	1 hour	Peak	67.8	65.8[1]	Metro railroad operations
N13	350	Residences (Union Market Historic District)	1 hour	Night	65.7	70.9[2]	Train operations Traffic on Florida Ave NE
			1 hour	Morning Peak	67.3		
			1 hour	Midday	69.6		
N14	375	Residences (Union Market Historic District)	1 hour	Peak	66.2	64.2[1]	Traffic from nearby roads such as 4th St NE
N15	325	Gale Apartments	1 hour	Night	56.8	62.7[2]	Trains operations Traffic on Harry Thomas Way NE
			1 hour	Morning Peak	61.6		
			1 hour	Midday	62.8		
N16	400	Motel 6	1 hour	Night	69.1	73.5[2]	Traffic on local streets and New York Ave
			1 hour	Morning Peak	68.2		
			1 hour	Midday	68.8		
N17	1000	Lower Senate Park	1 hour	Peak	58.6	56.6[1]	Traffic from surrounding roadways Columbus Circle NE
N18 (V2)	50	REA Building	1.5 hours	Peak	70.3	68.3[1]	Train operations This building is not a noise-sensitive receptor since it is currently used for office space
N19	200	NPS Maintenance Facility	24 hours	24 hours	See **Figure 4-17**	78.9	Traffic on New York Ave NE

1. Ldn estimated according to FTA guidance for measurements conducted between 7:00 AM and 7:00 PM; 2. Ldn estimated using the three 1-hour measurements taken in night, morning peak, and midday periods.

Figure 4-16 and **Figure 4-17** present the hourly sound level measurements taken over 24 hours at Locations N11 and N19, respectively. These figures show the hourly Leq as well as the sound levels that were exceeded 10, 50, or 90 percent of the time during the hour. L90 sound levels are representative of the quieter ambient background noise conditions and L10 sound levels representative of the louder ambient noise conditions (for instance when trains or loud vehicles pass by the microphone). At N11, near the tracks, ambient noise levels ranged between 60 and 70 dBA Leq throughout the entire 24-hour period.

Noise did not substantially decrease during the late-night and early-morning hours because of train and roadway traffic in the area during that time. At N19, adjacent to New York Avenue, ambient noise levels ranged from 63 to 80 dBA Leq throughout the entire 24-hour period. Noise levels were relatively constant but louder during the morning peak period due to rush-hour traffic.

Vibration Measurements

The maximum measured exterior vibration levels at the closest receptor locations with vibration-sensitive use such as 840 First Street NE (Site V2), Courtyard Marriott (Site V4), and historic residences (Site V5), ranged from 61 to 65 VdB. Such levels are below the thresholds of human perception. At historic buildings such as the Railway Express Agency (REA) building (V1) and Uline Ice Company Plant and Arena (V3), vibration levels ranged from 66 to 85 VdB, below the thresholds for increased risk of structural damage.

Figure 4-16. Long-Term Noise Measurements, Site N11

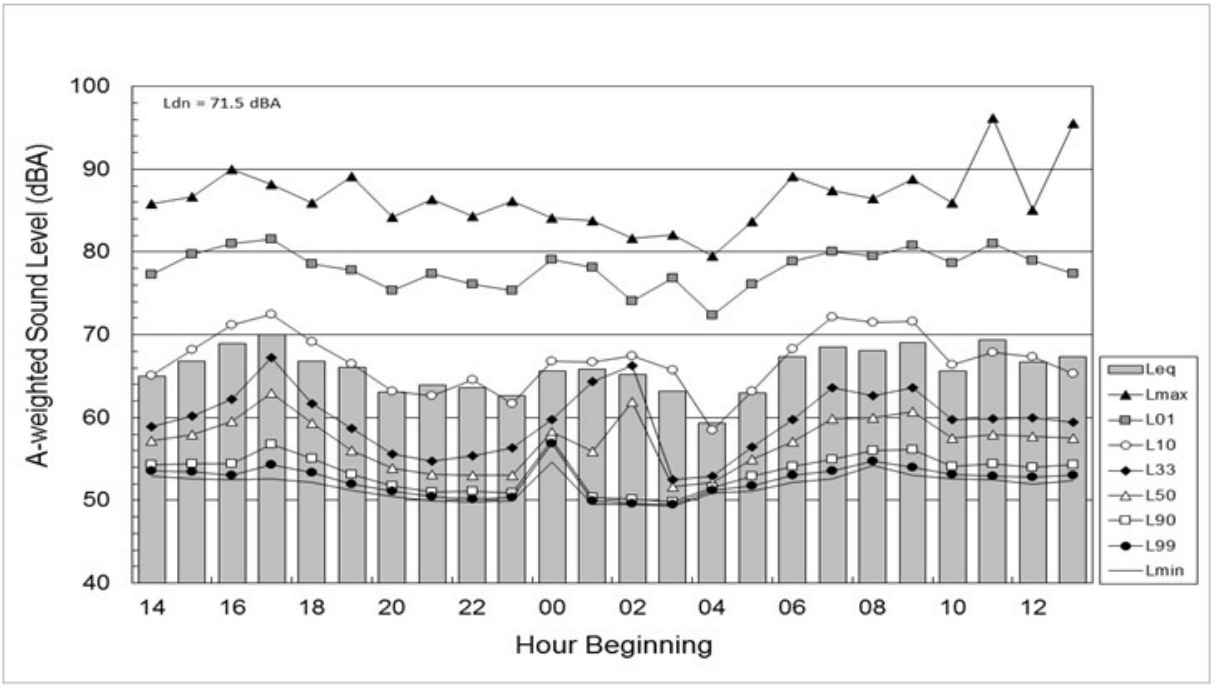
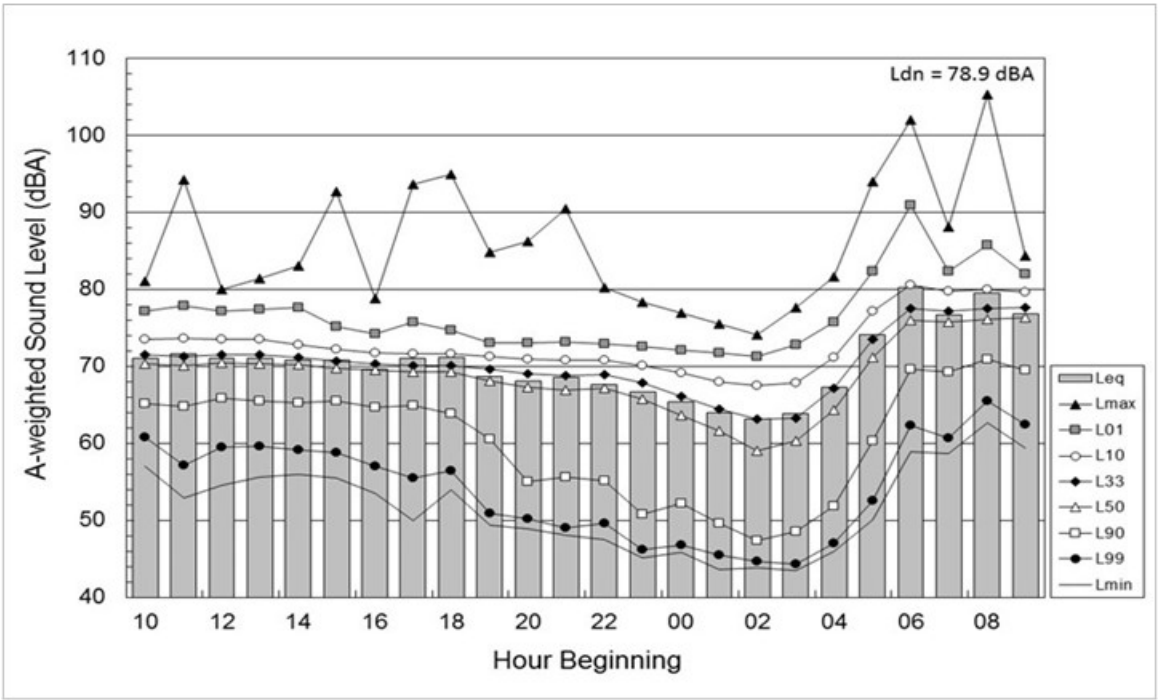


Figure 4-17. Long-Term Noise Measurements, Site N19



4.11 Aesthetics and Visual Quality

This section describes existing conditions pertaining to aesthetics and visual quality. The urban and cultural environment, including streetscapes, buildings, parks, and monuments, contributes to the visual character of the area around WUS. WUS itself, in the heart of the nation's capital, and its monumental historic headhouse are a major contributor to the visual character of the area.

4.11.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that pertain to aesthetics and visual quality and are relevant to the Project include:

- NCPC, *The Comprehensive Plan for the National Capital*: *Federal Elements, Urban Design Element;*[229]

[229] National Capital Planning Commission. 2021. *The Comprehensive Plan for the National Capital: Federal Elements*. Accessed from https://www.ncpc.gov/plans/compplan/. Accessed on August 18, 2023.

- EO 1259, *Commission of Fine Arts (CFA) Review of Public Buildings in the District of Columbia Proposed by the Federal or DC governments*;[230]
- Shipstead-Luce Act of 1930 (Public Law [PL] 71-231, PL 76-248);[231]
- EO 1862, *CFA Review of New Structures and Matters of Art Proposed by the Federal Government in DC*;[232]
- EO 11593, *Protection and Enhancement of the Cultural Environment;*[233] *and*
- The Height of Buildings Act of 1910.

District policies, regulations, and guidance that may pertain to aesthetics and visual quality include:

- The Historic Landmark and Historic District Protection Act of 1978 (DC Law 2-144, as amended through October 1, 2016);
- District of Columbia Municipal Regulations (DCMR), *Zoning Regulations Special Purpose Zones* (DCMR 11K 305.);[234] and
- *The Comprehensive Plan for the National Capital: District Elements*, *Urban Design Element*.[235]

4.11.2 Study Area

Because of the close connection between potential aesthetics and visual quality impacts and impacts on cultural resources, the aesthetics and visual quality Study Area (**Figure 4-18**) coincides with the Area of Potential Effects (APE) defined in **Section 4.12**, *Cultural Resources*. In addition to individual cultural resources, the APE also includes culturally significant viewsheds from Arlington National Cemetery, the Old Post Office Building, the Washington Monument, the U.S. Capitol, the Washington National Cathedral, and St. Elizabeths West Campus. There is no Regional Study Area for this resource because there is no potential for visual impacts outside the Local Study Area.

[230] EO 1259. Accessed from https://www.cfa.gov/about-cfa/legislative-history/executive-order-1259-october-25-1910. Accessed on August 18, 2023.

[231] Shipstead-Luce Act. 40 U.S.C. § 121. Accessed from https://www.cfa.gov/about-cfa/legislative-history/shipstead-luce-act-public-law-231-71. Accessed on August 18, 2023.

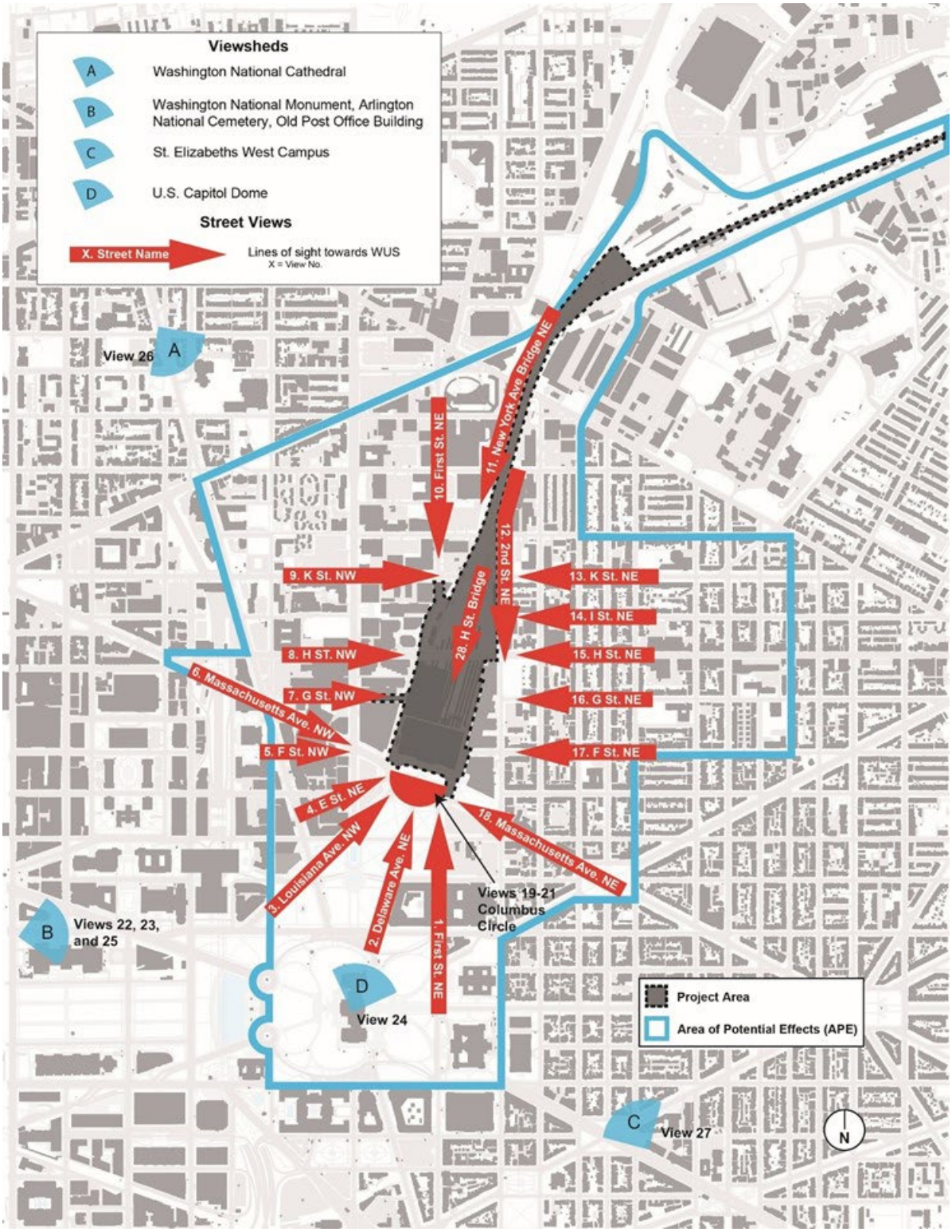
[232] EO 1862. Accessed from https://www.cfa.gov/about-cfa/legislative-history/executive-order-1862. Accessed on August 18, 2023.

[233] EO 11593. Accessed from https://www.archives.gov/federal-register/codification/executive-order/11593.html. Accessed on August 18, 2023.

[234] District of Columbia Municipal Regulations (DCMR) 11-K305, Special Purpose Zones. Accessed from https://dcregs.dc.gov/Common/DCMR/SectionList.aspx?SectionNumber=11-K305. Accessed on August 18, 2023.

[235] District of Columbia Office of Planning. 2021a. *The Comprehensive Plan for the National Capital: District Elements*. Accessed from https://planning.dc.gov/node/637932. Accessed on August 14, 2023.

Figure 4-18. Aesthetics and Visual Quality Study Area



4.11.3 Methodology

Existing conditions and views of WUS were characterized from key viewpoints that are character-defining and may impact the integrity of WUS as a cultural resource. Characterization of views included assessment of views and vistas, urban design context, and population of viewers in the Study Area.

4.11.4 Existing Conditions

4.11.4.1 Existing Land Use and Population

Visual quality is largely determined by the existing environment, land use, and population. WUS is surrounded by a variety of land uses (see **Section 4.9**, *Land Use, Land Planning and Property*) that bring a wide range of people to the area. Numerous travelers, visitors, commuters, and residents pass through the Study Area daily and experience its visual character. Based on existing land uses, residents and commuters predominate to the east and west of WUS, while mostly commuters (including many government workers), visitors, and tourists are found to the south of WUS.

4.11.4.2 Existing Visual Quality

The visual quality of the environment surrounding WUS is influenced by topography, open space, vegetation, and the scale, form, location, and materials of the built environment. The topography of the Study Area slopes slightly upward between the U.S. Capitol and WUS. Architectural forms to the east, south, and west of WUS tend to be more traditional, while some buildings to the north in NoMa break from traditional forms and are more sculptural. The Project Area itself is mostly level, except for the H Street Bridge, which is elevated over the rail terminal. The significant difference in elevation between the rail terminal and the surrounding streets is a defining characteristic of the Study Area.

To the south of WUS, parks and large public buildings dominate the visual environment. The Senate Park and the Capitol Grounds feature open grassy areas, trees, tree-lined pathways and streets, and other plantings. These elements obscure views of WUS, especially during spring to late fall when trees are in leaf (**Figure 4-19, Views 1 and 2**). Public buildings in that area primarily consist of AOC assets including the U.S. Capitol, U.S. Supreme Court, the Thurgood Marshall Federal Judiciary Building, the Russell, Dirksen, and Hart Senate Office Buildings, the Library of Congress, and the Cannon House Office Building. All these buildings are defined by their monumental massing and stone masonry facades. Immediately to the south of WUS, Columbus Plaza, dominated by a large fountain, was designed as a grand entrance forecourt to WUS.

The area to the east of WUS consists mostly of residential neighborhoods featuring tree-lined streets and mostly low-scale residences. From spring through fall, vegetation obstructs views towards the Project Area (**Figure 4-19, View 3**). Typical buildings in this area include two-story single-family rowhouses constructed of brick, stone masonry, and wood. Larger commercial and residential buildings are concentrated along Second Street NE (**Figure 4-19, View 4**). Between Second Street NE and WUS, a large building houses the U.S. Securities and Exchange Commission. Sidewalks in that area are typically brick with granite curbing.

The area to the west of WUS is largely commercial and public, with numerous businesses, institutions, and government offices. The National Postal Museum and U.S. Government Publishing Office are in that area. Streets feature fewer trees and buildings are taller and more massive than in the residential neighborhoods to the east **(Figure 4-19, View 5**). Commercial and institutional building construction varies. Many are multi-story structures with glass curtain walls. Others are glass and masonry clad (**Figure 4-19, View 6**).

The ongoing construction of new commercial and high-density residential buildings to the west, north, and east of WUS is progressively changing the visual environment in the vicinity of the station (**Figure 4-19, View 7**).

4.11.4.3 Existing Street Views and Significant Viewsheds

The general urban design of much of the area surrounding WUS, especially to the west, south, and east, reflects the 18th-century L'Enfant Plan. The McMillan Plan of 1901 re-established the L'Enfant Plan and was instrumental in determining the location of WUS. The L'Enfant and McMillan Plans, which are listed in the National Register of Historic Places (NRHP), established significant visual corridors directed towards WUS (see **Figure 4-18**). Key existing views are briefly characterized in **Table 4-12**.

Figure 4-19. Views of the Project Area

1.Northeast View, towards WUS from Capitol Grounds, across Constitution Avenue NW and Louisiana Avenue

2. Northeast View towards WUS from Senate Park along Louisiana Avenue Between D Street NE and Columbus Circle NE

3. View Looking West towards the Project Area and the REA Building from I Street NE and 6th Street NE

4. View Looking West towards the Project Area and WUS from F Street NE and 3rd Street NE

5. View Looking West of the WUS Rail Terminal

6. View Looking West along H Street NE from 7th Street NE

7. View Looking Northeast from I Street NE and Second Street NE

Table 4-12. Key Street View Descriptions

Street View[1]	Existing Visual Description
1.First Street NE, view looking north	In the distance, especially from Independence Avenue and East Capitol Street, only the WUS headhouse roof is visible. Approaching Columbus Plaza, the entire south elevation can be seen. WUS and Columbus Plaza are listed in the NRHP, and both contribute to the NRHP-eligible WUS Historic Site. The street is characterized by institutional buildings of Capitol Hill, open space for parking, and the park-like space of Lower Senate Park.
2.Delaware Avenue NE, view looking northeast	From Constitution Avenue NE, C Street NE, and D Street NE only the center three bays of the WUS headhouse are visible. Approaching Columbus Plaza, the entire south elevation can be seen. The street is characterized by the Russell Senate Office Building and the open park like setting of Upper and Lower Senate Parks.
3.Louisiana Avenue NW, view looking northeast	Along Louisiana Avenue NE, only the center pavilion of the WUS headhouse is visible. Approaching Columbus Plaza, the entire south elevation of the headhouse and the far western portion of the WUS parking garage can be seen. The street is characterized by a variety of uses including areas for parking, the Upper Senate Park, the Japanese American Memorial, and institutional and commercial buildings.
4. E Street NE, view looking northeast	From E Street NE and North Capitol Street NW, portions of the south and west elevations of the WUS headhouse are visible. Approaching Columbus Plaza, the entire south elevation of the headhouse and the far western portion of the WUS parking garage can be seen. The street is characterized by open parking lots.
5. F Street NW, view looking east	Only the front portion of the WUS headhouse and Columbus Plaza are visible. The street is characterized by multi-story commercial and institutional buildings of various styles and ages.
6. Massachusetts Avenue NW, view looking southeast	Only Columbus Plaza is visible until one passes through the plaza or drives through Columbus Circle NE. The street is characterized by multi-story commercial and institutional buildings of various styles and ages.
7. G Street NW, view looking east	The WUS parking garage is visible along G Street NW. The street is characterized by institutional and commercial buildings, especially the GPO Building and the former Gales School on the corner of Massachusetts Avenue and G Street NW.
8. H Street NW, view looking east	The H Street Bridge is visible looking east towards the Project Area. From the H Street Bridge (looking south), only the WUS parking garage is visible. The WUS headhouse and rail terminal are not visible to pedestrians. The street is characterized by multi-story commercial and institutional buildings, especially the GPO Building.
9. K Street NW, view looking east	The K Tower and other elements of the rail terminal, including the K Street underpass and sections of the Burnham Walls, are visible looking east towards the Project Area. The rail terminal (and its contributing features, including underpasses, the Burnham Walls, historic catenaries, signal bridges, K Tower, the REA Building, and Substation 25A) is part of the NRHP-eligible WUS Historic Site. K Street at this location is characterized by varied building types, which include commercial buildings, a former church, a school, and multi-family residential buildings.
10. First Street NE, view looking south	The WUS parking garage and Burnham Walls are visible looking south towards the Project Area. The street is characterized by the Metropolitan Branch Trail that runs beside it as well as many multi-story commercial and multi-family residential buildings.

Street View[1]	Existing Visual Description
11. New York Avenue Bridge NE, view looking south	From the New York Avenue NE Bridge, the WUS rail terminal, headhouse, and parking garage are visible. The U.S. Capitol is also visible beyond. New York Avenue is a busy thoroughfare and a main access route into the District. It is surrounded by industrial, commercial, and residential buildings.
12. Second Street NE, view looking south	Moving south along Second Street NE, the view of the Project Area changes. From M Street and L Street, elements of the rail terminal are visible, including the Burnham Walls, street underpasses, catenaries, and signal bridges within the terminal. At K Street, Substation 25A is also visible. At I Street, the REA Building comes into view. Second Street NE is bordered by the rail terminal to the west and mostly by single-family rowhouses and multi-family apartment buildings of various styles and ages to the east.
13. K Street NE, view looking west	Looking west along K Street NE, the K street underpass and Burnham Walls of the rail terminal are visible. At this location, K Street is characterized by two-story traditional rowhouses as well as new multi-story residential and mixed-use buildings of various styles and ages.
14. I Street NE, view looking west	The REA Building is visible looking west along I Street NE. The street is characterized by a mixture of multi-story, multi-family apartment buildings and two-story, single-family rowhouses of varying styles and ages.
15. H Street NE, view looking west	Looking west along the H Street NE commercial corridor, the H Street Bridge and WUS parking garage are visible. From the H Street Bridge, portions of the rail terminal are visible, including the REA Building and K Tower. The roof of the WUS headhouse is also visible. H Street is a busy commercial corridor featuring two- and multi-story commercial buildings, residences, and mixed-use buildings of various styles and ages.
16. G Street NE, view looking west	There is no direct view to the Project Area from G Street NE due to the height of the existing office buildings along Second Street NE. East of Second Street NE, the street is characterized by the single-family rowhouses that are prevalent in the Capitol Hill neighborhood.
17. F Street NE, view looking west	Looking west, the WUS headhouse and a section of the Retail and Ticketing Concourse are visible. Multi-story office buildings line the west side of Second Street; the rest of F Street is mostly characterized by two-story residences and several small businesses.
18. Massachusetts Avenue NE, view looking northwest	Columbus Plaza and the Columbus Fountain are visible along Massachusetts Avenue. As one approaches Columbus Circle NE, the South elevation of the WUS headhouse becomes visible. From west of 4th Street, Massachusetts Avenue is characterized by two- and multi-story institutional, commercial, and residential buildings of various styles and ages. The buildings are set back from the street, providing a wide view of Columbus Plaza and WUS.
28. H Street Bridge looking south	Looking south from the north sidewalk at the center of the bridge, the view is characterized by the strong presence of the existing WUS parking garage on the west and the open space above the rail terminal on the east, bordered by multi-story commercial buildings along second street. The foreground of the view is dominated by the street, road traffic, streetcar infrastructure, and the south barrier wall. Portions of the historic passenger concourse roof and barrel vault of the WUS headhouse are visible. The visual quality of the view from H Street Bridge is notably different compared to the other street views, which are all lined with standard sidewalks, street trees, and landscaped areas that frame the views to and from WUS.

1. Numbers are those shown in **Figure 4-18**.

4.12 Cultural Resources

This section describes existing cultural resources at and near WUS. For the purposes of this section, cultural resources include districts, buildings, sites, structures, and objects included in or eligible for inclusion in the NRHP (also defined as historic properties) and the DC Inventory of Historic Sites (DCI); properties that fall within AOC's purview and are listed as AOC Heritage Assets; and properties that are under the jurisdiction of NPS's National Mall and Memorial Parks (NAMA).

Additional details on historic and cultural resources are available in Appendix 3, *Area of Potential Effects and Identification of Historic Properties, Final Report,* of Appendix D1, *Draft Section 106 Assessment of Effects*, of the DEIS.[236]

4.12.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that are relevant to this section include:

- Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. § 470);
- *Protection of Historic Properties* (36 CFR Part 800);
- The Secretary of the Interior's *Standards for the Treatment of Historic Properties* (36 CFR Part 68);
- *Assumption of Responsibility for Preservation of Historic Property*, (54 U.S.C. § 306101);
- National Register of Historic Places (36 CFR Part 60); and
- AOC Heritage Assets.[237]

District policies, regulations, and guidance relevant to this section include:

- The Historic Landmark and Historic District Protection Act of 1978 (DC Law 2-144, as amended);
- DCMR, *Preservation Regulations*, Title 10-C; and
- DC Inventory of Historic Sites.[238]

[236] Available at: https://railroads.dot.gov/sites/fra.dot.gov/files/2020-06/Appendix%20D1a_Draft%20Assessment%20of%20Effects_%20Appendices_WUS%20DEIS.pdf.

[237] Architect of the Capitol. Order 37-1, *Preservation Policy and Standards, December 30, 2016*. Accessed from https://imlive.s3.amazonaws.com/Federal%20Government/ID299982152735687088301929761072980578466/Attach_5_-_AOC_Order_37-1,_Preservation_Policy_and_Standards_2016.pdf. Accessed on February 14, 2024.

[238] District of Columbia Office of Planning. *DC Inventory of Historic Sites*. Accessed from https://planning.dc.gov/page/dc-inventory-historic-sites. Accessed on August 22, 2023.

4.12.2 Section 106 Consultation

Section 106 of the NHPA requires Federal agencies to consider the effects of their undertakings on historic properties listed or eligible for listing in the NHRP. Federal agencies must consult with the State Historic Preservation Officer (SHPO) or, if applicable, Tribal Historic Preservation Officer, having jurisdiction on the historic properties that may be affected by the undertaking. Agencies must also afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking. Other participants in the Section 106 consultation process include Consulting Parties, which are individuals and organizations with a demonstrated interest in the undertaking due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties.

FRA is the Federal agency responsible for compliance with Section 106 for the Project. FRA initiated consultation with the SHPO on the Project on November 23, 2015. Following initiation of the process and in consultation with the SHPO, FRA identified potential Consulting Parties and invited them to participate in the process. The invited parties are identified in **Section 8.11**, *National Historic Preservation Act Section 106 Consultation*. The parties that accepted the invitation are shown in **Table 4-13**.

Table 4-13. Agencies and Organizations Participating in the Section 106 Consultation Process

Section 106 Consulting Parties		
ACHP	DC Preservation League	Megabus
Akridge	DDOT	MWCOG
Amtrak	Federal Highway Administration	NPS
Advisory Neighborhood Commission (ANC) 6C	FTA	NCPC
AOC	General Services Administration	National Railway Historical Society, DC Chapter
Capitol Hill Restoration Society	GPO	National Trust for Historic Preservation
CFA	Greyhound	USRC
Committee of 100 on the Federal City	MARC	VRE
SHPO	MTA	WMATA

With input from the SHPO and Consulting Parties, FRA:

- Defined the APE for the Project;
- Identified the historic properties in the APE; and
- Assessed the Project's potential effects on those historic properties.

- Worked with Consulting Parties to resolve and develop measures to avoid, minimize, or mitigate adverse effects.

Section 8.11, *National Historic Preservation Act Section 106 Consultation*, describes the key steps of the consultation process to date in more detail in. FRA held fifteen meetings with Consulting Parties since the inception of the Project. Additionally, the public and Consulting Parties had opportunities to comment on the Project and historic preservation issues at the EIS scoping meeting (December 7, 2015), at four public meetings held between March 2016 and March 2018, the DEIS public hearing (July 14, 2020), and two SDEIS public hearings (June 27 and 28, 2023).

4.12.3 Study Area

The Local Study Area consists of the APE defined as part of the Section 106 process for the Project. **Figure 4-20** shows the Local Study Area and the location of the cultural resources within its boundaries. The Local Study Area contains 49 cultural resources and six culturally significant viewsheds (Washington National Cathedral, Washington National Monument, Old Post Office Building, Arlington National Cemetery, U.S. Capitol Dome, and St. Elizabeths West Campus). There is no Regional Study Area because the Project has no potential to affect cultural resources beyond the Local Study Area.

4.12.4 Methodology

FRA determined the APE based on a visual survey of streets and viewsheds towards the Project Area. The visual survey also identified areas of high traffic volume and confirmed routes typically used by trucks and buses. The APE was refined through consultation with the SHPO and Section 106 Consulting Parties. The APE was presented to the Consulting Parties on September 7, 2017. The SHPO concurred with the APE in a letter dated September 29, 2017.

Cultural resources in the APE were identified by analyzing the various data sources available (such as the NRHP,[239] *DC Inventory of Historic Sites*,[240] AOC's *List of Heritage Assets*,[241] and the list of memorials and monuments within NPS's NAMA[242]).

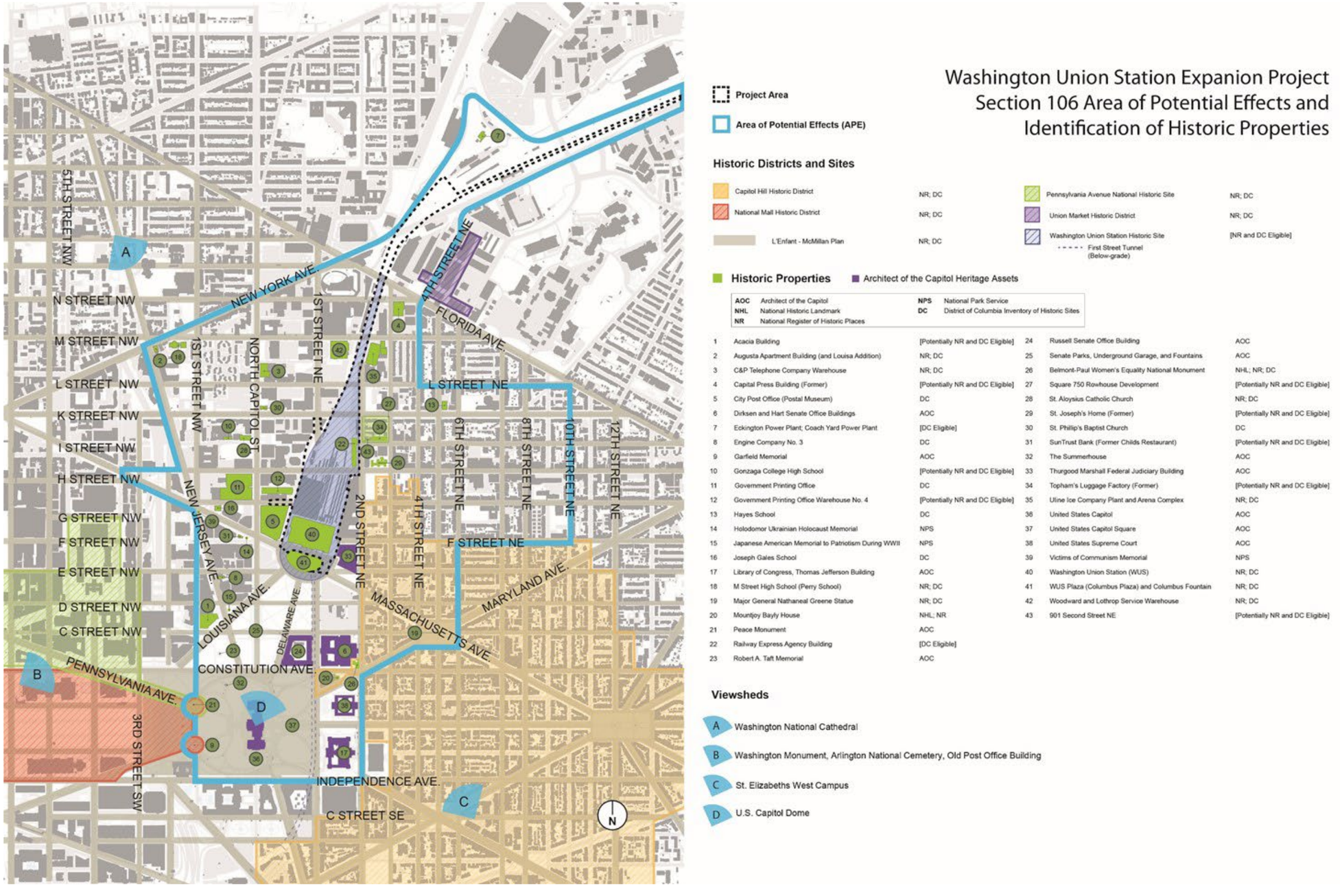
[239] The National Register of Historic Places is the official list of the Nation's historic places worthy of preservation; authorized by the National Historic Preservation Act of 1966 (see https://www.nps.gov/subjects/nationalregister/index.htm).

[240] The DC Inventory of Historic Sites is the list of historic landmarks and historic districts in the District of Columbia. Properties listed in the Inventory are protected by the District's historic preservation law, which promotes compatible alterations and adaptation for current use (see https://planning.dc.gov/page/dc-inventory-historic-sites).

[241] The List of Heritage Assets is an internal Architect of the Capitol document.

[242] Historic properties recognized as part of a National Park are automatically listed on the NRHP (see https://www.nps.gov/nama/index.htm).

Figure 4-20. Cultural Resources within the APE



Additional potentially eligible historic properties were identified through consultation with Section 106 Consulting Parties and the SHPO. WUS is located in an area that has been thoroughly studied by many public and private entities for purposes of historic preservation. FRA identified only one new resource: the WUS Historic Site, for which FRA completed a Determination of Eligibility. The WUS Historic Site expands the historic designation of WUS to include historically significant features of the rail terminal.[243]

Additional information is available in Appendix 3, *Area of Potential Effects and Identification of Historic Properties, Final Report,* of Appendix D1, *Draft Section 106 Assessment of Effects*, of the DEIS.[244]

4.12.5 Existing Conditions

4.12.5.1 Architectural Cultural Resources

The APE contains 49 architectural cultural resources ranging from residential, commercial, industrial, and institutional buildings to monuments of national significance and city plans. These resources are listed in **Table 4-14** along with their historic designation and date of construction or period of significance. Additional information is available in Appendix 3, *Area of Potential Effects and Identification of Historic Properties, Final Report,* of DEIS Appendix D1, *Draft Section 106 Assessment of Effects*.

Table 4-14. Architectural Cultural Resources within the Area of Potential Effects

Name	Historic Designation
Acacia Building	Potentially National Register and DCI Eligible
Augusta Apartment Building (and Louisa Addition)	National Register and DCI
C&P Telephone Company Warehouse	National Register and DCI
Capital Press Building (Former)	Potentially National Register and DCI Eligible
City Post Office (Postal Museum)	DCI
Dirksen and Hart Senate Office Buildings	AOC Heritage Asset
Eckington Power Plant; Coach Yard Power Plant	DCI Eligible
Engine Company No. 3	DCI
Garfield Memorial	AOC Heritage Asset
Gonzaga College High School	Potentially National Register and DCI Eligible
Government Printing Office	DCI

[243] The SHPO concurred with the Determination of Eligibility for the WUS Historic Site on April 29, 2019.

[244] Available at: https://railroads.dot.gov/sites/fra.dot.gov/files/2020-06/Appendix%20D1a_Draft%20Assessment%20of%20Effects_%20Appendices_WUS%20DEIS.pdf.

Name	Historic Designation
Government Printing Office Warehouse No. 4	Potentially National Register and DCI Eligible
Hayes School	DCI
Holodomor Ukrainian Holocaust Memorial	NPS memorial
Japanese American Memorial to Patriotism During WWII	NPS memorial
Joseph Gales School	DCI
Library of Congress, Thomas Jefferson Building	AOC Heritage Asset
M Street High School (Perry School)	National Register and DCI
Major General Nathaneal Greene Statue	National Register and DCI
Mountjoy Bayly House	National Register; National Historic Landmark
Peace Monument	AOC Heritage Asset
Railway Express Agency (REA) Building	DCI Eligible
Robert A. Taft Memorial	AOC Heritage Asset
Russell Senate Office Building	AOC Heritage Asset
Senate Parks, Underground Garage, and Fountains	AOC Heritage Asset
Belmont-Paul Women's Equality National Monument	National Historic Landmark; National Register and DCI
Square 750 Rowhouse Development	Potentially National Register and DCI Eligible
St. Aloysius Catholic Church	National Register and DCI
St. Joseph's Home (Former)	Potentially National Register and DCI Eligible
St. Philip's Baptist Church	DCI
Sun Trust Bank (Former Childs Restaurant	Potentially National Register and DCI Eligible
The Summerhouse	AOC Heritage Asset
Thurgood Marshall Federal Judiciary Building	AOC Heritage Asset
Topham's Luggage Factory (Former)	Potentially National Register and DCI Eligible
Uline Ice Company Plant and Arena Complex	National Register and DCI
United States Capitol	AOC Heritage Asset

Name	Historic Designation
United States Capitol Square	AOC Heritage Asset
United States Supreme Court	AOC Heritage Asset
Victims of Communism Memorial	NPS memorial
Washington Union Station (WUS)	National Register and DCI
Washington Union Station Plaza (Columbus Plaza and Columbus Fountain)	National Register and DCI
Woodward and Lothrop Service Warehouse	National Register and DCI
901 Second Street NE	National Register and DCI Eligible
Capitol Hill Historic District	National Register and DCI
L'Enfant – McMillan Plan	National Register and DCI
National Mall Historic District	National Register and DCI
Pennsylvania Avenue National Historic Site	National Register and DCI
Union Market Historic District	National Register and DCI
Washington Union Station Historic Site (Expanded Boundary)	National Register and DCI Eligible

AOC = Architect of the Capitol; DCI = District Inventory of Historic Sites; NPS = National Park Service

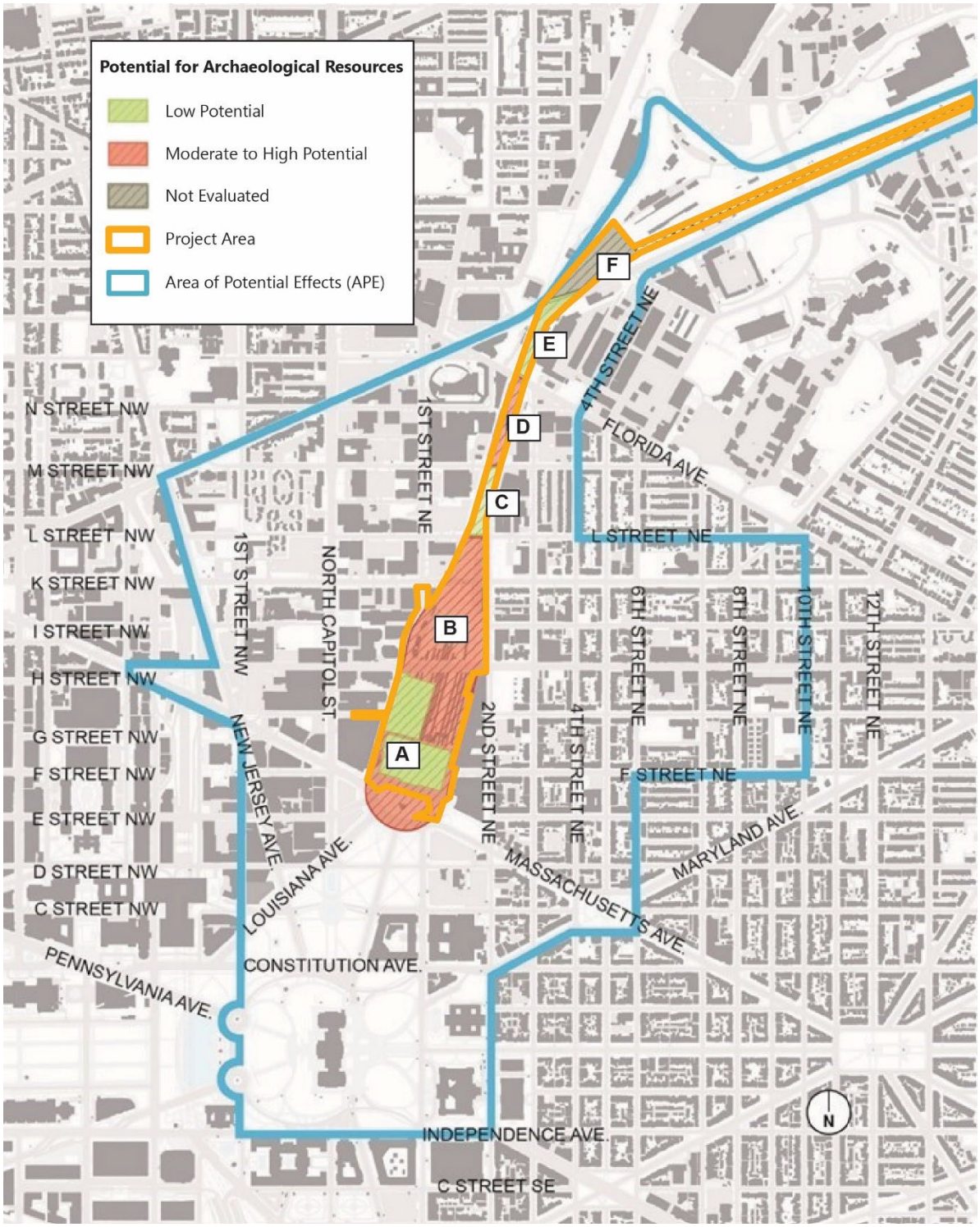
4.12.5.2 Archaeological Resources

The 2015 *Washington Union Station Historic Preservation Plan* includes an archaeological assessment that found that the Project Area may contain a range of prehistoric and historic archaeological materials, from isolated artifacts to significant cultural features.[245] The 2015 assessment found that the rail terminal has low-to-moderate potential for prehistoric material and moderate-to-high potential for historic material to be present (**Figure 4-21**).

Any resources present would likely be remnants of the Swampoodle neighborhood, a residential and commercial area that developed in the mid-to-late 19th century, which was home to many African American as well as Irish and Italian immigrants. Potential archaeological resources likely would include building foundations, wells, privies, infrastructure, and trash pits. Railroad infrastructure dating to the late 19th century and earlier may also be present.

[245] Washington Union Station Historic Preservation Plan Partners. 2015. *Washington Union Station Historic Preservation Plan*. Accessed from https://www.usrcdc.com/projects/historic-preservation-plan/. Accessed on August 18, 2023.

Figure 4-21. Potential for Archaeological Resources within the Project Area (Washington Union Station Historic Preservation Plan)



A 2022 Phase IB/II Archaeological Survey for the Washington Union Station Subbasement Structural Slab Replacement Project, which included eight excavation units within the WUS Subbasement, unearthed several artifacts and features. These resources primarily date to the 1878 to 1903 occupation period of Square 720, prior to the construction of WUS. The Phase IB/II survey determined that the resources discovered do not have the ability to provide significant new information to fill data gaps regarding late nineteenth-century communities in northeast Washington, DC. Therefore, the resources were recommended not eligible for listing in the NRHP.[246]

4.13 Parks and Recreation Areas

This section identifies existing parks and recreation areas near WUS that have the potential to be affected by the Project. For the purposes of the analysis, parks and recreation areas include public parks, private parks open to the public, off-street bicycle trails, walking paths, and areas used for general recreation. On-street bicycle and pedestrian routes are discussed in **Section 4.5**, *Transportation*.

4.13.1 Regulatory Context and Guidance

Relevant Federal and District policies, regulations, and guidance include:

- NPS Organic Act of 1916 (16 U.S.C. § 1-4);
- NPS Director's Order 12;[247]
- NPS NEPA Handbook;[248]
- NCPC and District of Columbia Parks and Recreation, *Comprehensive Plan for the National Capital* (2021);[249]
- DCMR Title 24: Public Space and Safety;

[246] Richard Grubb & Associates. November 17, 2022. *Phase IB/II Archaeological Survey: Washington Union Station Subbasement Structural Slab Replacement Project.* Prepared for Gannett Fleming, Inc. on behalf of Amtrak and FRA.

[247] United States Department of the Interior, National Park Service. October 5, 2011. *Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-Making.* Accessed from https://www.nps.gov/subjects/policy/upload/DO_12_10-5-2011.pdf. Accessed on February 14, 2024.

[248] United States Department of the Interior, National Park Service. 2015. *NEPA Handbook.* Accessed from https://www.nps.gov/subjects/nepa/upload/NPS_NEPAHandbook_Final_508.pdf. Accessed on August 18, 2023.

[249] Title 10, Part A8, published pursuant to Section 9a of the District of Columbia Comprehensive Plan Act of 1994, effective April 10, 1984 (D.C. Law 5-76; D.C. Official Code Section 1-301.66). The *Comprehensive Plan for the National Capital* is a unified plan comprised of two components: 1) the District Elements and 2) the Federal Elements. The District Elements are authored by DCOP, including the Parks, Recreation and Open Space elements of the plan. NCPC authors the Federal Elements, including the Parks and Open Space element.

- *NoMa Vision Plan and Development Strategy*;[250] and
- *Downtown East Re-Urbanization Strategy*.[251]

4.13.2 Study Area

The Study Area for parks and recreation areas includes the Project Area and the part of the District within up to two city blocks of the Project Area (**Figure 4-22**). Impacts on a regional scale are not anticipated; therefore, there is no Regional Study Area.

4.13.3 Methodology

Parks and recreation areas in the Study Area were identified by coordinating with relevant local, national, and regional recreation area authorities and through review of GIS-based resources and aerial photography.

4.13.4 Existing Conditions

Table 4-15 identifies and briefly describes the existing parks and recreation areas within the Study Area, the agency with jurisdiction over the property, the estimated property size, and the approximate distance from the Project Area. Note that there are a few small areas in **Figure 4-22** that indicate a park, but they are unnamed open grassy areas (e.g., small triangular areas where several roads converge [e.g., Massachusetts Ave NE, Second Street NE, and D Street NE]). All parks and recreation areas are easily accessible by pedestrians and visitors in vehicles. They mostly attract users from the surrounding area.

[250] District of Columbia Office of Planning. 2006. *NoMa Vision Plan and Development Strategy*. Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/Section%202-%20NoMA%20Vision.pdf. Accessed on August 16, 2023.

[251] District of Columbia Office of Planning. 2019. *The Downtown East Re-Urbanization Strategy*. Accessed from https://planning.dc.gov/downtown-east. Accessed on August 14, 2023.

Figure 4-22. Parks and Recreation Areas Study Area

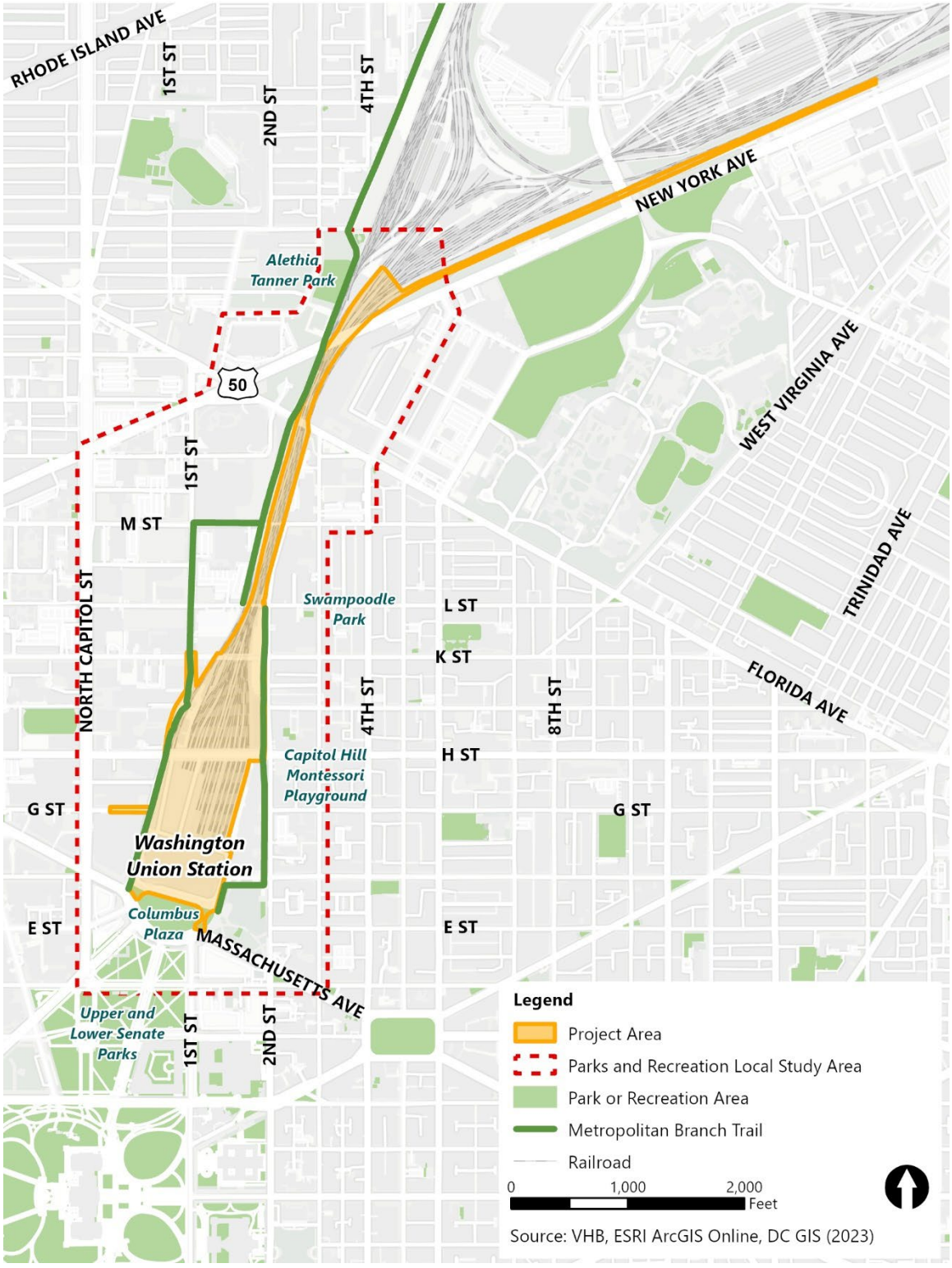


Table 4-15. Parks and Recreation Areas within the Study Area

Resource Name	Resource Description	Jurisdiction	Est. Size (square feet)	Approx. Distance (feet)
Columbus Plaza	Plaza and landscaped area immediately across from the primary entrance to WUS; serves as the gateway to Union Station and link to the U.S. Capitol Complex.	NPS	1,400	25
Metropolitan Branch Trail[252]	Off/On-street multi-use trail. Adjacent to WUS, the trail is split between the First Street Cycle Track and Second Street NE.	DDOT, DC Department of General Services	Linear	25
Alethia Tanner Park	Large lawn, playground, dog park, gardens, bioremediation meadow with a boardwalk, plaza areas, performance area adjacent to a large gently sloped lawn, café space with seating, and connections to the Metropolitan Branch Trail.[1]	Private (except 0.5 acres given to DC for the dog park and MBT alignment)	108,900	80
Capitol Hill Montessori Playground	Children's playground associated with the Capitol Hill Montessori Elementary School.	DC Public Schools	300	600
Swampoodle Park	Children's playground, dog park, public seating	DC Department of Parks and Recreation	8,200	350
Upper and Lower Senate Parks	Part of the U.S. Capitol Complex, within the National Mall; lawns, plazas, and landscaped areas on the north side of the U.S. Capitol Complex (known as the senate side); fountains and small memorials present throughout.	Federal Land; AOC	5,700	420

1. NoMa Parks Foundation. 2023. Alethia Tanner Park. Accessed from https://nomaparks.org/nomagreen/. Accessed on September 20, 2023.

4.14 Social and Economic Conditions

This section describes existing conditions pertaining to demographics, jobs, economic conditions, tax revenue, and commercial activity at WUS.

[252] This section addresses the Metropolitan Branch Trail as a recreational facility. However, in their comments on the administrative draft FEIS (provided to FRA by email dated November 9, 2023, DDOT), the official with jurisdiction on the trail, indicated that the Metropolitan Branch Trail is primarily a transportation facility. As such, it is exempt from Section 4(f) requirements.

4.14.1 Regulatory Context and Guidance

The following are District regulations and guidance pertaining to social and economic conditions that are most relevant to the Project.

- DC Code 8-109.01 – 8.109.12, Subchapter V: *Environmental Impact Statements*;
- DC Workforce Investment Council, Workforce Innovation and Opportunity Act 2016-2020 Unified State Plan;[253]
- DC Office of the Deputy Mayor for Planning and Economic Development, *DC's Economic Strategy: Strategy Report*[254] and
- *The Comprehensive Plan for the National Capital: District Elements*.[255]

4.14.2 Study Area

The Local Study Area (**Figure 4-23**) includes the Project Area up to K Street NE and the 30 2020 U.S. Census block groups within one half-mile of the Project Area. The Regional Study Area is comprised of the District.

4.14.3 Methodology

A socioeconomic profile of the Study Area was established using the following indicators: demographics, jobs, tax and other public revenues, current economic conditions of the neighborhood(s), commercial activity, and local government services. The social, demographic, economic, and commuting data used are from the 2020 U.S. Census, the DC Office of Tax and Revenue, and the Bureau of Labor Statistics.

4.14.4 Existing Conditions

4.14.4.1 Demographics

Total Population

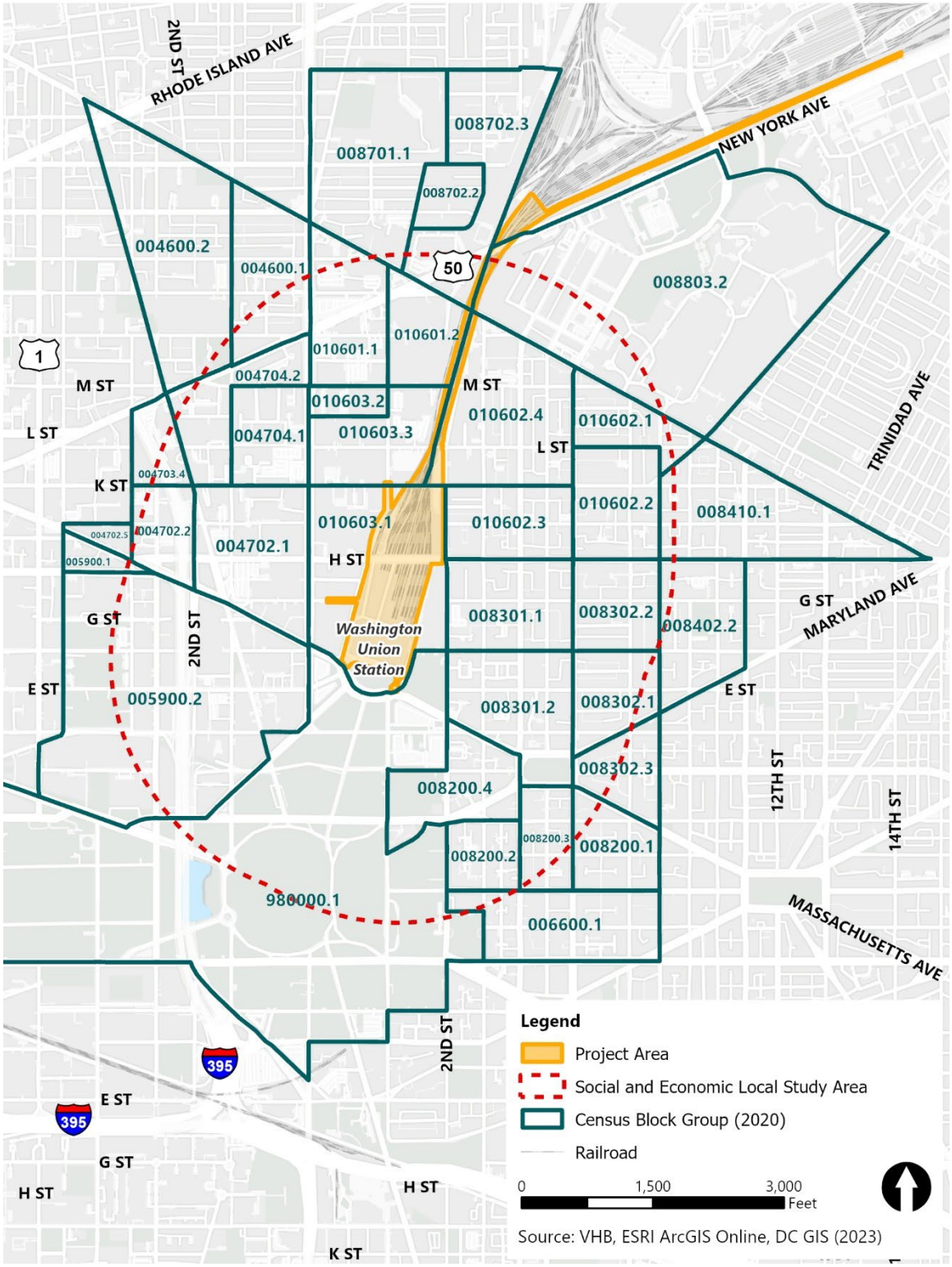
The population of the Local Study Area in 2020 was 29,004, which is approximately 4.0 percent of the District's total population of 689,545 residents.

[253] DC Workforce Investment Council. 2016. *Workforce Innovation & Opportunity Act 2016-2020 Unified State Plan.* https://dcworks.dc.gov/sites/default/files/dc/sites/dcworks/publication/attachments/WIOA_DC_Unified_State_Plan_Final.pdf. Accessed on August 18, 2023.

[254] Office of the Deputy Mayor for Planning & Economic Development. *DC's Economic Strategy, Strategy Report. March 2017.* Accessed from https://dmped.dc.gov/sites/default/files/dc/sites/dmped/page_content/attachments/DC-Economic-Strategy-Strategy-Report-FULL-May-1-2017.pdf. Accessed on February 9, 2024.

[255] District of Columbia Office of Planning. 2021a. *The Comprehensive Plan for the National Capital: District Elements*. Accessed from https://planning.dc.gov/node/637932. Accessed on August 14, 2023.

Figure 4-23. Socioeconomic Local Study Area



While the District's total population increased between 2010 and 2020 (official census collection years) by approximately 14.5 percent (from 601,723 to 689,545), the U.S Census Bureau currently estimates (as of July 1, 2022) a decrease (down to 671,803 or -2.6 percent) in the District's total population since 2020.[256]

Age

Table 4-16 shows the age distribution of the population in the Local Study Area and the District in 2020. Persons in the 25-to-34-year age group formed the largest age group in both the Local Study Area (33.7 percent) and the District (23.6 percent). In general, in 2020, the population of the Local Study Area was slightly younger than that of the District as a whole. Persons under 44 years of age represented 73.9 percent of the former and 67.4 percent of the latter.

Table 4-16. Local Study Area and District Population by Age (2020)

Age Group	Local Study Area		District	
	Population	Percent of total	Population	Percent of Total
Under 5 Years	1,102	3.8	37,068	5.4
5-14 Years	1,462	5.0	62,236	9.0
15-19 Years	939	3.2	33,747	4.9
20-24 Years	3,293	11.4	64,439	9.3
25-34 Years	9,768	33.7	162,577	23.6
35-44 Years	4,874	16.8	105,015	15.2
45-54 Years	2,850	9.8	69,507	10.1
55-64 Years	2,266	7.8	68,180	9.9
65-74 Years	1,414	4.9	51,206	7.4
75-84 Years	800	2.8	25,085	3.6
85 and Older	236	0.8	10,485	1.5
Total	29,004	100	689,545	100

Source: 2020 U.S. Census[257]

Gender

In 2020, gender distribution in the Local Study Area's population was approximately 48.3 percent male and 51.7 percent female. By comparison, the District had a slightly lower male population (approximately 46.8 percent) and higher female population (approximately 53.2 percent).

[256] U.S. Census Bureau. 2023. *Quick Facts – District of Columbia*. Accessed from https://www.census.gov/quickfacts/fact/table/DC/PST045222. Accessed on August 15, 2023.

[257] United States Census. 2020. Accessed from https://data.census.gov/. Accessed on August 17, 2023.

Race

Table 4-17 shows the racial and ethnic breakdown of the Local Study Area's population in 2020, along with the District's. The Local Study Area, with 58.2 percent of white residents, was home to proportionately fewer minorities than the District as a whole.

Table 4-17. Local Study Area and District Population by Race (2020)

Race or Ethnicity	Local Study Area		District	
	Population	Percent of total	Population	Percent of Total
White	16,872	58.2	261,771	38.0
Black or African American	7,005	24.2	282,066	40.9
Asian	1,352	4.7	33,192	4.8
American Indian and Alaskan Native	27	0.1	1,277	0.2
Native Hawaiian/Other Pacific Islander	0	0	349	0.1
Some other race	93	0.3	3,753	0.5
Two or more races	1,308	4.5	29,485	4.3
Hispanic or Latino	2,347	8.1	77,652	11.3
Total	29,004	100	689,545	100

Source: 2020 U.S. Census[258]

Median Household Income

The median household income for the Local Study Area was $133,444 in 2020.[259] This is $43,356 higher than the median household income for the District overall ($90,088).

4.14.4.2 Economic Conditions

The Federal and District governments comprise a large share of the District's economy (approximately 30 percent of District's Gross Domestic Product [GDP]) and are the largest employers in the District. The Federal government alone is the largest employer in the District with approximately 25 percent of all jobs. Significant industries include tourism, education, and professional services. District real GDP was approximately $129.27 billion in 2022, which is an increase from the previous year when real GDP stood at $126.98 billion. Over a five-year period (2017-2022), real GDP increased approximately 5 percent. The Districts GDP in 2022 represented approximately 0.5 percent of the U.S. GDP.[260] In 2021, approximately 19.1 million people visited the District, up from 13.3 million in 2020, when COVID pandemic-related closures and travel restrictions affected travel. Visitors spent approximately $5.4 billion in the District, which supported nearly 58,000 local jobs. The number of visitors in the District in 2021 was still below

[258] United States Census. 2020. Accessed from https://data.census.gov/. Accessed on August 17, 2023.

[259] United States Census. 2020. Accessed from https://data.census.gov/. Accessed on August 17, 2023.

[260] United States Bureau of Economic Analysis. 2022. *GDP For the District of Columbia*. Accessed from https://www.bea.gov/. Accessed on August 16, 2023.

pre-pandemic levels (approximately three quarters of the 2019 levels).[261] In addition, the District operates as a center for meetings, conventions, and exhibitions.

4.14.4.3 Employment

In 2020, there were an estimated 650,612 jobs in the District and 62,740 jobs within the Local Study Area.[262] The leading industries in the Local Study Area included public administration (29 percent); educational services (17 percent); and professional, scientific, and technical services (12 percent). As previously mentioned, the Federal government is the largest employer in the District; however, year over year (from June 2022 to June 2023), there was a decrease in Federal government jobs in the District (-4.1 percent).[263] The District's unemployment in June 2023 stood at 5.1 percent, up from 4.4 percent in June 2022.[264]

4.14.4.4 Economic Planning Policy

Economic planning policy in the District is guided by *DC's Economic Strategy* report developed in March 2017 and *The Comprehensive Plan for the National Capital,* which was adopted in 2006 and amended in 2011 and 2021.The *DC's Economic Strategy* report states two specific goals: 1) grow the DC private sector economy to $100 billion (by 20%) by the end of 2021, and 2) reduce unemployment across wards, races, and educational attainment levels, bringing unemployment levels below 10% in all segments by the end of 2021. The unemployment goal translates to the following targets: reduce unemployment levels of African American residents, reduce unemployment levels of high school graduates without a Bachelor's degree, and reduce unemployment levels of Wards 7 and 8. The report provides an action framework to meet these goals. *The Comprehensive Plan for the National Capital* is a framework guiding the future growth and development of the District as an inclusive city with equitable places to live and work with equitable opportunities.[265]

[261] Aratani, Lori. "D.C. sees a boost in visitors, but full recovery remains elusive" *Washington Post*, August 31, 2022. Accessed from https://www.washingtonpost.com/transportation/2022/08/31/dc-tourism-visitors-washington/. Accessed on August 16, 2023.

[262] Bureau of Labor Statistics (2020) accessed via the U.S. Census Bureau's *Longitudinal Employment-Household Dynamics* online mapper found at https://onthemap.ces.census.gov/. Accessed on August 18, 2023

[263] District Department of Employment Services. *District of Columbia Area Industry Employment*. Accessed from https://does.dc.gov/sites/default/files/dc/sites/does/page_content/attachments/CESdcJun23.pdf. Accessed on August 16, 2023.

[264] District Department of Employment Services. *Employment Status For the Civilian Population*. Accessed from https://does.dc.gov/sites/default/files/dc/sites/does/page_content/attachments/Jun_2023_EmpStatus_DC.pdf. Accessed on August 16, 2023.

[265] District of Columbia Office of Planning. 2021. *The Comprehensive Plan for the National Capital: District Elements, Capitol Hill*. Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/District%20Elements_Volume%20II_Chapter%2015_April%208%202011.pdf. Accessed on August 18, 2023; *The Comprehensive Plan for the National Capital: District Elements, Near Northwest*. Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/District%20Elements_Volume%20II_Chapter%

4.14.4.5 Taxes, Public Revenue, and Local Government Services

In 2022, the District's largest revenue sources were real property taxes (29%), individual income taxes (33.8%), and sales and use taxes (11.1%); total District revenue collection was approximately $8.5 billion from taxes, fees, and other sources.[266] Real property tax rates vary according to property type. The current general sales tax rate in the District is 6 percent. Some goods and services are taxed at a higher rate, including, but not limited to, soft drinks, tickets to events at Capital One Area, restaurant meals, hotel rooms, and parking in commercial lots. Individual income tax rates are progressive and vary according to income levels.[267] Nearly half of the District's 2022 budget was allocated to public education (27 percent) and social services (22 percent). Approximately 13 percent of the District's budget goes toward public safety and justice (e.g., police, fire, emergency and medical service). The remaining budget allocations go to government direction and support, economic development and regulation, operations and infrastructures, and financing.[268]

4.14.4.6 Commercial Activity at WUS

The WUS parking garage and retail uses within WUS are USRC's primary sources of revenue. USRC uses this revenue to manage WUS and sustain ongoing operations. Existing retail space at the WUS is under a long-term (99-year) lease between USRC and USI, a private entity controlled by Ashkenazy Acquisition Corporation. USPG, LLC operates the WUS parking garage for USRC under another lease agreement. Based on USRC's financial report for 2019, parking accounts for 70 percent ($8,098,714) of USRC's total annual revenue. Interest income and station revenue account for the remaining 30 percent of USRC's revenue.[269]

There are approximately 206,000 square feet of retail space in WUS, and it is one of the District's largest retail shopping centers. As of 2023, nearly 50 percent of the retail space at WUS is food/beverage stores and restaurants, with the remaining 50 percent comprised of men's and women's apparel, jewelry, and health and beauty stores.[270] The primary consumer groups for WUS retail and services are local residents, local workers, commuters, and tourists.

2021_April%208%202011.pdf. Accessed on August 18, 2023; *The Comprehensive Plan for the National Capital: District Elements, Upper Northeast*. Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/District%20Elements_Volume%20II_Chapter%2024_April%208%202011.pdf. Accessed on August 18, 2023

[266] District of Columbia, Office of the Chief Financial Officer. Total General Fund Revenue – Fiscal Year 2022. Accessed from https://cfo.dc.gov/sites/default/files/dc/sites/ora-cfo/publication/attachments/FY22%20DC%20Revenue%20Chapter.pdf. Accessed on August 15, 2023.

[267] District of Columbia Code: Title 47, Chapters 20 and 22.

[268] District of Columbia. 2022. FY 2022 Revised Local Funds Budget. Accessed from https://cfo.dc.gov/sites/default/files/dc/sites/ocfo/page_content/attachments/FY%202022%20Revised%20Local%20Funds%20Budget.pdf. Accessed on August 18, 2023.

[269] Union Station Redevelopment Corporation. *2019 Annual Report*. Accessed from https://www.usrcdc.com/wp-content/uploads/2020/01/usrc_annual_report_2019_final.pdf. Accessed on August 15, 2023.

[270] Union Station DC. *Directory*. Accessed from https://www.unionstationdc.com/directory/. Accessed on August 18, 2023.

4.15 Public Safety and Security

This section characterizes existing conditions pertaining to public safety and security at WUS.

4.15.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance:

- FRA Safety Standards (49 CFR Parts 200 - 299);
- FRA High-Speed Passenger Rail Safety Strategy;[271]
- Rail Safety Improvement Act of 2008 (Public Law 110-432);
- U.S. Code on Railroad Safety (49 U.S.C. § 20101 et seq);
- Department of Homeland Security/Transportation Security Administration Regulations concerning Rail Transportation Security (49 CFR Part 1580); and

Other relevant guidance includes:

- Amtrak safety and security procedures;[272]
- District of Columbia Fire Code;[273]
- District of Columbia Construction Codes Supplement;[274] and
- DCMR Title 24, Public Space and Safety.

4.15.2 Study Area

The Local Study Area includes the Project Area and a half-mile buffer (**Figure 4-24**). The Regional Study Area includes service boundaries for fire, law enforcement, and emergency services in the District (**Figure 4-25**). These service boundaries include those specific to WUS and the District, including Amtrak Police, Metro Transit Police, U.S. Park Police, and U.S. Capitol Police.

[271] Federal Railroad Administration. 2009. *High-Speed Passenger Rail Safety Strategy.* Accessed from https://www.fra.dot.gov/eLib/Details/L03624. Accessed on August 18, 2023.

[272] Amtrak is responsible for assessing and implementing safety and security measures for its trains in the Study Area; commuter services, in collaboration with Amtrak, are responsible for assessing and implementing safety and security measures for their trains in the Study Area.

[273] District of Columbia Department of Buildings. *2017 Construction Codes*. Accessed from https://dob.dc.gov/page/dc-construction-codes. Accessed on August 18, 2023.

[274] District of Columbia Department of Buildings. *2017 Construction Codes*. Accessed from https://dob.dc.gov/page/dc-construction-codes. Accessed on August 18, 2023.

4.15.3 Methodology

The assessment is based on a review of publicly available information on FRA rail accident data, law enforcement services, emergency response services, crime data, and transportation security measures.

4.15.4 Existing Conditions

4.15.4.1 Safety

Railroad safety in the Project Area is overseen by FRA and relevant Amtrak departments. Based on FRA safety data, between 2020 and 2023 (through May), there were 21 Amtrak train accidents and one MARC train accident within the District.[275] Of the 21 Amtrak accidents, 17 were derailments and 4 were categorized as 'other'. The MARC accident was a derailment. In 2022, there were 16 reported passenger injuries on Amtrak trains (12 injuries) and MARC trains (4 injuries) in the District, consisting primarily of bruises, cuts, and abrasions from slips, trips, and falls.[276] In 2023 (as of May 31), there were 6 reported passenger injuries on Amtrak trains and one reported injury on MARC trains, with similar injuries and causes as 2022.

4.15.4.2 Fire and Medical Emergency Response

WUS and the Local Study Area are served by Fire Battalions 1 and 2. The closest fire station to WUS is Engine 3 Station at 439 New Jersey Avenue NW. Other stations close to WUS are Engines 2, 6, 10, 12, 13, and 18 (**Figure 4-26**). Exact protocols for fire response vary by incident type and size. District fire services also coordinate with other local municipalities.

Eight hospitals in the District provide emergency care, none of which fall within the Local Study Area. Four hospitals that provide emergency care are located within 3 miles of the WUS in the District, including three general hospitals (Howard University Hospital, MedStar-Washington Hospital Center, and George Washington University Hospital) and one pediatric hospital (Children's National Medical Center).[277] Emergency response services in the Regional Study Area are provided by MPD and the District of Columbia Fire Department.

[275] Federal Railroad Administration. 2023. *Train Accidents by Railroad Group*. Accessed from https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/inctally3.aspx. Accessed on August 21, 2023.

[276] Federal Railroad Administration. 2023. *Casualties by State/Railroad*. Accessed from https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/query/CasualitiesReport.aspx. Accessed on August 21, 2023.

[277] DC Health Department. 2017. Hospitals in the District of Columbia. Accessed from https://dchealth.dc.gov/sites/default/files/dc/sites/doh/publication/attachments/List%20of%20Hospitals%20FY17.pdf. Accessed on August 14, 2023.

Figure 4-24. Public Safety and Security Local Study Area

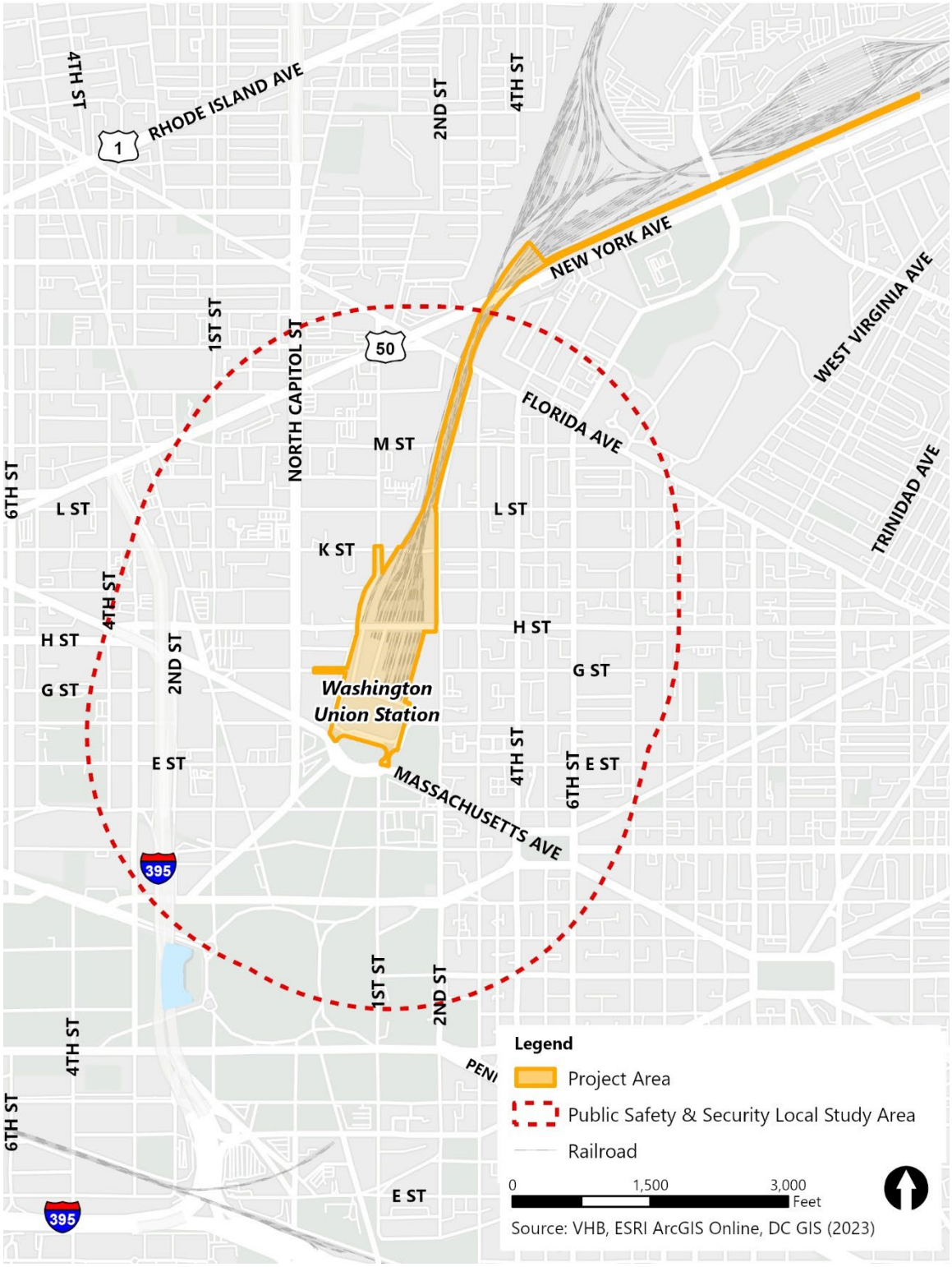


Figure 4-25. Public Safety and Security Regional Study Area

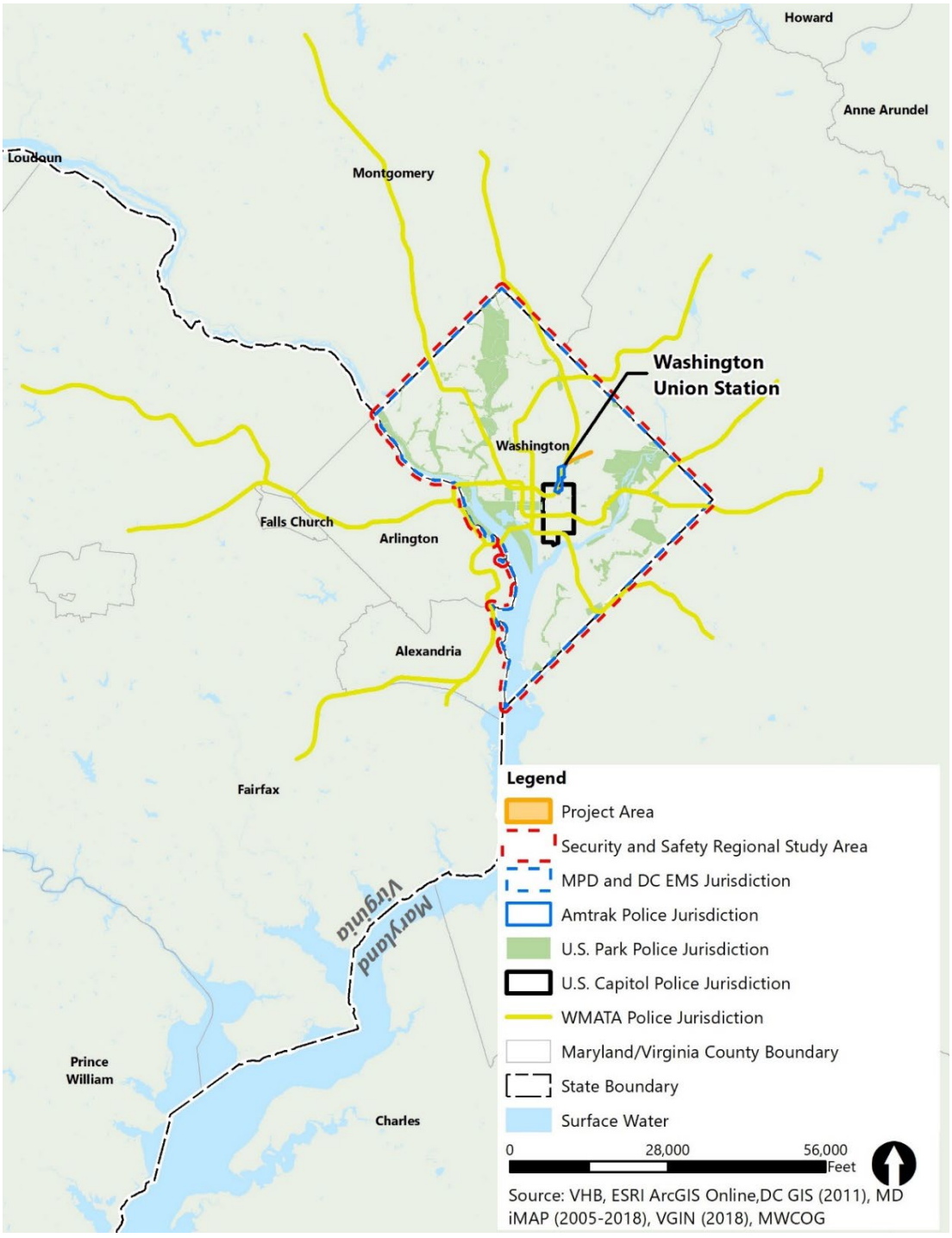
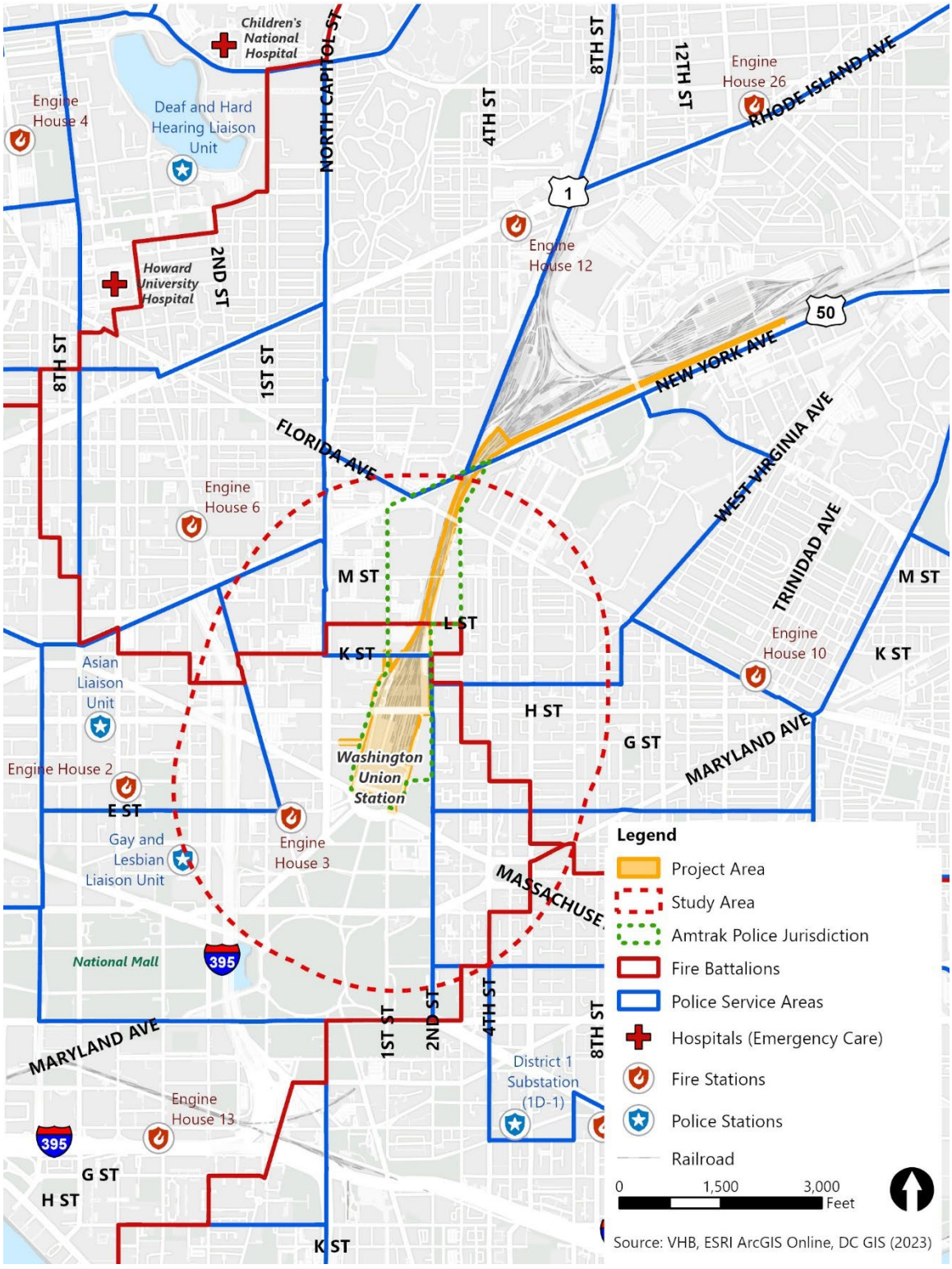


Figure 4-26. Emergency Response Resources



4.15.4.3 Police

Multiple overlapping police and security forces operate in the Local Study Area. The largest force is MPD. MPD is divided into seven districts, themselves divided into Police Service Areas (PSA). WUS is within the First District, PSA 102. The other primary PSAs overlapping with the Local Project Area include PSAs 104, 501, 502, and 505.[278] The nearest substation is First District Substation on 500 E Street SE.

Amtrak Police have jurisdiction and authority over WUS. Amtrak Police regularly patrol WUS, have an office and information desk in the Claytor Concourse, and are headquartered in the REA Building. Amtrak Police uses contracted security forces (Allied Universal Security Services) to maintain order in the terminals and perform screening of freight deliveries at the east and west loading docks. Amtrak Emergency Management and Corporate Security (EMCS) owns and manages security cameras, physical access control systems, and intrusion detection systems. Metro Transit Police are responsible for the Metrorail platform and concourse, as well as for the West Porch.

Columbus Plaza and the area near Columbus Circle to the south of WUS (in the Lower Senate Areas) are under the jurisdiction of the U.S. Park Police**.** GPO Police are responsible for the H Street and K Street bridges that connect into WUS over First Street NE. Federal Protective Service (FPS) is responsible for securing the Securities and Exchange Commission and Postal Square Buildings. U.S. Capitol Police are responsible for the Thurgood Marshall Federal Building and associated parking lots and park land controlled by the AOC.

The Police Coordination Amendment Act of 2001 governs how Federal law enforcement agencies interact with MPD in the District, including the Local Study Area.[279]

4.15.4.4 Crime

The Local Study Area saw a 14 percent increase in reported crimes in 2023 (January 1 to August 21) compared to the same period in 2022.[280] This included a 54 percent increase in violent crime and a 10 percent increase in property crime. The majority of violent crimes included robbery and assault with a dangerous weapon, while most property crimes were theft. MPD's First District had the fifth highest numbers of total reported crimes in 2023 (through August 21) compared to all seven districts.[281] Out of the five primary PSAs that overlap with the Local Study Area, PSA 501 had the highest incidents of total

[278] Metropolitan Police Department. *First District Map*. Accessed from https://mpdc.dc.gov/sites/default/files/dc/sites/mpdc/publication/attachments/First%20District%20Map%2024x24.pdf. Accessed on August 21, 2023.

[279] District of Columbia. 2018. *Covered Federal Law Enforcement Agencies.* Accessed from https://mpdc.dc.gov/page/covered-federal-law-enforcement-agencies. Accessed on August 21, 2023.

[280] District of Columbia Metropolitan Police Department. 2023. Crimecards Application. Accessed from https://crimecards.dc.gov/. Accessed on August 21, 2023. Note that the Crimecards mapper allows incremental distances from a point location only to obtain data. Therefore, for this crime data, the Local Study Area was increased to ¾ of a mile around WUS to capture the more northern areas of the project area.

[281] District of Columbia Metropolitan Police Department. 202318. Crimecards map Application. Accessed from https://crimecards.dc.gov/http://crimemap.dc.gov/. Accessed on August 21, 2023.

crime and violent crime.[282] PSA 501 is north-northwest of WUS and generally includes the area west of Capitol Street and north of H Street to Florida Avenue, and just north of Florida Avenue (i.e., the areas of Union Market and Gallaudet University)

MPD crime reduction initiatives include a full-scale body-worn camera program, a citywide closed-circuit television system, and increased officers on the street during the summer. Six locations in the Local Study Area have MPD closed-circuit television cameras installed. MPD places an emphasis on community policing and beat patrols.

4.15.5 Security

WUS's concourses are publicly accessible and there are no security measures to restrict entry. Platform access is restricted to ticketed passengers and railroad personnel. Major entrances to the tracks at 3rd Street NE and from the Ivy City Yard are controlled by electronic system or guards. The H Street Bridge and New York Avenue Bridge are fenced but may provide an opportunity for intrusion of people or materials from above onto the tracks. In both cases, however, fencing and walls limit such intrusion.

Loading facilities are located on First Street NE and in a loading dock on H Street shared with the adjacent Station Place development. There are no dedicated screening facilities at the loading docks, though security personnel patrol the area.

The Transportation Security Administration (TSA) conducts periodic bag and passenger screenings with uniformed and canine divisions inside WUS. The parking and bus garage do not screen vehicles, passengers, or luggage.

DDOT has designated 19 corridors radiating from the District as emergency event/evacuation routes extending into Maryland and Virginia and connecting to the Capital Beltway (I-495). Within the Local Study Area, New York Avenue, H Street NE, and I-395 are designated evacuation routes. The District's Homeland Security and Emergency Management Agency (HSEMA) coordinates preparedness and response in the event of an emergency. The District and the Federal governments have developed multiple contingency plans for securing critical infrastructure and ensuring the safety of citizens in an emergency. The District Response Plan, developed by HSEMA to facilitate coordinated planning and unified response in times of crisis, identifies Amtrak, MTA, and VRE as stakeholder organizations and agencies tasked with support roles during an emergency by providing emergency transit support and coordination during an emergency.[283] In case of railroad failure during an emergency event, WUS would serve as a primary hub of multimodal activity.

[282] District of Columbia Metropolitan Police Department. 202318. Crimecards map Application. Accessed from https://crimecards.dc.gov/http://crimemap.dc.gov/. Accessed on August 21, 2023.

[283] District of Columbia Homeland Security and Emergency Management Agency. *District Response Plan,* September 2014. Accessed from https://hsema.dc.gov/page/document-library. Accessed on August 21, 2023.

4.15.6 Traffic Restrictions

Traffic restrictions have been put in place along several routes around WUS to improve traffic safety and limit the potential for explosive attacks using large vehicles.[284] The District has defined Primary Routes with no heavy vehicle restrictions, Bus Restricted Routes, Truck Restricted Routes, Bus and Truck Restricted Routes, and Directional Restricted Routes. New York Avenue, Florida Avenue, New Jersey Avenue, Massachusetts Avenue NW, N Capitol Street, and H Street are all Primary Routes in the Local Study Area. There are Bus and Truck Restricted Routes in the Local Study Area along D Street NE, Constitution Avenue, F Street NE, and sections of 3rd, 4th, and 5th Streets NE. Buses and trucks are restricted along 3rd Street and 5th Street NE between H Street and D Street, and on F Street NE between 4th Street and 6th Street.

4.16 Public Health, Elderly, and Persons with Disabilities

This section characterizes existing conditions pertaining to public health, the elderly, and persons with disabilities. FRA's *Procedures for Considering Environmental Impacts*[285] specify that the "EIS shall assess impacts of the alternatives on the transportation and general mobility of the elderly and handicapped."

4.16.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that pertain to public health, the elderly, and persons with disabilities that are relevant to the Project include:

- NAAQS (40 CFR Part 50);
- OSHA Safety and Health Regulations for Construction (29 CFR Part 1926);
- NESHAP Regulations (40 CFR Part 61);
- Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) under CERCLA (42 U.S.C. § 9601);
- ADA (42 U.S.C. § 1210);
- Transportation Services for Individuals with Disabilities (49 CFR Part 37);
- FTA Americans with Disabilities Act (ADA) Guidance (FTA Circular 4710.1);[286] and

[284] District of Columbia. Truck and Bus Routes. Accessed from http://opendata.dc.gov/datasets/truck-and-bus-through-route. Accessed on August 21, 2023.

[285] Federal Railroad Administration. 1999. *Procedures for Considering Environmental Impacts.* Accessed from https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/1217/FRAEnvProcedures.pdf/. Accessed on August 21, 2023.

[286] Federal Transit Administration. 2015. FTA Circular 4710.1 *Americans with Disabilities Act: Guidance*. Accessed from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/Final_FTA_ADA_Circular_C_4710.1.pdf. Accessed on August 21, 2023.

- EPA Memorandum, *Promoting the Use of Health Impact Assessment to Address Human Health in Reviews Conducted Pursuant to the National Environmental Policy Act and Section 309 of the Clean Air Act*.[287]

District policies, regulations, and guidance that pertain to public health, elderly, and persons with disabilities include:

- DCMR, Title 22-B, Public Health and Medicine;[288]
- The District of Columbia Building Code,[289] Chapter 11, *Accessibility*; and
- The District of Columbia Green Construction Code,[290] Chapter 8, *Indoor Environmental Quality and Comfort*.

4.16.2 Study Area

The Local Study Area (**Figure 4-27**) for public health, elderly, and persons with disabilities is the Project Area with a half-mile buffer. Regional impacts were not considered since all potential impacts are expected to be local. Potential impacts to public health, the elderly, and person with disabilities would be local.

4.16.3 Methodology

The assessment considered entrances, transit connections, retail and food areas, concourses, platforms, support facilities, existing populations of users, elderly, and persons with disabilities within the Project Area and the Local Study Area. Public health data were acquired from the EPA Human Health Risk Assessment tools, databases, and guidelines; Emergency Planning and Community Right-to-Know Act existing Tier I and Tier II reports; U.S. Department of Health and Human Service (HHS) health data; and DC Health. Data sources for the elderly and disabled included Census data. Existing accessibility and ADA compliance features and known station and track issues were also considered.

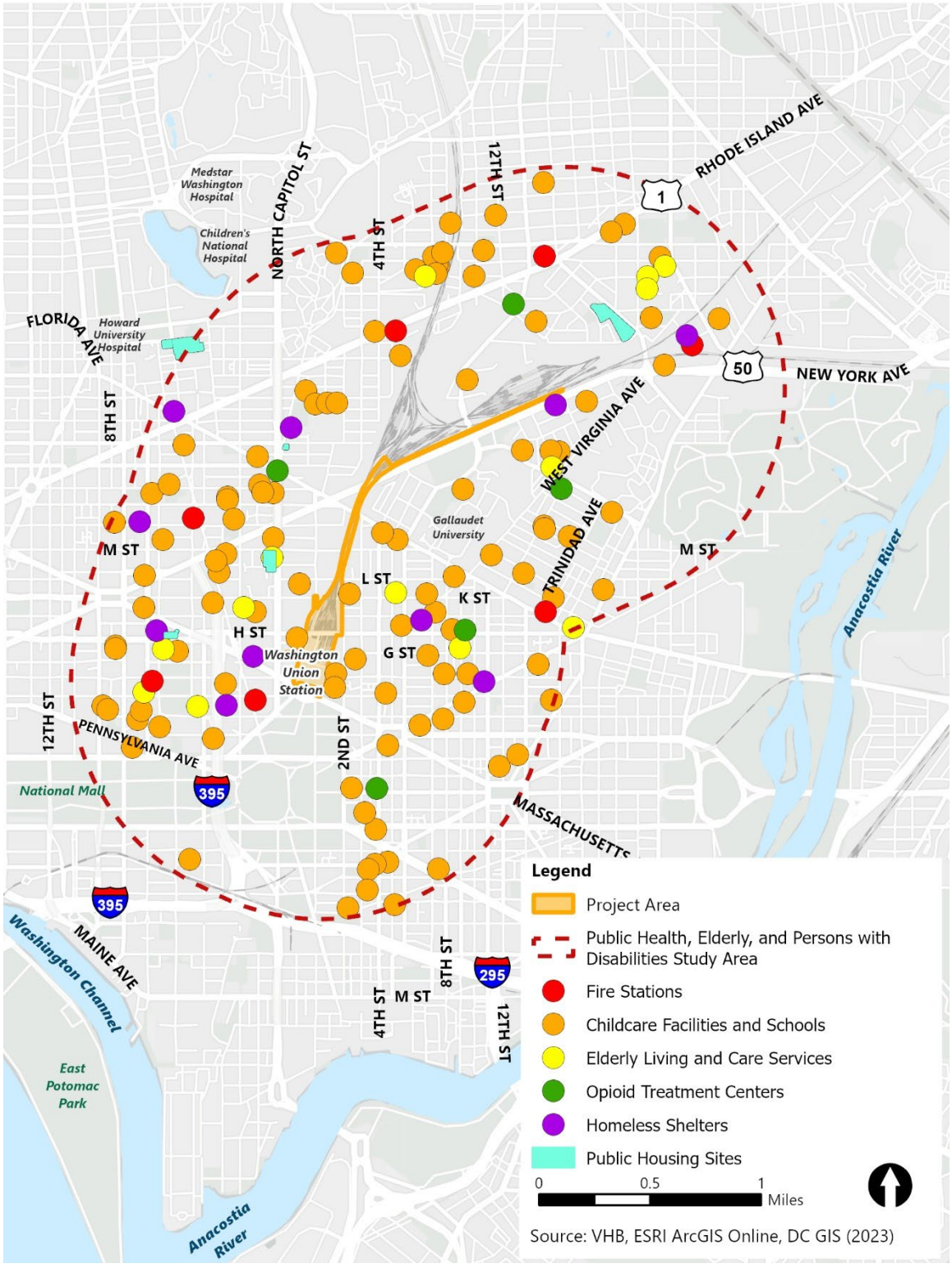
[287] U.S. Environmental Protection Agency. 2015. *Promoting the Use of Health Impact Assessment to Address Human Health in Reviews Conducted Pursuant to the National Environmental Policy Act and Section 309 of the Clean Air Act*. Accessed from https://www.epa.gov/sites/production/files/2016-03/documents/hia_memo_from_bromm.pdf. Accessed on August 21, 2023.

[288] District of Columbia Municipal Regulations. 2018. Title 22-B *Public Health and Medicine*. Accessed from https://dcregs.dc.gov/Common/DCMR/ChapterList.aspx?subtitleNum=22-B. Accessed on August 21, 2023.

[289] International Code Council and District of Columbia. 2014. *District of Columbia Building Code – Chapter 11, Accessibility.* Accessed from https://codes.iccsafe.org/public/chapter/content/9182/. Accessed on August 21, 2023.

[290] District of Columbia Department of Buildings. *2017 District of Columbia Green Construction Code, Chapter 8, Indoor Environmental Quality and Comfort.* Accessed from https://dob.dc.gov/sites/default/files/dc/sites/dob/publication/attachments/2017%20DC%20Green%20Construction%20Code.pdf. Accessed on February 9, 2024.

Figure 4-27. Public Health, Elderly, and Persons with Disabilities Local Study Area



4.16.4 Existing Conditions

4.16.4.1 Public Health

The Project Area is in the heart of Washington, D.C. and visitors, residents, and workers to the Local Study Area may be exposed to a range of urban environmental stressors related to air quality, solid waste and hazardous materials, noise and vibration, and water resources. Existing conditions pertaining to these aspects of the environment are characterized in **Section 4.3**, *Water Resources and Water Quality*, **Section 4.4**, *Solid Waste Disposal and Hazardous Materials*, **Section 4.6**, *Air Quality*, and **Section 4.10**, *Noise and Vibration*.

Air quality is the main potential stressor in the Local Study Area. Diesel locomotives at WUS have the potential to affect public health due to emission of fine particulates. The diesel locomotives are currently naturally ventilated. Prolonged direct exposure to diesel emissions is limited by WUS practices related to boarding and by maintaining safe distances from locomotives when locomotives are being switched.

Children, low-income individuals, people seeking substance abuse, the homeless, and the elderly are most susceptible to environmental stressors. In the Local Study Area, there are 117 child development centers and schools, 25 elderly living and care facilities,[291] 10 shelters, 6 public housing sites, and 5 opioid treatment centers. Environmental Justice communities (i.e., minority and low-income populations) are addressed in more detail in **Section 4.17**, *Environmental Justice*.

4.16.4.2 Transportation and Mobility of the Elderly and Persons with Disabilities

WUS received its last major renovation in the 1980s and some of its elements do not meet current accessibility standards. Such limitations impair mobility for the elderly and persons with disabilities with respect to accessibility to WUS, transit services, and facilities. Ramps that allow passengers access from WUS to the train level are difficult to navigate for wheelchair users and those with limited mobility. Amtrak Red Cap service is available to help users with reduced mobility reach their trains. However, existing platforms do not meet ADA requirements for warning strips, safety zones, vertical circulation, or pedestrian circulation. Existing platforms lack level boarding and have an excessive gap between the platform and train. Congestion within corridors and platforms; the narrow width of platforms; and single points of access and egress are a hazard to those with impaired mobility due to increased chances of trip and fall accidents.

According to 2020 U.S. Census data, there were an estimated 2,450 individuals older than 65 within the Local Study Area in that year, or approximately 8.5 percent of the total population in the area (See **Table 4-16**, *Local Study Area and District Population by Age (2020)*). Sensitive receptors related to elderly persons within the Local Study Area are shown in **Figure 4-27**. According to 2021 ACS data,

[291] Elderly living and care facilities are identified as "aging services" in the District GIS dataset, which include group meal programs, health care and in-home support, wellness programs, senior transportation programs, adult day care, group homes, emergency group housing, employment and job training facilities, nursing facilities, case management, recreation/socialization areas, multicultural centers, advocacy and ombudsman, and legal services.

approximately 18 percent of the population in the Local Study area reported a disability, including hearing (3 percent), vision (2 percent), cognitive (4 percent), ambulatory (5 percent), self-care (1 percent), and independent living difficulties (3 percent).[292] The Local Study Area partially overlaps with the campus of Gallaudet University, an educational institution for the deaf and hard-of-hearing with approximately 1,300 students.[293] Gallaudet University runs a shuttle bus service between WUS and the campus out of the WUS bus facility.

The Local Study Area features a comprehensive sidewalk network that is in relatively good condition. Most intersections have high visibility crosswalks across major approaches, with wheelchair ramps and detectable warning surfaces to aid visually impaired individuals. Most intersections in the Local Study Area have accessible pedestrian signal equipment. Those that do not are expected to be rebuilt or retrofitted in the next few years.

4.17 Environmental Justice

As outlined in FTA Circular 4703.1, *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*, the USDOT is required to make environmental justice (EJ) part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority populations or low-income populations. This section describes existing demographic conditions in the Local Study Area to identify whether minority or low-income populations are present that could be disproportionately adversely affected by the Project.

4.17.1 Regulatory Context and Guidance

Federal policies, regulations, and guidance that pertain to EJ include:

- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*;
- EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*;
- EO 14008, *Tackling the Climate Crisis at Home and Abroad*;
- U.S. Civil Rights Act Title VI (42 U.S.C. § 2000d);
- *Memorandum of Understanding on Environmental Justice and EO 12898* (August 4, 2011);[294]

[292] U.S. Census Bureau. 2021 ACS data accessed through the 2020 census data. Available from https://data.census.gov/table?g=050XX00US24003,24001&tid=ECNBASIC2017.EC1700BASIC. Accessed on August 23, 2023. Note that the disability data for the Local Study Area is provided at the tract level and not block group (which are smaller).

[293] Univstats. *Gallaudet University Faculty & Staff Headcounts*. Accessed at https://www.univstats.com/staffs/gallaudet-university/. Accessed on August 14, 2023.

[294] *Memorandum of Understanding on Environmental Justice and Executive Order 12898*. Accessed from https://www.epa.gov/sites/production/files/2015-02/documents/ej-mou-2011-08.pdf. Accessed on August 21, 2023.

- CEQ, *Environmental Justice: Guidance Under the National Environmental Policy Act (NEPA)*;[295]
- USDOT Order 5610.2(a), *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*;[296]
- USDOT, *Environmental Justice Strategy*;[297]
- *Promising Practices for EJ Methodologies in NEPA Reviews: Report of the Federal Interagency Working Group on Environmental Justice and NEPA Committee*;[298]
- FTA Transit Laws, 49 U.S.C. § 53; and
- FTA Circulars:
- 4702.1B Title VI *Requirements and Guidelines for Federal Transit Administration Recipients*;[299] and
- 4703.1 *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*.[300]

District policies, regulations, and guidance that pertain to EJ include:

- Draft Racial Equity Action Plan[301]

[295] Council on Environmental Quality. 1997. *Environmental Justice: Guidance Under the National Environmental Policy Act*. Accessed from https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf. Accessed on August 21, 2023.

[296] U.S. Department of Transportation. *Final DOT Environmental Justice Order 5610.2(a)*. Accessed from https://www.transportation.gov/transportation-policy/environmental-justice/department-transportation-order-56102a#:~:text=DOT%20Order%205610.2%20%28a%29%20sets%20forth%20the%20U.S.,into%20planning%20and%20programming%2C%20rulemaking%2C%20and%20policy%20formulation. Accessed on August 21, 2023.

[297] U.S. Department of Transportation. November 15, 2016. *Environmental Justice Strategy*. Accessed from https://www.transportation.gov/policy/transportation-policy/environmental-justice-strategy. Accessed on August 21, 2023.

[298] Federal Interagency Working Group on Environmental Justice & NEPA Committee. 2016. *Promising Practices for EJ Methodologies in NEPA Reviews: Report of the Federal Interagency Working Group on Environmental Justice & NEPA Committee*. Accessed from https://www.epa.gov/sites/production/files/2016-08/documents/nepa_promising_practices_document_2016.pdf. Accessed on August 21, 2023.

[299] U.S. Department of Transportation. *Title VI Requirements and Guidelines for Federal Transit Administration Recipients*. Accessed from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf. Accessed on August 21, 2023.

[300] U.S. Department of Transportation. 2012. *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*. Accessed from https://www.transit.dot.gov/regulations-and-guidance/fta-circulars/environmental-justice-policy-guidance-federal-transit. Accessed on August 21, 2023.

[301] District of Columbia. *Draft Racial Equity Action Plan*. Accessed from https://ore.dc.gov/sites/default/files/dc/sites/ore/page_content/attachments/ORE_REAP_ENGLISH_DRAFT.pdf. Accessed on August 21, 2023.

4.17.2 Study Area

EJ communities exist at the local level and are generally identified at the Census block group, not the regional, level. Therefore, only a Local Study Area was defined for EJ. The Local Study Area includes Census block groups that are wholly or partially within one half-mile of the Project Area, which is the same study area as defined for Social and Economic Conditions (see **Figure 4-23**).

4.17.3 Methodology

The data source used to identify minority populations was the 2020 Census. Minority populations were considered at the block level. The CEQ guidance threshold of 50 percent was used as one indicator of minority population requiring consideration. The data source for identifying low-income populations was the ACS five-year average data for 2016-2021 and HHS poverty guidelines. Due to high median income in the District, households below 150 percent of the HHS poverty guidelines were considered low-income (under $35,000, assuming a household size of 3 persons, consistent with average household size in the District). A threshold of 23 percent (District households falling under the threshold) was used to identify concentrations of low-income residents. Distinct low-income populations were confirmed through mapping the locations of low-income housing units. Populations in Census blocks without housing units were considered to consist of unhoused people if confirmed through newspaper articles or field observations.

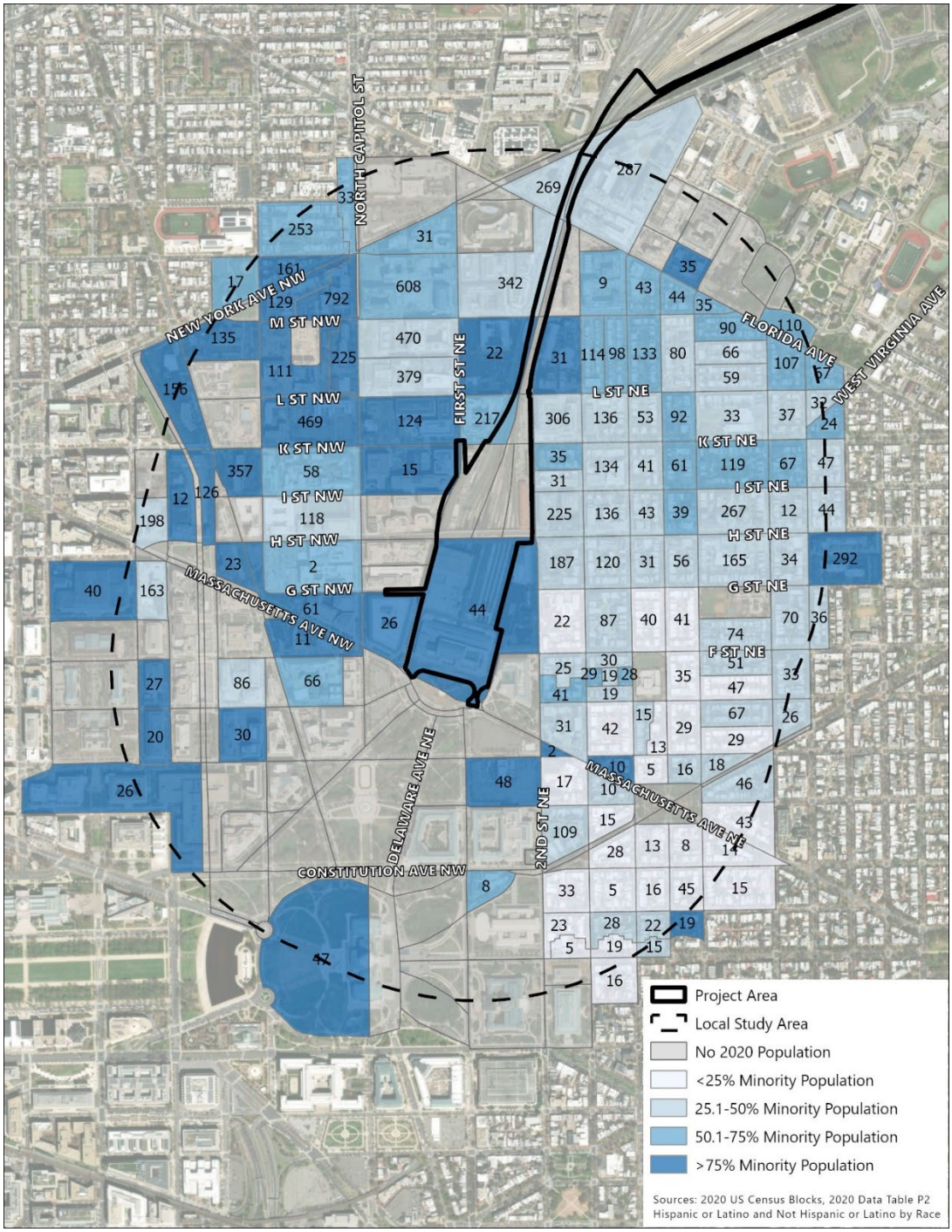
4.17.4 Existing Conditions

4.17.4.1 Minority Populations

Based on the 2020 Census, minorities represented approximately 62 percent of the District's population and approximately 42 percent of the Local Study Area (See **Table 4-17**). African Americans made up the largest minority group in the Local Study Area and comprise approximately 40.9 percent of the overall population (See **Table 4-17**). The lowest concentrations of minority populations occurred in the southeastern portion of the Local Study Area, while the highest concentrations occurred to the north and west (**Figure 4-28**). Numerous census blocks in the Local Study Area had minority populations over 50 percent. These Census blocks comprise portions of the Mount Vernon Square, North Capitol Street, NoMA, Truxton Circle, Eckington, and Near Northeast neighborhoods (**Figure 4-28**). Minorities make up 40 percent of the residents east of WUS and 58 percent of the residents west of WUS. **Figure 4-28** also indicates a concentration of EJ populations along the North Capitol Street corridor north of H Street. A comparison with the 2010 data provided in the 2020 DEIS shows that several blocks just east of North Capitol Street that were empty of residents in 2010 have since been developed and have become home to a substantial proportion of minority residents.

It can also be noted that several blocks in the Local Study Area with a reported 2020 Census population are empty of any residential uses. Such blocks include WUS itself, the area just west of the Capitol building, and the block occupied by the City Post Office (Postal Museum). This apparent discrepancy between population and land use likely reflects the presence of persons experiencing homelessness in these areas when the Census was taken.

Figure 4-28. Distribution of Minority populations in the Local Study Area[302]



[302] Numbers are the number of minority persons in each block per the 2020 Census.

4.17.4.2 Low-Income Populations

The most recent American Community Survey (ACS) data (2016-2021) was used to identify low-income populations, based on U.S. Department of Health and Human Services (HHS) poverty guidelines. Due to high median income in the District, households below 150 percent of the HHS poverty guidelines were considered low-income (under $35,000, assuming a household size of three persons, consistent with average household size in the District). **Figure 4-29** shows the distribution of low-income households across the Local Study Area along with the location of affordable housing developments. There is a significant amount of public and low-income housing in the Sursum Corda area to the northwest of North Capitol and K Streets, including the Sibley Plaza complex and the Sursum Corda Banner Lane redevelopment, where residents of the former public housing complex can exercise a right of return.

Low-income households make up 9 percent of all households east of WUS and 27 percent of all households west of WUS. **Table 4-18** shows the total number of low-income households in the Local Study Area and in the District, compared to the total number of households.

Table 4-18. Low-Income Households

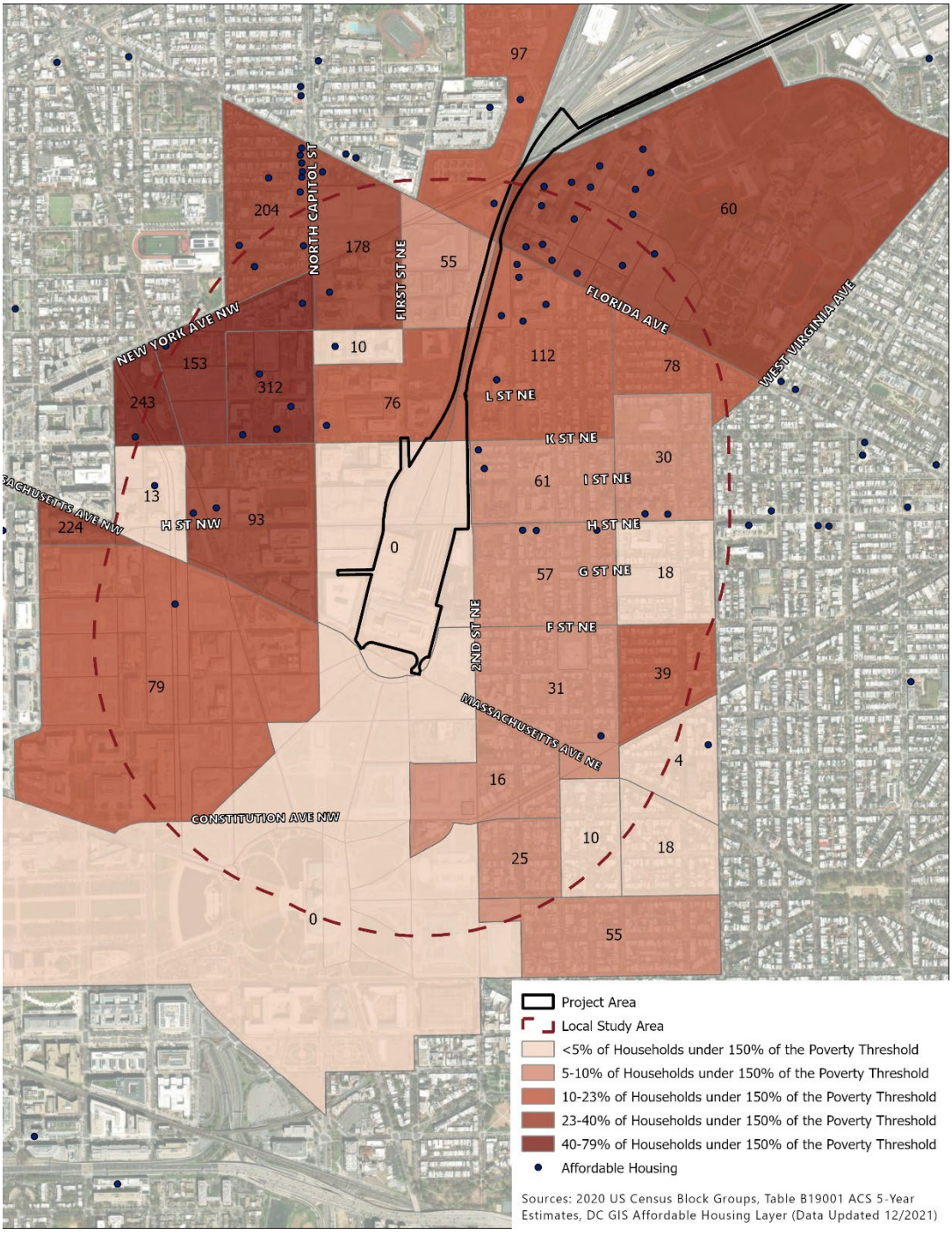
Area	Total Households	Total Low-Income Households
Study Area	13,207	2,351 (18%)
District	319,565	74,139 (23%)

Low-income housing consists of communities managed by the District Housing Authority (identified as public housing) as well as of reserved low-income units in private developments. Some developments are exclusively low-income while others are mixed-income, with units reserved for residents meeting certain income limits. Many mixed-income developments are in the Near Northeast neighborhood along H Street NE, within block groups that have a low-income population below the threshold.

Homeless populations do occur near WUS, and past news reports and field visits have reported the presence of encampments on First Street NE and under the K Street NE underpass, as well as in the L Street NE underpass.[303] Because of the transient, mobile, and changing character of this population, as well as evolving economic conditions and District policies, it is not possible to determine the size of this population in the Local Study Area.

[303] In January 2020, the District enacted and implemented a policy to permanently remove all homeless encampments from the K Street NE underpass. The removal policy did not apply to L Street encampments. Heim, Joe and Moyer, Justin Wm., "No Room on the Street: D.C. Orders Homeless out of Underpass in Fast-Developing Neighborhood," *Washington Post*, January 10, 2020. Accessed from https://www.washingtonpost.com/local/no-room-on-the-street-dc-orders-homeless-out-of-underpass-in-fast-developing-neighborhood/2020/01/10/1704d604-319c-11ea-9313-6cba89b1b9fb_story.html. Accessed on August 21, 2023.

Figure 4-29. Distribution of Low-Income Households in the Local Study Area[304]



[304] Numbers are the number of low-income households in each block group per 2016-2021 ACS data.

The District has articulated a vision to make homelessness in the District of Columbia "rare, brief, and nonrecurring;" this vision guides *Homeward DC 2.0*, which is the District's strategic plan to end long-term homelessness.[305] The District also has a policy in place to address encampments, including a protocol for cleaning public spaces when a site presents a security, health, or safety risk, or interferes with community use of such spaces.[306] In January 2020, the District closed the encampment in the K Street NE underpass, near WUS. Some of the displaced persons moved to nearby locations on First Street NE, which was closed in June 2023.[307] Existing and future homeless assistance resources would remain available to persons experiencing homelessness. The project owners would have the option to work with the District if and when it is necessary to remove homeless encampments and address the needs of their residents.

[305] District of Columbia Interagency Council on Homelessness. *Homeward DC 2.0: ICH Strategic Plan FY2021 - FY2025*. Accessed from https://ich.dc.gov/page/homeward-dc-20-ich-strategic-plan-fy2021-fy2025. Accessed on August 20, 2023.

[306] Office of the Deputy Mayor for Health and Human Services. *Encampments*. Accessed from https://dmhhs.dc.gov/page/encampments. Accessed on August 20, 2023.

[307] Annemarie Cuccia and Athiyah Azeem, "DC is quietly closing more encampments, as residents have fewer places to go." *Street Sense Media*. June 7, 2023. Accessed from https://streetsensemedia.org/article/dc-is-quietly-closing-more-encampments/. Accessed on August 20. 2023.

5 Environmental Consequences

5.1 Introduction

This chapter summarizes the impact analysis framework used in this Final Environmental Impact Statement (FEIS) to adhere to the Federal Railroad Administration (FRA) *Procedures for Considering Environmental Impacts*.[308] Prior to issuing permits or approvals for a project, Federal agencies must consider the environmental impacts of their actions in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] § 4321 *et seq.*). To comply with NEPA and the Council on Environmental Quality (CEQ) *Implementing Regulations for NEPA*, this FEIS identifies the direct, indirect, and cumulative effects the Washington Union Station (WUS) Expansion Project (the Project) could have on the human and natural environment.[309] This FEIS also identifies measures to avoid, minimize, or mitigate potential adverse impacts.

Whenever applicable and practicable, FRA conducted the analyses in accordance with the environmental review policies and guidance of relevant Federal agencies as well as state and local jurisdictions. In this way, the FEIS will support the review of the document by Federal, state, and local agencies from which permits or approvals are required for the Project. **Chapter 7, Table 7-2**, identifies permitting requirements potentially applicable to the Preferred Alternative. Measures that would be implemented to avoid, minimize, or mitigate impacts identified in this chapter are listed in **Chapter 7, Table 7-1.**

5.1.1 Definitions

The CEQ's *Implementing Regulations for NEPA* provide the following key definitions:[310]

- **Direct impacts** are caused by the action and occur at the same time and place.
- **Indirect impacts** are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable.
- **Cumulative impacts** are the impacts on the environment that result from the incremental impacts of the action when added to the impacts of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

Impacts may vary with regard to their duration, significance, and outcome:

[308] 64 Federal Register [FR] 28545, Section 12, May 26, 1999, as updated by 78 FR 2713, January 14, 2013.

[309] 40 Code of Federal Regulations (CFR) Parts 1500-1508.

[310] Effects and impacts, as used in the CEQ Implementing Regulations and this report, are synonymous.

- **Duration:** The impact analyses address operational impacts and construction impacts. Operational impacts are long-term or permanent impacts associated with the operation of the Project. They would occur for the foreseeable future. Construction impacts are associated with the construction phase of the Project and would stop with the completion of construction activities. In that sense, they are short-term or temporary impacts.
- **Context and Intensity:** Depending on the nature of the topic, relevant contexts include society as a whole (human, national), the affected region, the affected interests, or the locality. Intensity refers to the severity of impact and includes consideration of beneficial and adverse impacts. Intensity can be assessed using a wide range of criteria. In this FEIS, impacts are assessed using the following scale[311]:
  - **Negligible impacts** may be adverse or beneficial but would occur at the lowest level of detection.
  - **Minor impacts** would be noticeable but would not affect the function or integrity of the resource.
  - **Moderate impacts** would be readily apparent and would influence the function or integrity of the resource.
  - **Major impacts** would be substantial and would result in severely adverse or exceptionally beneficial changes to the resource.
- **Outcome:** Impacts may be beneficial or adverse:
  - **Beneficial impacts** would result in positive outcomes to the natural or human environment.
  - **Adverse impacts** would result in unfavorable or undesirable outcomes to the natural or human environment.

The FRA analyzed and assessed the potential environmental impacts of the No-Action Alternative and the Preferred Alternative on sixteen resources:

- The operational impacts of the No-Action Alternative in the 2040 planning horizon year were assessed relative to existing conditions.[312]
- The operational impacts of the Preferred Alternative in the 2040 planning horizon year were assessed relative to No-Action Alternative conditions in 2040.[313]

[311] For some of the resources considered in this chapter, resource-specific definitions that build on and refine these general definitions are provided in the *Methodology* section.

[312] Existing conditions of the affected environment for each resource are described in **Chapter 4**, *Affected Environment.*

[313] The operational impacts of the Preferred Alternative were also more briefly described relative to existing conditions in Appendix C3S, *Supplemental Environmental Consequences Technical Report*, of the 2023 SDEIS. This is because the No-Action Alternative includes the development of the privately owned air rights above the WUS rail terminal, a separate, large-scale

- The construction impacts were assessed relative to existing conditions.

5.1.2 Format for Evaluating Impacts in this FEIS

This FEIS analyzes the environmental impacts of the Project for each applicable resource in individual resource sections. The resources considered are listed below:

- **Section 5.2**, Natural Ecological Systems
- **Section 5.3**, Water Resources and Water Quality
- **Section 5.4**, Solid Waste Disposal and Hazardous Materials
- **Section 5.5**, Transportation
- **Section 5.6**, Air Quality
- **Section 5.7**, Greenhouse Gas Emissions and Resilience
- **Section 5.8**, Energy Resources
- **Section 5.9**, Land Use, Land Planning and Property
- **Section 5.10**, Noise and Vibration
- **Section 5.11**, Aesthetics and Visual Quality
- **Section 5.12**, Cultural Resources
- **Section 5.13**, Parks and Recreation Areas
- **Section 5.14**, Social and Economic Conditions
- **Section 5.15**, Public Safety and Security
- **Section 5.16**, Public Health, Elderly and Persons with Disabilities

In addition, this FEIS analyzes Environmental Justice impacts (**Section 5.17**); Cumulative Impacts (**Section 5.18**); and Commitment of Resources (**Section 5.19**). Effects from the potential transfer and development of the Federal air rights are described as indirect impacts because the transfer could occur as a result of the Project but at a later time.

For each resource area, impacts are briefly characterized in bold lettering based on the context and intensity scale defined above, followed by a supporting description and analysis. Information presented in this chapter includes:

- **Methodology:** Summary description of the approach adopted to evaluate and assess the potential operational and construction impacts (methodologies are the same as those used in the DEIS and SDEIS);

project that would substantially change conditions in the Project Area. Assessment against both No-Action Alternative and existing conditions provided a more complete understanding of the impacts of the Project.

- **Impact Analysis:** Description and assessment of the operational (long-term or permanent) and construction impacts of the No-Action Alternative and the Preferred Alternative; and
- **Summary of Impacts:** Summary comparison of the impacts of the No-Action Alternative and the Preferred Alternative.

Regulatory context and study area are as described in Chapter 4, *Affected Environment,* for each resource area and are not repeated in this chapter.

5.2 Natural Ecological Systems

This section describes and characterizes the potential impacts of the No-Action Alternative and the Preferred Alternative on natural ecological systems. Natural ecological systems include resources such as vegetation, common and protected wildlife, wetlands, and floodplains.

5.2.1 Methodology

5.2.1.1 Operational Impacts

The assessment of potential operational impacts on natural ecological systems is based on a review of the natural ecological systems that may occur within the Study Area to determine whether WUS operations would interfere with components of these systems.

5.2.1.2 Construction Impacts

Construction impacts were similarly assessed by evaluating whether construction activities would disrupt or damage any natural ecological system components.

5.2.2 Impacts of the No-Action Alternative

5.2.2.1 Direct Operational Impacts

Relative to existing conditions, the No-Action Alternative would have no direct operational impacts on natural ecological systems.

As explained in **Section 4.2**, *Natural Ecological Systems*, the Local and Regional Study Areas are fully developed with transportation infrastructure and buildings. No natural ecological systems are present. Therefore, the No-Action Alternative would have no direct operational impact on natural ecological systems.

5.2.2.2 Indirect Operational Impacts

Relative to existing conditions, the No-Action Alternative would have no indirect operational impacts on natural ecological systems.

For the same reasons as stated above, the No-Action Alternative would have no indirect operational impacts on natural ecological systems.

5.2.2.3 Construction Impacts

There would be no construction impacts on natural ecological systems in the No-Action Alternative.

Construction activities associated with the projects included in the No-Action Alternative would likely disturb and displace any urban-dwelling birds or mammals that may be present in the Project Area. Such disturbance is common in urban areas and would only affect birds that could easily relocate to adjacent area or nuisance species such as rats. This would not amount to an impact on natural ecological systems.

5.2.3 Impacts of the Preferred Alternative

5.2.3.1 Direct Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have no direct operational impacts on natural ecological systems.

The Local and Regional Study Areas are fully developed with transportation infrastructure and buildings. They contain no natural ecological systems. Therefore, the Preferred Alternative would have no direct operational impacts on natural ecological systems.

5.2.3.2 Indirect Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have no indirect operational impacts on natural ecological systems.

For the same reasons as stated above, the Preferred Alternative would have no indirect operational impacts on natural ecological systems.

5.2.3.3 Construction Impacts

Construction of the Preferred Alternative would result in minor adverse impacts on natural ecological systems.

There are approximately 26 ornamental Japanese zelkova trees (*Zelkova serrata*) on the east sidewalk of First Street NE between G and K Streets. Based on field observation, these trees are approximately between 6 and 10 inches in diameter. Construction activities along the western edge of the Project Area and the east side of First Street NE would require the removal of those trees. The construction of pick-up and drop-off spaces on the west side of Second Street NE, south of the H Street Bridge, would likely require removing a few of the approximately ten trees currently present on the sidewalk. These would be minor adverse impacts, as the trees are non-native, ornamental street trees that do not form part of a larger natural system. Tree removal would require coordination with and a permit from the District Department of Transportation (DDOT) Urban Forestry Ward Arborist.

Construction activities throughout the Project Area would likely disturb and displace any urban-dwelling birds or mammals that may be present. Such disturbance is common in urban areas and would only affect birds that can easily relocate to adjacent areas or nuisance species such as rats. This would not amount to an impact on natural ecological systems.

5.2.4 Summary of Impacts

Table 5-1 summarizes the impacts of the No-Action Alternative and Preferred Alternative on natural ecological systems.

Table 5-1. Summary of Impacts on Natural Ecological Systems

Type of Impact	No-Action Alternative	Preferred Alternative
Direct Operational	No Impact	No impact
Indirect Operational	No Impact	No impact
Construction	No Impact	Minor adverse impact

5.3 Water Resources and Water Quality

This section describes and characterizes the potential impacts of the No-Action Alternative and the Preferred Alternative on surface waters, groundwater, stormwater, wastewater, and drinking water supply.

5.3.1 Methodology

5.3.1.1 Operational Impacts

Operational impacts were assessed based on the following information and indicators:

- Anticipated increases in impervious surfaces and runoff.
- Anticipated long-term dewatering needs based on preliminary geotechnical modeling.
- Projected wastewater generation compared to the available treatment capacity and qualitative assessment of DC Water's wastewater infrastructure to convey those flows.
- Projected drinking water demand compared to available supply and qualitative assessment based of DC Water's water supply infrastructure.

5.3.1.2 Construction Impacts

Construction impacts were assessed based on the same indicators.

5.3.2 Impacts of the No-Action Alternative

5.3.2.1 Direct Operational Impacts

Surface Waters

Relative to existing conditions, the No-Action Alternative would have no direct operational impacts on surface waterbodies.

There are no bodies of surface water in or adjacent to the Project Area. Therefore, the No-Action Alternative has no potential to directly affect surface waters or water quality.

Groundwater

Relative to existing conditions, the No-Action Alternative would have negligible adverse direct operational impacts on groundwater.

No public groundwater supplies or wellhead protection areas[314] exist within the Project Area. The Project Area is almost fully impervious and is a negligible source of groundwater recharge. This would remain the case in the No-Action Alternative.

Up to 945 drilled shafts would provide structural support for the private air rights development deck. The drilled shafts would range in diameter from 5 feet to 12 feet, depending on the structural load they would support. Their average depth would be up to 150 feet. Drilling the shafts would displace groundwater. Groundwater displacement may slightly alter local groundwater levels within the Project Area and Local Study Area. The volume occupied by the drill shafts would be very small in the context of both the Local and the Regional Study Areas, making the resulting displacement negligible.

Stormwater

Relative to existing conditions, the No-Action Alternative would have a major beneficial direct operational impact on stormwater infrastructure and stormwater flows.

Because the Project Area is entirely impervious and would remain so in the No-Action Alternative, the No-Action Alternative would cause no change in impervious cover. Modifications to the Project Area's drainage infrastructure associated with the private air rights development, including roof drains, catch basins, and drainage pipes, would be conducted in compliance with current District stormwater management laws and regulations. [315]

The stormwater management practices currently in place in the Project Area were put in place before the District adopted its more stringent current stormwater regulations. Because the private air rights

[314] W*ellhead protection areas* are surface and subsurface land *areas* regulated to prevent contamination of a well or well-field supplying a public water system. Established under the Safe Drinking Water Act (42 U.S.C. § 330f-300j), this program is implemented through state governments.

[315] District Department of Energy and Environment. *2020 Stormwater Management Guidebook*. Accessed from https://doee.dc.gov/swguidebook. Accessed on November 10, 2022.

development above the rail terminal must comply with these more stringent regulations and standards, there would be a reduction in stormwater flows over approximately 15 acres of the rail terminal, a major beneficial impact relative to existing conditions.

Wastewater

Relative to existing conditions, the No-Action Alternative would have minor adverse direct operational impacts on wastewater infrastructure and wastewater flows.

Construction of the private air rights development would require modifications to sewer laterals in the Local Study Area to serve the new buildings. No information is available on the specific location and extent of these modifications. However, such work is routine for large development projects and would be a minor adverse impact. DC Water sewer lines would continue to collect wastewater and convey it to the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains) or, during large storms, to combined sewer overflow (CSO) outfalls in the Anacostia River, within the Regional Study Area.

In the No-Action Alternative, increased ridership at WUS and the private air rights development would cause an increase in the amount of wastewater produced in the Project Area, as shown in **Table 5-2**.

The average daily wastewater flow in the Project Area would increase by approximately 464,200 gallons a day. Relative to 83,500 gallons per day under existing conditions, this would be a more than fivefold increase.

The net increase in flow from the Project Area is not likely to result in more frequent CSO events. In normal conditions, wastewater from the Project Area would continue to be conveyed to Blue Plains, which has the capacity to treat an average of 384 million gallons per day and treats approximately 300 million gallons on an average day.[316] The projected increase in wastewater flow would be minor, representing a little more than 0.1 percent of the average capacity and approximately 0.5 percent of the average unused daily capacity.

[316] DC Water. *Blue Plains Advanced Wastewater Treatment Plant*. Accessed from https://www.dcwater.com/sites/default/files/documents/blue_plains_plant_brochure_2020_final_0.pdf. Accessed on October 14, 2022. DC Water. *The Largest Advanced Wastewater Treatment Plant in the World*. Accessed from https://www.dcwater.com/blue-plains. Accessed on January 10, 2023.

Table 5-2. No-Action Alternative Estimated Wastewater Generation Increases

Location	Use	Existing (gpd)	Unit Flow Rate[2] (Gallon per Day [gpd])	Total Unit (2040)	Estimated Average Daily Flow (gpd)	Total (gpd)
WUS	Rail and Bus[1]	83,500	1.7 gpd/passenger[3]	+ 19,000 passengers	+32,300	115,800
Private air rights Development	Residential	0	60 gpd/ resident	+2,150 residents[4]	+129,000	129,000
Private air rights Development	Office	0	0.09 gpd/ square foot (sf)	+2,160,000 sf	+194,400	194,400
Private air rights Development	Retail	0	0.05 gpd/ sf	+120,000 sf	+6,000	6,000
Private air rights Development	Hotel	0	0.25 gpd/ sf	+410,000 sf	+102,500	102,500
Private Air rights Development Subtotal					**+431,900**	**431,900**
Total					**+464,200**	**547,700**

1. Amtrak + Maryland Area Regional Commuter (MARC) + Virginia Railway Express (VRE) + Intercity bus ridership.
2. Rates based on Maryland Design Guidelines for Wastewater Facilities unless otherwise noted. [317]
3. Per-passenger unit rate calculated for existing conditions based on 2017 station water usage.
4. Assumes 2.1 residents per unit.

Drinking Water

Relative to existing conditions, the No-Action Alternative would have a minor adverse direct operational impact on drinking water infrastructure and demand.

Construction of the private air rights development would require modifications to the water distribution infrastructure in the Local Study Area to provide the additional capacity to meet the demand from the development's occupants. There is no information on the location and extent of the needed modifications, but they would be within the range of what is typical for a large development project and would represent a minor adverse impact.

Increased WUS ridership and the private air rights development would generate an increase in demand for water in the Project Area. Water demand increase was estimated based on wastewater generation, with an added factor of 10 percent to account for consumption, system losses, and other uses. Based on an estimated additional wastewater generation of 464,200 gallons per day, additional water demand in the No-Action Alternative would be 510,620 gallons per day. This would include 35,530 gallons per day for WUS uses and 475,090 gallons per day for private air rights development uses.

[317] Maryland Department of the Environment Engineering and Capital Projects Program (2016) *Design Guidelines for Wastewater Facilities*. Accessed from https://mde.maryland.gov/programs/Permits/WaterManagementPermits/Documents/WastewaterDesignGuidelines-2016.pdf. Accessed on October 14, 2022.

DC Water would continue to distribute water to the Project Area and the Washington Aqueduct would continue to supply the water. The Aqueduct produces an average of 135 million gallons per day in the two treatment plants located in the District.[318] The increase in demand relative to existing conditions would represent approximately 0.4 percent of this capacity.

5.3.2.2 Indirect Operational Impacts

Surface Waters

Relative to existing conditions, the No-Action Alternative would result in negligible adverse indirect operational impact on surface waterbodies, including the Anacostia River, Potomac River, and Chesapeake Bay.

In the No-Action Alternative, combined stormwater and wastewater from most of the Project Area would continue to flow through DC Water's combined sewer system to either Blue Plains or to CSO outfalls in the Anacostia River during large storms. A small portion of the Project Area (approximately 7,000 square feet at the farthest northeast end) would continue to drain to the Anacostia River through the municipal separate storm sewer system (MS4). No changes to drainage subwatersheds would occur.

The No-Action Alternative would see an increase in wastewater flows from WUS and the private air rights development. Adding wastewater to DC Water's combined sewer system could increase the likelihood of untreated sewage releases from CSO outfalls into the Anacostia River during large storm events. This could exacerbate water quality impairments due to bacterial and nutrient loadings in the Anacostia River and the Chesapeake Bay, a potential adverse impact. However, the relatively small amount of additional wastewater generated in the No-Action Alternative, combined with the reduction in CSO events that would result from DC Water's Anacostia River Tunnel and Northeast Boundary Tunnel projects would largely offset this increased risk.

Additionally, stormwater from the portion of the Project Area that currently drains to the MS4 is untreated and carries pollutants from the Project Area to the Anacostia River. If the projects included in the No-Action Alternative implement stormwater BMPs to the maximum extent practicable as required by the District's *Stormwater Management Guidebook*, runoff volume, peak flow rate, and pollutant loading from the Project Area to the Anacostia River would decrease, partially offsetting any impacts from the increased flows in the other parts of the Project Area. Altogether, and given the small size of the Project Area relative to the Anacostia River watershed (176 square miles), net adverse impacts on water quality would be negligible.

[318] U.S. Army Corps of Engineers. *Washington Aqueduct*. Accessed from https://www.nab.usace.army.mil/Missions/Washington-Aqueduct/. Accessed on October 14, 2022.

Groundwater

Relative to existing conditions, the No-Action Alternative would have no indirect operational impact on groundwater.

There would be no indirect impacts on groundwater because, as described in **Section 5.3.2.1**, *No-Action Alternative, Direct Operational Impacts*, there is no potential to indirectly affect private or public water supply wells, wetlands, or springs.

Stormwater

Relative to existing conditions, the No-Action Alternative would have no indirect operational impact on stormwater.

There would be no indirect impacts on stormwater because the No-Action Alternative would result in no changes to stormwater flows outside the Project Area.

Wastewater

Relative to existing conditions, the No-Action Alternative would have no indirect operational impact on wastewater.

There would be no indirect impacts on wastewater because the No-Action Alternative would result in no changes to wastewater production outside the Project Area. As explained in **Section 5.3.2.1**, *No-Action Alternative, Direct Operational Impacts,* DC Water and Blue Plains have sufficient capacity to convey and treat additional wastewater flows from the Project Area.

Drinking Water

In the No-Action Alternative, there would be no indirect operational impact on drinking water.

There would be no indirect impacts on drinking water. The No-Action Alternative would result in no changes to demand for water outside the Project Area. As explained in **Section 5.3.2.1**, *No-Action Alternative*, *Direct Operational Impacts*, DC Water and the Washington Aqueduct have sufficient capacity to meet additional water demand from the Project Area.

5.3.2.3 Construction Impacts

In the No-Action Alternative, construction of the Project would not occur. Construction of the projects included in the No-Action Alternative, including the private air rights development, would take place at various times and each would generate construction impacts. Because specific schedules and construction methods are still undetermined, it is only possible to describe and assess these impacts in general terms.

Surface Waters

There would be no construction impacts to surface waterbodies in the No-Action Alternative.

No surface waterbodies lie within or adjacent to the Project Area. Therefore, none of the construction activities that would occur in the No-Action Alternative would affect surface waterbodies.

Groundwater

In the No-Action Alternative, construction activities would cause negligible adverse impacts on groundwater.

Construction of drilled shafts for the private air rights development deck would likely necessitate dewatering. The amount of groundwater that would be pumped and disposed of cannot be estimated. Provided work complies with applicable National Pollutant Discharge Elimination System (NPDES) construction general permit dewatering requirements as well as with applicable District Department of Energy and Environment (DOEE) and DC Water requirements for treating and metering pumped groundwater, adverse impacts would be negligible.

Stormwater

In the No-Action Alternative, construction activities would cause minor adverse impacts on stormwater flows.

Ground-disturbing activities associated with the projects included in the No-Action Alternative could result in increased erosion and sedimentation, affecting the quality of stormwater runoff. This risk would be small because these projects would have to include erosion and sediment controls in compliance with NPDES construction general permit and DOEE's *Erosion and Sediment Control Manual* requirements.[319,] Erosion and sediment control practices would prevent/minimize the transport of sediment from the construction sites to city streets, drainage systems, and waterbodies, resulting in minor adverse impacts.

Wastewater

In the No-Action Alternative, wastewater flows from construction-related dewatering would cause a negligible adverse impact on wastewater.

Drilled shafts for the private air rights development would be located within the CSO drainage area. It is likely that pumped groundwater would be pre-treated, if needed, on site and discharged to the DC Water combined sewer system. This would generate additional flow of clean water through the system. With a capacity to treat an average of 384 million gallons per day and an average of 84 million of unused

[319] U.S. Environmental Protection Agency. *2022 National Pollutant Discharge Elimination System (NPDES) Construction General Permit*. Accessed from https://www.epa.gov/npdes/2022-construction-general-permit-cgp. Accessed on August 9, 2023; District Department of Energy and Environment. *Erosion and Sediment Control Manual*. Accessed from https://doee.dc.gov/publication/soil-erosion-and-sediment-control-resources. Accessed on August 9, 2023.

capacity daily, Blue Plains would have the capacity to treat the additional flow, resulting in a negligible impact.

Drinking Water

In the No-Action Alternative, water demand during construction activities would cause a negligible adverse impact on water supply.

Construction activities would require the use of water for dust control, equipment washing, and construction worker sanitation and consumption. DC Water would likely provide the water. Although it is not possible to estimate the amount of water these activities would use, it would be typical of medium to large-scale construction projects in the District and is not likely to exceed the Washington Aqueduct capacity. Impacts would be negligible.

5.3.3 Impacts of the Preferred Alternative

5.3.3.1 Direct Operational Impacts

Surface Waters

Relative to the No-Action Alternative, the Preferred Alternative would have no direct operational impacts on surface waterbodies.

There are no bodies of surface water in or adjacent to the Project Area. Therefore, the Preferred Alternative has no potential to directly affect surface waters or water quality.

Groundwater

Relative to the No-Action Alternative, the Preferred Alternative would have a moderate adverse direct operational impact on groundwater.

There are no public groundwater supplies or wellhead protection areas within the Project Area and the Preferred Alternative would have no impact on those resources. The Project Area is almost fully impervious and is a negligible source of groundwater recharge. This would remain the case in the Preferred Alternative. The Preferred Alternative would have moderate direct operational impacts on groundwater levels. The Preferred Alternative would require excavating most of the rail terminal to a depth of approximately 3 feet above sea level. This would be below current groundwater elevations at the site. The construction of a slurry wall down to the Potomac Clay layer underlying the Project Area around the perimeter of the excavation, and the installation of concrete pressure slabs at the bottom of the excavation would minimize any long-term groundwater seepage, but it may not eliminate it entirely.

Preliminary modeling conducted for the 2020 DEIS Action Alternatives indicated that long-term dewatering rates for 2020 DEIS Alternative C, which featured a one-level below-ground facility like the Preferred Alternative, would range from 20 to 30 gallons per minute. This equates to 28,800 to 43,200 daily gallons, which would have to be pumped and disposed of, after treatment if required. Because the Preferred Alternative would involve the same depth of excavation as 2020 DEIS Alternative C, the same

long-term dewatering rates are anticipated. This would be within the threshold for a District Significant Non-Categorical Industrial User Wastewater Discharge Permit (25,000 gpd or more).[320]

Groundwater withdrawal may increase the risk of soil settlement in the long term. Until geotechnical studies are conducted, and existing dewatering operations are identified, the level and extent of potential long-term soil settlement cannot be determined. Based on preliminary modeling, it can be anticipated that the greatest risk of subsidence would occur immediately adjacent to the Project Area. The features at greatest risk for drawdown-induced settlement would likely be shallow utility infrastructure such as sewer lines, gas lines, or water lines in the Project Area or adjacent public roadways; the WUS Metrorail station; and adjoining buildings supported by shallow foundation systems. Most of the larger buildings adjacent to WUS likely sit on deep foundations and are unlikely to experience settlement. Any impacts would be moderate.

Stormwater

Relative to the No-Action Alternative, the Preferred Alternative would have a moderate direct beneficial impact on stormwater infrastructure and stormwater flows.

Because the Project Area would be entirely impervious in the No-Action Alternative and would remain so in the Preferred Alternative, the Preferred Alternative would cause no change in impervious cover. However, modifications to the Project Area's drainage infrastructure, including roof drains, catch basins, and drainage pipes, would be necessary to accommodate the Preferred Alternative under current District stormwater management laws and regulations. [321]

The stormwater management practices currently in the Project Area were put in place before the District adopted its more stringent current stormwater regulations. Under current regulations, the Preferred Alternative would be a Major Land Disturbing Activity.[322] As such, it would require additional stormwater management to treat any Storm Water Retention volume (SWRv) not treated under the No-Action Alternative. The Preferred Alternative would also comply with Section 438 of the Energy Independence and Security Act (EISA) of 2007. The resulting upgrades would decrease runoff volume, peak flow rate, and pollutant loading from the Project Area, which would be a beneficial impact.

In the No-Action Alternative, the private air rights development, which would cover most of the Project Area, would be subject to the current District regulations. Therefore, the area that would be upgraded to current stormwater treatment regulations in the Preferred Alternative would be limited to the footprint of the Project within the Federally owned air rights and the edges of the historic station building. For this reason, the beneficial impact of the Preferred Alternative relative to the No-Action Alternative would be moderate.

[320] The permit is for disposal through the District's wastewater system. This requirement is not indicative of the intensity of impacts on groundwater.

[321] District Department of Energy and Environment. *2020 Stormwater Management Guidebook*. Accessed from https://doee.dc.gov/swguidebook. Accessed on November 10, 2022.

[322] Major Land Disturbing Activity is any land disturbance greater than or equal to 5,000 square feet.

Wastewater

Relative to the No-Action Alternative, the Preferred Alternative would have minor adverse direct operational impacts on wastewater infrastructure and wastewater flows.

The Preferred Alternative would likely require modifications to sewer laterals to serve the expanded station. At the current, early stage of Project design, no information is available on the location and extent of these modifications, but they would likely overlap with those that would occur in the No-Action Alternative for the private air rights development as both projects would occur within the boundaries of the WUS terminal. Relative to the No-Action Alternative, adverse impacts would be minor.

Table 5-3 shows estimated additional wastewater flows from the Project Area in the Preferred Alternative relative to the No-Action Alternative. WUS-related generation would increase in proportion to the number of additional passengers relative to the No-Action Alternative. Because the Preferred Alternative would use some of the private air rights area, the private air rights development would be smaller than in the No-Action Alternative, as noted in **Section 3.5**, *Description of the Preferred Alternative*. The quantity of wastewater the private air rights development would produce relative to the No-Action Alternative would be correspondingly smaller. Altogether, after rounding, the net total additional daily flow in the Preferred Alternative would be approximately 8,330 gallons per day more than the No-Action Alternative.

Table 5-3 Preferred Alternative Estimated Changes in Wastewater Generation

Location	Use	Unit Flow Rate (Gallons per Days)	Total Unit (2040)	Estimated Average Daily Flow (Gallons per Day)[5]
WUS	Rail and Bus[1]	1.7/ passenger[2]	+50,900 passengers	+86,530
	Retail	0.05 square foot[3]	+64,000 square feet	+3,200
Sub-total				+89,730
Private Air Rights Development[5]	Residential	60/resident	-160 residents[4]	-9,600
	Office	0.09/square foot	-1,100,000 square feet	-99,000
	Retail	0.05/square foot	-35,000 square feet	-1,750
	Hotel	0.25/square foot	-25,000 square feet	-6,250
Sub-total				-81,400
Total				+8,330

1. Amtrak + Maryland Area Regional Commuter (MARC) + Virginia Railway Express (VRE) + Intercity bus ridership.
2. Per-passenger unit rate calculated for existing conditions based on 2017 station water usage.
3. Rates based on Maryland Design Guidelines for Wastewater Facilities unless otherwise noted.
4. Assumes 2.1 residents per unit.
5. Negative numbers reflect the smaller size of the private air rights development in the Preferred Alternative.

This estimate does not include the increase due to any needed long-term groundwater disposal, which would be up to approximately 43,200 gallons per day of groundwater from long-term (see **Section 5.3.3.1**, *Direct Operational Impacts*, *Groundwater*, including the permitting requirement triggered by

long-term groundwater disposal), for a total of approximately 51,530 gallons per day that would be discharged to the sewer conveyance system. This would be a 9.5 percent increase relative to the No-Action Alternative (547,700 gallons per day) (**Table 5-2**). The net increase in flows from the Project Area is not likely to result in more frequent CSOs. In normal conditions, wastewater from the Project Area would continue to be conveyed to the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains), which has the capacity to treat an average of 384 million gallons per day and treats approximately 300 million gallons on an average day.[323] The increase due to the Preferred Alternative would represent approximately 0.002 percent of Blue Plains' average daily capacity and 0.01 percent of the average unused daily capacity. The impact would be minor.

Drinking Water

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse direct operational impact on drinking water infrastructure and demand.

The Preferred Alternative would likely require modifications to the water distribution infrastructure to serve the expanded station. At the current, early stage of Project design, there is no information on the location and extent of the needed modifications, but they would likely overlap with those that would occur in the No-Action Alternative for the private air rights development. Relative to the No-Action Alternative, adverse impacts would be minor.

Water demand from the Project Area in the Preferred Alternative, based on wastewater generation with an added factor of 10 percent to account for consumption, system losses, and other use, would be approximately 668,624 gallons per day, an 11 percent increase relative to the No-Action Alternative (602,470 gallons per day). Drinking water would continue to be distributed by DC Water and supplied by the Washington Aqueduct. The Aqueduct produces an average of 135 million gallons per day in the two treatment plants located in the District.[324] The increase in demand relative to the No-Action Alternative would represent about 0.007 percent of this capacity. This would be a minor adverse impact.

5.3.3.2 Indirect Operational Impacts

Surface Waters

Relative to the No-Action Alternative, the Preferred Alternative would result in a negligible adverse indirect operational impact to surface waterbodies, including the Anacostia River, Potomac River, and Chesapeake Bay.

[323] DC Water. *Blue Plains Advanced Wastewater Treatment Plant*. Accessed from https://www.dcwater.com/sites/default/files/documents/blue_plains_plant_brochure_2020_final_0.pdf. Accessed on October 14, 2022. DC Water. *The Largest Advanced Wastewater Treatment Plant in the World*. Accessed from https://www.dcwater.com/blue-plains. accessed on January 10, 2023.

[324] U.S. Army Corps of Engineers. *Washington Aqueduct*. Accessed from https://www.nab.usace.army.mil/Missions/Washington-Aqueduct/. Accessed on October 14. 2022.

As noted above, the net increase in flows from the Project Area is not likely to result in more frequent CSOs. In normal conditions, wastewater flowing from the Project Area would be treated at Blue Plains. Adverse impacts on the quantity and quality of water in the Anacostia River or Potomac River, and beyond, in the Chesapeake Bay, would be negligible, given the small size of the Project Area and the small amount of effluent it would generate compared to the drainage basins of those waterbodies (176 square miles for the Anacostia River alone), combined with the reduction in CSO events resulting from DC Water's Anacostia River Tunnel and Northeast Boundary Tunnel projects.

Groundwater

Relative to the No-Action Alternative, the Preferred Alternative would have no indirect operational impacts on groundwater.

Construction of the Federal air rights development on a structural deck above the rail terminal would involve no excavation. It would require no temporary or long-term pumping and disposal of groundwater. Therefore, the Preferred Alternative would have no indirect impacts on groundwater in addition to its direct impacts.

Stormwater

Relative to the No-Action Alternative, the Preferred Alternative would have a moderate beneficial indirect operational impact on stormwater.

The potential development of the Federal air rights would lead to upgrades to the existing infrastructure in compliance with current requirements. As explained in **Section 5.3.3.1**, *Direct Operational Impacts, Stormwater*, current stormwater treatment regulations are more stringent than those in place when the existing and No-Action use of the area (parking garage) was constructed, resulting in a beneficial impact relative to No-Action Alternative conditions. Because of the limited size of the affected area, this beneficial impact would be moderate.

Wastewater

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse indirect operational impact on wastewater.

As explained in **Section 3.5**, *Description of the Preferred Alternative*, in the Preferred Alternative, the potential Federal air rights development is assumed to consist of approximately 175,000 square feet of residential uses; 310,000 square feet of office uses; and 15,000 square feet of retail uses. Using the same unit flow rates as used in **Tables 5-2 and 5-3**, this would generate approximately 51,810 gallons per day of additional wastewater, or an increase of 9 percent relative to the No-Action Alternative (see summary in **Table 5-5** below).

Wastewater would continue to be collected and conveyed via DC Water combined sewer lines to Blue Plains. The additional production of 51,810 gallons per day is not likely to increase the frequency of CSOs. It would represent about 0.013 percent of Blue Plains' average daily capacity

(384 million gallons per day) and about 0.06 percent of the average unused daily capacity (84 million gallons per day).

Drinking Water

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse indirect operational impact on drinking water.

In the Preferred Alternative, the potential development of the Federal air rights would increase drinking water demand. The Federal air rights development, consisting of a mix of residential, office, and retail space as described above, would approximately generate an additional 56,991 gallons per day of water demand, calculated as wastewater demand plus 10 percent to account for consumption, system losses, and other uses (see **Table 5-5** below). This would represent an increase of 9 percent relative to the No-Action Alternative.

Drinking water would continue to be distributed by DC Water and supplied by the Washington Aqueduct. The Aqueduct produces an average of 135 million gallons per day. The increase in demand from the Federal air rights development would represent 0.04 percent of this capacity, a minor adverse impact.

5.3.3.3 Construction Impacts

Surface Waters

Construction of the Preferred Alternative would have no impact on surface waterbodies.

No surface waterbodies lie within or adjacent to the Project Area. Therefore, the construction activities associated with the Preferred Alternative would not affect surface waterbodies.

Groundwater

Construction of the Preferred Alternative would have moderate adverse impacts on groundwater.

Because of the depth of the excavation required in the Preferred Alternative, groundwater seepage would occur during construction and require dewatering. Preliminary modeling conducted for 2020 DEIS Alternative C (see **Section 5.3.3.1**, *Direct Operational Impact*, *Groundwater*, above) estimated a short-term dewatering rate ranging from approximately 220 gallons per minute (316,800 gallons per day) to 280 gallons per minute (403,200 gallons per day). This would be above the minimum threshold for, and thus require, a Significant Non-Categorical Industrial User Wastewater Discharge Permit (25,000 gpd). [325] Dewatering would have to be conducted in compliance with NPDES construction general permit dewatering requirement, as well as the DOEE and DC Water requirement for treatment and metering of pumped groundwater.

[325] The permit is for disposal through the District's wastewater system and this requirement is not indicative of the intensity of impacts on groundwater.

As noted above, groundwater withdrawal has the potential to cause soil settlement in the vicinity of the withdrawal. Until geotechnical studies are conducted, and existing dewatering operations are identified, the level and extent of potential soil settlement cannot be determined. Based on preliminary modeling, it can be anticipated that the greatest risk of subsidence would occur immediately adjacent to the cut-off wall, where groundwater drawdown would be greatest, and that it would decrease with increasing distance from the wall. The features at greatest risk for drawdown-induced settlement would likely be shallow utility infrastructure such as sewer lines, gas lines, or water lines in the Project Area or adjacent public roadways; the WUS Metrorail station; and adjoining buildings supported by shallow foundation systems. Most of the larger buildings adjacent to WUS likely sit on deep foundations and are unlikely to experience settlement. Any impacts would be moderate.

Stormwater

Construction of the Preferred Alternative would have minor adverse impacts on stormwater flows.

Ground-disturbing activities associated with the construction of the Preferred Alternative could result in increased erosion and sedimentation, which would affect the quality of stormwater runoff from the Project Area. Increased sediment loadings in stormwater conveyed by drainage systems can also result in lost conveyance capacity. These risks would be minimized because the Project would be required to include erosion and sediment controls in compliance with NPDES construction general permit and DOEE's *Erosion and Sediment Control Manual*. Erosion and sediment control practices would prevent the transport of significant amounts of sediment from the construction site to city streets, drainage systems, and waterbodies. Adverse impacts would be minor.

Wastewater

Wastewater flows from construction-related dewatering in the Preferred Alternative would cause a minor adverse impact on wastewater.

Groundwater pumped out of the Project Area during construction would be discharged to the wastewater conveyance system after being treated on site if required. As explained above, the maximum modeled amount of discharged groundwater would be approximately 403,200 gallons a day. This would require a Significant Non-Categorical Industrial User Wastewater Discharge Permit, as noted in **Section 5.3.3.3**, *Construction Impacts*, *Groundwater*. Wastewater would be conveyed via DC Water sewer lines to Blue Plains. Given Blue Plains' total and unused capacity (an average of 384 million gallons per day and 84 million gallons a day, respectively), the additional amount from the Preferred Alternative construction would represent a minor impact (0.1 percent of total capacity and 0.5 percent of unused capacity).

Drinking Water

Water demand during construction of the Preferred Alternative would result in a negligible adverse impact on drinking water.

Water would be used during construction activities for dust control, equipment washing, and construction worker sanitation and consumption. DC Water would likely provide the water. Although

the amount of water that would be used cannot be estimated, it would be typical of a large-scale construction project in the District. It is not likely to exceed the Washington Aqueduct capacity. Impacts would be negligible.

5.3.4 Summary of Impacts

Table 5-4 and **Table 5-5** summarize the impacts of the No-Action Alternative and the Preferred Alternative on water resources and water quality.

Table 5-4. Summary of Impacts on Water Resources and Water Quality

Impact Category	Type of Impact	No-Action Alternative	Preferred Alternative
Surface Waters	Direct Operational	No Impact	No impact
	Indirect Operational	Negligible adverse impact	Negligible adverse impact
	Construction	No impact	No impact
Groundwater	Direct Operational	Negligible adverse impact	Moderate adverse impact
	Indirect Operational	No impact	No impact
	Construction	Negligible adverse impact	Moderate adverse impact
Stormwater	Direct Operational	Major beneficial impact	Moderate beneficial impact
	Indirect Operational	No impact	Moderate beneficial impact
	Construction	Minor adverse impact	Minor adverse impact
Wastewater	Direct Operational	Minor adverse impact	Minor adverse impact
	Indirect Operational	No impact	Minor adverse impact
	Construction	Negligible adverse impact	Minor adverse impact
Drinking Water	Direct Operational	Minor adverse impact	Minor adverse impact
	Indirect Operational	No impact	Minor adverse impact
	Construction	Negligible adverse impact	Negligible adverse impact

Table 5-5. Quantitative Estimates of Direct and Indirect Impacts on Water Resources and Water Quality

Impact Category	Parameter	Source of Impact	Existing	No-Action Alternative (Additional)	No-Action Alternative (Total)	Preferred Alternative (Additional)	Preferred Alternative (Total)
Construc-tion-phase dewatering	Dewater-ing rate (gpm)	Project Area	N/A	N/A	N/A	220 to 280	220 to 280
Long-term Dewatering	Dewater-ing rate (gpm)	Project Area	N/A	N/A	N/A	20 to 30	20 to 30
Wastewater	Demand (gpd)	WUS	83,500	+32,300	115,800	+132,930	248,730
		Private Air Rights Development	0	+431,900	431,900	-81,400	350,500
		Potential Federal Air Rights Development	0	0	0	+51,810	51,810
		Total	**83,500**	**+464,200 (+556%)**	**547,700**	**+103,340 (+19%)**	**651,040**
Water	Demand (gpd)	WUS	91,850	+35,530	127,380	+98,703	226,083
		Private Air Rights Development	0	+475,090	475,090	-89,540	385,550
		Potential Federal Air Rights Development	0	0	0	+56,991	56,991
		Total	**91,850**	**+510,620 (+556%)**	**602,470**	**+66,154 (+11%)**	**668,624**

Abbreviations: gpm = gallons per minute; gpd = gallons per day

5.4 Solid Waste Disposal and Hazardous Materials

This section describes and characterizes the potential impacts of the No-Action Alternative and Preferred Alternative on solid waste production and disposal and on the use and disposal of hazardous materials. In the case of WUS and the Project, solid waste consists primarily of municipal waste (trash or garbage). Hazardous materials are any substances or chemicals that are a "health hazard" or "physical hazard" as defined by 29 Code of Federal Regulations (CFR) § 1910.1200 and 49 U.S.C. § 5102-5103.

5.4.1 Methodology

5.4.1.1 Operational Impacts

Operational impacts on solid waste were evaluated based on estimated volumes of solid waste that the Project Area would generate in the two alternatives considered. Estimates of WUS-generated waste were based on available data on recent waste generation. For other land uses, including the private air rights development and the potential Federal air rights development, the analysis used generation rates provided by the District Department of Public Works. There is no information on the total amount of solid waste the District produces currently or would produce in 2040, nor is there any information on the number and capacity of available transfer disposal facilities at that time. As a result, waste generation estimates were compared to the most recent amount of waste produced in the District during 2018.[326]

Non-recycled waste would be sent to landfill facilities in Virginia or Maryland, as there are no landfills in the District. For the purposes of impact evaluation, the increase in waste that would be generated in the two alternatives considered was conservatively compared to available landfill capacity in Virginia based on the most recent data available. [327]

The Impact assessment for hazardous materials was qualitative. The analysis presumes that operations at WUS comply and would continue to comply with all applicable laws and regulations.

5.4.1.2 Construction Impacts

Construction impacts were evaluated using a similar approach to that used for the operational impacts. Waste generation estimates were derived from the constructability analysis conducted for the Project. Compliance with laws and regulations pertaining to hazardous materials was presumed.

5.4.2 Impacts of the No-Action Alternative

5.4.2.1 Direct Operational Impacts

Municipal Solid Waste

Relative to existing conditions, in the No-Action Alternative, there would be minor adverse direct operational impacts from the increased amount of solid waste generated in the Project Area.

[326] District of Columbia Department of Public Works. *Washington DC Solid Waste Diversion Annual Report. Calendar Year 2018*. Accessed from https://zerowaste.dc.gov/sites/default/files/dc/sites/zerowaste/CY%2018%20Diversion%20Report%20Final%203%2010%2021.pdf. Accessed on August 16, 2023. This is the most recent date for which a report is available.

[327] Commonwealth of Virginia Department of Environmental Quality. *2022 Annual Solid Waste Report for CY 2021*. Accessed from https://www.deq.virginia.gov/home/showpublisheddocument/15488/637919249151430000. Accessed on August 9, 2023.

Increased activity at WUS in the No-Action Alternative would generate an increase in the amount of municipal solid waste produced at the station. Between January and August 2017, WUS generated approximately 1,145 tons of municipal solid waste and 415 tons of recyclable material, or an average of 195 tons of waste a month. This corresponds to an annual amount of approximately 2,340 tons.

It is possible to develop an order-of-magnitude estimate of the increase in solid waste generation that would occur in the No-Action Alternative based on the assumption that it would be approximately proportional to the increase in ridership. In 2040, daily WUS ridership (Amtrak, VRE, MARC, and intercity buses) is projected to increase by around 33 percent relative to existing conditions. A 33 percent increase in solid waste generation would result in approximately 765 more tons of municipal waste generation per year.

The private air rights development, including residential, hotel, office, and retail uses, would also generate new municipal solid waste. An order-of-magnitude estimate based on typical generation rates by use shows that the development would generate approximately 14,762 tons of additional solid waste annually (**Table 5-6**).

Table 5-6. Private Air Right Development Solid Waste Generation in the no-Action Alternative

	Additional Unit	Waste generation Rate per unit (Pounds/Day)[1]	Waste Generation Estimate (Tons/Year)
Residential	1,105 units[2]	4.75/unit	958
Office	2,160,000 square feet	2.75/100 square feet	10,840
Retail	120,000 square feet	5.5/100 square feet	1,205
Hotel	482 rooms	20/room	1,759
Total	-	-	14,762

1. Rate based on waste generation rates provided by District Department of Public Works, Office of Waste Diversion (January 2019) and volume-to-weight conversion factors obtained from U.S. Environmental Protection Agency (https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf).
2. Assuming 950 feet per unit.

Altogether, in the No-Action Alternative, the Project Area would annually produce approximately 15,527 more tons of solid waste than under existing condition, for a total of approximately 17,867 tons per year. The increase would be small in the context of District-wide waste production: it would represent about 1.4 percent of the 1,139,846 tons of waste produced in the District during 2018, the most recent year for which data are available. [328]

[328] Commonwealth of Virginia Department of Environmental Quality. *2022 Annual Solid Waste Report for CY 2021*. Accessed from https://www.deq.virginia.gov/home/showpublisheddocument/15488/637919249151430000. Accessed on August 9, 2023.

Consistent with the District's Zero Waste vision, part of the solid waste generated in the Project Area would be recycled or composted.[329] Non-recycled waste would be sent to landfill facilities in Virginia or Maryland (the District has no landfill). In Virginia alone, total sanitary landfill capacity at the end of 2021 was approximately 245.4 million tons spread across 50 landfills, which had an average remaining permitted life of 21.4 years. [330] Additional solid waste from the Project Area in the No-Action Alternative is unlikely to cause capacity issues.

Hazardous Materials and Waste

Relative to existing conditions, in the No-Action Alternative, there would be an increase in the amount of hazardous materials stored, used, and disposed of in the Project Area. This would result in negligible adverse direct operational impacts.

Train operations involve the storage and use of fuel, oils, lubricants, and other hazardous or regulated materials for the operation or maintenance of stationary or mobile equipment. There would be an increase in rail operations at WUS in the No-Action Alternative, from 24 percent for Amtrak operations to 6 percent for VRE operations. However, the nature of operations would remain similar to what it is currently. The same types of hazardous materials would continue to be used, though in greater amounts. The storage, utilization, and disposal of these materials would continue to comply with applicable laws, regulations, and policies. Increased activities at WUS may slightly increase the risk of accidental spills and release of oil or hazardous materials (OHM).

The private air rights development would involve the storage and use of hazardous materials typically found in residential and office buildings. The District has a program for the disposal of household hazardous materials at the Fort Totten Transfer Station, which would be available to residents of the development.

5.4.2.2 Indirect Operational Impacts

There would be no indirect operational impacts. The No-Action Alternative would not affect solid waste or hazardous materials generation away from the Project Area.

The No-Action Alternative would not affect the production of solid waste or hazardous materials generation away from the Project Area.

[329] Zero Waste is defined as diverting 80% or more of the city's solid waste stream away from landfills and waste-to-energy facilities. (District of Columbia. *About Zero Waste DC*. Accessed from https://zerowaste.dc.gov/about-zero-waste-dc. Accessed on August 16, 2023). In 2018, the citywide waste diversion rate was estimated to be 16.11% (District of Columbia Department of Public Works. *Washington DC Solid Waste Diversion Annual Report. Calendar Year 2018*. Accessed from https://zerowaste.dc.gov/sites/default/files/dc/sites/zerowaste/CY%2018%20Diversion%20Report%20Final%203%2010%2021.pdf. Accessed on August 16, 2023).

[330] Commonwealth of Virginia Department of Environmental Quality. *2022 Annual Solid Waste Report for CY 2021*. Accessed from https://www.deq.virginia.gov/home/showpublisheddocument/15488/637919249151430000. Accessed on August 9, 2023.

5.4.2.3 Construction Impacts

Construction activities in the No-Action Alternative would result in negligible adverse impacts from the storage and use of hazardous materials and the generation and disposal of hazardous waste and municipal solid waste. They would generate potential minor beneficial impacts from the removal of contaminated materials or media from the Project Area.

In the No-Action Alternative, construction of the Project would not occur and there would be no construction impacts. The construction of several of the projects included in this alternative, including the private air rights development, the replacement of the H Street Bridge, the relocation of Substation 25A, and the VRE Midday Storage Replacement Facility (MSRF), would generate impacts. Specific information on the construction methods and schedules for those projects is not available. This section assesses anticipated impacts in a general and qualitative manner.

Adverse impacts from the storage and use of hazardous materials and the generation and disposal of hazardous and non-hazardous waste and debris during construction would be negligible because it can be anticipated that these activities would comply with applicable Federal and local laws and regulations, as explained below.

Construction activities would involve the storage, use, and disposal of petroleum and hazardous materials such as fuel, lubricants, or solvents, among others, for the operation and maintenance of equipment during construction activities. This would create a risk of spill or release into the environment. Compliance with Emergency Planning and Community Right-to-know Act (EPCRA), Oil Pollution Act (OPA), and Resource Conservation and Recovery Act (RCRA) requirements would minimize impacts from spills or releases.

The projects in the No-Action Alternative would generate construction spoils and debris. Limited sampling suggests that soil and groundwater below the rail terminal contain contaminants in low concentrations. Some soil concentrations exceeded regulatory screening levels for total petroleum hydrocarbons, diesel range organics (TPH-DRO), polychlorinated biphenyls (PCB), and arsenic.[331] Arsenic concentration in the soil are consistent with regional background concentrations and are likely not the result of site-related activities. Construction contractors would be required to handle and dispose of spoil materials and groundwater in accordance with applicable laws and regulations, including RCRA and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The replacement of Substation 25A may generate hazardous debris. Electrical substations include electrical equipment such as transformers or capacitors that contain dielectric fluids. The Toxics Substances Control Act (TSCA) regulates the storage and disposal of PCB-contaminated materials like dielectric fluids. Construction contractors would have to comply with TSCA, as applicable.

[331]Amtrak. November 2019. *Final Washington Union Station Terminal Infrastructure Project Constructability Report*.

Pre-1980 structures, including Substation 25A and the H Street Bridge, may contain asbestos- containing materials (ACM) as well as lead-based paints. In the event such materials are present, special handling during the demolition process would be required. Removal and disposal of these materials would have to be in accordance with the applicable regulations and standard abatement protocols.

Taken together, the removal of contaminated materials from the Project Area would constitute a minor beneficial impact. This impact would be minor because of the likely limited level of contamination present.

5.4.3 Impacts of the Preferred Alternative

5.4.3.1 Direct Operational Impacts

Municipal Solid Waste

Relative to the No-Action Alternative, the Preferred Alternative would have a minor beneficial direct operational impact on municipal solid waste generation.

Table 5-7 shows the approximate net change in the amount of municipal waste that WUS would generate in the Preferred Alternative.

Table 5-7. Change in Municipal Solid Waste Generation at WUS in the Preferred Alternative

	Difference Between No-Action and Preferred Alternative	Waste generation Rate (Pounds/Day)[2]	Waste Generation Estimate (Tons/Year)
WUS			
Station	-	-	2,020[1]
Retail	64,000 square feet	5.5/100 square feet	642
Total WUS	**-**	**-**	2,662

1. Proportional to increase in passengers.
2. Rate based on waste generation rates provided by District Department of Public Works, Office of Waste Diversion (January 2019) and volume-to-weight conversion factors obtained from U.S. Environmental Protection Agency (https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf).

Increased activity and ridership at WUS in the Preferred Alternative would generate an increase in the amount of municipal solid waste produced by the station. An order-of-magnitude estimate of the increase can be calculated based on the assumption that it would be proportional to the increase in ridership. In 2040, daily WUS ridership (Amtrak, VRE, MARC, and intercity buses) would increase by around 65 percent relative to the No-Action Alternative. No-Action ridership would produce approximately 3,105 tons of municipal waste annually. An increase in solid waste proportional to the increase in ridership in the Preferred Alternative would result in approximately 2,020 more tons of municipal waste per year.

The Preferred Alternative would also add 64,000 square feet of retail at WUS. This would contribute approximately 642 tons of additional waste per year, bringing the total increase in WUS-generated waste in the Preferred Alternative to approximately 2,662 tons per year.

Consistent with the District's Zero Waste vision, part of the solid waste generated in the Project Area would be recycled or composted.[332] Non-recycled waste would be sent to landfill facilities in Virginia or Maryland (the District has no landfill). In Virginia alone, total sanitary landfill capacity at the end of 2021 was approximately 245.4 million tons spread across 50 landfills, which had an average remaining permitted life of 21.4 years. [333] Additional solid waste from WUS in the Preferred Alternative is unlikely to cause capacity issues.

Because the Preferred Alternative would make use of part of the private air rights area, the private air rights development in this alternative would be smaller than in the No-Action Alternative, as noted in **Section 3.5**, *Description of the Preferred Alternative*. **Table 5-8** shows the difference in assumed square footage for each use and the resulting change in projected solid waste generation. The private air rights development would generate approximately 6,043 fewer tons of waste in the Preferred Alternative than in the No-Action Alternative.

Table 5-8. Change in Private Air Rights Solid Waste Generation in the Preferred Alternative

	Difference Between No-Action and Preferred Alternative	Waste generation Rate (Pounds/Day)[1]	Waste Generation Estimate (Tons/Year)
Residential	-75 units[2]	4.75/unit	-65
Office	-1,100,000 square feet	2.75/100 square feet	-5,521
Retail	-35,000 square feet	5.5/100 square feet	-351
Hotel	-29 rooms	20/room	-106
Total	-	-	-6,043

1. Rate based on waste generation rates provided by District Department of Public Works, Office of Waste Diversion (January 2019) and volume-to-weight conversion factors obtained from U.S. Environmental Protection Agency (https://www.epa.gov/sites/production/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf).
2. Assuming 950 feet per unit.

Altogether, the Project Area in the No-Action Alternative would produce a total of around 17,867 tons of municipal waste per year. In the Preferred Alternative, because of the smaller size of the private air

[332] Zero Waste is defined as diverting 80% or more of the city's solid waste stream away from landfills and waste-to-energy facilities. (District of Columbia. *About Zero Waste DC*. Accessed from https://zerowaste.dc.gov/about-zero-waste-dc. Accessed on August 16, 2023). In 2018, the citywide waste diversion rate was estimated to be 16.11% (District of Columbia Department of Public Works. *Washington DC Solid Waste Diversion Annual Report. Calendar Year 2018*. Accessed from https://zerowaste.dc.gov/sites/default/files/dc/sites/zerowaste/CY%2018%20Diversion%20Report%20Final%203%2010%2021.pdf. Accessed on August 16, 2023).

[333] Commonwealth of Virginia Department of Environmental Quality. *2022 Annual Solid Waste Report for CY 2021*. Accessed from https://www.deq.virginia.gov/home/showpublisheddocument/15488/637919249151430000. Accessed on August 9, 2023.

rights development, the Project Area would produce a total of 14,486 tons,[334] a reduction of approximately 19 percent relative to the No-Action Alternative. This reduction would be small in the context of District-wide waste production: it would represent about 0.3 percent of the 1,139,846 tons of waste produced in the District during 2018, the most recent year for which data are available. [335] While beneficial, the impact would be minor.

Hazardous Materials and Waste

Relative to the No-Action Alternative, the Preferred Alternative would have negligible adverse direct operational impacts pertaining to hazardous materials and waste.

Train operations involve the storage and use of fuel, oils, lubricants, and other hazardous or regulated materials for the operation or maintenance of stationary or mobile equipment. There would be an increase in rail operations at WUS in the Preferred Alternative relative to the No-Action Alternative. However, the nature of operations would remain similar to what it is currently and what it would be in the No-Action Alternative. The same type of hazardous materials would continue to be used, though in greater quantities. The storage, utilization, and disposal of these materials would continue to be performed in compliance with applicable laws, regulations, and policies.

Increased activities at WUS may slightly increase the risk of accidental spills and release of fuel or hazardous materials. All releases of hazardous materials would continue to be reported to the applicable regulatory authority in accordance with EPCRA or OPA. In the District, this authority is the Homeland Security and Emergency Management Agency. Actions to be taken in the event of a spill would be specified in the station's Spill Prevention, Control, and Countermeasure (SPCC) Plan in the Preferred Alternative as in the No-Action Alternative. Union Station Redevelopment Corporation (USRC), the Project Sponsor, would update the existing SPCC Plan to reflect any major changes to on-site petroleum product or liquid hazardous waste storage.

5.4.3.2 Indirect Operational Impacts

Municipal Solid Waste

Relative to the No-Action Alternative, in the Preferred Alternative, the potential development of the Federal air rights would result in a minor adverse indirect operational impact on solid waste generation.

In the Preferred Alternative, the potential Federal air rights development would consist of approximately 175,000 square feet of residential uses; 310,000 square feet of office uses; and 15,000

[334] An increase of 2,662 tons at WUS and reduction of 6,043 tons at the private air rights development.

[335] Commonwealth of Virginia Department of Environmental Quality. *2022 Annual Solid Waste Report for CY 2021*. Accessed from https://www.deq.virginia.gov/home/showpublisheddocument/15488/637919249151430000. Accessed on August 9, 2023.

square feet of retail uses. Using the generation rates used in **Table 5-8,** the potential Federal air rights development would generate approximately 1,865 tons per year of additional solid waste.

The impact would be minor, representing about 0.16 percent of the 1,139,846 tons of waste produced in the District during 2018. A part of it would be recycled, in keeping with the policies in place to achieve the District's Zero Waste goals. Non-recycled waste would be sent to landfills in Maryland and Virginia. As noted above, in Virginia alone, as of the end of 2021, sanitary landfill capacity was approximately 245.4 million tons spread across 50 landfills. These landfills had an average remaining permitted life of 21.4 years. The additional solid waste generated by the potential Federal air rights development in the Preferred Alternative is not likely to cause capacity issues.

Hazardous Materials and Waste

Relative to the No-Action Alternative, in the Preferred Alternative, the potential development of the Federal air rights would result in a negligible indirect operational adverse impact on hazardous material and waste.

Development of the Federal air rights into mixed uses space would not involve the storage and use of hazardous materials beyond products typically found in mixed-use buildings. In addition to common batteries, solvents, paints, or detergents, these may include fuel for emergency generators and Uninterruptable Power Supply batteries. The storage, utilization, and disposal of these materials would be performed in compliance with applicable laws, regulations, and policies. Impacts would be negligible.

5.4.3.3 Construction Impacts

Construction of the Preferred Alternative would result in minor adverse impacts from the storage and use of hazardous materials and the generation and disposal of hazardous and non-hazardous waste and debris. It would have potential minor beneficial impacts from the removal of contaminated materials or media from the Project Area.

Construction of the Preferred Alternative would require the storage, use and disposal of petroleum products and hazardous materials. Examples include fuel, lubricants, antifreeze, fire retardants, brake fluid, adhesives, or solvents for the operation and maintenance of construction equipment and vehicles. This would create a risk of spill or release into the environment. Compliance with the requirements of EPCRA, OPA, RCRA, and other applicable Federal and local laws and regulations would minimize these risks. These laws and regulations are intended to minimize the release of harmful substances in the environment. The implementation of standard best management practices by the construction contractor, including spill prevention plans and the construction and maintenance of containment systems, would contribute to minimizing the risk of spills. Adverse impacts would be minor.

The Preferred Alternative would require excavating the rail terminal to approximately 3 feet above sea level. It would also involve demolishing existing infrastructure such as tracks, platforms, and catenaries as well as the Claytor Concourse and the existing parking garage. Construction of the access ramps on G Street NE, First Street NE, and the east side of WUS would also involve excavation and disposal of soil. This would generate a substantial quantity of spoils and debris—approximately 1.5 million cubic yards—

that would need to be transported and disposed of offsite over the entire construction period (13 years). However, excavation and associated disposal needs would not occur all at once. Instead, it would occur in four separate steps, as each construction phase would include a period of excavation early in the phase. The amount of spoil produced in each phase would vary, from a total of approximately 141,000 cubic yards during Phase 1 to a total of approximately 753,000 cubic yards during Phase 4. Appropriate transport methods and disposal locations would be identified during construction planning.

Limited sampling in the Project Area suggests that soil and groundwater below the rail terminal contain contaminants in low concentrations. Some soil concentrations exceeded regulatory screening levels for total petroleum hydrocarbons, diesel range organics (TPH-DRO), Polychlorinated Biphenyls (PCBs), and arsenic. The presence of diesel-based hydrocarbons and some PCBs is expected in a historic railyard within a dense urban environment. Arsenic concentrations in soil are consistent with regional background concentrations and are likely not the result of site-related activities. Shallow groundwater samples from beneath the former H Street Tunnel contained some metal concentrations exceeding regulatory levels.

Construction contractors would be required to handle and dispose of spoil materials and groundwater in accordance with applicable laws and regulations, including RCRA and CERCLA. This would likely involve further characterizing the environmental condition of those materials and treating them in accordance with the type of contamination present, if any. Contaminated soils would be transported in accordance with U.S. Department of Transportation (USDOT) regulations and disposed of at facilities permitted to receive them. Contaminated groundwater may be treated on site before being discharged to the municipal sewer system.

Construction debris would include platforms and railroad tracks. Used wooden railroad ties are typically coated with chemical preservatives including creosote, which contains semi-volatile organic compounds. Materials would have to be characterized, managed, and disposed of in accordance with RCRA and other applicable regulations. This would also be the case of debris that, based on age, may contain asbestos or lead-based paint. All such waste would be disposed of at facilities permitted for this type of material.

Spoil generated under each phase by excavation activities would be disposed of at regional disposal facilities based on the type of waste, facility capacity, and waste characterization requirements. Receiving facilities may include solid waste landfills; soil reclamation areas; soil recycling facilities; asbestos receiving landfills; hazardous waste landfills; hazardous waste incinerators; and Toxic Substances Control Act (TSCA) incinerators. The appropriate transport methods and disposal locations would be identified as part of construction planning.

The removal of contaminated media materials from the Project Area would constitute a minor beneficial impact. The impact would be minor because of the likely limited level of contamination that would be encountered and removed. All fill used during construction would be certified-clean material.

5.4.4 Summary of Impacts

Table 5-9 and **Table 5-10** summarize the impacts of the No-Action Alternative and the Preferred Alternative.

Table 5-9. Summary of Impacts on Waste and Hazardous Materials

Impact Category	Type of Impact	No-Action Alternative	Preferred Alternative
Municipal Solid Waste	**Direct operational**	Minor adverse impact	Minor beneficial impact
	Indirect operational	No impact	Minor adverse impact
	Construction	Minor adverse impact	Minor adverse impact
Hazardous Materials and Waste	**Direct operational**	Negligible adverse impact	Negligible adverse impact
	Indirect operational	No impact	Negligible adverse impact
	Construction	Negligible adverse/minor beneficial impact	Minor adverse / minor beneficial impact

Table 5-10. Quantitative Estimates of Impacts on Municipal Waste

Source	No-Action Alternative (Additional)	No-Action Alternative (Total)	Preferred Alternative (Additional)	Preferred Alternative (Total)
Operational				
WUS	+765 tpy (+33%)	3,105 tpy	+2,662 tpy (+86%)	5,767 tpy
Private Air Rights Development	+14,762 tpy	14,762 tpy	-6,043 tpy (-41%)	8,719 tpy
Potential Federal Air Rights Development	-	-	+1,865 tpy	1,865 tpy
Total	+15,527 tpy (+664%)	17,867 tpy	-1,516 tpy (-8.5%)	16,351 tpy
Construction Spoils and Debris				
Construction Spoils and Debris	-		1,507,102 cy	

tpy = tons per year; cy = cubic yards

5.5 Transportation

This section describes the impacts of the No-Action Alternative and Preferred Alternative on the multiple transportation modes (modes) in and around WUS. These include railroad (Amtrak, VRE, and MARC Train); intercity, tour/charter, and sightseeing buses (including hop-on/hop-off buses and daily sightseeing coaches); private vehicles; for-hire vehicles;[336] bicycles; transit (Metrorail, DC Streetcar, and Metrobus); and pedestrians. This section also addresses parking and rental cars.

5.5.1 Methodology

The transportation impact analysis identifies the impacts on the transportation system due to changes in the volume or patterns of railroad, bus, private vehicle, for-hire vehicle, bicycle, transit, and pedestrian trips associated with WUS. The analysis uses existing and anticipated trip generation information to estimate future transportation volumes and the resulting impacts on the various modes. Transportation agencies, private operators, and site visits provided the data informing the analysis. Key inputs included:

- Projected ridership, service frequency, and schedule data (provided by Amtrak, DDOT, MARC, Washington Metropolitan Area Transit Authority [WMATA], and VRE);
- National Capital Region Transportation Planning Board (TPB) travel demand model;
- TPB 2040 Constrained Long-Range Transportation Plan;
- Reasonable assumptions about future private and Federal air rights development programs, including office, residential, and retail uses;
- Projected local transit ridership;
- Projected pedestrian and bicycle activity;
- Projected intercity bus ridership;
- WUS retail uses; and
- Growth from planned private development projects within one ½ mile of WUS and general background growth.

Projections (in the year 2040) for each mode were developed through a detailed multimodal model using existing baseline and projected ridership and developments, and estimated mode splits.[337] Projections included morning (AM) and evening (PM) peak-hour rail, intercity and tour bus, and transit ridership, traffic,[338] bicycle, and pedestrian information.

[336] In the District and in this FEIS, "for-hire vehicles" refers to all vehicles where the passenger pays for a ride, including taxis, livery/car services, and transportation networking companies (TNCs) such as Uber and Lyft.

[337] Mode splits are the percentage of trips that are taken via a certain mode. For example, if twenty percent of station users take transit, their "transit mode split" is twenty percent.

[338] Traffic in this context refers to the movements of different vehicular modes, including private vehicles, for-hire vehicles, trucks for loading and delivering, and buses, on roadways.

Data sources for the mode projections included:

- Amtrak, MARC, and VRE ridership, and Intercity bus projections from the *Northeast Corridor (NEC) FUTURE Tier 1 FEIS*;[339]
- Amtrak Terminal Infrastructure Study and Operations Plan;
- VRE 2040 System Plan;[340]
- MARC Train 2040 Growth and Investment Plan;[341]
- WMATA Land Use Ridership Model;
- Metropolitan Washington Council of Governments (MWCOG) Regional Bus Staging, Layover, and Parking Location Study;[342]
- MWCOG Cooperative Forecast – WMATA ridership;
- MWCOG 2040 Cooperative Forecast - local Transportation Activity Zone data;
- DDOT DC Circulator ridership;
- DDOT Streetcar Ridership projections;
- District land use sources including the Office of Planning (DCOP), Zoning Commission, Board of Zoning Appeals, the North of Massachusetts Avenue (NoMA) Business Improvement District (BID), the Mount Vernon Triangle BID, the Capitol Hill BID, and local Advisory Neighborhood Commissions;
- Destination DC visitor statistics;[343] and
- Submissions from the private air rights developer to FRA.

5.5.1.1 Operational Impacts

Post-2040, operational (long-term or permanent) impacts on the various modes were assessed as follows:

- **Amtrak, VRE, and MARC commuter railroads:** Increases or decreases in, and ability to meet, expected service levels and ridership;

[339] Federal Railroad Administration. 2017. *NEC FUTURE Tier I Final Environmental Impact Statement*. Accessed from https://www.fra.dot.gov/necfuture/. Accessed on September 26, 2023.

[340] Virginia Railway Express. 2014. *System Plan 2040*. Accessed from https://www.vre.org/about/studies-and-reports/2040/. Accessed on November 17, 2022.

[341] Maryland Transit Administration. 2013. *MARC Growth and Improvement Plan Update 2013 to 2050*. Accessed from https://www.mgip-update.com/images/presentations/mgip_update_2013-09-13.pdf. Accessed on February 14, 2024.

[342] Metropolitan Washington Council of Governments. 2015. *Regional Bus Staging, Layover, and Parking Location Study*.

[343] Destination DC. *Washington, DC Visitor Research*. Accessed from https://washington.org/press/DC-information/washington-dc-visitor-research. Accessed on April 19, 2023.

- **WMATA Metrorail:** Increases or decreases in passenger demand, impacts on passenger flow, capacity issues that may result from increases;
- **DC Streetcar:** Increases or decreases in passenger demand and capacity issues that may result from increases;[344]
- **Intercity, tour, and charter bus:** Increases or decreases in service capacity level and ridership, ability to meet future service capacity levels;
- **Loading:** Availability and accessibility of loading docks and ability to meet WUS needs;
- **Pedestrian and bicycle activity:** Increases or decreases in pedestrian and bicycle activity, ability to meet activity demands, and impacts on safety;
- **WMATA Metrobus, DC Circulator, and commuter buses:** Increases or decreases in passenger demand, impacts on access to transit buses;
- **Parking and rental cars:** Increases or decreases in space available for parking (including from rental car companies); [345]
- **Ride-for-hire circulation:** Increases or decreases in traffic volumes on nearby streets, and ability to meet demands at the WUS curbside space;[346]
- **Private pick-up and drop-off activity:** Increases or decreases in traffic volumes on nearby streets, and ability to meet demands at the WUS curbside space;[347] and

[344] The analysis assumed that the DC Streetcar would be extended east to the Benning Road Metrorail Station. While the District has postponed the extension of the Streetcar to the west indefinitely, it is anticipated that an equivalent high-capacity transit option such as a busway to Georgetown implemented as part of DDOT's Bus Priority Program will be in place by 2040. This assumption was made in coordination with DDOT. H Street has been incorporated in the District's Bus Priority Plan. *See* DDOT. 2021a. *Bus Priority Plan.* Accessed from https://ddot.dc.gov/sites/default/files/dc/sites/ddot/Bus%20Priority%20Plan_2021-12-20.pdf. Accessed on November 12, 2022. As of 2022, DDOT was planning dedicated bus lanes on H Street as part of the H Street NE Bus Priority Project and the H Street NW Bus Priority Project: District Department of Transportation, *H Street NW Bus Priority,* accessed from https://ddot.dc.gov/page/h-street-nw-bus-priority, accessed on November 12, 2022; and District Department of Transportation, *H Street NE Bus Priority Project*, accessed from https://ddot.dc.gov/page/h-street-ne-bus-priority-project, accessed on November 12, 2022.

[345] The parking impact analysis addresses parking as a resource for which there is a demand. Therefore, a reduction in parking availability is considered an adverse impact on parking. A reduction in parking availability may also have adverse or beneficial consequences for other resources or transportation modes. Such consequences are incorporated into the impact analyses for those other resources or transportation modes.

[346] A single for-hire vehicle generates two trips: one arriving and one departing from WUS, regardless of whether it is picking up or dropping off a passenger. For the purposes of the impact analysis, a single for-hire pick-up or drop-off was estimated to produce 1.5 trips to reflect the linking of trips in the WUS circulation network ("linking of trips" refers to a for-hire vehicle picking-up a passenger just after dropping one off).

[347] A single private pick-up/drop-off trip generates two trips: one arriving and one departing from WUS, regardless of whether it is picking up or dropping off a passenger. For the purposes of the impact analysis, a single private pick-up or drop-off is estimated to produce 2 trips as no linking can be assumed.

- **Vehicular traffic:** Increases and decreases in traffic volumes on nearby streets, level of service (LOS) impacts, and queuing impacts at key intersections. LOS, increases in average delay, and queuing are the three indicators on which the assessment of traffic impacts is based.

In coordination with DDOT, the traffic analysis presented in the SDEIS for the Preferred Alternative has been revised to assume a 25 percent reduction in auto mode share for trips to and from WUS, consistent with the District's goal identified in Move DC, the District's long-range transportation plan.[348] Other modes were revised accordingly to account for the shift in mode share. The mitigation measures defined in **Table 7-1** of the FEIS, specifically performance monitoring (**Table 7-1, Item #28a**) would ensure that, at a minimum, this goal is achieved and that remaining impacts are adequately mitigated.

5.5.1.2 Construction Impacts

Construction impacts on transportation in the No-Action Analysis were analyzed at a high level for the various projects with potential to have such impacts. The potential impacts from the construction of the Preferred Alternative were assessed for each transportation mode. Because construction planning is still in its early stages, the impact analysis is qualitative. In the Preferred Alternative, construction of the Project would take place in four phases. The analysis focuses particularly on Phase 4 of construction (beginning 8 to 9 years after the start of construction) because Phase 4 has the greatest potential to affect transportation conditions in the Local Study Area. This is because during Phase 4, demolition of the existing bus facility and parking garage would occur; the west ramp would be demolished; and construction activities would be along the west side of WUS, adjacent to Metrorail's Red Line. Phase 4 is also the longest construction phase.

5.5.2 Impacts of the No-Action Alternative

5.5.2.1 Direct Operational Impacts

Commuter and Intercity Railroads

Relative to existing conditions, the No-Action Alternative would have major adverse direct operational impacts on commuter and intercity rail service because their ability to meet future demand would be severely constrained.

In the No-Action Alternative, concourse and track conditions would be very constrained and limit the growth of rail transportation in the Washington, D.C. area. The constraints on track and platform infrastructure in the No-Action Alternative would cause only 50 percent of the 2040 unconstrained Amtrak service levels and 68 percent of the unconstrained ridership levels to be realized. Only 42 percent of MARC service and 53 percent of MARC ridership would be achieved. Only 37 percent of VRE service and 36 percent of VRE ridership would be achieved. The existing platforms are antiquated and

[348] District Department of Transportation. 2021b. *Move DC. The District of Columbia's Multimodal Long-Range Transportation Plan*. Accessed from https://movedc-dcgis.hub.arcgis.com/. Accessed on August 11, 2023.

deteriorated, have inadequate width for passenger volumes, and do not meet current Americans with Disabilities Act (ADA) or life safety standards. As a result, the No-Action Alternative would result in a major adverse impact on rail operations at WUS.

Amtrak, MARC, and VRE would continue to provide rail service to and from WUS in 2040. **Table 5-11** shows changes in ridership and daily trains for Amtrak, MARC, and VRE between existing conditions and the No-Action Alternative.

Table 5-11. Daily Train Service and Total Ridership in the No-Action Alternative

Service	No-Action Alternative	Existing Conditions	Projected Change
Amtrak Trains	144	116	24%
Amtrak Ridership	21,800	16,400	33%
MARC Trains	106	95	11%
MARC Ridership	37,900	28,100	35%
VRE Trains	34	32	6%
VRE Ridership	4,900	3,900	26%

Intercity Railroad Service

In the No-Action Alternative, the average number of Amtrak weekday trains would increase by approximately 24 percent, to 144 trains a day. Over that same period, average Amtrak weekday ridership would increase by 33 percent, to 21,800 passengers due to planned service improvements and regional and local growth.

MARC

In the No-Action Alternative, MARC would see a modest increase in service, with an 11 percent average increase in weekday trains across the three lines serving WUS from 95 to 106. The Brunswick Line, which would add five trains to and from WUS by 2040, is slated for the largest increase. MARC would see a 35 percent growth in ridership over that same period, with approximately 37,900 average daily riders in 2040.

VRE

In the No-Action Alternative, VRE would see a 6 percent average increase in weekday revenue trains serving WUS (currently 32, to increase to 34), accompanied by a 26 percent increase in average weekday ridership by 2040. This increase would bring daily VRE ridership to 4,900 daily riders. VRE plans to accommodate the increase by running longer trains and using more double-deck train cars.

WMATA Metrorail

Relative to existing conditions, the No-Action Alternative would result in a moderate adverse direct operational impact on WMATA Metrorail operations because increased demand would exceed capacity in the PM peak and would exacerbate station circulation issues at the WMATA platform level.

WUS ridership growth would result in an adverse operational impact because volumes at the WUS Metrorail station would exceed capacity in the Glenmont direction during the PM peak. This adverse impact would be moderate as only one direction and one peak period would be affected. Where volume to capacity (V/C) exceeds 100 percent, there would be a need for measures to address overcrowding. [349] **Table 5-12** summarizes WUS-related peak-hour activities at the WUS Metrorail station.

Table 5-12. Peak-hour WUS-related Metrorail Activity, No-Action Alternative[350]

	No-Action Alternative		Existing Conditions	
	Shady Grove	Glenmont	Shady Grove	Glenmont
AM Peak Hour				
Ridership Arriving at WUS	13,651	4,250	8,499	5,071
V/C Arriving at WUS[351]	80%	25%	57%	34%
WUS Boardings	5,202	1,010	2,802	528
WUS Alightings	4,128	2,803	923	3,644
Through Ridership	9,523	1,447	7,576	1,427
Ridership Departing WUS[352]	14,725	2,457	10,378	1,955
V/C After WUS	86%	14%	69%	13%
Excess Demand	0	0	0	0
PM Peak Hour				
Ridership Arriving at WUS	3,107	16,848	2,592	9,948
V/C Arriving at WUS	20%	**107%**	19%	72%
WUS Boardings	2,559	3,661	3,265	918
WUS Alightings	1,154	6,126	582	3,090
Through Ridership	1,953	10,722	2,010	6,858

[349] WMATA capacity standards are based on WMATA's operating manual. The capacity reported in this report is less than the "crush load" of WMATA trains. Capacity represents the level at which WMATA believes they can operate effectively without delays to trains and passengers due to overcrowding.

[350] Estimates of WMATA peak hour capacity are consistent with TPB Constrained Long-Range Transportation Plan elements and direction from WMATA.

[351] Red Line hourly nominal capacity at the peak hour is 19,200 passengers, assuming trains every 3 minutes, 120 passenger capacity, and 100 percent 8-car train operations. However, in this analysis, capacity is curtailed due to peaking factors. As a result, the initial v/c upon arrival at WUS is based on a 1.12 multiplier of actual volumes in the AM peak and 1.22 multiplier of actual volumes in the PM peak.

[352] "Through ridership" refers to riders who neither board nor alight at WUS but ride the Red Line train through the WUS Metrorail Station.

	No-Action Alternative		Existing Conditions	
	Shady Grove	Glenmont	Shady Grove	Glenmont
Ridership Departing WUS	4,512	14,383	5,275	7,776
V/C After WUS	29%	91%	38%	56%
Excess Demand	0	1,110	0	0

By 2040, peak-hour train loads at the WUS Metrorail Station would follow the same pattern as currently, with higher utilization in the westbound direction (Shady Grove) in the AM peak hour and in the eastbound direction (Glenmont) in the PM peak hour.

Volumes would remain below capacity in the Shady Grove direction during the AM peak. They would exceed it in the Glenmont direction during the PM peak (107 percent arriving), reflecting an estimated excess demand of approximately 1,110 passengers.

The increase in Metrorail ridership at WUS in the No-Action Alternative would adversely affect passenger circulation. Passenger circulation is an existing issue at the station. At the northern exit of the station, it can take up to 8 minutes for passengers to clear the two sets of escalators from the platform level. The improvements to circulation included in the planned Concourse Modernization Project would have a beneficial impact on circulation at the WMATA mezzanine level and between the mezzanine level and the WUS concourse. However, the existing circulation between the WMATA platform and the WMATA mezzanine would remain a constraint. Increased passenger volumes in the No-Action Alternative relative to existing conditions would further degrade conditions.

DC Streetcar[353]

Relative to existing conditions, the No-Action Alternative would result in a moderate beneficial direct operational impact on DC Streetcar operations due to increased demand that would not exceed capacity. The benefits of increased ridership would be partially offset by greater operational delays.

In the No-Action Alternative, it is likely that ridership growth at WUS and nearby development projects, including the private air rights development, would generate additional demand for the DC Streetcar. Modeling shows that this demand would contribute to supporting the operation of the Streetcar without creating capacity issues, amounting to a beneficial impact. Maximum capacity would be in the eastbound direction in the AM peak (33 percent). This beneficial impact would be moderate. It would be partially offset by the adverse impact from the introduction of new signalized intersections on the H Street Bridge for the roadways that would serve the private air rights development, and greater traffic volumes (see **Section 5.5.1.4**, *Direct Operational Impacts, Vehicular Traffic*). These changes would create new operational delays.

[353] As noted above, the impact analysis for impacts to DC Streetcar operations assumes an extension of the existing line in both the eastbound and the westbound directions. Although the District has indefinitely postponed extending the Streetcar line to the west, it is assumed that by 2040, an equivalent transit line would be in place between WUS and Georgetown. References to a westbound Streetcar direction refer to this equivalent line.

Intercity, Tour/Charter, and Sightseeing Buses

Relative to existing conditions, the No-Action Alternative would have a major adverse direct operational impact on bus passenger facilities' ability to accommodate projected increases in users.

In the No-Action Alternative, intercity, tour, daily sightseeing, and charter buses would continue to use the existing 61-slip (parking space) bus facility. Hop-on/hop-off sightseeing buses would continue to serve the front of WUS.

In 2040, the No-Action Alternative would generate an estimated 28 AM and 39 PM peak-hour intercity, tour/charter and daily sightseeing bus movements (**Table 5-13**). Relative to existing conditions, this would be an increase of 33 percent (7 trips) in the AM peak and 39 percent (11 trips) in the PM peak.

Table 5-13. Peak-hour Bus Trips in the No-Action Alternative

	No-Action Alternative		Existing Conditions	
	AM Peak	PM Peak	AM Peak	PM Peak
Ins	14	20	11	14
Outs	14	19	10	14
Total	**28**	**39**	**21**	**28**

The existing bus facility, which would continue to be used in the No-Action Alternative, would be sufficient to accommodate the increase in bus operations. However, the proximity of the bus exit ramp to the intersection of the private air rights development's center road with H Street would create a complex intersection that would complicate bus exiting movements. Additionally, buses coming from the east and making a left turn into the facility would have to navigate an offset intersection created by the road that would run along the northwest side of the private air rights development.

Also, existing passenger accommodations are deficient, and the No-Action Alternative would exacerbate this situation. Passengers must use cramped walkways to access some bus bays and have to cross an active busway to reach others. Some operators lack adequate queueing space. The projected increase in passengers would make these conditions worse. Increased passengers and service without improvements to the existing bus facility would result in a major adverse impact.

Loading

In the No-Action Alternative, there would be no direct operational impacts on loading dock operations. The retail and event programs would not change. Loading levels would be similar to existing conditions.

In the No-Action Alternative, WUS would continue to receive deliveries and service through two existing primary loading locations. One, on First Street NE between Massachusetts Avenue NE and G Street NE, provides access to the train tracks. The other, on H Street NE to the east of the railroad tracks, is shared with the existing Station Place development. Based on existing conditions, eight truck movements would occur in the AM peak and two would occur in the PM peak. Loading dock activity would continue to

peak in the mid-morning (10:00 AM to 11:00 AM). Amtrak service access to operations would remain on First and Second Streets.

Pedestrians

Relative to existing conditions, the No-Action Alternative would have a major adverse direct operational impact on pedestrian circulation within WUS due to overcrowded conditions in concourses and at access points. Pedestrian volumes near WUS would also increase, with no change to existing pedestrian infrastructure, resulting in a minor adverse direct operational impact.

In the No-Action Alternative, interior pedestrian volumes at WUS would increase substantially relative to existing conditions. In both the AM and PM peaks, volumes would be 33 percent greater as shown in **Table 5-14**. The largest generator of internal pedestrian trips would be passengers transferring between commuter rail and Metrorail. While the Concourse Modernization Project would enhance capacity at WUS, it would not provide sufficient space to handle the anticipated 2040 volumes without overcrowding, resulting in a major adverse impact. This situation would constrain any further growth.

Table 5-14. Pedestrian Volumes in the No-Action Alternative

	No-Action Alternative		Existing Conditions	
	AM Peak	PM Peak	AM Peak	PM Peak
Interior Volumes				
Total	47,703	61,416	35,867	46,178
Exterior Volumes				
Total	11,123	10,819	8,346	10,390

While a number of pedestrians would remain within WUS to connect to other modes or immediately adjacent land uses, many would exit the station through the existing doors on First Street NE and at the front of the historic station building. **Table 5-14** also shows the projected total number of WUS passengers who would be entering or exiting WUS on foot from or to local destinations (excluding the private air rights development).

Analysis conducted for two signalized pedestrian crossings (the east-west crossing of First Street NE and the east-west crossing of Union Station Drive) showed that, while queuing to cross the street would increase, there would be sufficient sidewalk space to accommodate queueing pedestrians. Therefore, the adverse impact outside WUS would be minor.

Anticipated increases in vehicular traffic near WUS, including pick-up and drop-off activities, along with the increases in pedestrian volumes, may cause a greater risk of conflict between pedestrians and vehicles. Based on the projected number and distribution of new multimodal trips, the two locations most likely to be affected would be G Street NE between North Capitol Street and First Street NE, and Union Station Drive in front of WUS.

Bicycle Activity

Relative to existing conditions, the No-Action Alternative would result in a moderate adverse direct operational impact on bicycle activity. Demand for Bikeshare spaces and private bicycle parking and storage near WUS would increase with no additional bicycle facilities being provided.

In the No-Action Alternative, existing bicycle facilities near WUS would remain in their current condition, including the First Street Cycle Track; bicycle lanes on the south and east sides of WUS; and multiple nearby Capital Bikeshare docking stations.

Bicycle traffic would grow by 2040 due to increased activity at WUS and the growing use of bicycle as a mode of transportation in the District. **Table 5-15** shows projected 2040 bicycle volumes in the No-Action Alternative. Of these volumes, an estimated 80 percent would be westbound and 20 percent eastbound. First Street, D Street, and Louisiana Avenue would see the largest westbound volumes. F Street, Second Street, and Massachusetts Avenue would see the largest eastbound volumes.

Table 5-15. Peak-hour Bicycle Trips in the No-Action Alternative

	No-Action Alternative		Existing Conditions	
	AM Peak	PM Peak	AM Peak	PM Peak
Total	207	241	156	181

The growth of the bicycle as a transportation mode has implications for the Capital Bikeshare system. Bikeshare stations rely on a balance between trips starting and trips ending at the station to maintain functionality. When more trips start than end in a given time, the station empties out. When more trips end than start, the station runs out of docking spaces.

Analysis of Bikeshare demand showed that overall, in the No-Action Alternative, the Columbus Circle station, which is closest to WUS, would see the largest imbalance during the PM peak. The station at the intersection of North Capitol Street and F Street NW would see the largest imbalance during the AM peak.

To eliminate the potential deficit in Bikeshare bicycle docking stations and reduce the need to rebalance by trucking bicycles from station to station, it would be necessary to provide new bicycle docks in equal number to the maximum potential peak-hour imbalance—a projected 59 docks in the No-Action Alternative. The No-Action Alternative includes no new Bikeshare bicycle docks. Thus, the anticipated imbalance would not be remedied. While this would be an adverse impact, this impact would be moderate as Bikeshare stations could nevertheless continue to operate and it is possible that docks would be added through future upgrades or projects.

Greater vehicular and bicycle volumes in the No-Action Alternative may result in more conflicts between bicycles and vehicles. However, planned DDOT bicycle facility improvements, such as on Louisiana Avenue NE and K Street NE, would help provide safe accommodation for bicyclists.

City and Commuter Buses

Relative to existing conditions, in the No-Action Alternative, anticipated increases in ridership and traffic volumes would cause a moderate adverse direct operational impact due to overcrowding of some WMATA buses and likely decreases in bus speeds and reliability.

Both city and commuter buses would experience adverse impacts in the No-Action Alternative because of overcrowding or delays due to traffic conditions, or both. Based on the number of affected routes, however, these adverse impacts would be moderate.

Based on available information, in the No-Action Alternative, there would be no changes to commuter bus or WMATA Metrobus routes or stop locations. Local and commuter bus services in the Study Area would continue to operate as they do at present. Additionally, because the District has indefinitely postponed extending the DC Streetcar line to the west, it is likely that an equivalent new transit line would be in place between WUS and Georgetown. The Gallaudet University shuttle would continue to operate out of the WUS bus facility.

Table 5-16 shows projected usage for transit and commuter buses (including Metrobus, DC Circulator, and Maryland Transit Administration [MTA] and Loudoun County Transit [LCT] commuter buses) in the No-Action Alternative.

Table 5-16. Combined Peak-hour City and Commuter Bus Ridership in the No-Action Alternative

	No-Action Alternative		Existing Conditions	
	AM Peak	PM Peak	AM Peak	PM Peak
Capacity	7,837	7,471	7,837	7,471
Volume Prior to WUS	3,887	3,863	3,723	3,593
V/C Arriving	50%	52%	48%	48%
Alightings for WUS	476	854	394	719
Through Volume	3,411	3,009	3,329	2,874
Boardings from WUS	829	612	717	501
Total Volume	**4,240**	**3,621**	**4,046**	**3,375**
V/C Departing	54%	48%	52%	45%

Collectively, transit and commuter buses would operate below capacity. However, assuming service levels remain the same as currently, No-Action Alternative conditions would create overcrowding in five WMATA Metrobus routes in the AM peak and three in the PM peak (**Table 5-17**).

Table 5-17. Bus Routes Over Capacity[1]

	Metrobus Route	Direction	No-Action Alternative	Existing Conditions
AM Peak	80	SB	Over Capacity	
	D4	WB	Over Capacity	
	D6	WB	Over Capacity	
	P6	NB	Over Capacity	
	P6	SB	Over Capacity	
	X1	WB	Over Capacity	
	X2	WB	Over Capacity	Over Capacity
	X9	EB	Over Capacity	Over Capacity
	X9	WB	Over Capacity	Over Capacity
PM Peak	96	EB	Over Capacity	
	D6	EB	Over Capacity	
	P6	NB	Over Capacity	
	X2	EB	Over Capacity	Over Capacity
	X2	WB	Over Capacity	Over Capacity
	X9	EB	Over Capacity	Over Capacity
	X9	WB	Over Capacity	Over Capacity

1. Over capacity is in relation to the stated capacity in WMATA's service standards, which is 1.2 times the number of seats on a bus

Increases in vehicle delays and queues due to greater traffic volumes would likely affect bus reliability and speed. Of the Metrobus routes that pass through the Local Study Area, four would pass through at least two intersections degrading to LOS F in the AM peak and five would do so in the PM peak. One DC Circulator route and seven commuter buses routes (out of nine) would be similarly affected in the PM peak hour. However, traffic-related delays may be reduced due to ongoing DDOT planning efforts as part of the Bus Priority Program.[354] Bus priority treatments, which may include dedicated lanes or other measures to improve bus speed and reliability, are planned for North Capitol Street, H Street NE/NW, and Massachusetts Avenue NE/NW.[355]

[354] District Department of Transportation. 2021. *Bus Priority Plan*. Accessed from https://ddot.dc.gov/sites/default/files/dc/sites/ddot/Bus%20Priority%20Plan_2021-12-20.pdf. Accessed on November 12, 2022.

[355] District Department of Transportation. *Bus Priority Projects Map.* Accessed from https://www.arcgis.com/apps/webappviewer/index.html?id=d6c220c59aea4cd2b0f65b5e225756b7. Accessed on February 9, 2024.

Vehicular Parking and Rental Cars

Relative to existing conditions, the No-Action Alternative would have no direct operational impact on parking. It would have a minor adverse direct operational impact on rental car operations at WUS because the existing, already challenged, rental car facility would have to accommodate additional trips.

The existing WUS parking garage would continue to operate in the No-Action Alternative. The private air rights development would provide new parking facilities. Access to this parking would be via H Street NE, with private air rights development parking located both to the north and south of the street.

The WUS parking garage capacity would remain unchanged, with room for approximately 2,450 vehicles, including rental cars. The private air rights development parking facilities would include an estimated 1,320 new parking spaces.[356] These spaces would accommodate the parking needs the development would generate.

Trip generation modeling, summarized in **Tables 5-19 and 5-20**, indicated that in 2040 under the No-Action Alternative, relative to existing conditions, there would be an estimated 153 additional peak-hour parking trips (for a total of 488 trips): 61 in the AM peak (for a total of 189 trips in the AM peak) and 92 in the PM peak (for a total of 299 trips in the PM peak). The additional parking demand could be accommodated in the existing garage.

The rental car facility would generate another 14 additional peak-hour trips (for a total of 91 trips): 5 trips in the AM peak (for a total of 46 trips) and 9 trips in the PM peak (for a total of 45 trips). The projected increase in rental car trips would be small enough for the existing rental car facility (which would remain unchanged in the No-Action Alternative) to accommodate it. However, this facility already makes use of “stacked parking” and existing conditions are cramped. With the additional trips, conditions at the unchanged rental car facility would become more challenging, an adverse impact. This adverse impact would be minor, as the facility could accommodate the increase and remain functional.

For-hire Vehicles[357]

Relative to existing conditions, the No-Action Alternative would have a major adverse direct operational impact on for-hire vehicle operations at the front of WUS. The existing lane configuration would remain unchanged and there would be no additional for-hire vehicle areas. As a result, the available curb and circulation space would fail to adequately accommodate anticipated increases in the use of for-hire vehicles.

For-hire vehicles, including traditional taxis, limousines, and transportation networking companies (TNC) like Uber and Lyft, would continue to use the existing designated pick-up and drop-off locations at the front of WUS. Growth in use of for-hire vehicles is anticipated to continue through 2040. Trip generation

[356] Letter from Akridge to FRA dated May 31, 2016.

[357] In the District, for-hire vehicles” refers to all vehicles where the passenger pays for a ride, including taxis, livery/car services, and TNCs, such as Uber and Lyft.

modeling, summarized in **Tables 5-18 and 5-19**, indicated that in 2040 under the No-Action Alternative, relative to existing conditions, there would be an estimated 344 additional peak-hour for-hire vehicle trips (for a total of 1,386 trips): 130 in the AM peak (for a total of 524 trips in the AM peak) and 214 in the PM peak (for a total of 862 trips in the PM peak).

With only a single designated location available to for-hire vehicles serving WUS passengers (in front of the historic station building), conditions would deteriorate relative to existing conditions. Existing taxi queues would lengthen during peak periods, leading to increased queueing on H Street NE. Combined with the increase in private pick-up and drop-off (see next section), the outside drop-off lanes would become more congested than they are today. This congestion would create queueing issues at both the entry and exit of the lanes, with potential spillover onto Massachusetts Avenue, amounting to a major adverse impact.

A modest increase in the use of informal pick-up and drop-off locations on First Street NE, Second Street NE, and H Street NE would also likely occur. For-hire vehicles would also serve the private air rights development via the private roadways off both sides of the H Street Bridge.

Private Pick-up and Drop-off[358]

Relative to existing conditions, the No-Action Alternative would have a major adverse direct operational impact on private pick-up and drop-off operations at the front of WUS. The existing lane configuration would remain unchanged and there would be no additional private pick-up and drop-off areas. As a result, the available curb and circulation space would fail to adequately accommodate anticipated increases in private pick-up and drop-off.

The outermost lanes of Union Station Drive NE, at the front of WUS, would remain designated for private pick-up and drop-off activity. Private vehicles would likely also continue to use informal pick-up and drop-off locations on First Street NE, Second Street NE, and H Street NE.

Trip generation modeling, summarized in **Tables 5-18 and 5-19**, indicated that in 2040 under the No-Action Alternative, relative to existing conditions, there would be an estimated 452 additional peak-hour private pick-up and drop-off trips (for a total of 1,820 trips): 216 in the AM peak (for a total of 872 trips in the AM peak) and 236 in the PM peak (for a total of 948 trips in the PM peak).

The continued use of a single location for private pick-ups and drop-offs, in front of WUS, would further exacerbate existing congested conditions. The size of the private pick-up and drop-off curb spaces and the storage capacity of the lanes are very constrained and would remain so. The increased volumes would exceed capacity. Queues during both the AM and PM peak would extend beyond Union Station Drive and spill back into both eastbound and westbound Massachusetts Avenue NE. This spill back would lead to congestion and conflicts on that major thoroughfare.

[358] "Private pick-up and drop-off" refers to pick-up and drop-off happening at WUS where the WUS passenger is in the car of a friend, family member, or acquaintance and has not paid for the ride.

Vehicular Traffic

Relative to existing conditions, in the No-Action Alternative, there would be major adverse direct operational impacts on traffic operations at several intersections near WUS. During at least one of the peak periods, out of 35 intersections in the Local Study Area, nine would degrade to LOS F; 18 would experience an increase in average delay of more than 5 seconds; and 25 would experience an increase in queue length of more than 150 feet.

Trips Generation

Table 5-18 and **Table 5-19** show the number of AM and PM peak WUS-related trips in the No-Action Alternative, along with the corresponding information for existing conditions. Compared to existing conditions, the No-Action Alternative would generate 412 additional AM peak trips (34 percent increase) and 551 additional PM peak trips (34 percent increase). These volume increases, combined with background and private air rights development growth, would adversely affect traffic operations in the Local Study Area.

Table 5-18. AM Peak-hour Traffic Volumes in the No-Action Alternative

	No-Action Alternative			Existing Conditions		
	Total Trips	In	Out	Total Trips	In	Out
Parking	189	127	62	128	104	24
Private Pick-Up/Drop-Off	872	436	436	656	328	328
For-hire Vehicles	524	262	262	394	197	197
Car Rental	46	28	18	41	26	15
Total Trips	**1,631**	**853**	**778**	**1,219**	**655**	**564**

Table 5-19. PM Peak-hour Traffic Volumes in the No-Action Alternative

	No-Action Alternative			Existing Conditions		
	Total Trips	In	Out	Total Trips	In	Out
Parking	299	102	197	207	53	154
Private Pick-Up/Drop-Off	948	474	474	712	356	356
For-hire Vehicles	862	431	431	648	324	324
Car Rental	45	17	28	36	13	23
Total Trips	**2,154**	**1,024**	**1,130**	**1,603**	**746**	**857**

Intersection Analysis

The impacts of the No-Action Alternative on traffic operations were assessed using Synchro modeling. Three indicators were used to assess impacts relative to existing conditions at each of the study intersections:

- Degradation of intersection LOS to F from a better LOS;
- Increase in average vehicle delay of more than five seconds; and
- Increase in 95th-percentile queue lengths of more than 150 feet for any lane group.[359,360]

Table 5-20 shows LOS and delays in the No-Action Alternative relative to existing conditions. **Figure 5-1** shows projected LOS for the 35 No-Action Alternative study intersections. While seven out of the 35 study intersections would operate at a better LOS in the No-Action Alternative than under existing conditions during at least one peak hour, in general, traffic conditions would deteriorate.[361]

In the No-Action Alternative, relative to existing conditions, nine intersections would degrade to LOS F from a better LOS in at least one peak hour: three intersections in the AM peak hour only; four in the PM peak hour only; and two in both peaks. Three intersections operating at LOS F under existing conditions would experience longer delays in the AM peak.

Eighteen of the 35 study intersections would experience an increase in average delay of more than 5 seconds for at least one peak period relative to existing conditions: seven intersections in the AM peak period only; four in the PM peak period only; and seven in both peaks. Several of the increases would be substantial. Delays would increase by more than 120 seconds at four intersections in the AM peak and at four intersections in the PM peaks. Increases would be particularly greater along K Street NE (Intersections #1, 2, and 3) due to capacity reduction associated with the establishment of bicycle lanes.[362]

[359] These three indicators were used to analyze the traffic impacts of the No-Action Alternative in the 2020 DEIS. They align with those used by DDOT in identifying traffic operations impacts as presented in the 2012 *Guidelines for Comprehensive Transportation Review (CTR) Requirements*, available at https://nacto.org/docs/usdg/comprehensive_transportation_review_ddot.pdf. In January 2022, DDOT issued updated CTR guidance with a revised impact assessment methodology based on five factors. The 2012 approach is used in this document due to practical consideration and to maintain consistency with earlier analyses.

[360] A lane group is a set of lanes established at an intersection approach for separate capacity and level-of-service analysis.

[361] Improvements in traffic operations are generally associated with the optimization of signal timings and phasing.

[362] This occurred after the analysis presented in the 2020 DEIS was completed. The change has been incorporated in the FEIS analysis.

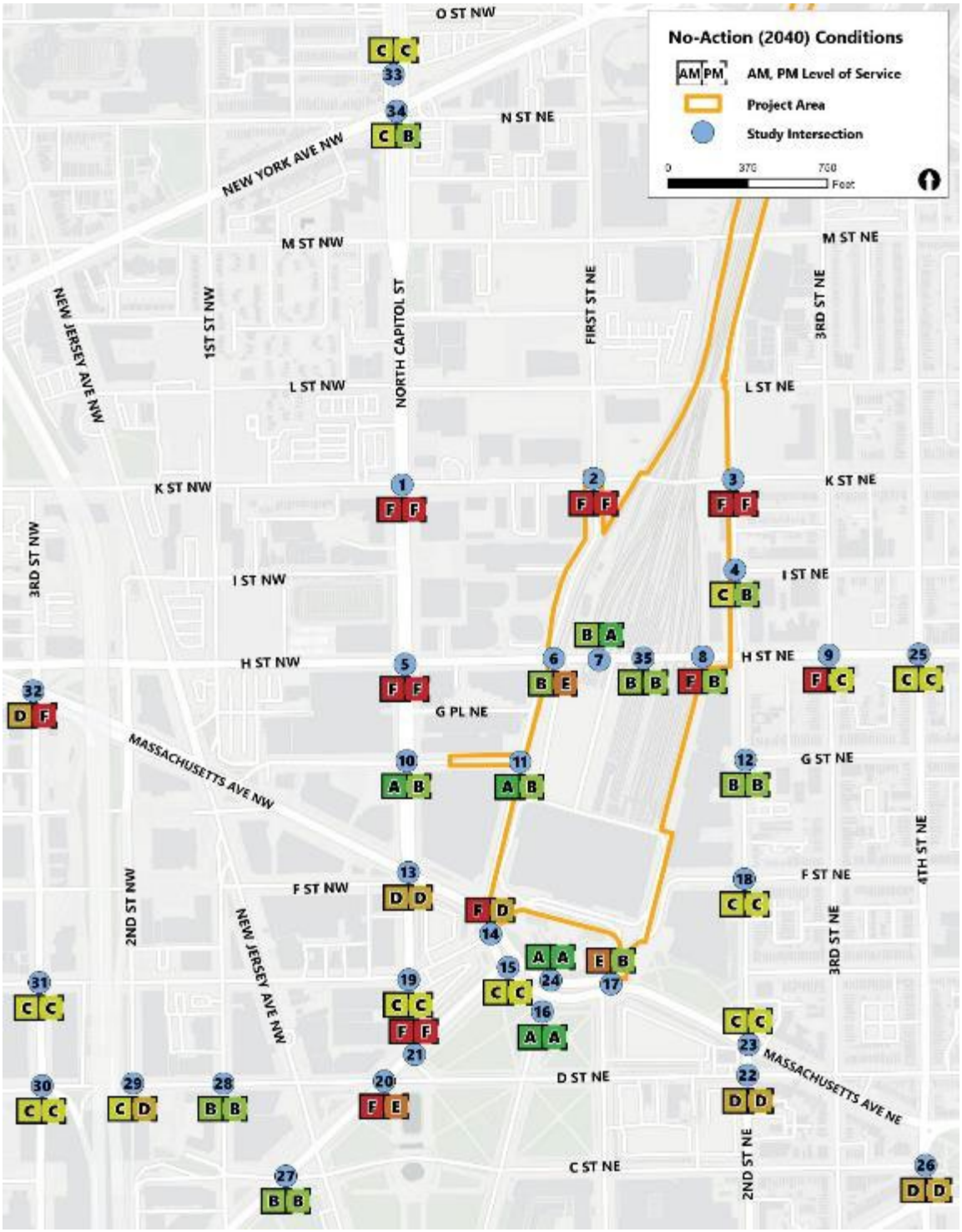
Table 5-20. Levels of Service and Delays in the No-Action Alternative

Int. No.	Intersection Name	No-Action Alternative				Existing Conditions			
		AM		PM		AM		PM	
		LOS	Delay/ Change (Seconds)	LOS	Delay/ Change (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)
1	North Capitol Street/ K Street	F	168.1/ 79.9	F	207.0/ 171.1	F	88.2	D	35.9
2	First Street/ K Street NE	F	144.5/ 49.4	F	237.4/ 177.7	F	95.1	E	59.7
3	Second Street/ K Street NE	F	210.0/ 183.4	F	153.5/ 141.5	C	26.6	B	12.0
4	Second Street/ I Street NE	C	15.3/ 2.5	B	11.7/ 1.0	B	12.8	B	10.7
5	North Capitol Street/ H Street	F	178.8/ 161.2	F	292.9/ 265.6	C	17.6	C	27.3
6	WUS West Intersection/ H Street NE	B	12.3/ 10.5	E	57.1/ 49.3	A	1.8	A	7.8
7	WUS Bus Exit/ H Street NE	B	14.2/ 11.9	A	7.0/ 1.5	A	2.3	A	5.5
8	WUS East Intersection/ H Street NE	F	160.8/ 149.9	B	13.7/ 3.9	B	10.9	B	9.8
9	3rd Street/ H Street NE	F	102.8/ 44.7	C	32.0/ 7.2	E	58.1	C	24.8
10	North Capitol Street/ G Street	A	6.4/ -1.3*	B	14.1/ 3.3	A	7.7	B	10.8
11	First Street/ G Street NE	A	9.5/ 0.1	B	10.3/ 0.8	A	9.4	A	9.5
12	Second Street/ G Street NE	B	14.3/ 1.9	B	11.4/ 0.8	B	12.4	B	10.6
13	North Capitol Street/ Mass. Avenue	D	39.3/ 3.9	D	46.1/ 10	D	35.4	D	36.1
14	Mass. Avenue E Street / First Street NE	F	86.8/ 13.9	D*	45.6/ -27*	E	72.9	E	72.6
15	Louisiana Avenue/ Mass. Avenue NE	C	27.8/ 8.9	C	26.3/ -1.7*	B	18.9	C	28.0
16	Delaware Avenue/ Mass. Avenue NE	A	2.1/ -1.2*	A	1.9/ -2.7*	A	3.3	A	4.6
17	First Street/ Mass. Avenue NE	E	62.6/ 22.1	B	19.3/ 0.8	D	40.5	B	18.5
18	Second Street/ F Street NE	C	18.8/ 4.4	C	15.3/ 1.9	B	14.4	B	13.4

Int. No.	Intersection Name	No-Action Alternative				Existing Conditions			
		AM		PM		AM		PM	
		LOS	Delay/ Change (Seconds)	LOS	Delay/ Change (Seconds)	LOS	Delay (Seconds)	LOS	Delay (Seconds)
19	North Capitol Street/ E Street	C	22.2/ 3.3	C*	27.9/ -13.8*	B	18.9	D	41.7
20	Louisiana Avenue/ D Street NW	F	93.5/ -174.8*	E*	60.1/ -117.2*	F	268.3	F	177.3
21	Louisiana Avenue/ North Capitol Street	F	262.1/ 177.8	F	203.4/ 161.4	F	84.3	D	42.0
22	Second Street/ D Street NE	D	35.4/ -4.1*	D*	37.4/ -145.7*	D	39.5	F	183.1
23	Second Street/ Mass. Avenue NE	C	27.8/ -0.5*	C	33.8/ 3.8	C	28.3	C	30.0
24	Mass. Avenue/ Delaware Avenue NE	A	0.1/ 0.0	A	0.3/ -0.7*	A	0.1	A	1.0
25	4th Street/ H Street NE	C	21.5/ 4.5	C	22.0/ 10.1	B	17.0	B	11.9
26	Mass. Avenue/ C Street/4th Street NE	D	40.9/ 11.3	D	44.3/ 1.3	C	29.6	D	43.0
27	Louisiana Avenue/ C Street NW	B	18.4/ 6.1	B	14.0/ 4.1	B	12.3	A	9.9
28	First Street/ D Street NW	B	15.5/ -3.3*	B*	16.6/- 16.9*	B	18.8	C	33.5
29	Second Street/ D Street NW	C*	30.0/ -19.2*	D	36.2/ -1.3*	D	49.2	D	37.5
30	3rd Street/ Indiana Avenue/ D Street NW	C	25.1/ -1.5*	C	23.3/ -5.4*	C	26.6	C	28.7
31	3rd Street/ E Street NW	C	28.3/ 2.0	C	30.0/ 6.8	C	26.3	C	23.2
32	3rd Street/ Mass. Avenue/ H Street NW	D*	42.7/ -14.1*	F	81.4/ 32.6	E	56.8	D	48.8
33	North Capitol Street (Southbound [SB] Ramp)/ New York Avenue	C	25.5/ -1.8*	C	30.7/ 5.0	C	27.3	C	25.7
34	North Capitol Street (Northbound [NB] Ramp)/ New York Avenue	C	21.4/ 2.7	B	15.7/ -0.2*	B	18.7	B	15.9
35	Central Intersection/ H Street NE	B	19.7/ na	B	12.8/ na	na	na-	na	na

Grey cell indicates an adverse impact; * indicates an improvement; na = not applicable.

Figure 5-1. Intersection Peak-Hour LOS in the No-Action Alternative



Additionally, 25 intersections would experience queue increases greater than 150 feet for one or more lane groups. Of these, 16 would experience such an increase in both peak hours (**Table 5-21**).

Table 5-21. Intersections with Queue Increases Greater than 150 Feet in the No-Action Alternative

Int. No.	Intersection Name	Lane groups with queue increase/Total lane groups	
		AM Peak	PM Peak
1	North Capitol Street/K Street	6/8	2/6
2	First Street/K Street NE	1/8	3/8
3	Second Street/K Street NE	2/4	1/4
5	North Capitol Street/H Street	3/9	7/7
6	WUS West Intersection/H Street NE	2/6	3/6
7	WUS Bus Exit/H Street NE	1/3	0/3
8	WUS East Intersection/H Street NE	1/3	1/3
9	3rd Street/H Street NE	3/7	1/7
10	North Capitol Street/G Street	0/8	2/8
14	Mass. Avenue/E Street/First Street NE	2/11	3/11
15	Louisiana Avenue/Mass. Avenue NE	1/5	1/5
17	First Street/Mass. Avenue NE	3/7	0/7
19	North Capitol Street/E Street	2/8	0/8
20	Louisiana Avenue/D Street NW	3/7	2/7
21	Louisiana Avenue/North Capitol Street	1/5	3/5
22	Second Street/D Street NE	1/4	3/4
23	Second Street/Mass. Avenue NE	2/7	3/5
25	4th Street/H Street NE	2/4	0/4
26	Mass. Avenue/C Street/4th Street NE	2/3	3/3
29	Second Street/D Street NW	1/4	1/4
30	3rd Street/I-395 On-ramp/D Street NW	0/8	1/8
31	3rd Street/E Street NW	0/3	1/3
32	3rd Street/Mass. Avenue/ H St NW	0/6	2/6
33	North Capitol Street (SB Ramp)/New York Avenue	3/6	2/6
34	North Capitol Street (NB Ramp)/New York Avenue	2/6	0/6
35	WUS Central Intersection/H Street NE	NA	NA

5.5.2.2 Indirect Operational Impacts

There would be no indirect impacts in the No-Action Alternative. No actions would be taken that would induce other transportation changes.

5.5.2.3 Construction Impacts

In the No-Action Alternative, construction of the Project would not occur. The construction of other projects in the Project Area would cause a range of potential construction-related adverse impacts. The intensity of those impacts would depend on schedules, durations, and methods of construction, which are not known at this time.

The paragraphs below provide a qualitative summary description of the likely potential construction impacts of the projects included in the No-Action Alternative that have the most potential to generate construction impacts on the transportation system.

Concourse Modernization Project and WMATA Metrorail Station Improvements

The Concourse Modernization Project would cause disruptions to passenger circulation in both the Claytor Concourse and the WMATA Metrorail Station mezzanine level. Passengers may have to walk longer distances because of construction activities in the passenger areas. Temporary closure of the WMATA Metrorail north mezzanine may be necessary, which would concentrate pedestrian flows at the south entrance and may cause overcrowded conditions.

VRE Midday Storage Replacement Facility (MSRF)

The construction of the VRE MSRF would cause temporary disruptions to the railroad infrastructure north of K Street NE and to railroad service in the rail terminal when the facility's tracks are connected into the existing system. These disruptions may include track outages, flagger operations, and reduced speed limits, and may require temporary modifications to rail terminal operations.

Station and Track Improvements

The station and track improvements listed in **Section 3.4.3**, *Near-term Station and Track Improvements at WUS*, may cause minor disruptions to the transportation infrastructure from short-term track closures, the temporary unavailability of passenger circulation areas, and temporary disruptions to passenger service including cancellations, delays, and reduced speeds in the rail terminal.

H Street Bridge Replacement

DDOT, in conjunction with the Federal Highway Administration, is planning to replace the H Street Bridge on its existing alignment and within DDOT's right of way.[363] DDOT's construction approach would

[363] District Department of Transportation and Federal Highway Administration. 2022. *H Street Bridge NE Replacement Final Environmental Assessment*. Accessed from https://www.hstreetbridgeproject.com/final-ea-and-fonsi/. Accessed on August 11, 2023.

avoid or minimize transportation impacts. While H Street NE would remain open, the reduced capacity across the bridge would cause some traffic congestion and delays along H Street NE and divert some traffic to other, nearby streets. Access to the WUS parking garage would be maintained throughout construction. Metrobus stops on the bridge would be closed and relocated, but this is not anticipated to affect operations. The DC Streetcar would start passenger service at 3rd Street NE. An interim shuttle service to the WUS parking garage would be put in place. All taxi services on H street would be directed to the main taxi pick-up and drop-off area at the front of WUS. There would be intermittent closure of sidewalks and detouring of pedestrians and bicycles. Alternative routes would be provided in accordance with the District's Safe Accommodation for Pedestrians and Bicyclists law.

The new bridge design was closely coordinated with Amtrak and WMATA to avoid any impacts to the track alignment. The approach to bridge construction would be closely coordinated with Amtrak and WMATA to ensure construction is scheduled to avoid impacts to rail and transit operations.

Private Air rights Development

The development of the privately-owned air rights above the rail terminal is the project with the most potential to cause substantial construction-related impacts at and near WUS. Methods and duration of construction are not known at this time. However, construction would likely take place in phases over several years. It would entail building an overbuild deck within the air rights to support buildings and infrastructure. Columns to support the deck would be constructed in the rail terminal, likely requiring modifications to tracks and platforms. Depending on the duration of any construction-related shutdowns, there could be adverse impacts on rail terminal operations, with implications for Amtrak, MARC, and VRE operations. However, Amtrak would have approval authority over the construction activity and would minimize impacts to operations as much as possible.

Construction on the west side of the rail terminal (north of the H Street Bridge, as the air rights on the west side south of the bridge are Federally owned) may affect the operation of Metrorail's Red Line. There may be a need for temporary single-tracking or partial closures, although it is possible that these could be limited to non-revenue hours.

Construction activities on the west side in proximity to the existing bus facility may affect charter/tour and intercity bus operations. Temporary shutdowns during the construction of the adjacent parts of the air rights deck and buildings could be required and, if so, would need to be coordinated with WUS. If they occur, such shutdowns would disrupt bus operations and may require the establishment of an interim bus terminal. They may also affect parking garage access.

The construction of new intersections on H Street may temporarily affect DC Streetcar operations. Construction activities along First Street NE and Second Street NE may affect pedestrian circulation to and from WUS. These activities may also block or complicate access to H Street and the DC Streetcar station.

Construction-generated traffic would affect the local transportation network. Construction would not require large amounts of excavation, limiting the number of trucks that would travel to and from the site. There may be some short-term lane closures along First and Second Streets NE, but in general, the

construction traffic generated by this project can be anticipated to be commensurate with, and typical of, any large downtown mixed-use development.

5.5.3 Impacts of the Preferred Alternative

5.5.3.1 Direct Operational Impacts

Commuter and Intercity Railroads

Relative to the No-Action Alternative, the Preferred Alternative would have a major beneficial direct operational impact on commuter and intercity railroad service, as it would support increased service with the ability to accommodate substantially more passengers than the No-Action Alternative.

The reconstruction of the tracks and platforms included in the Preferred Alternative would allow for a substantial expansion of rail capacity at WUS. The new tracks, platforms, and supporting infrastructure would support simultaneous boarding of trains, quicker turnaround times for trains, and potential double berthing.[364] The Preferred Alternative would make these procedures possible by providing wider platforms that can safely accommodate more passengers; longer usable platform edges that would increase the amount of space that can be effectively used for passenger activity;[365] and greater redundancy in the track system through the redesign of critical interlockings. These changes would allow for longer and more frequent trains because trains could unload and load passengers more quickly.[366]

Alongside the resulting additional capacity, Amtrak developed an operating plan that would accommodate the growth in Amtrak, MARC, and VRE ridership estimated by FRA's *Northeast Corridor (NEC) FUTURE* modeling. Relative to pre-pandemic conditions, Amtrak ridership would grow by approximately 95 percent, MARC ridership would grow by approximately 150 percent, and VRE ridership would grow by approximately 250 percent. **Table 5-22** shows anticipated daily train volumes for intercity and commuter train services in the Preferred Alternative. No-Action Alternative data are also provided for easier comparison.

[364] "Double berthing" is when two trains are lined up, one in front of the other, on the same track. The incorporation of double berthing into the track and platform plan is described in Appendix B of the 2020 DEIS.

[365] While some platforms may retain the same total lengths as today, they would differ greatly in how much of that length is actively used. Portions of platforms are currently unused due to lack of accessibility, insufficient width, and other issues.

[366] These improvements to the tracks and platforms would be combined with the new concourse spaces and new vertical circulation elements to provide improved overall passenger circulation throughout WUS.

Table 5-22. Daily Intercity and Commuter Train Volumes in the Preferred Alternative

Service	Preferred Alternative	No-Action Alternative
Amtrak Trains (All Services)	288	144
Amtrak Total Ridership	32,000	21,800
MARC Trains (All Services)	250	106
MARC Total Ridership	70,700	37,900
VRE Trains (All Services)	92	34
VRE Total Ridership	13,600	4,900

The operating plan would allow for two new services: a new low-cost intercity service called the "Metropolitan," and MARC through-running trains to Virginia, in addition to the existing Amtrak Acela, Amtrak Northeast Regional, Amtrak Long Distance, and MARC and VRE commuter rail services.

The Metropolitan service, introduced in the *NEC FUTURE* FEIS, is a proposed unreserved intercity service between Washington, DC, and Boston. This service would be less expensive than most Northeast Regional services and it would make more frequent intermediate stops. As planned, it would provide intercity service to new markets and attract riders who might otherwise drive or take the bus, potentially reducing vehicular traffic along the Northeast Corridor. It would also provide some commuter service for longer-distance commuters.

MARC Through-Running would provide regional commuter rail service between Washington, DC, Maryland, and Virginia, with trains connecting from the MARC Penn Line to the VRE Fredericksburg and Manassas lines. For the purposes of this FEIS, this new service is labeled as "MARC Through-Running;" however, MARC and VRE have not yet reached an agreement on how this service would be operated.

Train volumes would increase substantially relative to the No-Action Alternative. Daily intercity train volumes would increase by 100 percent, MARC trains by 136 percent, and VRE trains by 171 percent. In contrast to the No-Action Alternative, where increased train volumes would further stress WUS's existing, constrained infrastructure, in the Preferred Alternative, the proposed improvements to platforms and concourses would adequately accommodate these volumes.

Currently, Amtrak allows private train cars to be stored at WUS. Under the reconfiguration of the rail terminal in the Preferred Alternative, Amtrak has identified space for eight private train cars to be stored at a time. Therefore, private car storage could continue.

Washington Metropolitan Area Transit Authority (WMATA) Metrorail

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse direct operational impact on Metrorail operations because of increased demand that would aggravate train overcapacity and station circulation issues at the WMATA platform level. This impact would be minor because the congestion would be expected to dissipate in the system's core.

Increased train service and ridership, added retail uses, and reduced parking capacity in the Preferred Alternative would generate increased demand for Metrorail at WUS. **Table 5-23** shows modeled activity

in the AM peak and PM peak**,** respectively, along with corresponding data for the No-Action Alternative. When the projected volume/capacity (V/C) ratio would exceed 100 percent, measures would be needed to address overcrowding.

Table 5-23. Peak-hour WUS-related Metrorail Activity in the Preferred Alternative

	Preferred Alternative		No-Action Alternative	
	Shady Grove	Glenmont	Shady Grove	Glenmont
AM Peak Hour				
Passengers Arriving at WUS	14,423	4,877	13,651	4,250
V/C Arriving at WUS	85%	29%	80%	25%
WUS Boardings	8,500	1,720	5,202	1,010
WUS Alightings	5,201	3,581	4,128	2,803
Through Ridership	9,222	1,296	9,523	1,447
Ridership Departing WUS	17,722	3,016	14,725	2,457
V/C Departing WUS	**103%**	18%	86%	14%
Excess Demand	579	0	0	0
PM Peak Hour				
Passengers Arriving at WUS	3,412	18,259	3,107	16,848
V/C Arriving at WUS	22%	**116%**	20%	**107%**
WUS Boardings	3,336	4,640	2,559	3,661
WUS Alightings	1,765	8,422	1,154	6,126
Through Ridership	1,647	9,841	1,953	10,722
Ridership Departing WUS	4,983	14,477	4,512	14,383
V/C Departing WUS	32%	92%	29%	91%
Excess Demand	0	2,521	0	1,110

By 2040, volumes in the Preferred Alternative would exceed capacity in the Shady Grove direction during the AM peak (departing WUS) and in the Glenmont direction during the PM peak (arriving at WUS).

Relative to the No-Action Alternative, in the AM peak, the Preferred Alternative would cause the V/C ratio leaving WUS toward Shady Grove to reach 103 percent, compared to 86 percent in the No-Action Alternative, reflecting an estimated excess demand of 579 passengers. Based on the geographic distribution of WMATA peak ridership demand, overcapacity conditions are anticipated to dissipate within the Red Line core. [367]

In the PM peak, capacity exceedance toward Glenmont (116 percent arriving) would be greater in the Preferred Alternative than in the No-Action Alternative (107 percent). The Preferred Alternative would

[367] The Red Line core, as defined by WMATA, consists of the line segment between Dupont Circle and WUS. On the other side of those stations, average ridership volumes noticeably decrease.

aggravate the level of crowding, generating an additional excess demand of approximately 1,411 passengers, for a total excess demand of around 2,521.

Relative to the No-Action Alternative, the increase in Metrorail ridership at WUS in the Preferred Alternative would further adversely affect passenger circulation at the WMATA platform level. The construction of the First Street Concourse and the reconfiguration of Metrorail access to the rail platform level of Concourse A in the Preferred Alternative would improve circulation between the WMATA mezzanine at the northern end of the station and WUS rail platform levels. However, vertical circulation between the WMATA platform and the WMATA mezzanine would remain as in the No-Action Alternative. This connection would be a constraint on circulation in the No-Action Alternative and would remain one in the Preferred Alternative. It is likely that in the Preferred Alternative, circulation conditions on the WMATA platform for passengers seeking to access the North Mezzanine would further degrade compared to the No-Action Alternative because of increased volumes.

DC Streetcar[368]

Relative to the No-Action Alternative, the Preferred Alternative would result in a minor beneficial direct operational impact on DC Streetcar operations. The benefits that increased ridership would generate would be partially offset by greater operational delays.

The Preferred Alternative would not cause capacity to be exceeded on the DC Streetcar. Relative to the No-Action Alternative, passenger volumes departing WUS would increase by 367 in the westbound direction and 105 in the eastbound direction in the AM peak. In the PM peak, passenger volumes would increase by 50 in the westbound direction and 156 in the eastbound direction.

The Preferred Alternative would result in greater use of the DC Streetcar than the No-Action Alternative while leaving sufficient room for further growth, a beneficial impact. This beneficial impact would be minor because greater traffic congestion on H Street (see **Section 5.5.3.1,** *Direct Operational Impacts*, *Vehicular Traffic*) may create operational delays that would partially offset the benefits of increased ridership.

Intercity, Tour/Charter, and Sightseeing Buses

Relative to the No-Action Alternative, the Preferred Alternative would have a moderate beneficial direct operational impact on intercity, tour/charter, and daily sightseeing buses because of the improved passenger facilities and ability to accommodate future growth to services.

In the Preferred Alternative, intercity buses, tour/charter buses, and daily sightseeing buses,[369] would be accommodated in a new, purpose-built facility adjacent to the WUS train hall. This facility would be

[368] As previously noted, the impact analysis for the DC Streetcar operations assumes an extension of the existing line in both the eastbound and the westbound directions. Although the District has indefinitely postponed extending the Streetcar line to the west, it is assumed that by 2040, an equivalent transit line would be in place between WUS and Georgetown. References to a westbound Streetcar direction are to this equivalent line.

[369] Daily sightseeing buses are coach-style buses that provide scheduled tours of Washington-area sites and currently depart from the existing WUS bus facility.

integrated into the overbuild deck and directly open onto the train hall's lower mezzanine, where waiting areas, information displays, and other bus passenger amenities would be located. Through the train hall, bus passengers would have direct access to the multimodal connections available at WUS, including rail, Metrorail, and the pick-up and drop-off facilities. This would result in a substantial improvement in passenger experience relative to the No-Action Alternative, which would maintain the existing bus facility.

Intercity buses, tour/charter buses, and daily sightseeing buses would reach the new facility via the new east intersection on H Street NE. Exit would be via the new west intersection. Buses would be able to enter and exit the facility from either the eastbound or westbound side of H Street.

Based on the assumptions presented in **Appendix F1**, *Multimodal Refinement Report*, in 2040, the Preferred Alternative would generate an estimated 41 AM and 79 PM peak-hour intercity, tour/charter and daily sightseeing bus movements. Relative to the No-Action Alternative, this would be an increase of 46 percent (13 trips) in the AM peak and a doubling (40 trips) in the PM peak.

Methods to manage the bus facility in a manner that optimizes its capacity would be developed by USRC in coordination with the bus operators. It is anticipated that on most days, a "zonal" approach to slip assignment would be used. This means that while a particular scheduled bus may not always arrive at or depart from the same slip (for instance, Slip 2), it would always operate from a limited subset of slips (for instance, Slips 1-4). Projections indicate that five days out of the week, a scheduled bus would be able to use the same slip. On regular peak days (Fridays and Sundays), scheduled buses should be able to use the same slip or at least a nearby slip in the same "zone" of the facility. A "dynamic management" approach may also be used on days of very high demand, if and as needed. This approach, which would assign slips to arriving buses depending on availability, would allow for the sharing of slips across different carriers during peak periods, increasing the functional capacity of the facility.[370] Scheduled intercity and tour/charter bus service would be prioritized, with non-scheduled tour/charter service only accommodated as possible from a capacity, safety, and security standpoint.

During periods of unusually high activity, bus traffic may cause the facility's capacity to be exceeded. In these circumstances, buses would make use of the pick-up and drop-off area on the H Street deck level, next to the train hall. Approximately 15 buses could be accommodated in this area. Tour/charter buses would be first to be redirected to the deck level, but intercity buses could also use it if needed. It is expected that this spillover area would be used infrequently (5 to 10 days a year is a reasonable estimate).

While the capacity provided in the facility would be sufficient to minimize the level of change that the potential management approaches involve, these approaches would introduce a new complexity in the use of the bus facility that bus operators and bus riders would need to adapt to. This consideration makes the anticipated beneficial impact moderate.

In the Preferred Alternative, based on curbside operations modeling, it is anticipated that hop-on/hop-off sightseeing buses would continue to be accommodated at the front of WUS along with transit buses.

[370] **Appendix S1,** *Multimodal Refinement Report*, includes more discussion of bus facility management approaches.

This would be confirmed through the monitoring to be conducted after the completion of the Project (see **Table 7-1**, Item #28a). If monitoring showed that hop-on/hop-off sightseeing buses cannot be accommodated, a new location would have to be identified. Hop-on/hop-off sightseeing buses frequently operate on city curbsides, and, as such, have multiple potential options for relocation. USRC, the Project Sponsor, would identify an alternative location in coordination with DDOT.

Loading

Relative to the No-Action Alternative, the Preferred Alternative would have no adverse direct operational impacts on loading space availability at WUS. Demand would increase but it would be met through continued use of the existing docks and the provision of a new dock on Second Street NE.

In the Preferred Alternative, use of the existing east and west loading docks would continue. A new loading dock (north dock) between Second Street and K Street NE with access from Second Street NE would be constructed. Relative to the No-Action Alternative, the demand for loading dock slips at WUS would increase because of the greater amount of retail and the increase in multimodal operations. Between the existing loading docks and the new north dock, there would be sufficient capacity to accommodate the expected volume of vehicles and materials. Trucks serving this dock would comply with District law, which prohibits backing up in the public right-of-way ("head-in, head-out"), and the District Design and Engineering Manual.[371]

Pedestrians

Relative to the No-Action Alternative, the Preferred Alternative would have a major beneficial direct operational impact on pedestrian circulation inside WUS. Additional access points to WUS would disperse pedestrian traffic and make access to WUS easier. Outside of WUS, the Preferred Alternative would have a minor adverse direct operational impact on pedestrian circulation because of increased queueing at certain crossings near the station.

As shown in **Table 5-24**, interior passenger volumes at WUS would increase in the Preferred Alternative relative to the No-Action Alternative. In both the AM and PM peaks, volumes would be approximately 50 percent greater. The largest generator of internal pedestrian trips would be passengers transferring between commuter rail and Metrorail. Outside WUS, pedestrian volumes would increase as well, by about 61 percent in the AM peak and 55 percent in the PM peak.

[371] District Department of Transportation. 2019b. *Design and Engineering Manual.* Accessed from https://ddot.dc.gov/page/design-and-engineering-manual. Accessed on July 21, 2023.

Table 5-24. Pedestrian Volumes in the Preferred Alternative

	Preferred Alternative		No-Action Alternative	
	AM Peak	PM Peak	AM Peak	PM Peak
Interior Volumes				
Total	71,734	92,356	47,703	61,416
Exterior Volumes				
Total	17,938	16,766	11,123	10,819

By providing new concourse space and access points, widened concourse areas and platforms, more vertical circulation elements from platforms and between station levels, and a new concourse and expanded gates from which to access trains, the Preferred Alternative would facilitate the movement of passengers and visitors through and in and out of WUS, avoiding the congestion and conflicts that would occur in the No-Action Alternative, where existing, already congested circulation spaces and entry points would have to accommodate a growing number of people. For this reason, despite the increase in pedestrian volumes relative to the No-Action Alternative, the Preferred Alternative would result in a major beneficial impact on pedestrian conditions in WUS.

Outside, projected queues at nearby crossings from passengers accessing their destinations on foot in the Preferred Alternative would be longer than they would be in the No-Action Alternative. However, queues would remain manageable, as they could remain contained within the available sidewalk space at these locations. Anticipated increases in vehicular traffic near WUS, including pick-up and drop-off activities, along with increases in pedestrian volumes, may result in more conflicts between pedestrians and vehicles. The following locations would be most affected: G Street NE between North Capitol Street and First Street NE; First Street NE between Massachusetts Avenue and K Street NE; H Street NE between the new west intersection and east intersection; and Second Street NE between F Street NE and K Street NE.

The Preferred Alternative would improve pedestrian connectivity outside the station by providing a pedestrian ramp (shared with bicycles) along the west side of WUS, which would connect the front of the station and First Street NE to the deck-level development and H Street. This ramp would be consistent with the potential construction of a “greenway” from H Street to the Metropolitan Branch Trail as part of future public or private projects. There would also be shared pedestrian-bicycle access from the east side of WUS to the new bus facility along the east side of the station. When the normal WUS vehicular circulation system is disrupted (for instance during major maintenance activities), the west ramp and the east ramp may be used by pick-up and drop-off vehicles or buses, respectively. During those times, on the west ramp, pedestrian circulation would be maintained alongside vehicle travel. On the east ramp, pedestrian access would be suspended; access via the interior of WUS would remain available.

Considering the pedestrian improvements associated with the Preferred Alternative, adverse impacts from crowding and potential conflicts would be minor.

Bicycle Activity

Relative to the No-Action Alternative, the Preferred Alternative would result in a major beneficial direct operational impact on bicycle activity. Anticipated demand for private bicycle parking and storage would be accommodated by the provision of about 100 Bikeshare spaces and up to 900 bicycle storage spots. However, this benefit would be partially offset by increased conflicts with pedestrians and vehicles.

In the Preferred Alternative, it is projected that WUS would generate a total of 638 peak-hour bicycle trips, with 309 trips in the AM peak and 329 trips in the PM peak (**Table 5-25**).[372] These volumes would represent an increase of 102 AM trips (49 percent) and 88 PM trips (37 percent) over the No-Action Alternative.

Table 5-25. Peak-hour Bicycle Trips in the Preferred Alternative

	Preferred Alternative		No-Action Alternative	
	AM Peak	PM Peak	AM Peak	PM Peak
Total	309	329	207	241

The Preferred Alternative would provide approximately 100 Bikeshare spaces and up to 900 bicycle storage spaces.[373] New bicycle storage facilities would be established adjacent to the H Street Concourse entrances at First and Second Streets NE and in the undercroft of the west and east ramps. With the new bicycle facilities, the Preferred Alternative would fully accommodate the increased number of bicycle trips and would make possible future growth in station-bicycle connections. This would not occur in the No-Action Alternative.

The Preferred Alternative would also improve connectivity near WUS by providing a bicycle ramp (shared with pedestrians) along the west side of WUS, which would connect the front of the station and First Street NE to the deck-level development and H Street. This ramp would be consistent with the potential construction of a "greenway" from H Street to the Metropolitan Branch Trail as part of future public or private projects and would not preclude that facility from being constructed in the future. There would also be shared bicycle-pedestrian access from the east side of WUS to the new bus facility along the east side of the station.

When the normal WUS vehicular circulation system is disrupted (for instance during major maintenance activities), the west ramp and the east ramp may be used by pick-up and drop-off vehicles or buses, respectively. During those times, on the west ramp, bicycle circulation would be maintained alongside vehicle travel. On the east ramp, bicycle access would be suspended.

Greater vehicular, pedestrian, and bicycle volumes in the Preferred Alternative would increase the risk of conflicts between bicycles and vehicles, especially along the First Street Cycle Track. The access for

[372] These estimates include trips taken on e-bicycles or e-scooters.

[373] The new Bikeshare spaces would require DDOT's approval.

the new First Street ramp into WUS, which would be signalized, would introduce a new conflict to the First Street Cycle Track. The potential for conflicts also exists at the entrance to the new Second Street loading dock, which would cross the Second Street segment of the Metropolitan Branch Trail (at this location, the trail consists of a shared-use sidewalk). Increased vehicular and pedestrian activity from pick-ups and drop-offs as well as from the new pedestrian entrances at H Street on First and Second Streets NE would also increase the risk of conflicts. However, bicycle facility improvements planned by DDOT (on Louisiana Avenue NE and K Street NE, for instance) would generally improve safety and measures would be incorporated into Project design to minimize the potential for conflicts. On balance, the Preferred Alternative would result in a major beneficial direct operational impact on bicycle access and activity relative to the No-Action Alternative.

City and Commuter Buses

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse direct operational impact on city and commuter buses, including the DC Circulator. Increases in WUS-generated ridership would incrementally contribute to the overcrowding of some city buses and increases in traffic congestion would incrementally contribute to delays experienced by all city and commuter buses. These impacts would be partially offset by the Preferred Alternative's relocation of some city bus routes to the front of WUS and planned bus priority projects in the District.

The Preferred Alternative would increase usage of city and commuter buses (including DC Circulator Metrobus, Maryland Transit Authority, and Loudoun County Transit buses) that serve WUS, as shown in **Table 5-26.**

Table 5-26. Combined Peak-hour City and Commuter Bus Ridership in the Preferred Alternative

	Preferred Alternative		No-Action Alternative	
	AM Peak	PM Peak	AM Peak	PM Peak
Capacity	7,837	7,471	7,837	7,471
Volume Prior to WUS	4,350	4,564	3,887	3,863
V/C Arriving	56%	61%	50%	52%
Alightings for WUS	939	1,555	476	854
Through Volume	3,411	3,009	3,411	3,009
Boardings from WUS	1,773	1,090	829	612
Total Volume	**5,184**	**4,099**	**4,240**	**3,621**
V/C Departing	66%	55%	54%	48%

Compared to the No-Action Alternative, there would be an additional 463 alightings (97 percent) and 944 boardings (114 percent) at WUS in the AM peak from and on city and commuter buses. There would be an additional 701 alightings (82 percent) and 478 boardings (78 percent) in the PM peak. However, considered collectively, city and commuter buses would continue to operate under capacity in both peaks.

At the route level, the Metrobus routes that would be over capacity in at least one direction during at least one peak time in the No-Action Alternative would also be over capacity in the Preferred Alternative. These routes include 80, 96, D4, D6, P6, X1, X2, and X9. Because of the increase in ridership, the overcrowding would be worse, but the Preferred Alternative would not cause more Metrobus or DC Circulator lines to run above capacity than would the No-Action Alternative.

Increases in vehicle delays and queueing on streets near WUS would likely affect bus reliability and speeds due to the overall degradation in traffic operations. Bus routes that pass through at least two intersections that would degrade to level of service F relative to the No-Action Alternative (see **Section 5.5.3.1**, *Direct Operational Impacts*, *Vehicular Traffic*) may experience slightly greater delays than in the No-Action Alternative. As in the No-Action Alternative, traffic-related delays may be reduced due to ongoing DDOT planning efforts as part of the Bus Priority Program.[374] Bus priority treatments, which may include dedicated lanes or other measures to improve bus speed and reliability, are planned for North Capitol Street, H Street NE/NW, and Massachusetts Avenue NE/NW.[375] Additionally, the inclusion of transit buses in the front of WUS would also reduce impacts from congestion, as loading and unloading activities would be on a dedicated curbside off District streets. Conflicts with drop-off traffic in the outer lanes at the front of WUS would need to be managed, however.

In combination, increased overcrowding and delays on some bus lines would amount to a minor adverse direct operational impact on city and commuter buses.

In the Preferred Alternative, the new bus facility would not accommodate the Georgetown – Union Station (GT-US) DC Circulator or the Gallaudet University shuttle that make use of the existing facility. In existing conditions, the DC Circulator has four slips for operations. Based on observations conducted for the Project, typically only two slips are occupied: one for active loading and unloading and one for bus staging. The DC Circulator would use the transit lanes in front of WUS for pick-ups and drop-offs. A new staging location would need to be identified near WUS.

The shuttle serving Gallaudet University would be relocated to the H Street deck pick-up and drop-off area, adjacent to the train hall. Riders could wait for the shuttle in the train hall. In the infrequent instances when that area is used for tour/charter or intercity bus operations, the shuttle would be temporarily relocated to other roads on the H Street deck or H Street itself, with adequate wayfinding and signage provided. Because of the short dwell time and limited number of trips, no impact on traffic operations would occur because of this relocation.

[374] District Department of Transportation. *Bus Priority Projects.* Accessed from https://buspriority.ddot.dc.gov/. Accessed on February 9, 2024.

[375] District Department of Transportation. *Bus Priority Projects Map*. Accessed from https://www.arcgis.com/apps/webappviewer/index.html?id=d6c220c59aea4cd2b0f65b5e225756b7. Accessed on February 9, 2024.

Vehicular Parking and Rental Cars

Relative to the No-Action Alternative, the Preferred Alternative would have a moderate adverse direct operational impact on parking at WUS because of a reduction in parking capacity. There would be a minor adverse direct operational impact on rental car operations.

In the Preferred Alternative, all parking and rental car activity would be in a new below-ground parking facility with access via G Street NE and First Street NE. The new facility would have a capacity of up to 550 spaces, approximately 1,900 fewer spaces (a 77 percent reduction) than the existing parking garage, which would continue to be used in the No-Action Alternative. Construction of the ramp on G Street NE would require eliminating the parking spaces that are currently available on the south side of the street. The new facility would provide Electric Vehicle (EV) charging capacity for parked vehicles. The number of charging spots would be determined during design.

The new parking facility would not fully accommodate projected future demand as estimated by FRA. [376] As such, it would amount to an adverse impact on parking. It is anticipated that the limitation of parking supply would create an incentive for WUS users to use different modes to reach the station. In some cases, they could also drive to a different station, such as New Carrollton, Maryland. Furthermore, based on regional modeling estimates and recent District planning, it is likely that proportionately fewer passengers or visitors would be driving to and parking at WUS by 2040.[377] Therefore, the adverse impact would be moderate.

Because of the reduction in parking capacity, WUS activity in the Preferred Alternative would generate fewer peak-hour parking trips than in the No-Action Alternative, as shown in **Table 5-27 and Table 5-28** below. In the AM peak, the reduction between the No-Action Alternative and the Preferred Alternative would be 117 trips (62 percent reduction). In the PM peak, it would be 215 trips (72 percent reduction).

Increased WUS activity would generate more rental car trips relative to the No-Action Alternative, as shown in **Table 5-27 and Table 5-28**. In both the AM and PM peak hours, the number of car-rental trips would more than double relative to the No-Action Alternative (105 against 46 in the AM peak and 92 against 45 in the PM peak). This substantial change would be due to the large increase in intercity train volumes concentrated in the peak hours.

In the Preferred Alternative, the below-ground parking facility would include space for rental cars. However, because the size of the space (room for approximately 100 cars) would be less than the demand estimate (approximately 230 cars), there would be an adverse impact on rental car operations. This adverse impact would be minor, as the facility operates in a constrained condition today (see **Section 4.5.4.6**, *Rental Cars*) and would continue to do so in the No-Action Alternative. Facility operators have experience with strategies to manage vehicle storage and use in those conditions.

[376] See **Appendix F1,** *Multimodal Refinement Report,* for the demand projections.

[377] The Metropolitan Washington Council of Government (MWCOG) Transportation Planning Board (TPB) Regional Model estimates a 10 percent reduction in single-occupancy vehicle trips in the WUS area to 2040, based on the 2040 Cooperative Forecast developed for the 2040 Constrained Long-Range Plan. At the same time, DDOT's *Move DC* plan calls for a 13 percent reduction in automobile trips in the District relative to a projected future 2040 baseline.

Table 5-27. AM Peak-hour Traffic Volumes in the Preferred Alternative

	Preferred Alternative			No-Action Alternative		
	Total Trips	In	Out	Total Trips	In	Out
Parking	72	52	20	189	127	62
Private Pick-Up/Drop-Off	1,050	525	525	872	436	436
For-hire Vehicles	784	392	392	524	262	262
Car Rental	105	57	48	46	28	18
Total Trips	**2,011**	**1,026**	**985**	**1,631**	**853**	**778**

Table 5-28. PM Peak-hour Traffic Volumes in the Preferred Alternative

	Preferred Alternative			No-Action Alternative		
	Total Trips	In	Out	Total Trips	In	Out
Parking	84	22	62	299	102	197
Private Pick-Up/Drop-Off	968	484	484	948	474	474
For-hire Vehicles	838	419	419	862	431	431
Car Rental	92	37	55	45	17	28
Total Trips	**1,982**	**962**	**1,020**	**2,154**	**1,024**	**1,130**

For-hire Vehicles

Relative to the No-Action Alternative, the Preferred Alternative would have a moderate beneficial direct operational impact on for-hire vehicle activity because of the provision of new locations for pick-ups and drop-offs. These locations would adequately accommodate the anticipated growth in for-hire trips, manage congestion at the front of the historic station building, and provide new capacity to manage queueing.

The following five pick-up and drop-off locations would be provided in the Preferred Alternative:

- **Front of WUS:** For-hire vehicles would have two means of access depending on trip purpose: from Columbus Circle for all for-hire vehicles (drop-off only) and, for taxis, from the below-ground facility up the east ramp, via the entrances at G Street and First Street (pick-up only). Egress from the front of WUS would continue to occur at the intersection of Massachusetts Avenue, E Street NE, and First Street NE.
- **Adjacent to the north-south train hall on the deck level**: For-hire vehicles would access this location via the new west intersection on H Street NE, with egress via the east intersection to H Street NE.

- **New H Street Concourse entrance on First Street NE**: This location would serve the new WUS entrance on First Street NE and consist of a curbside pick-up and drop-off area on the west side of the street, north of H Street NE. For-hire vehicles would reach it via southbound First Street NE.
- **New H Street Concourse entrance on Second Street NE**: This location would serve the new WUS entrance on Second Street NE. It would consist of space for curbside pick-up and drop-off on both sides of the street. The west side location would be reached via southbound Second Street NE. Vehicles would reach the east side location via northbound Second Street NE.
- **Below-ground Facility:** This facility would provide a below-ground space incorporating queueing, staging, and pick-up and drop-off spaces for for-hire vehicles. This facility could include unique staging and pick-up and drop-off areas for both taxis and Transportation Networking Companies (TNCs) to meet their different operational needs. This facility would have ingress and egress at First Street NE, G Street NE, and egress only at the east ramp to the front of WUS. The ability to accommodate EV charging for vehicles would be evaluated in future design.

The provision of these additional locations would have a beneficial impact on for-hire vehicle operations, as it would provide more room and flexibility for both drivers and passengers. Because volumes associated with for-hire as well as private pick-up and drop-off activity on the deck level and in front of WUS would increase and may occasionally create limited queueing and congestion, this beneficial impact would remain moderate.

Table 5-27 and Table 5-28 below show the anticipated number of WUS-related for-hire trips in the Preferred Alternative.[378] Relative to the No-Action Alternative, the Preferred Alternative would generate an estimated 260 additional peak-hour for-hire trips in the AM peak hour (50 percent increase) and 24 fewer trips in the PM peak hour (3 percent decrease). The principal source of additional peak-hour for-hire trips in the AM peak would be the increase in intercity rail activity. The projected distribution of these trips across the five above locations is shown in **Table 5-29** below.

Private Pick-up and Drop-off

Relative to the No-Action Alternative, the Preferred Alternative would have a moderate beneficial direct operational impact on private pick-up and drop-off activities because of the provision of new locations for these activities. These locations would adequately accommodate the anticipated growth in private pick-up and drop-off trips.

The same five locations used by for-hire vehicles would be available for private pick-up and drop-off activity for individuals to pick up WUS passengers that they know. However, private vehicles would not

[378] A single for-hire pick-up or drop-off operation creates both an in and an out trip as the vehicle arrives and then departs WUS. A single for-hire vehicle pick-up or drop-off is assumed to generate 1.5 trips to reflect the linking of trips in the WUS circulation network.

be allowed to use the ramp to access the front of WUS from the below-ground facility and only drop-offs would be permitted in front of the station.

The provision of additional locations for private pick-up and drop-off would result in a beneficial impact, as it would provide more room and flexibility for both drivers and passengers. Because volumes associated with private pick-up and drop-off as well as for-hire activity on the deck level and in front of WUS would increase and may occasionally create limited queueing and congestion, this beneficial impact would remain moderate.

Table 5-27 and Table 5-28 show the anticipated number of WUS-related peak-hour private pick-up and drop-off trips in the Preferred Alternative.[379] Relative to the No-Action Alternative, the Preferred Alternative would generate an estimated 178 additional AM peak-hour trips (20 percent increase) and 20 additional PM peak hour trips (2 percent increase). The principal source of increased peak-hour private pick-up/drop-off trips would be the increase in intercity rail activity. The projected distribution of these trips across the five above locations is shown in **Table 5-29** below.

Vehicular Traffic

Relative to the No-Action Alternative, the Preferred Alternative would have major adverse direct operational impacts on traffic operations at several intersections near WUS due to increased traffic volumes. During at least one of the peak periods, out of 35 intersections in the Local Study Area, three intersections would degrade to Level of Service (LOS) F; 12 would experience an increase in average delay of more than 5 seconds; and 15 would experience an increase in queue length of more than 150 feet.

Trips Generation and Circulation

Table 5-27 and **Table 5-28** show the number of AM and PM peak WUS-related trips in the Preferred Alternative, along with the corresponding information for the No-Action Alternative. Compared to the No-Action Alternative, the Preferred Alternative would generate 380 additional AM peak trips (23 percent increase) and 172 less PM peak trips (8 percent decrease).

WUS-related vehicular activity in the Preferred Alternative would be primarily distributed across six locations: the pick-up/drop-off area at the front of WUS; the new bus facility and deck-level pick-up/drop-off location, accessed from H Street NE; the new curbside drop-off location on First Street NE (serving the new H Street Concourse); the new curbside drop-off location on Second Street NE (serving the new H Street Concourse); the ingress and egress ramp to the below-ground facility on G Street NE; and the ingress and egress ramp to the below-ground facility on First Street NE.

Parking and rental car activity would converge on G Street and First Street to access the below-ground facility. Private and for-hire pick-up and drop-off activity would be spread across all locations. **Table 5-29** shows the anticipated distribution of WUS-related vehicular trips by access point and type of trip in the

[379] A single private pick-up or drop-off vehicle generates two trips: one in and one out as the vehicle arrives and then departs WUS.

Preferred Alternative. Approximately 70 percent of WUS-related traffic is expected to travel to and from points west of WUS and 30 percent traveling to and from points east.

Table 5-29. Trip Distribution by Access Point and Trip Type in the Preferred Alternative

	First Street	Second Street	Front of WUS	H Street	Below-ground Facility
For-hire Pick-up/Drop-off	5%	3%	35% (AM) 32% (PM)	19% (AM) 21% (PM)	38% (AM) 39% (PM)
Private Pick-up/Drop-off	5%	3%	18% (AM) 19% (PM)	32% (AM) 31% (PM)	42% (AM) 42% (PM)
Parking	0%	0%	0%	0%	100%
Rental Cars	0%	0%	0%	0%	100%

During the occasional periods when the WUS circulation system is disrupted (for instance during major maintenance activities), the east and west ramps would be used by buses and pick-up and drop-off vehicles, respectively. Buses would descend the east ramp into the circulation area at the front of WUS; they would make use of the middle lanes to exit the station. Pick-up and drop-off vehicles would go down the west ramp and stop alongside the colonnade, as occurs today during periods of construction; they would exit WUS via Columbus Circle. WUS operational personnel would direct and manage the pick-up and drop-off activities as needed.

Curbside Analysis

The anticipated vehicular volumes associated with for-hire and private pick-up and drop-off activities on the deck level and on First and Second Streets NE would not result in regular congestion and queues at these locations. At deck level, spreadsheet queueing analysis indicated that the approximately 550 feet of curbside space adjacent to the east-west train hall would accommodate for-hire vehicles and private pick-up and drop-off without spill-back onto H Street NE. No queues would form at the First Street or Second Street pick-up and drop-off areas. On First Street NE, there would be an estimated 92 pick-up and drop-off trips in the AM peak and 90 in the PM peak. On Second Street NE, there would be 55 pick-up and drop-off trips in the AM peak and 54 in the PM peak. The available pick-up and drop-off areas provided in the Preferred Alternative along these corridors would be sufficient to accommodate these volumes. In the below-ground facility accessed from G Street and First Street, 739 pick-up and drop-off trips would occur in the AM peak and 733 would occur in the PM peak. This facility is designed to accommodate an adequate amount of queueing and circulation space to operate effectively with these volumes.

During the preparation of the FEIS, FRA conducted micro-modeling of curbside operations at the front of WUS, on First and Second Streets NE, and on the H Street deck to confirm that operations at these locations would be acceptable and generate no significant queueing. The micro-modeling was done using the VISSIM model, which allows for detailed and specific modeling of driver behavior in complex networks. This additional modeling confirmed that all curbs would perform at either LOS A or LOS B during both AM and PM peak hours.

Intersection Analysis

The impacts of the Preferred Alternative on traffic operations were assessed through Synchro modeling. Three indicators were used to assess the impacts of the Preferred Alternative on traffic operations at each intersection:

- Degradation of intersection LOS to F from a better LOS due to vehicle trips generated by the Project;
- Increase in average vehicle delay of more than 5 seconds; and
- Increase in 95th-percentile queue lengths of more than 150 feet for any lane group at an intersection.

Figure 5-2 shows peak-hour LOS in the Preferred Alternative. **Table 5-30** identifies intersections that would operate at LOS F in one or both peak periods, along with LOS in the No-Action Alternative for comparison. The intersections that would degrade from an acceptable LOS (D or better) in the No-Action Alternative to LOS F in the Preferred Alternative are denoted by a grayed-out cell. **Table 5-30** also shows intersections where the LOS would improve from F in the No-Action Alternative to an acceptable LOS in the Preferred Alternative. Such improvements are the result of the optimization of signal timings and phasing. Intersections not shown in the table would operate at an acceptable LOS.

As **Table 5-30** shows, in the Preferred Alternative, relative to the No-Action Alternative, three intersections would degrade to LOS F in at least one peak hour. Of these, one would degrade to LOS F in both peak hours. Three of the intersections that would operate at LOS F in the No-Action Alternative would improve to a better LOS in at least one peak hour.

Figure 5-2. Preferred Alternative Levels of Service at Peak Hour

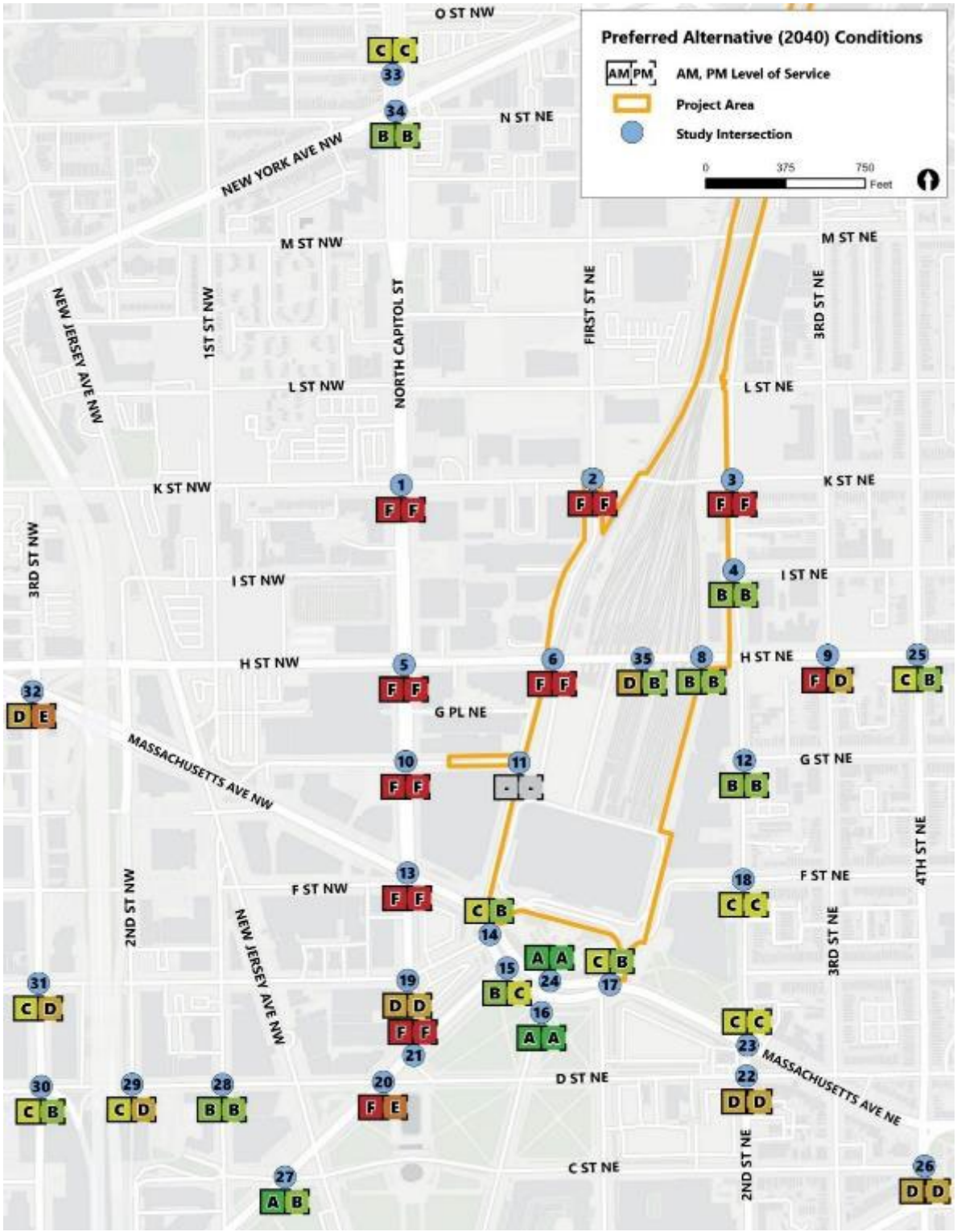


Table 5-30. Intersections with Failing LOS or Improvements from LOS F in the Preferred Alternative

Int. No.	Intersection Name	Preferred Alternative		No-Action Alternative	
		AM LOS	PM LOS	AM LOS	PM LOS
1	North Capitol Street/K Street	F	F	F	F
2	First Street/K Street	F	F	F	F
3	Second Street/K Street	F	F	F	F
5	North Capitol Street/H Street	F	F	F	F
6	WUS West Intersection/H Street NE	F	F	B	E
9	3rd Street/H Street NE	F	D	F	C
10	North Capitol Street/G Street	F	F	A	B
13	North Capitol Street/Mass. Avenue	F	F	D	D
20	Louisiana Avenue/D Street NW	F	E	F	E
21	Louisiana Avenue/North Capitol Street	F	F	F	F
Intersections with Improvements from LOS F					
8	WUS East Intersection/H Street NE	B	B	F	B
14	Mass. Avenue/E Street/First Street NE	C	B	F	D
32	3rd Street/Mass. Avenue/H St NW	D	E	D	F

Table 5-31 shows intersections that would experience an increase in delay of more than five seconds during at least one peak hour in the Preferred Alternative relative to the No-Action Alternative. Intersections not listed in the table would experience increases of less than five seconds or a reduction in delay. In the Preferred Alternative, 12 of the 35 study intersections would experience an increase in average delay of more than 5 seconds for at least one peak hour relative to the No-Action Alternative. Of these, seven would experience such an increase in both peak hours.

Table 5-31. Intersections with Delay Increases > 5 seconds in the Preferred Alternative

Int. No.	Intersection Name	AM Peak		PM Peak	
		Delay	Change	Delay	Change
1	North Capitol Street/K Street	222.4	54.3	160.2	-46.8
2	First Street/K Street NE	276.7	132.2	318.9	81.5
5	North Capitol Street/H Street	266.4.0	87.5	272.6	-20.3
6	WUS West Intersection/H Street NE	82.1	69.8	97.1	40.0
9	3rd Street/H Street NE	133.0	30.2	38.0	6.0
10	North Capitol Street/G Street	80.1	73.7	147.3	133.2
13	North Capitol Street/Mass. Avenue	98.5	59.2	88.7	42.6
19	North Capitol Street/E Street	38.4	16.2	35.1	7.2

Int. No.	Intersection Name	AM Peak		PM Peak	
		Delay	Change	Delay	Change
20	**Louisiana Avenue/D Street NW**	88.1	-5.4	73.0	12.9
21	**Louisiana Avenue/North Capitol Street**	354.7	92.6	288.2	84.8
31	**3rd Street/E Street NW**	32.3	4.0	40.2	10.2
35	**Central Intersection/H Street NE**	52.2	32.5	15.1	2.3

Table 5-32 shows intersections that would experience an increase in queue length of more than 150 feet for one or more lane groups relative to the No-Action Alternative. Fifteen of the 35 study intersections would experience such increases. Of these, eight would do so in both peak hours. Intersections not listed in the table would experience increases in queue lengths of less than 150 feet.

Table 5-32. Intersections with Queue Increases Greater than 150 Feet in the Preferred Alternative

Int. No.	Intersection Name	Lane groups with queue increase/Total lane groups	
		AM Peak	PM Peak
1	**North Capitol Street/K Street**	2/9	2/8
2	**First Street/K Street NE**	1/8	1/8
3	**Second Street/K Street NE**	0/4	1/4
6	**WUS West Intersection/H Street NE**	1/8	0/8
8	**WUS East Intersection/H Street NE**	2/7	2/7
9	**3rd Street/H Street NE**	2/6	2/6
10	**North Capitol Street/G Street**	7/8	5/7
13	**North Capitol Street/Mass. Avenue**	5/10	0/10
14	**Mass. Avenue/E Street/First Street NE**	1/9	0/9
15	**Louisiana Avenue/Mass. Avenue NE**	0/5	1/5
19	**North Capitol Street/E Street**	3/10	0/10
21	**Louisiana Avenue/North Capitol Street**	1/6	0/6
30	**3rd Street/I-395 On-ramp/D Street NW**	2/10	0/10
31	**3rd Street/E Street NW**	3/11	1/11
35	**Central Intersection/H Street NE**	2/8	2/8

Table 5-33 summarizes the impacts of the Preferred Alternative on traffic operations relative to the No-Action Alternatives. Out of the 35 study intersections, 17 would experience an impact for one or more of the three indicators used in the analysis.

Table 5-33. Summary of Preferred Alternative Traffic Impacts

Int. No.	Intersection Name	Impact		
		LOS	Delay	Queuing
1	North Capitol Street/K Street			
2	First Street/K Street NE			
3	Second Street/K Street NE			
4	Second Street/I Street NE			
5	North Capitol Street/H Street			
6	WUS West Intersection/H Street NE			
7	WUS Bus Exit/H Street NE	NA	NA	NA
8	WUS East Intersection/H Street NE			
9	3rd Street/H Street NE			
10	North Capitol Street/G Street			
11	First Street/G Street NE			
12	Second Street/G Street NE			
13	North Capitol Street/Massachusetts Avenue			
14	Massachusetts Avenue/ E Street/First Street NE			
15	Louisiana Avenue/Massachusetts Avenue NE			
16	Delaware Avenue/Mass. Avenue NE			
17	First Street/Massachusetts Avenue NE			
18	Second Street/F Street NE			
19	North Capitol Street/E Street			
20	Louisiana Avenue/D Street NW			
21	Louisiana Avenue/North Capitol Street			
22	Second Street/D Street NE			
23	Second Street/Mass. Avenue NE			
24	Massachusetts Avenue/Delaware Avenue NE			
25	4th Street/H Street NE			
26	Massachusetts Avenue/C Street/4th Street NE			
27	Louisiana Avenue/C Street NW			
28	First Street/D Street NW			
29	Second Street/D Street NW			
30	3rd Street/I-395 On-ramp/D Street NW			
31	3rd Street/E Street NW			
32	3rd Street/Massachusetts Avenue/ H Street NW			
33	North Capitol Street (SB Ramp)/New York Avenue			
34	North Capitol Street (NB Ramp)/New York Avenue			
35	Central Intersection/H Street NE			

A gray cell indicates a major adverse impact to LOS, queuing, or delay as described in *Intersection Analysis* above.

5.5.3.2 Indirect Operational Impacts

The Preferred Alternative would have minor adverse indirect operational impacts on traffic because of the trips generated by the potential Federal air rights development.

In the Preferred Alternative, the Federal air rights above the rail terminal not used for the Project would be available for potential transfer and mixed-use development. For the purposes of impact analysis, this potential development is assumed to include 310,000 square feet of office, 175,000 square feet of residential development, and 15,000 square feet of retail. These uses would generate additional trips to the Project Area for all modes. For vehicular trips, the increase would be about 5 percent; it would be smaller for other modes. These indirect trips were incorporated into the above analyses in **Section 5.5.3.1**, *Direct Operational Impacts*, as applicable, for a comprehensive assessment.

5.5.3.3 Construction Impacts

Construction of the Preferred Alternative would take place over approximately 13 years. The following sections characterize the potential impacts of the construction of the Preferred Alternative on the various transportation modes at and near WUS. The discussion focuses on Phase 4 of construction. Phase 4 would have the greatest impacts on transportation because of the demolition of the existing parking garage and bus facility that would occur during this phase and because of the concentration of construction activities on the west side of WUS, adjacent to Metrorail's Red Line. In the Preferred Alternative, Phase 4 would begin approximately 8 years and 9 months after the start of construction and last for approximately 4 years and 3 months.

Commuter and Intercity Railroads

Construction of the Preferred Alternative would cause a moderate adverse impact to Intercity and Commuter rail operations. Limited train delays and cancellations may occur during the entire construction period.

Each phase of construction would involve taking a set of tracks out of service, thus reducing the number of tracks and platforms available for train service. The provision of temporary tracks and connections would largely make up for this temporary loss. A construction-period operating plan designed to maximize use of the available infrastructure would be put in place. However, railroad operations would be affected, as certain trips would be affected by planned cancellations and rescheduling. Subject to change, potential schedule impacts by service by construction phase are shown in **Table 5-34**.

Table 5-34. Potential Daily Train Cancellations and Alterations during Construction of the Preferred Alternative

Service	Construction			
	Phase 1 & Intermediate Phase	Phase 2	Phase 3	Phase 4
Amtrak Trains Altered (out of 144 Daily)	0	2	0	1
MARC Canceled (out of 106 Daily)	0	4	0	4
VRE Canceled (out of 34 Daily)	2	2	0	0

In all phases, potential service cancellations would represent at most approximately 3 percent of the overall service levels at WUS. While moderate and manageable, this would reduce flexibility and increase delays. Phase 4 of construction would see an average delay to train operations of 6 minutes and 12 seconds.[380] Phase 2 would see larger delays and greater disruptions to train operations. During this phase, a total of 8 trains would be canceled daily. The average train delay would be 18 minutes and 36 seconds.[381] These delays and cancellations would cause disruptions for passengers, most notably VRE passengers, as 6 percent of VRE trains would be canceled. Private rail car storage would not be available during construction.

WMATA Metrorail

Construction of the Preferred Alternative would have moderate adverse impacts on WMATA Metrorail Red Line operations due to intermittent stoppages or single-tracking events.

Metrorail's Red Line runs along the western side of the Project Area. Therefore, it would be most affected during Phase 4 of construction period, which is when the First Street Concourse, the First Street entrance to the H Street Concourse, and the First Street and G Street vehicle ramps would be constructed. Additionally, in Phase 4, the existing parking garage would be demolished.

These construction activities may require schedule adjustments for safety purposes. Intermittent stoppages, single-tracking, or shutdowns may occur on weekdays, weeknights, or weekends. Such impacts would occur throughout Phase 4 and their exact frequency or duration are not known at this stage of planning. No extended shutdowns or periods of single tracking are anticipated.

During the same period, the unavailability of parking between the demolition of the existing garage and the completion of the new parking facility would generate additional daily Metrorail trips when the station is open. This would not cause noticeable overcrowding as those trips would be distributed over the entire day.

[380] This is the average delay that a scheduled train would experience due to the construction. This metric does not include canceled trains.

[381] Amtrak's adoption of Airo trainset (see **Section 4.5.4.1**, *Commuter and Intercity Railroads*) may reduce some train delays by eliminating the need for engine changes.

DC Streetcar

Construction of the Preferred Alternative would have moderate adverse impacts on DC Streetcar operations due to temporary disruptions to direct access between the WUS Streetcar station and WUS.

DC Streetcar operations would be affected during Project construction if the H Street Bridge were to be closed for safety reasons. Such closures are not likely, and if they did occur, they would be rare and brief. Construction of the Project elements and demolition of the existing parking garage may result in a loss of direct access between the WUS Streetcar station and WUS, including the Metrorail Station, during certain times. Such adverse impacts would be moderate because of their limited duration.

Intercity, Tour/Charter, and Sightseeing Buses

Construction of Preferred Alternative would have moderate adverse impacts on bus operations and bus passenger accommodations.

Impacts on intercity, tour/charter, and daily sightseeing bus operations would be concentrated in Phases 3 and 4 of construction. During Phase 3, which would last for approximately 2 years and 8.5 months, the relocation of the facility within the existing parking structure would create some disruptions, but operations would generally be able to continue. At the beginning of Phase 4, the entire existing bus facility and parking garage would be demolished. The new bus facility would not be operational until the completion of Phase 4.

Therefore, as explained in **Appendix F2**, *Description of the Preferred Alternative*, Section F.11.7.2, *Bus*, during Phase 3 if needed and during Phase 4, a temporary bus facility or temporary bus loading zones would be established on the completed portion of the structural deck. These temporary facilities would be of sufficient size to maintain an adequate level of operations. They would likely be small during Phase 3 and established only on an as-needed basis, depending on conditions in the remaining part of the existing parking garage and bus facility. During Phase 4, which would last for approximately 4 years and 3 months, the temporary facilities would have to accommodate all intercity and charter bus service. Some or all the temporary facilities would have to be established on the completed portion of the private air rights deck through an agreement with the private air rights developer. FRA confirmed with the private air rights developer that this approach is feasible.

Such interim bus facilities would be sufficient to maintain adequate intercity and charter bus service at WUS until the new facility is operational. They would not provide the same amenities as the new facility and, depending on their location, they may increase the distance to the front of the station. Bus carriers would have to adapt their operations to a changing environment during a few years. This would be a moderate adverse impact. Service would continue and intermodal connections would remain available throughout the construction period. USRC would work with the private air rights developer and the bus carriers to ensure that the temporary facilities are sited and designed in a manner that provides users with the highest reasonably achievable level of comfort.

Loading

Construction of the Preferred Alternative would have a major adverse impact on loading operations and facilities.

The east loading facility, which is accessed from H Street NE, would remain open for operation during most of the Preferred Alternative construction period. However, the west loading dock would be closed in Phase 4 when construction activities would occur nearby. The new loading dock at Second and K Streets NE would not be operational until the end of the construction period because of the need to use the area for material laydown and storage.

Because of these constraints, large truck loading on-site would be limited. Small trucks would have to be used instead. A facility to transfer and screen large loads to smaller trucks would be needed. At this stage of planning, the location of this temporary facility has not been determined.

Pedestrians

Construction of the Preferred Alternative would have moderate adverse impacts on pedestrian traffic.

Throughout the construction period, circulation within WUS would be affected as tracks and platforms are replaced; sections of the station are closed to allow for column removal in the First Street Tunnel; and new concourses and access points are built. The intensity of the impacts would vary with the phase but would be greatest during Phases 1 and 2, including the column removal work, and during Phase 4, because of interior construction activities on the west side of the site. Access to the Metrorail station from within WUS may also be affected.

Externally, throughout the construction period, street and sidewalk segments around WUS would be subject to temporary closures. The affected areas would include the front of the historic station building during the upgrade of the pick-up and drop-off lanes; and First Street NE, G Street, NE, and Second Street NE (including the Metropolitan Branch Trail), as multimodal facilities and ramps are constructed. During closures, alternative routes and access would be provided in accordance with the District's Safe Accommodation law.[382] Construction traffic (up to 120 trucks a day during periods of excavation) may also make pedestrian movements more challenging and generate conflicts along truck routes, especially Second Street NE.

Bicycles

Construction of the Preferred Alternative would have a moderate adverse impact on bicycle circulation during the construction of the First Street pick-up and drop-off facilities, the H Street Concourse, and entrance to the below-ground facility.

During parts of Phase 4 of construction, portions of First Street NE near the H Street Concourse would be rebuilt; an entrance to the H Street Concourse and the access ramps to the below-ground facility

[382] District of Columbia Municipal Regulations (DCMR) 24-3315. The law requires that when a bicycle lane or sidewalk is closed for construction, an equally safe accommodation, free of hazards and debris, must be provided.

would be built. Parts of the First Street Cycle Track may be closed during the construction of these elements. Truck use of the existing H Street Tunnel may also create conflicts during construction. While this work is being performed, it may not be possible to maintain a bicycle accommodation along the First Street corridor. During portions of Phase 4, It is expected that bicyclists would be rerouted to the Second Street shared-use path portion of the Metropolitan Branch Trail. How long disruption of the Cycle Track would last is not known at this time, but it would likely be less than the full duration of Phase 4. Temporary road closures around WUS would also disrupt bicycle circulation, as described above for pedestrians. During any closures, alternative routes and access would be provided in accordance with the District's Safe Accommodation law.

City and Commuter Buses

Construction of the Preferred Alternative would have negligible adverse impacts on city and commuter bus operations, as there would only be intermittent disruptions.

Construction activities would not significantly affect commuter bus activities. Most commuter bus service in the area serves North Capitol Street and the Columbus Circle area, where the larger transportation network would absorb the construction truck traffic and where there would be no direct access to the construction site.

City bus operations, including the DC Circulator and WMATA Metrobus, could be disrupted if H Street NE were to be closed for safety reasons. Specific information on the frequency and duration of these possible closures is not available at this time but long-term disruptions to H Street NE are not anticipated.

Operation of the Gallaudet University shuttle out of the existing bus facility would have to stop in Phase 4, when the facility would be demolished. As explained in **Section 5.5.3.1**, *Direct Operational Impacts*, *City and Commuter Buses*, this would become a permanent condition since the new bus facility could not accommodate the shuttle. During Phase 4 of construction, the shuttle would be accommodated in the interim bus facility (see **Section 5.5.3.3**, *Construction Impacts*, *Intercity, Tour/Charter, and Sightseeing Buses*).

Vehicular Parking and Rental Cars

Construction of the Preferred Alternative would have a major adverse impact on parking and rental cars in the period between the demolition of the existing parking garage and the completion of the below-ground facility in Phase 4 of construction.

Major impacts to parking and rental car operations would occur in Phase 4 of construction, when demolition of the existing parking garage would occur. Parking, including rental car parking, would be unavailable at WUS during Phase 4 until the new below-ground facility is completed, resulting in a major adverse impact on parking. The loss of parking capacity would require WUS visitors or passengers to use alternative modes of transportation. Given the overall daily volumes of these modes, it is anticipated that the added trips would be manageable. Some drivers may look for alternative parking and commercial parking may accommodate some of this demand. Street parking near WUS is in very limited supply, as most streets within a quarter mile of the station are residential parking permit areas, two-

hour parking areas, or monitored parking areas on Architect of the Capitol (AOC) property. Therefore, no WUS passengers or visitors are likely to be able to use street parking for long-term parking.

For-hire Vehicles

Construction of the Preferred Alternative would have a major adverse impact on for-hire vehicle operations because of extended queueing.

Passenger pick-up and drop-off in front of the historic station building by for-hire vehicles would remain available during most of the construction period, although some disruption would occur when the taxi and private pick-up and drop-off lanes would be improved. The existing loop road along the back of the station building would be unavailable during the entire period of construction. Therefore, the east ramp currently used by taxis to reach the front of the station would stop being accessible from the start of construction. Taxis would have to queue along the west ramp as they do today when the east ramp is not available. During Phase 4, the west ramp would be closed, and taxis would have to queue along the new southeast road on the deck level and the new east ramp from the bus facility (both available after completion of Phases 1 and 2). The east ramp would be used for the entirety of Phase 4. The loss of parking likely would result in an uptick in for-hire operations, which would contribute to the adverse impact on these operations during Phase 4.

Private Pick-up and Drop-off

Construction of the Preferred Alternative would have a moderate adverse impact on private pick-up and drop-off operations.

Private pick-up and drop-off would remain available in front of WUS during the construction period. The reconstruction of traffic lanes in front of the station would require the temporary closure of parts of the pick-up and drop-off area, although some spaces would always remain available. Therefore, this adverse impact would be moderate. As noted above, the loss of parking likely would result in an uptick in private pick-up and drop-off operations, which would contribute to the adverse impact on these operations during Phase 4 of construction.

Vehicular Traffic

Construction of the Preferred Alternative would have a major adverse impact on vehicular traffic operations because of roadway closures and construction vehicle traffic.

In the Preferred Alternative, construction activities at WUS would generate traffic to and from the site throughout the day during the entire construction period, although the volume and nature of this traffic would vary depending on the phase and type of activities being conducted. Construction traffic would be minimal when only column-removal work would be performed (intermediate phase between Phases 1 and 2) and greatest during excavation, when up to 120 trucks per 20-hour day could be traveling to and from the site. This is a maximum, conservative estimate that assumes that no work trains would be used to haul spoils away. Use of two work trains a day would eliminate most of this truck traffic. Additionally, while each construction phase (excluding the Intermediate Phase) would include a period

of excavation and associated truck traffic, that period would be substantially shorter than the phase itself.

The longest period of excavation (approximately 2 years and 1 month) would occur during Phase 4, on the west side of the Project Area. During that time, most truck traffic would travel on First Street NE to connect to designated District truck routes along the North Capitol Street and New York Avenue corridors. Phase 1, on the east side of the Project Area, would have the shortest excavation period (approximately 5 months). During that period, trucks would likely travel along portions of Second Street NE before connecting to a designated District truck route. No trucks would circulate along residential streets, or any other streets not designated as a truck route by the District.

As WUS would remain operational throughout the construction period, construction traffic would add to the traffic generated by users of the station. By the time of Phase 4, WUS would generate similar levels of vehicular traffic to that expected in the No-Action Alternative. Although construction traffic would add to total traffic volumes on major WUS access routes, it would be spread out across the entire day, reducing its impact on local traffic operations.

At different times during the construction period, temporary roadway closures would be required, especially along G Street NE between North Capitol Street and First Street NE; First Street NE, between Columbus Circle and K Street; and Second Street NE, between Massachusetts Avenue and K Street, to accommodate construction traffic in and out of the construction site. Road closures would generally last from 5 to 6 minutes on average and no more than 20 minutes. During those times, traffic may temporarily move to other streets such as H Street, K Street, 4th Street NE, and North Capitol Street.

5.5.4 Summary of Impacts

Table 5-35 summarizes the transportation impacts of the No-Action Alternative and Preferred Alternative by mode.

Table 5-35. Summary of Impacts on Transportation

Mode	Type of Impact	No-Action Alternative	Preferred Alternative
Commuter and Intercity Railroads	**Direct Operational**	Major adverse impact	Major beneficial impact
	Construction	NA	Moderate adverse impact
WMATA Metrorail	**Direct Operational**	Moderate adverse impact	Minor adverse impact
	Construction	NA	Moderate adverse impact
DC Streetcar	**Direct Operational**	Moderate beneficial impact	Minor beneficial impact
	Construction	NA	Moderate adverse impact
Intercity, Tour/Charter, and Sightseeing Buses	**Direct Operational**	Major adverse impact	Moderate beneficial impact
	Construction	NA	Moderate adverse impact

Mode	Type of Impact	No-Action Alternative	Preferred Alternative
Loading	**Direct Operational**	No impact	No adverse impact
	Construction	NA	Major adverse impact
Pedestrians	**Direct Operational**	Major adverse impact (inside WUS) and minor adverse impact (outside WUS)	Major beneficial impact (inside WUS) and minor adverse impact (outside WUS)
	Construction	NA	Moderate adverse impact
Bicycle Activity	**Direct Operational**	Moderate adverse impact	Major beneficial impact
	Construction	NA	Moderate adverse impact
City and Commuter Buses	**Direct Operational**	Moderate adverse impact	No impact (university shuttle) or minor adverse impact (all others)
	Construction	NA	Negligible adverse impact
Vehicular Parking	**Direct Operational**	No impact	Moderate adverse impact
	Construction	NA	Major adverse impact
Rental Cars	**Direct Operational**	Minor adverse impact	Minor adverse impact
	Construction	NA	Major adverse impact
For-hire Vehicles	**Direct Operational**	Major adverse impact	Moderate beneficial impact
	Construction	NA	Major adverse impact
Private Pick-up/drop-off	**Direct Operational**	Major adverse impact	Moderate beneficial impact
	Construction	NA	Moderate adverse impact
Vehicular Traffic	**Direct Operational**	Major adverse impact	Major adverse impact
	Construction	NA	Major adverse impact
All Modes	**Indirect Operational**	NA	Minor adverse impact

N/A = Not Available. Construction of the projects included in the No-Action Alternative would cause a range of transportation impacts. However, these impacts cannot be characterized because information on construction methods and schedules are not known at this time.

5.6 Air Quality

This section addresses the potential impacts of the No-Action Alternative and Preferred Alternative, including the potential Federal air rights development, on air quality. Air quality is the condition of ambient air determined through the measurement of air pollution. Ambient air is the portion of the atmosphere to which the public has access outside of buildings. Air pollution is the presence of potentially harmful gases or particles (pollutants) in ambient air. Urban air pollution is the result of

emissions from mobile sources (such as automobiles, trains, or trucks) or stationary sources (such as boilers, generators, and ventilation equipment).

This section also addresses the requirements of the General Conformity Rule. Established under the Clean Air Act, the General Conformity Rule helps states and tribes improve air quality in those areas that do not meet National Ambient Air Quality Standards (NAAQS). The U.S. Environmental Protection Agency (EPA) has established NAAQS for carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter sized 10 micrometers or less (PM_{10}), and 2.5 micrometers or less ($PM_{2.5}$), and lead. These pollutants are known as criteria pollutants. EPA designates areas that do not meet the NAAQS for one or more criteria pollutants as nonattainment or maintenance areas for those pollutants. The District is a moderate nonattainment area for O_3.

The General Conformity Rule applies to any Federal action in a nonattainment area. It is designed to ensure that Federal actions do not interfere with a state's or tribe's ability to attain and maintain the NAAQS. If the total direct and indirect emissions from the Federal action are below the applicable *de minimis* threshold rates, the emissions are exempt from the provisions of the General Conformity regulations. If a project's emissions of a criteria pollutant exceed the applicable *de minimis*, a Conformity Determination must be performed. Because the District is classified as moderate nonattainment for O_3, and is located within an O_3 transport region, the *de minimis* thresholds for the O_3 precursors nitrogen oxides (NO_X) and volatile organic compounds (VOCs) are 100 tons per year and 50 tons per years, respectively.[383] NO_X and VOC combine to generate O_3.

The District is in attainment of the CO and particulate matter NAAQSs, and General Conformity does not apply for those pollutants. Estimates of CO, PM_{10}, and $PM_{2.5}$ emissions associated with the Preferred Alternative are presented in this section for information purposes only.

5.6.1 Methodology

This section summarizes the methodology for evaluating the potential impacts of the No-Action Alternative and Preferred Alternative on air quality.

5.6.1.1 Operational Impacts

Three types of direct operational impacts on air quality were considered:

Stationary Sources

Stationary sources include cooling towers, ventilation fans, and emergency generators needed for the operation of WUS. The design of mechanical systems for the expanded WUS is highly conceptual at this early stage of design. Therefore, stationary source impacts are assessed qualitatively. Because emissions would occur in the Project Area, impacts from stationary sources are direct impacts.

[383] EPA. 2023. *De Minimis Tables*. Accessed from https://www.epa.gov/general-conformity/de-minimis-tables. Accessed on February 11, 2023.

Mobile Sources

Mobile sources of air emissions include diesel locomotives, motor vehicles, and buses associated with the Project (including emissions from parking garage activities released through ventilation systems). Mobile source emissions were considered at the regional level through a mesoscale analysis. Because they would occur on a regional scale, mobile source impacts are indirect impacts.

Motor vehicle emission factors were calculated using EPA's MOVES2014. This model calculates emission factors from motor vehicles in a mass per distance format (often grams per mile) for existing and future conditions. It then applies these factors to vehicle-miles traveled (VMT) data to obtain emissions inventories. Tier 3 emission standards, an EPA program that sets new vehicle emissions standards, were factored into the analysis. In the first phase (2014-2018), Tier 3 emission standards regulated the sulfur content of gasoline, heavy-duty engine emissions, and vehicle greenhouse gas (GHG). A second phase (2017--2025) regulates light-duty vehicle GHGs. The analysis also accounted for conditions specific to the District, such as the state vehicle registration age distribution and the Inspection and Maintenance (I/M) program. Roadway links were developed based on the traffic network used in the transportation impact analysis. VMT and vehicle delays were calculated using the traffic volumes and network operations from the same analysis.

Rail emissions were developed based on the EPA's *Emission Factors for Locomotives* guidance (EPA-420-F-09-025) and applied to projected future rail operations. The analysis considered emissions from diesel locomotives only. Locomotive emissions were considered for operations that would occur in the Project Area and for locomotive dwelling and switching operations based on an inventory of horsepower-hours by alternative, operator, locomotive type and emissions tier provided by Amtrak.

The mesoscale analysis had two components:

- **Criteria Pollutant Emissions**: Quantitative estimation of the change in annual area-wide emissions of VOC and NO_X (precursors of O_3) attributable to the Project. Project-related emissions were compared to the applicable *de minimis* thresholds to assess impacts on air quality in compliance with General Conformity requirements. Emissions of CO and PM were also estimated for disclosure purposes.
- **Mobile Source Air Toxics (MSAT) Emissions:** Qualitative analysis of MSAT emissions, as the Project has low potential for MSAT impacts. The analysis considered anticipated volumes, vehicle mix, routing and speed of traffic, and future rail activity.

5.6.1.2 Construction Impacts

As a reasonably foreseeable result of the Action, a quantitative modeling of potential construction year emissions was performed. Construction-related air quality impacts were estimated for each phase of construction, including the Intermediate Phase, based on emissions associated with excavation; support of excavation construction; caisson drilling; foundation slab construction; overbuild deck construction; track demolition and reconstruction; terminal demolition; subbasement column removal; and construction of the G Street Ramp, First Street Ramp, and East Ramp. For each construction phase, emissions were annualized, conservatively assuming that all types of activity would take place during

each year of the phase. This conservative assumption allows for comparison with EPA's *de minimis* criteria and a General Conformity applicability determination.

The analysis estimated the emissions generated by diesel-powered construction equipment, dust-generating activities, and road vehicles. Exhaust emissions associated with construction equipment were predicted based on typically used equipment for each critical construction activity and the percentage of time (or load factor) that the equipment would be operating. As appropriate, emission control measures that would minimize potential air quality impacts were also considered. Emission factors for the various emission sources were determined using a combination of EPA's Non-Road, MOVES2014, and AP-42 models.

5.6.2 Impacts of the No-Action Alternative

5.6.2.1 Direct Operational Impacts

Relative to existing conditions, stationary source emissions in the No-Action Alternative would have negligible adverse direct operational impacts on air quality.

In the No-Action Alternative, WUS would remain in its current conditions, and there would be no new stationary source emissions. The station improvement projects included in the No-Action Alternative would not cause significant amounts of new air pollutant emissions. The private air rights development would generate new emissions, for instance from boilers or emergency generators. Stationary sources associated with the development would be subject to the District's air quality permitting requirements for minor sources, as applicable.[384] Adverse impacts would be negligible.

5.6.2.2 Indirect Operational Impacts

Mesoscale Analysis

Relative to existing conditions, in the No-Action Alternative, reductions in emissions of VOC, NO_X, CO, and $PM_{2.5}$ would result in a beneficial indirect operational impact on air quality.

In the No-Action Alternative, traffic volumes in the Local Study Area and railroad operations at WUS would increase due to background growth in population and future travel demand. The private air rights above the rail terminal would be developed, also causing increases in local traffic volumes. There would be changes in local vehicular and locomotive emissions driven by regulation and technology. These developments would affect air emissions.

As shown in **Table 5-36**, regional emissions of NO_X, VOC, CO, and $PM_{2.5}$ in the No-Action Alternative would decrease substantially compared to the existing conditions. This is attributable to the anticipated effect of new regulations and improved technology in vehicles and locomotives. PM_{10} emissions would

[384] District Department of Energy and Environment. *Air Pollutant Permit*. Accessed from https://doee.dc.gov/service/airpermits. Accessed on August 12, 2023.

increase relative to existing conditions because of increased vehicular traffic on local streets and emissions generated from brake-and-tire wear.

Table 5-36. Mesoscale Emission Inventory in the No-Action Alternative (Tons per Year)

Source	NO_X	VOC	CO	PM_{10}	$PM_{2.5}$
Motor Vehicle Emissions	4.1	34.5	66.3	4.6	0.9
Locomotive Emissions	26.5	0.9	12.2	0.5	0.5
Total Emissions	30.6	35.4	78.4	5.1	1.3
Existing Conditions Emissions	73.5	62.9	162.9	4.4	2.1

Mobile Source Air Toxics

Relative to existing conditions, the No-Action Alternative may result in localized, higher levels of MSAT emissions in the Local Study Area. Information to quantitatively assess these impacts is not available; based on existing information, they are anticipated to be minor.

On a regional basis, EPA's vehicle and fuel regulations coupled with the progressive replacement of older vehicles by newer ones and increased use of electric vehicles (EV), is anticipated to result in substantial reductions in MSAT emissions over time and in overall lower MSAT levels in 2040. EPA's national control programs are projected to result in annual reductions of MSAT emissions of over 90 percent between 2010 and 2050. Local regional conditions, such as fleet mix and turnover, VMT growth rates, and local control measures may differ from national conditions. Therefore, the regional level of MSAT reductions may differ from national assumptions. However, EPA's projected national reductions are so substantial that net MSAT emissions in the Regional Study Area are likely to be lower by 2040. Locally, increases in diesel-fueled rail operations could result in increases in emissions. While the magnitude and duration of these potential impacts cannot be reliably quantified due to incomplete or unavailable information, they would be minimized through the implementation of EPA's control programs and other measures. For instance, an element of Amtrak's Net-Zero Strategy is the use of renewable diesel to reduce emissions, including MSAT emissions, from diesel engines.[385]

5.6.2.3 Construction Impacts

Construction of the projects included in the No-Action Alternative would cause air pollutant emissions. Available information on methods and schedules of construction is insufficient to quantify and characterize impacts on air quality.

The construction of the private air rights development, replacement of the H Street Bridge, and other projects included in the No-Action Alternative would generate emissions of air criteria pollutants. Primary sources would include construction equipment and heavy machinery exhaust as well as ground

[385] Amtrak. *Net-Zero Strategy*. Accessed from https://www.amtrak.com/net-zero#diesel. Accessed on August 13, 2023.

disturbing activities. The total annual emissions would depend on equipment and vehicle types as well as on the schedule of each project. This information is not currently available, precluding the development of quantitative estimates.

5.6.3 Impacts of the Preferred Alternative

5.6.3.1 Direct Operational Impacts

Relative to the No-Action Alternative, stationary source emissions in the Preferred Alternative would have negligible adverse direct operational impacts on air quality.

The design of mechanical systems for the expanded WUS is highly conceptual at this early stage of design. As WUS receives heating and cooling from District energy sources, there is a limited need for heating, ventilation, and air conditioning equipment with direct (on-site) pollutant emissions. The only Project-related stationary source equipment with direct emissions would be cooling towers and emergency generators.

Cooling towers would be on the roof of one of the planned air rights buildings, on the east side of the Project Area, next to the northern end of the Railway Express Agency (REA) Building. Cooling towers do not directly emit pollutants through a combustion process and are a small source of particulate matter emissions. Such emissions would occur on the roofs of the buildings, far from any areas where people are routinely present. Impacts to ambient air quality would be negligible.

Unlike cooling towers, emergency generators are direct sources of air pollutant emissions from combustion. Emergency generators would be installed on the east and west sides of WUS, between G Place and H Street NE, on the roofs of the planned air rights buildings. The operation of emergency generators is limited to a maximum of 500 hours per year.[386] Such generators can only be operated during emergency situations and for periodic testing and require an air quality permit from DOEE before installation and operation. During the permitting process, the applicant must demonstrate that the generators would not cause an adverse impact on air quality. Therefore, impacts to ambient air quality from the installation and operation of emergency generators in the Preferred Alternative are anticipated to be negligible.

Ventilation fans would be used to exhaust air from the tracks and platforms and the below-ground facility and maintain good ambient air quality in those areas. Eight fan plants would be installed on the roofs of the air rights buildings (two between G Street and G Place NE; two between G Place and H Street NE; two north of H Street NE; and two just south of K Street NE). Because the fan plants would be ventilating pollutants from mobile sources, their emissions are accounted for in the mesoscale analysis

[386] District Department of Energy and Environment. *Application For Source Category Permit Approval to Construct and/or Operate a Natural Gas Fired Emergency Engine Subject to NSPS Subpart JJJJ*. Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/release_content/attachments/Source%20Category%20Application%20Form%20for%20NSPS%20Nat%20Gas%20Emergency%20Engines.pdf. Accessed on January 13, 2023.

of indirect impacts. Because of their location on the roofs of buildings, direct impacts on ambient air quality would be negligible.[387]

5.6.3.2 Indirect Operational Impacts

Mesoscale Analysis

In the Preferred Alternative, the net increase in emission of O_3 precursors (NO_X and VOC) attributable to the Preferred Alternative relative to the No-Action Alternative would be below the General Conformity *de minimis* thresholds applicable in the District. Therefore, adverse indirect impacts on air quality would be minor.

The mesoscale analysis considered the increases in VOC, NO_X, CO, and PM_{10} and $PM_{2.5}$ emissions from motor vehicles and locomotives anticipated to occur by 2040 with implementation of the Preferred Alternative. The analysis used data (volumes, delays, and speeds) from the Preferred Alternative traffic analysis for on-road emissions sources. Locomotive emissions were modeled based on future rail operations, accounting for locomotive propulsion and idling, and conservatively assumed the use of diesel locomotives.

Table 5-37 shows the results of the mesoscale analysis for NO_x and VOC emissions in the Preferred Alternative and the *de minimis* thresholds that apply in the District. The table shows total emissions in the Preferred Alternative and the No-Action Alternative. The net emissions attributable to the Preferred Alternative, calculated by subtracting the No-Action Alternative emissions from the total Preferred Alternative emissions, represent the impact of the Preferred Alternative.

Emissions of NO_X and VOC would increase relative to the No-Action Alternative. The net change in emissions attributable to the Preferred Alternative is the appropriate metric for review against the applicable *de minimis* thresholds because it reflects the net change in emissions caused by the Preferred Alternative. Other quantities shown in the table incorporate existing and No-Action Alternative emissions that are not associated with the Preferred Alternative.

Table 5-37. Mesoscale Inventory of NO_X and VOC Emissions in the Preferred Alternative (Tons per Year)

Source	NO_X	VOC
Motor Vehicle Emissions	4.4	34.8
Locomotive Emissions	61.4	2.0
Total Preferred Alternative Emissions	**65.8**	**36.8**

[387] In the Preferred Alternative, the private air rights development would be smaller than in the No-Action Alternative (approximately 2.7 million square feet of mixed uses against approximately 3.8 million square feet). Therefore, direct stationary source emissions associated with the private air rights development (for instance emissions from boilers) would be reduced in the Preferred Alternative relative to the No-Action Alternative, partially offsetting increases associated with the Project.

Source	NO_X	VOC
No-Action Emissions	30.6	35.4
Net Change in Emissions Attributable to the Preferred Alternative[1]	35.2	1.4
***De Minimis* Threshold**	**100**	**50**

1. The "Net Change in Emissions attributable to the Preferred Alternative" is the difference between total emissions in the Preferred Alternative and No-Action Alternative emissions.

For both criteria pollutants, the net increase attributable to the Preferred Alternative (35.2 tons per year [tpy] of NO_X and 1.4 tpy of VOC) is below the applicable *de minimis* threshold (100 tpy and 50 tpy, respectively), indicating that the proposed Federal activity would not cause new violations of the NAAQS, increase the frequency or severity of NAAQS violations, or delay timely attainment of the NAAQS or any interim milestone. Therefore, adverse indirect impacts on ambient air quality would be minor.

The mesoscale analysis also estimated operational emissions of CO, PM_{10}, and $PM_{2.5}$. In the District, there are no applicable regulatory thresholds for these pollutants because the region is in attainment for each of them. Therefore, the estimates in **Table 5-38** are provided for information only.

Table 5-38. Mesoscale Inventory of CO and PM Emissions in the Preferred Alternative (Tons per Year)

Source	CO	PM_{10}	$PM_{2.5}$
Motor Vehicle Emissions	67.7	4.5	0.9
Locomotive Emissions	29.8	1.0	1.0
Total Preferred Alternative Emissions	**97.5**	**5.6**	**1.9**
No-Action Emissions	78.4	5.1	1.3
Net Change in Emissions Attributable to the Preferred Alternative[1]	19.1	0.5	0.6

1. The "Net Change in Emissions Attributable to the Preferred Alternative" is the difference between total emissions in the Preferred Alternative and No-Action Alternative emissions.

Mobile Source Air Toxics Analysis

Relative to the No-Action Alternative, the Preferred Alternative may result in localized, higher levels of mobile source air toxics (MSAT) emissions in the Local Study Area. Information to quantitatively assess these impacts is not available; based on existing information, they are anticipated to be minor.

The amount of MSAT emitted in the Preferred Alternative would be proportional to the amount of bus VMT and railroad activity, assuming other variables (such as travel not associated with WUS) remain the same. Most Project-generated motor vehicle traffic would be light-duty vehicles, which are not a substantial source of MSAT. Although the capacity of the new bus facility with implementation of the

Preferred Alternative would be less than the capacity under the No-Action Alternative, an increase in peak-hour bus activity to accommodate an increased number of passengers would occur. Due to increases in capacity and ridership expected from the WUS expansion, on-road VMT and railroad activity would be greater under the Preferred Alternative.

The increase in bus VMT and rail activity would lead to higher diesel particulate matter emissions (a component of MSAT) near WUS. The increase in emissions could be partly offset by two factors: the decrease in regional traffic due to greater use of commuter rail and increased speeds on area highways due to the decrease in commuter traffic. As noted in **Section 5.5.2.1**, *Direct Operational Impacts*, *Commuter and Intercity Railroads*, the Preferred Alternative would provide intercity service to new markets and attract riders who might otherwise drive or take the bus, as well as provide some commuter service for longer distance commuters. Though this would primarily remove from regional traffic light-duty vehicles, which are not a substantial source of MSAT, the removal of these vehicles would lead to reduced congestion and emissions for the entire existing vehicle fleet mix, which includes diesel vehicles. Taking light-duty vehicles off regional roadways would improve operations for diesel vehicle traffic, including a reduction in idling time, and MSAT emissions would be reduced.

A portion of the increase in railroad activity would be associated with electric locomotives, which do not generate MSAT emissions. An increase in diesel locomotive activity would increase diesel emissions near homes, schools, and businesses in WUS's vicinity. As a result, there may be areas where local ambient concentrations of MSAT would be higher in the Preferred Alternative than in the No-Action Alternative. The magnitude and duration of these potential impacts cannot be reliably quantified due to incomplete or unavailable information. Like in the No-Action Alternative, they would be minimized through the implementation of EPA's control programs and other programs, such as Amtrak's Net-Zero Strategy, which plans for the use of renewable diesel to reduce emissions, including MSAT emissions, from diesel engines.[388]

On a regional basis, as explained for the No-Action Alternative, EPA's vehicle and fuel regulations coupled with the progressive replacement of older vehicles by newer ones and increased use of EV, is anticipated to result in substantial reductions in MSAT emissions over time and in overall lower MSAT levels in 2040. EPA's projected national reductions are so substantial (even after accounting for VMT growth in the Preferred Alternative) that MSAT emissions in the Regional Study Area are likely to be lower by 2040.

5.6.3.3 Construction Impacts

Emissions of O_3 precursors (NO_X and VOC) during the construction of the Preferred Alternative would be below the General Conformity *de minimis* criteria applicable in the District. Therefore, air quality impacts from construction would be minor.

Construction activities in the Preferred Alternative would cause air pollutant emissions in amounts that would vary across the entire construction period, estimated to last approximately 13 years. The primary

[388] Amtrak. *Net-Zero Strategy*. Accessed from https://www.amtrak.com/net-zero#diesel. Accessed on August 13, 2023.

sources of emissions would be construction equipment, including dump trucks, and heavy machinery exhaust, along with ground-disturbing activities and the operation of construction vehicles on unpaved roadways, which would generate fugitive dust.

Excavation and the loading and transport of excavated soil and other materials would be the most emission-intensive part of the construction process, requiring the use of large diesel-fueled equipment such as excavators and dump trucks. Two scenarios were analyzed for the removal of excavation spoils from the Project site: one scenario assumed removal only by trucks (120 trucks a day: All Truck Scenario) and the other assumed spoil removal by work trains (two work trains a day: Work Train Scenario).

Table 5-39 shows estimated maximum annual emissions of NO_X and VOC for each phase for both the All Truck Scenario and the Work Train Scenario. In either scenario, emissions would be below the applicable *de minimis* threshold in all phases. Therefore, adverse impacts on ambient air quality would be minor.

Table 5-39. Construction Emissions of NO_X and VOC per Phase for the Preferred Alternative (Tons per Year)

Construction Phase	All Truck Scenario		Work Train Scenario	
	NO_X	VOC	NO_X	VOC
Phase 1	62.7	7.7	60.5	6.8
Intermediate Phase	23.3	1.9	23.3	1.9
Phase 2	52.4	6.9	49.1	5.6
Phase 3	36.7	4.9	32.9	3.3
Phase 4	62.2	8.1	56.8	5.9
***De Minimis* Threshold**	100	50	100	50

In all phases, except the Intermediate Phase, the Work Train Scenario would result in less emissions of O_3 precursor pollutants than the All Truck Scenario. The Intermediate Phase would not include any excavation work or involve the transport of materials to or from the Project Area. Therefore, the scenarios make no difference for this phase.

Table 5-40 shows annual estimated CO and particulate matter emissions. As noted above, there are no applicable regulatory thresholds for these pollutants because the region is in attainment of the NAAQS for each of them. Therefore, the estimates in **Table 5-40** are provided for information only. The Work Train Scenario would result in less emissions of every pollutant in each phase except the Intermediate Phase, for the same reason as explained above.

Table 5-40. Annual Construction CO and PM Emissions per Phase for the Preferred Alternative

Construction Phase	All Truck Scenario			Work Train Scenario		
	CO	PM_{10}	$PM_{2.5}$	CO	PM_{10}	$PM_{2.5}$
	tpy	tpy	tpy	tpy	tpy	tpy
Phase 1	27.1	2.7	2.1	24.3	1.9	1.8
Intermediate Phase	6.2	0.4	0.4	6.2	0.4	0.4
Phase 2	23.0	2.6	1.8	18.8	1.4	1.3
Phase 3	17.0	2.3	1.4	12.2	0.9	0.9
Phase 4	29.1	3.7	2.4	22.2	1.7	1.6

tpy = tons per year

5.6.3.4 Combined Operational and Construction NO_X and VOC Emissions

To demonstrate that a General Conformity determination is not required, direct construction NO_X and VOC emissions were combined with the net change in indirect operational emissions attributable to the Preferred Alternative and compared to the applicable *de minimis* thresholds. For construction emissions, the phase and scenario with the highest annual emissions of NO_x (Phase 1 – All Truck Scenario) were used. Operational emissions are those that would occur after the Project is complete. However, during the entire construction period, operational activity at WUS (e.g., car and train traffic) would be well below this post-completion level of activity and achieved only after the Project is complete. Therefore, the estimates shown here are very conservative. Actual emission levels are anticipated to be substantially lower.

As shown in **Table 5-41**, combined emissions of NO_X and VOC associated with the Preferred Alternative would be below the applicable *de minimis* thresholds.

Table 5-41. Combined Operational and Construction Annual NO_X and VOC Emissions for the Preferred Alternative (Tons per Year)

Component	NO_X	VOC
Construction Emissions	62.7	7.7
Maximum Net Change in Operational Emissions Attributable to the Preferred Alternative	< 35.2	< 1.4
Maximum Combined Preferred Alternative Operational and Construction Emissions	< 97.9	< 9.1
***De Minimis* Threshold**	100	50

5.6.4 Summary of Impacts

Table 5-42 summarizes the impacts of the No-Action Alternative and Preferred Alternative.

Table 5-42. Summary of Impacts on Air Quality

Type of Impact	No-Action Alternative	Preferred Alternative
Direct Operational	Negligible adverse impact	Negligible adverse impact
Indirect Operational – Mesoscale Analysis	Minor adverse impact	Minor adverse impact
Indirect Operational – MSAT	Minor adverse impact	Minor adverse impact
Construction	Undetermined	Minor adverse impact

5.7 Greenhouse Gas Emissions and Resilience

This section addresses the potential impacts of the No-Action Alternative and Preferred Alternative on GHG emissions and resilience. GHGs trap heat in the atmosphere and can affect air quality and climate change. Major GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (such as hydrofluorocarbons and perfluorocarbons). The primary pollutant of concern from sources related to human activity is CO_2, which is the most abundant and influential GHG.

5.7.1 Methodology

GHG impacts are generally analyzed in terms of CO_2-equivalent (CO_2e) emissions. CO_2e describes the number of metric tons of CO_2 emissions with the same global warming potential as one metric ton of another GHG. Because the primary GHG associated with the operation of WUS by far is CO_2 from mobile and stationary sources, there is no difference between CO_2 and CO_2e emissions in the analysis. Amounts of CO_2 emissions are also amounts of CO_2e emissions.

5.7.1.1 Operational Impacts

The primary concern associated with GHG emissions is their effect on climate change. Such an effect is by definition long-term and global in extent. Therefore, all GHG impacts are addressed as indirect impacts.

Stationary Sources

CO_2 emissions from the operation of buildings and facilities were derived from the energy use estimates presented in Section 5.8, *Energy Resources*, using U.S. Energy Information Administration (EIA)'s emission factors: 117 pounds of CO_2 per 1,000 kBTUs of natural gas energy (used for heating [steam])

and 1,177 pounds per megawatt-hour (MWh) for electric energy (used for chilled water).[389] Energy from steam and electricity was converted to MWh prior to applying the factor.

Mobile Source Emissions

CO_2 emissions from mobile sources (cars, buses, and locomotives) were evaluated using the same methodology as used for the emissions of criteria pollutants, described in **Section 5.6.1.1**, *Operational Impacts. Mobile Sources*, above.

Assessment

To provide a measure of the intensity of the impacts, total CO_2 emission estimates were compared to the District's 2019 CO_2e emissions (7,170,450 metric tons).[390] The District has set a GHG reduction targets of 56 percent by 2032 and carbon neutrality by 2045.[391] Total emissions were also compared to the 2032 benchmark, which is approximately 4,614,141 metric tons of CO_2e.

5.7.1.2 Construction Impacts

CO_2 emissions from construction impacts were assessed using the same approach as for the assessment of criteria pollutant emissions, described in **Section 5.6.1.2**, *Construction Impacts*.

5.7.1.3 Resilience

Potential impacts to resilience were assessed qualitatively for the Project and immediately adjacent infrastructure. The analysis also considered consistency with *Resilient DC. A strategy to Thrive in the Face of Change*.[392]

5.7.2 Impacts of the No-Action Alternative

5.7.2.1 Direct Operational Impacts

As noted above, all GHG impacts are addressed as indirect impacts.

[389] U.S. Energy Information Administration. *Carbon Dioxide Emissions Coefficients.* Accessed from https://www.eia.gov/environment/emissions/co2_vol_mass.php. Accessed on November 4, 2022. U.S. Energy Information Administration. *States Electricity Profiles*. *District of Columbia. 2020.* Accessed from https://www.eia.gov/electricity/state/districtofcolumbia/. Accessed on November 4, 2022.

[390] District Department of Energy and Environment. *2006-2020 Greenhouse Gas Inventory*. Accessed from https://doee.dc.gov/service/greenhouse-gas-inventories. Accessed on November 4, 2022. Emissions for 2019 were used because 2020 emissions were affected by the COVID-19 pandemic.

[391] District of Columbia. *Clean Energy DC: The District of Columbia Climate and Energy Action Plan. August 2018*. Accessed from https://doee.dc.gov/cleanenergydc. Accessed on August 16, 2023. *Carbon Free DC (*https://storymaps.arcgis.com/stories/034104405ef9462f8e02a49f2bd84fd9*)* is the District's strategy to become carbon neutral by 2045 and achieve the goals defined in *Clean Energy DC.*

[392] Issued in April 2019. Available at: https://resilient.dc.gov/. Accessed on October 31, 2022.

5.7.2.2 Indirect Operational Impacts

Relative to existing conditions, the No-Action Alternative would potentially result in a moderate adverse direct operational impact on CO_2 emissions.

Stationary Source Emissions—WUS

In the No-Action Alternative, energy consumption at WUS would remain approximately the same as under existing conditions because the station would not undergo any major physical expansion. Existing consumption may decrease between now and 2040 due to the greater energy-efficiency of upgraded heat, ventilation, and air conditioning systems, lighting fixtures, and other equipment. In this case, associated emissions of CO_2 would decrease as well.

Stationary Sources Emissions—Private Air Rights Development

In the No-Action Alternative, the primary source of additional energy consumption in the Project Area and associated CO_2 emissions would be the private air rights development.

As explained in **Section 5.8.2.1**, *Direct Operational Impacts*, *Private Air Rights Development*, in the No-Action Alternative, the private air rights development would increase energy consumption in the Project Area by approximately 208,842,000 kilo British thermal units (kBTUs). [393]

Based on the U.S. Department of Energy (DOE)'s prototypical models for this type of development, it can be assumed that local natural gas consumption would account for approximately 23 percent of this total, or 48,033,660 kBTUs. Based on the EIA's emission factor of 117 pounds of CO_2 per 1,000 kBTUs of natural gas energy, this would result in a potential reduction in direct CO_2 emissions of approximately 2,549 metric tons per year. The remaining 77 percent, 160,808,340 kBTUs, would be from electric energy use. Based on the 1,177 pounds per MWh factor for electric energy, this would potentially result in emissions of 25,161 metric tons of CO_2 per year. Altogether, the private air rights development in the No-Action Alternative would potentially generate approximately 27,710 metric tons of CO_2 per year.

Mobile Source Emissions

Mobile sources of air emissions include diesel locomotives, motor vehicles, and buses. Mesoscale analysis (see **Section 5.6.3.2**, *Indirect Operational Impacts, Mesoscale Analysis*) indicated that additional motor vehicle traffic and locomotive operations in the No-Action Alternative would emit approximately an additional 929 metric tons of CO_2 annually relative to existing conditions. In the long-term, modal shift from car to rail along the Northeast Corridor can be anticipated to result in a reduction of GHG emissions from automobiles. The *U.S. National Blueprint for Transportation Decarbonization* notes that the transportation sector is the largest source of greenhouse gas emissions in the United States and identifies as one of three key strategies the need to improve efficiency by expanding affordable,

[393] A kBTU is one thousand BTU. A BTU is "a measure of the heat content of fuels or energy sources." Specifically, it is the quantity of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature that water has its greatest density (approximately 39 degrees Fahrenheit).

efficient, and reliable options like public transportation and rail.[394] Additionally, in 2022, Amtrak adopted a Net Zero Strategy with a net-zero emissions goal for 2045, which can be anticipated to have reduced emissions from train operations by 2040.[395] Resulting reductions in GHG emissions would partially or wholly offset the increase in local GHG emissions associated with WUS in the No-Action Alternative.

Summary of Additional CO_2 Emission Estimates

Table 5-43 shows the potential increase in emissions of CO_2 from stationary and mobile sources in the No-Action Alternative. The total potential net increase in emissions would be approximately 28,639 metric tons, representing approximately 0.41 percent of the District's total 2019 CO_2-equivalent (CO_2-e) emission inventory and 0.62 percent of its 2032 emissions target.[396]

Table 5-43. Total Estimated Changes in Annual CO_2 Emissions in the No-Action Alternative

Source	CO_2 Emissions (Metric Tons/Year)	Percentage of 2019 Total Inventory	Percentage of 2032 Target
Stationary Sources -WUS	-	-	-
Stationary Sources – Private Air Rights Development	+27,710	0.4%	0.6%
Mobile Sources	+929	0.01%	0.02%
Total Additional Emissions	+28,639	0.41%	0.62%

The amounts shown in the table are conservative potential estimates that do not account for measures that would be taken to reduce energy consumption and related emissions. Actual emissions would likely be substantially less, as measures consistent with the District's goal of carbon neutrality by 2045 are incorporated in project designs; Amtrak implements its Net-Zero Strategy toward a net-zero emissions goal in 2045; and increases in rail travel along the Northeast Corridor, as well as the growing popularity of electric vehicles, reduce vehicular emissions. Therefore, any net adverse impacts would be moderate.

Resilience

Relative to existing conditions, the No-Action Alternative would have a moderate adverse impact on resilience at WUS. Climate change impacts would likely increase resiliency challenges while WUS infrastructure would remain mostly unchanged.

[394] U.S. Department of Energy. *Fact Sheet. U.S. National Blueprint for Transportation Decarbonization*. Accessed from https://www.energy.gov/sites/default/files/2023-01/EERE_TranspoDecarb_factsheet-508_0.pdf. Accessed on August 29, 2023.

[395] Amtrak. *Net-Zero Strategy*. Accessed from https://www.amtrak.com/net-zero#diesel. Accessed on February 11, 2023.

[396] The District's 2019 CO_2e emissions amounted to 7,170,450 metric tons of CO_2e. The District has set a target of 56 percent GHG reduction relative to 2006 emissions by 2032 and carbon neutrality by 2045. The 2032 benchmark is approximately 4,614,141 metric tons of CO_2e.

In the No-Action Alternative, no major upgrades or retrofitting of the station's infrastructure that would provide the opportunity to significantly improve its resilience would occur. The No-Action Alternative would not fully support the transportation objectives of *Resilient DC*, which calls for greater integration, capacity, and frequency of regional transit systems at Union Station. As climate change-related weather events become more numerous and challenging, WUS's current infrastructure may become less and less able to withstand them, potentially leading to disruptions in service and a deterioration of passenger and visitor experience. Such potential impacts are summarized in **Table 5-44.**

Table 5-44. Potential Impacts of Climate Change

	Potential Impacts
Increasing temperatures and frequency and duration of heat waves	• Power outages due to larger demand for cooling during hot days. • Increased internal temperatures of buildings if ventilation is not adequate. • Increased stress on transmission lines, rail tracks, and critical electrical equipment. • Expanded joints or buckled rail tracks. • Increased risk of regional power loss, resulting in interruption or delay of service. • Increased risk of heat exposure and heat-related illness to construction workers, terminal employees, and passengers. • Improved safety and train services due to fewer cold days. • Reduced environmental impacts (from salt and chemicals) and costs from less need for snow and ice removal.
Increasing frequency and intensity of precipitation and extreme storm events	• Damage to facilities, disruption of operations and services due to flooding and standing water. • Flood risks near the Project due to overwhelmed stormwater/drainage systems that would impact access to the Project Site. • Damage to train and electrical equipment due to electrical voltage spikes during severe storms. • Fallen trees and debris (from high wind, ice storms, and other severe storm events), resulting in damaged rail infrastructure and terminal building. • Safety risk for outdoor workers and passengers. • Limitation of outdoor operations and maintenance services.

By 2040, WUS may experience increased temperatures, increased frequency and duration of heat waves, and increased frequency and intensity of precipitation and extreme storm events, as noted for the District in the *Climate Ready DC Plan.*[397] The District will become more vulnerable to storm surge flooding from coastal storms and hurricanes. The most intense impacts are likely to occur later than

[397] District of Columbia. *Climate Ready DC. The District of Columbia's Plan to Adapt to a Changing Climate*. Accessed from https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/CRDC-Report-FINAL-Web.pdf. Accessed on August 16, 2023.

2040, however, and the No-Action Alternative would not preclude later upgrades to improve resiliency. Therefore, adverse impacts would be moderate.

Due to its location, WUS is not likely to be directly affected by sea level rise and increased storm surge risks. The elevation of the Local Study Area ranges from approximately 50 feet near Columbus Plaza to approximately 100 feet at the northern end of the Project Area.

5.7.2.3 Construction Impacts

Construction of the projects included in the No-Action Alternative would cause CO_2 emissions. Information on methods and schedules of construction is insufficient to quantify and characterize impacts.

Projects that would be constructed through 2040 in the No-Action Alternative would generate CO_2 emissions from construction equipment and heavy machinery exhaust. Sufficient information on the total annual emissions, type of equipment, vehicles, and project schedules is not available to develop estimates.

5.7.3 Impacts of the Preferred Alternative

5.7.3.1 Direct Operational Impacts

As noted above, all GHG impacts are addressed as indirect impacts.

5.7.3.2 Indirect Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would result in moderate adverse indirect operational impacts on CO_2 emissions from mobile and stationary sources.

Stationary Source Emissions—WUS[398]

CO_2 emissions associated with the Preferred Alternative would result from the additional energy needed to operate the expanded WUS, including electricity, heat, and cooling. As estimated in **Section 5.8.3.1**, *Direct Operational Impacts*, *Buildings*, the additional energy consumption would amount to approximately 72,904,000 kBTUs per year. Based on the proportion of each energy source used at WUS under existing conditions, it can be assumed that 44 percent of this energy would be electrical; 30 percent chilled water; and 18 percent steam. Potential CO_2 emissions from the additional energy consumption would amount to approximately 9,791 metric tons per year, as shown in **Table 5-45**.

[398] Stationary sources include onsite energy-generating equipment, such as boilers, as well as offsite energy-generating plants. The stationary source emission estimates in this section were developed based on the estimates of energy consumption increases presented in **Section 5.8**, *Energy Resources*, and GHG emissions factors, not on a review of specific emission sources. These estimates provide a rough-order-of-magnitude measure of **potential** GHG emissions. They do not incorporate measures to reduce energy consumption and associated emissions.

Table 5-45. Preferred Alternative Stationary Source CO_2 Emissions - WUS

Component	Change in Energy Consumption (KBTUs/Year)	Change in Energy Consumption (MWh/Year)	CO_2 Emission Factor	Change in CO_2 Emissions (Metric Tons/Year)
WUS Electricity	31,812,242	9,321	1,177 pounds (lbs)/MWh	4,976
WUS Chilled Water	25,480,372	7,466	1,177 lbs/MWh	3,986
WUS Steam	15,611,386	--	117 lbs/1,000 kBTUs	829
Total WUS	72,904,000	--	--	9,791

Stationary Sources Emissions—Private Air Rights Development

In the Preferred Alternative, the private air rights development would be smaller than in the No-Action. As estimated in **Section 5.8.1.1,** *Direct Operational Impacts*, *Buildings*, the difference would result in a reduction in energy consumption of approximately 65,780,700 kBTUs per year. Based on DOE prototypical models for this type of development, it can be assumed that local natural gas consumption would account for approximately 23 percent of this total, or 15,129,561 kBTUs; and electricity for the remaining 77 percent, or 50,651,139 kBTUs. The associated reductions in CO_2 emissions are shown in **Table 5-46**.

Table 5-46. Preferred Alternative Stationary Source CO_2 Emissions - Private Air Rights Development

Component	Change in Energy Consumption (kBTUs/Year)	Change in Energy Consumption (MWh/Year)	CO_2 Emission Factor	Change in CO_2 Emissions (Metric Tons/Year)
Electricity	-50,651,139	-14,844	1,177 lbs/MWh	-7,925
Natural Gas	-15,129,561	--	117 lbs/1,000 kBTU	-803
Total		--	--	-8,728

Stationary Sources Emissions – Potential Federal Air Rights Development

In the preferred Alternative, the potential development of the Federal air rights area would increase annual energy consumption in the Project Area by 27,600,000 kBTUs (**Section 5.8.3.2**, *Indirect Operational Impacts*, *Potential Air Rights Development*). On the same assumptions as used for the private air rights development (23 percent natural gas, 77 percent electricity), this would generate an additional 3,661 metric tons of CO_2 per year.

Mobile Source Emissions

Mobile sources of air emissions include diesel locomotives, motor vehicles, and buses. Mesoscale analysis (see **Section 5.6.3.2**, *Indirect Operational Impacts, Mesoscale Analysis*) indicated that additional motor vehicle traffic and locomotive operations in the Preferred Alternative would emit approximately an additional 9,247 metric tons. As in the No-Action Alternative but to a greater degree, modal shift from car to rail along the Northeast Corridor in the Preferred Alternative can be anticipated to result in a reduction of GHG emissions from automobiles. The *U.S. National Blueprint for Transportation Decarbonization* notes that the transportation sector as the largest source of greenhouse gas emissions in the United States and identifies as one of three key strategies the need to improve efficiency by expanding affordable, efficient, and reliable options like public transportation and rail.[399] Additionally, in 2022, Amtrak adopted a Net Zero Strategy with a net-zero emissions goal for 2045, which can be anticipated to have reduced emissions from train operations by 2040.[400] Resulting reductions in GHG emissions would partially or wholly offset local GHG emissions associated with traffic at WUS in the Preferred Alternative.

Summary of Additional Operational CO_2 Emission Estimates

Table 5-47 shows the additional operational emissions of CO_2 from stationary and mobile sources in the Preferred Alternative. The total potential net increase in emissions would be approximately 13,971 metric tons, representing about 0.19 percent of the District's total 2019 CO_2e emission inventory and 0.3 percent of its 2032 emissions target.[401]

Table 5-47. Total Estimated Changes in Annual CO_2 Emissions in the Preferred Alternative

Source	CO_2 Emissions (Metric Tons/Year)	Percentage of 2019 Total Inventory	Percentage of 2032 Target
Stationary Sources -WUS	+9,791	0.14%	0.21%
Stationary Sources – Private Air Rights Development	-8,728	0.12%	0.19%
Potential Federal Air Rights Development	+3,661	0.05%	0.08%
Mobile Sources	+9,247	0.13%	0.20%
Total Additional Emissions	+13,971	0.19%	0.3%

[399] U.S. Department of Energy. *Fact Sheet. U.S. National Blueprint for Transportation Decarbonization*. Accessed from https://www.energy.gov/sites/default/files/2023-01/EERE_TranspoDecarb_factsheet-508_0.pdf. Accessed on August 29, 2023.

[400] Amtrak. *Net-Zero Strategy*. Accessed from https://www.amtrak.com/net-zero#diesel. Accessed on February 11, 2023.

[401] The District's 2019 CO_2e emissions amounted to 7,170,450 metric tons of CO_2e. The District has set a target of 56 percent GHG reduction relative to 2006 emissions by 2032 and carbon neutrality by 2045. The 2032 benchmark is approximately 4,614,141 metric tons of CO_2e.

The estimates presented in this section are conservative and do not account for measures that would be taken to reduce energy consumption and related emissions. Actual emissions increases would likely be substantially less, as measures consistent with the District's goal of carbon neutrality by 2045 are incorporated in Project design; Amtrak implements its Net-Zero Strategy toward a net-zero emissions goal in 2045; and increases in rail travel along the Northeast Corridor, as well as the growing popularity of electric vehicles, reduce vehicular emissions. As explained in **Section 5.5.3.1**, *Direct Operational Impacts*, *Commuter and Intercity Railroads*, the Preferred Alternative would provide intercity service to new markets and attract riders who might otherwise drive as well as provide some commuter service for longer distance commuters. Another factor likely to contribute to a decrease in CO_2 emissions is the contribution of the Preferred Alternative to creating a city that is more walkable, bikeable, and transit-accessible for both residents and visitors, resulting in a reduction in automobile VMT both locally and regionally. Therefore, any net adverse impacts would be moderate.

Resilience

Relative to the No-Action Alternative, the Preferred Alternative would have a beneficial impact on WUS's resilience.[402]

Climate change impacts are likely to increase resiliency challenges at WUS. The Preferred Alternative has the potential to result in a beneficial impact to the extent that it would provide an opportunity to improve the station's resilience. Features or measures designed to increase the resiliency of WUS would be incorporated into the design and operation of the Project to minimize the potential impacts of extreme weather events. Examples of potential resilience-enhancing measures are listed in **Table 7-1**, Item #34. They include, but are not limited to, reducing dependency on centralized power by installing renewable energy systems; considering the use of reflective roofs or green roofs to reduce urban heat island effect; and appropriate glazing for the train hall to control solar heat by season.[403]

The Preferred Alternative would also support the transportation objectives of *Resilient DC*, the District strategy to meet the challenges of climate change.[404] *Resilient DC* specifically calls for greater integration, capacity, and frequency of regional transit systems at Union Station.

5.7.3.3 Construction Impacts

Construction of the Preferred Alternative would result in moderate adverse impacts on CO_2 emissions.

Construction of the Preferred Alternative would generate CO_2 emissions from construction equipment and heavy machinery exhaust. Excavation, including the loading, transportation, and disposal of surplus soil and other materials, would require the use of large diesel-fueled equipment (such as excavators and

[402] This beneficial impact is not assigned an intensity as it would largely depend on the as-yet undefined resiliency features that would be included in the Project's final design.

[403] As noted above, the impact analysis presented in this section does not account for the effect of such measures, which will be finalized during Project design.

[404] *Resilient DC. A Strategy to Thrive in the Face of Change*. Accessed from https://resilient.dc.gov/. Accessed on October 31, 2022.

dump trailers). This would be the most CO_2 intensive part of the construction process. Support of excavation, caisson drilling, pressure slab, ramp, and overbuild deck construction would also generate substantial amounts of CO_2.

Construction emissions of CO_2 were estimated on an annual basis using the same approach as used for the analysis of air quality impacts (see **Section 5.6.3.3**, *Construction Impacts*). Construction would take place in four main phases, with a one-year intermediate phase between Phase 1 and Phase 2, during which only column removal work would occur. The emissions analysis considered two scenarios for excavation and spoil disposal: removal by trucks (All Truck Scenario, 120 trucks a day) or removal by work trains (Work Train Scenario, two work trains a day). The results of the analysis are shown in **Table 5-48.**

Table 5-48. Construction CO_2 Emissions (Metric Tons/Year) in the Preferred Alternative

Scenario	Phase 1	Intermediate	Phase 2	Phase 3	Phase 4
All Truck	20,415	6,314	18,462	12,423	20,807
Work Train	17,739	6,314	14,437	7,883	14,304

Emissions in the All Truck Scenario would be greater than in the Work Train Scenario in all phases, except the Intermediate Phase, during which no materials would be excavated and transported from the Project Area. Annual emissions would be greatest during Phase 4 for the All Truck Scenario and Phase 1 for the Work Train Scenario. The greatest annual construction emissions in the All Truck Scenario (20,807 metric tons) would constitute 0.29 percent of the District's total 2019 emissions and 0.45 percent of its 2032 emission target.[405] The greatest estimated annual construction emissions in the Work Train Scenario (17,739 metric tons) would constitute 0.25 percent of the District's total 2019 emissions and 0.38 percent of its 2032 emission target. Additionally, the creation and transportation of materials used to construct the Project would also generate GHG emissions. These emissions cannot practically be quantified because the quantity, origin, and fabrication method of the construction materials are not known. They have the potential to be substantial given the size of the Project, but steps would be taken to minimize them (see **Table 7-1**, Item #33). Based on this, and given the temporary character of construction-related emissions, adverse impacts would be moderate.

5.7.4 Summary of Impacts

Table 5-49 summarizes the impacts of the No-Action Alternative and Preferred Alternative.

[405] The District's 2019 CO_2e emissions amounted to 7,170,450 metric tons of CO_2e. The District 's 2032 target is approximately 4,614,141 metric tons of CO_2e.

Table 5-49. Summary of Impacts on GHG and Resilience

Impact Category	Type of Impact	No-Action Alternative	Preferred Alternative
GHG	**Direct Operational**	Not applicable	Not applicable
	Indirect Operational	Moderate adverse impact	Moderate adverse impact
	Construction	Undetermined	Moderate adverse impact
Resilience	-	Moderate adverse impact	Beneficial Impact

5.8 Energy Resources

This section addresses the potential impacts of the No-Action Alternative and Preferred Alternative on the use of energy resources. The analysis focuses on the amount of energy that would be consumed by WUS and other land uses within the Project Area.

5.8.1 Methodology

5.8.1.1 Operational Impacts

Potential impacts on energy resources were assessed by estimating the energy demand that would be generated by the larger WUS and other buildings in the Project Area as well as by increased rail operations at WUS and WUS associated traffic.

For WUS and other buildings (private and Federal air right development), rough-order-of-magnitude estimates of future on-site energy use, measured in kBTUs,[406] were calculated by multiplying the square footage of new building by median 2021 Energy Use Intensity (EUI) measures provided by the U.S. Federal Government's Energy Star Program. [407] EUI is expressed as energy per square foot per year. It is calculated by dividing the total energy consumed by a building in one year by the total gross floor area of the building. There are different EUIs for different types of building spaces. The impact analysis used the EUIs best applicable to the facilities or land uses included in each alternative. The estimates should be considered as conservative, as actual energy consumption would be reduced through the

[406] As noted above, a kBTU is one thousand BTU. A BTU is "a measure of the heat content of fuels or energy sources." Specifically, it is the quantity of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature that water has its greatest density (approximately 39 degrees Fahrenheit).

[407] Values derived from Energy Star Portfolio Manager. April 2021. *Technical Reference. U.S. Energy Use Intensity by Property Type*. Accessed from https://portfoliomanager.energystar.gov/pdf/reference/US%20National%20Median%20Table.pdf. Accessed on October 25, 2022. Energy Star Portfolio Manager. August 2018. *Technical Reference. Parking and the Energy Star Score in the United States and Canada*. Accessed from https://www.energystar.gov/sites/default/files/tools/Parking_August_2018_EN_508.pdf. Accessed on October 25, 2022.

incorporation of energy saving measures in the design of the facilities or buildings, which could include programmable and learning thermostats; energy management systems that react to utility price signals and energy demand in the region; and light motion sensors and dimmers. To provide a measure against which the intensity of the resulting impacts could be assessed, estimated energy uses were compared to the District's total energy consumption in 2021 (151 billion kBTUs).[408]

For rail and traffic operations, rough-order-of-magnitude energy consumption was estimated in gallons of diesel or gasoline fuel. The estimates were derived from the modeled CO_2 emissions (see **Section 5.7**, *Greenhouse Gas Emissions and Resilience*) using conversion factors available from the EPA. For rail, the factor is 10.21 kilograms (kg) of CO_2 for one gallon of diesel. For automobiles, it is 8.78 kg of CO_2 for one gallon of gasoline.[409] To provide a measure against which the intensity of the resulting impacts could be assessed, increases in estimated fuel use was compared to the annual U.S. production of diesel fuel in 2021 (approximately 68 billion gallons), the daily U.S. consumption of gasoline in 2022 (368,634,000 gallons), and the District's daily motor gasoline consumption in 2021 (approximately 178,200 gallons).[410,411,412]

5.8.1.2 Construction Impacts

Construction-related energy consumption would be mostly in the form of diesel fuel consumption for construction equipment and vehicles. It was estimated using the same methodology as for operational impacts.

5.8.2 Impacts of the No-Action Alternative

5.8.2.1 Direct Operational Impacts

Relative to existing conditions, the No-Action Alternative would have a minor adverse direct operational impact on energy resources.

In the No-Action Alternative, energy consumption at WUS would remain approximately the same as under existing conditions because the station would not undergo any major physical expansion. Existing

[408] U.S. Energy Information Administration. *District of Columbia Energy Profile*. Accessed from https://www.eia.gov/state/print.php?sid=DC. Accessed on August 13, 2023.

[409] U.S. Environmental Protect Agency. 2022. *Emission Factors for Greenhouse Gas Inventories*. Accessed from https://www.epa.gov/system/files/documents/2022-04/ghg_emission_factors_hub.pdf. Accessed on January 21, 2023.

[410] U.S. Energy Information Administration. *Diesel Fuel Explained. Where our Diesel Comes from*. Accessed from https://www.eia.gov/energyexplained/diesel-fuel/where-our-diesel-comes-from.php#:~:text=In%202021%2C%20U.S.%20refineries%20produced,barrels%20(59.82%20billion%20gallons). Accessed on January 21, 2023.

[411] U.S. Energy Information Administration. *U.S. Product Supplied of Finished Motor Gasoline*. Accessed from https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=mgfupus2&f=a. Accessed on January 21, 2023.

[412] U.S. Energy Information Administration. *Petroleum & Other Liquids, Prime Supplier Sales Volumes of Motor Gasoline by State*. Accessed from https://www.eia.gov/dnav/pet/pet_cons_prim_a_EPM0_P00_Mgalpd_a.htm. Accessed on September 22, 2023.

consumption may decrease between now and 2040 due to the greater energy-efficiency of upgraded heat, ventilation, and air conditioning systems; lighting fixtures; and other equipment.

Therefore, the primary source of additional energy consumption in the Project Area would be the private air rights development and increased rail operations.

Private Air Rights Development

Table 5-50 shows an estimate of the annual energy use of the private air rights development. Altogether, the on-site energy use of the private air rights development would be approximately 264 million kBTUs per year.

Table 5-50. Estimated Annual Energy Use of Private Air Rights Development in the No-Action Alternative

Use	Square Footage	EUI Category	EUI kBTUs/Square Foot/Year	Estimated Annual Use (kBTUs)
Residential	+1,050,000	Multi-family housing	59.6	+62,580,000
Office	+2,160,000	Office	52.9	+114,264,000
Retail	+120,000	Retail Store	51.4	+6,168,000
Hotel	+410,000	Hotel	63	+25,830,000
Total	3,740,000			+208,842,000

The private air rights development in the No-Action Alternative would result in an increase in energy consumption in the Project Area of approximately 208,842,000 kBTUs a year. This would amount to approximately 0.14 percent of the District's total energy consumption in 2021 (151 billion kBTUs). The additional consumption is not likely to create capacity issues or to require the development of a dedicated energy source. The additional electrical load from the private air rights development may require a new substation.[413,414] The new substation is likely to increase the electrical load on the local distribution system and could result in other necessary upgrades to ensure stable and reliable delivery of electricity to local customers. Such upgrades are typical for development projects of this size. Adverse impacts would be minor.

Rail Activity

In the No-Action Alternative, increases in rail activity would occur at WUS. Based on the modeling of annual CO_2 emissions and a factor of 10.21 kg of CO_2 per gallon of diesel fuel, the associated additional energy consumption from rail activity can be estimated to be approximately 96,964 gallons of diesel fuel per year (**Table 5-51**). In 2021, U.S. refineries produced more than 68 billion gallons of diesel fuel. The

[413] A substation is a set of equipment that reduces the high voltage of electrical power transmission to levels suitable for supply to consumers.

[414] Shalom Baranes Associates. 2015. *Washington Union Station: Concept Feasibility Review Report (Draft Submittal).*

additional consumption associated with the No-Action Alternative is not likely to create shortages or supply issues. The impact would be minor.

Table 5-51. Estimated Additional Annual Diesel Consumption from Rail Operations in the No-Action Alternative

	CO_2 Emissions (Metric Tons)	Diesel Fuel Consumption (Gallons)
No-Action Alternative Total	4,226	413,908
Existing Conditions Total	3,236	316,944
Increase in the No-Action Alternative	990	96,964

5.8.2.2 Indirect Operational Impacts

Relative to existing conditions, the No-Action Alternative would have no indirect operational impacts on energy resources.

The only source of indirect impacts in the No-Action Alternative would be gasoline usage by WUS associated traffic outside the Project Area.

Automobile Traffic

In the No-Action Alternative, increases in traffic around WUS would occur. Based on the modeling of annual CO_2 emissions presented in **Section 5.7.2.2**, *Indirect Operational Impacts, Mobile Source Emissions,* there would be no significant change in gasoline consumption once the anticipated effect of new regulations and improved technology in vehicles are factored in (**Table 5-52**).

Table 5-52. Estimated Change in Annual Gasoline Consumption in the No-Action Alternative

	CO_2 Emissions (Metric Tons)	Diesel Fuel Consumption[1] (Gallons)
No-Action Alternative Total	27,058	3,081,777
Existing Conditions Total	27,119	3,088,724
Change in the No-Action Alternative	-61	-6,947

1. 1. One gallon for 8.78 kg of CO_2. [415]

5.8.2.3 Construction Impacts

Construction of the projects included in the No-Action Alternative would result in minor adverse impacts on energy resources.

[415] U.S. Environmental Protect Agency. 2022. *Emission Factors for Greenhouse Gas Inventories*. Accessed from https://www.epa.gov/system/files/documents/2022-04/ghg_emission_factors_hub.pdf. Accessed on January 21, 2023.

In the No-Action Alternative, the Project would not be constructed and there would be no energy-related impacts. The construction of other projects in the Project Area through 2040 would consume varying amounts of energy depending on the scale and duration of the construction activities. While it is not possible to develop a quantitative estimate, this consumption would be a minor adverse impact for the following reasons.

The projects included in the No-Action Alternative are of a type and size that are not unusual in a large city like the District. Even the largest one – the development of the private air rights – is similar in scale and nature, for instance, to the recent development of the air rights above Interstate 95, a short distance from WUS. While the construction of such projects requires large amounts of energy, mostly in the form of diesel fuel for construction vehicles and equipment, the demand they generate is not such that it can create shortages or capacity issues for energy suppliers. Additionally, the projects would be implemented at different times and on different schedules, spreading the associated energy consumption over up to two decades.

5.8.3 Impacts of the Preferred Alternative

5.8.3.1 Direct Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse direct operational impact on energy resources.

Direct impacts are those that would occur because of additional energy consumption in the Project Area. They include changes in the energy needed to operate buildings and facilities; and changes associated with increases in rail operations.

Buildings

WUS

In the Preferred Alternative, relative to the No-Action Alternative, the expanded WUS would consume additional energy to operate the new or expanded station elements. **Table 5-53** provides high-level, order-of-magnitude estimates of the increases in site energy consumption that would result, based on approximate square footage changes and EUI factors. Altogether, the station expansion would result in an increase in energy consumption of approximately 72,904,000 kBTUs per year.

Private Air Right Development

In the Preferred Alternative, the private air rights development would be smaller than in the No-Action Alternative. Therefore, the Preferred Alternative would result in a reduction in energy use by this development. **Table 5-53** below provides a high-level, order-of-magnitude estimate of this reduction, which would amount to approximately 65,780,700 kBTUs per year.

Net Change

The Preferred Alternative would result in a net increase in building-related energy consumption of approximately 7,123,300 kBTUs a year. This would be an increase of approximately 2.3 percent relative

to Project Area's consumption in the No-Action Alternative (approximately 312,342,000 kBTUs[416]) and would amount to approximately 0.005 percent of the District's total energy consumption in 2021 (151 billion kBTUs).[417] Total estimated consumption in the Preferred Alternative (approximately 319,465,300 kBTUs) would be around 0.2 percent of the District's 2021 consumption.

The additional consumption is not likely to create capacity issues or to require the development of a dedicated energy source. The Project would likely require upgrades to local distribution and transmission energy systems (including electricity and steam). Such changes would be planned and designed in coordination with the affected utilities. These upgrades are not likely to be beyond what is commonly required by large-scale development projects in the District.

Table 5-53. Estimated Change in Annual Energy Use in the Preferred Alternative

Location	Element	Approximate Additional Square Footage	EUI Category	EUI kBTUs/Square Foot/Year	Estimated Annual Use (kBTUs)
WUS	**Retail**	+64,000	Retail (Enclosed Mall)	65.7	+4,204,800
	Amtrak and other Support Space	+880,000	Transportation Terminal/Station	56.2	+49,456,000
	Train Hall/Concourse Space	+380,000	Transportation Terminal/Station	56.2	+21,356,000
	Parking	+586,000	Parking (enclosed)	11.4	+6,680,400
	Bus Facility	+122,000	Parking (partially enclosed)	8.9	+1,085,800
	Existing Parking	-1,110,000	Parking (partially enclosed)	8.9	-9,879,000
	Subtotal				+72,904,000
Private Air Rights Development	**Residential**	-70,750	Multi-family Housing	59.6	-4,216,700
	Office	-1,100,000	Office	52.9	-58,190,000
	Retail	-35,000	Retail Store	51.4	-1,799,000
	Hotel	-25,000	Hotel	63	-1,575,000
	Subtotal				-65,780,700
Total					**+7,123,300**

[416] Based on an existing baseline annual consumption of approximately 103.5 million kBTUs.

[417] U.S. Energy Information Administration. *District of Columbia Energy Profile*. Accessed from https://www.eia.gov/state/print.php?sid=DC. Accessed on October 25, 2022.

Rail Activity

Relative to the No-Action Alternative, increases in rail activity would occur at WUS in the Preferred Alternative. Based on the modeling of annual CO_2 emissions presented in **Section 5.7.3.2**, *Indirect Operational Impacts*, *Mobile Source Emissions*, and a factor of 10.21 kg of CO_2 per gallon of diesel fuel, the associated additional energy consumption from rail activity can be estimated to be approximately 600,881 gallons of diesel fuel per year (**Table 5-54**).

Table 5-54. Estimated Additional Annual Diesel Consumption from Rail Operations in the Preferred Alternative

	CO_2 Emissions (Metric Tons)	Diesel Fuel Consumption (Gallons)[1]
Preferred Alternative Total	10,361	1,014,789
No-Action Alternative Total	4,226	413,908
Increase Attributable to the Preferred Alternative	6,135	600,881

This would represent an increase of 145 percent relative to the No-Action Alternative. In 2021, U.S. refineries produced more than 68 billion gallons of diesel fuel. The additional consumption associated with the Preferred Alternative is not likely to create shortages or supply issues. The impact would be minor.

5.8.3.2 Indirect Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse indirect operational impact on energy resources.

Indirect impacts are those that would occur because of additional energy consumption from the potential development of the Federal air rights or from WUS-generated traffic, which would occur mostly outside the Project Area.

Potential Federal Air Rights Development

The potential development of the Federal air rights under the Preferred Alternative would result in a further increase in energy consumption in the Project Area. As shown in **Table 5-55**, the potential Federal air rights development in the Preferred Alternative would increase energy consumption in the Project Area by approximately 27,600,000 kBTUs. This would represent an increase of around 9 percent over the No-Action Alternative. It would amount to approximately 0.02 percent of the District's total energy consumption in 2021. As such, the impact would be minor.

Table 5-55. Estimated Annual Energy Use of Potential Federal Air-rights Development in the Preferred Alternative

Use	Square Footage	EUI Category	EUI kBTUs/Square Foot/Year	Estimated Annual Use (kBTUs)
Residential	175,000	Multi-family Housing	59.6	10,430,000
Office	310,000	Office	52.9	16,399,000
Retail	15,000	Retail Store	51.4	771,000
Total				**27,600,000**

Automobile Traffic

Relative to the No-Action Alternative, increases in traffic around WUS would occur in the Preferred Alternative (see **Section 5.5.3.1**, *Direct Operational Impacts*, *Vehicular Traffic*). Based on the modeling of annual CO_2 emissions presented in **Section 5.7.3.2**, *Indirect Operational Impacts*, *Mobile Source Emissions,* and a factor of 8.78 kg of CO_2 per gallon of gasoline fuel, the resulting additional energy consumption from WUS-related traffic can be estimated to be approximately 354,328 gallons of gasoline per year (**Table 5-56**).

Table 5-56. Estimated Increase in Annual Gasoline Consumption from WUS-Related Traffic in the Preferred Alternative

	CO_2 Emissions (Metric Tons)	Gasoline Consumption (Gallons)[1]
Preferred Alternative Total	30,169	3,436,105
No-Action Alternative Total	27,058	3,081,777
Increase Attributable to the Preferred Alternative	3,111	354,328

It would be an increase of 11 percent relative to the No-Action Alternative. In 2022, the United States' consumption of gasoline was approximately 368,634,000 per day. In 2021, the District's motor gasoline consumption was approximately 178,200 gallons per day. The additional consumption associated with the Preferred Alternative is not likely to create shortages or supply issues. The impact would be minor.

5.8.3.3 Construction Impacts

Construction of the Preferred Alternative would result in minor adverse impacts on energy resources.

Construction of the Preferred Alternative would consume energy, mostly in the form of diesel fuel used for construction vehicles and equipment. An order-of-magnitude estimate of construction fuel consumption can be derived from the estimates of CO_2 emissions presented in **Section 5.7.3**,

Construction Impacts, as shown in **Table 5-57** for both the All Truck and the Work Train Scenarios for each construction phase.

Table 5-57. Estimated Annual Diesel Consumption per Construction Phase

	Phase 1	Intermediate phase	Phase 2	Phase 3	Phase 4
All Truck Scenario					
CO_2 Emissions (Metric Tons)	20,415	6,314	18,462	12,423	20,807
Diesel Fuel Consumption (Gallons)	1,999,510	618,413	1,808,227	1,216,748	2,037,904
Work Train Scenario					
CO_2 Emissions (Metric Tons)	17,739	6,314	14,437	7,883	14,304
Diesel Fuel Consumption (Gallons)	1,737,414	618,413	1,414,006	772,086	1,400,979

Energy consumption in the All Truck Scenario would be greater than in the Work Train Scenario during all construction phases except the Intermediate Phase, during which no materials would need to be excavated and transported from the Project Area. Consumption would be greatest during Phase 4 for the All Truck Scenario (more than 2 million gallons) and Phase 1 for the Work Train Scenario (approximately 1.7 million gallons). As noted above, in 2021, U.S. refineries produced more than 68 billion gallons of diesel fuel. The additional consumption associated with the construction of the Preferred Alternative is not likely to create supply issues. Impacts would be minor.

5.8.4 Summary of Impacts

Table 5-58 and **Table 5-59** summarize the energy resources impacts of the No-Action Alternative and Preferred Alternative.

Table 5-58. Summary of Impacts on Energy

Type of Impact	No-Action Alternative	Preferred Alternative
Direct Operational	Minor adverse impact	Minor adverse impact
Indirect Operational	No impact	Minor adverse impact
Construction	Minor adverse impact	Minor adverse impact

Table 5-59. Quantitative Estimates of Direct and Indirect Energy Impacts (kBTUs per Year)

Location	No-Action Alternative Additional Consumption	No-Action Alternative Total Consumption	Preferred Alternative Additional Consumption	Preferred Alternative Total Consumption
WUS	-	103,500,000	+72,904,000 (+70%)	176,404,000
Private Air Rights Development	+208,842,000	208,842,000	-65,780,700 (-31%)	143,061,300
Potential Federal Air Rights Development	-	-	+27,600,000	27,600,000
Total	+208,842,000 (+202%)	312,342,000	+34,723,300 (+11%)	347,065,300

5.9 Land Use, Land Planning, and Property

This section addresses the potential impacts of the No-Action Alternative and Preferred Alternative on land use and zoning, private property, and applicable local and regional plans and policies.

5.9.1 Methodology

5.9.1.1 Operational Impacts

Impacts on land use were determined by comparing the elements of the alternatives with the designated land use of the parcels comprising the Project Area. Impacts within the Project Area to property ownership, land acquisitions, and displacements were assessed by identifying the need for property acquisition as required for project implementation, including air rights property. The alternatives' impacts on local and regional plans were determined by considering the consistency of the Project program and elements with the relevant goals of the plans. Potential indirect impacts such as induced development, changes in development patterns, or increased rates of development outside the Project Area are described qualitatively.

Federal buildings are not subject to local zoning.[418] Federal development in the District is subject to review and approval by the National Capital Planning Commission (NCPC) as the zoning authority for Federal land. FRA has determined that it is reasonably foreseeable that the Federal air rights area would be rezoned to match the District's Union Station North (USN) zoning designation that applies to the adjacent private air rights. Development consistent with USN zoning was assumed for the Federal air rights.

[418] Code of the District of Columbia. *Subchapter IV. Zoning Regulations; Board of Zoning Adjustment*. Accessed from https://code.dccouncil.gov/us/dc/council/code/sections/6-641.15. Accessed on August 25, 2023.

Current Production, Distribution, and Repair (PDR)-3 zoning limits overall building height to 90 feet above existing grade; does not allow residential uses; and would be unlikely to support a consistent pattern of development on either side of the historic station building. The USN zone permits greater heights and a mix of uses but sets forth a mandatory design review process by the District Zoning Commission. Currently, USN zoning allows development to a maximum height of up to 130 feet above the crest of the H Street Bridge with a 20-foot height step down to 110 feet within 300 feet of the historic station building and another 20-foot height step down to 90 feet within 150 feet of it. Greater heights are possible in the 100-foot and 90-foot areas if permitted by the District Zoning Commission.

5.9.1.2 Construction Impacts

Impacts from construction were evaluated based on whether construction activities would cause inconsistencies with, or modifications or delays to, existing or planned land uses and developments in the Local Study Area that are distinct from potential operational impacts.

5.9.2 Impacts of the No-Action Alternative

5.9.2.1 Direct Operational Impacts

Zoning, Land Use, and Development

Relative to existing conditions, the No-Action Alternative would have a major beneficial direct operational impact on land use and development. It would have no direct operational impact on zoning.

The projects included in the No-Action Alternative would be consistent with existing zoning and, as such, would have no impact on zoning. The various station and track improvements in this alternative would be consistent with PDR-3 zoning. The private air rights development would be within what the USN zoning district allows. There would be no need for a zoning amendment.

The various projects included in the No-Action Alternative would moderately enhance WUS as a multi-modal transportation hub. Additionally, the private air rights development would result in denser and more varied land uses within the Project Area. This would have a major beneficial impact on land use, as it would create a new mixed-use development consistent with zoning and land use plans that would bridge the gap created by the existing rail terminal in the local urban fabric. The No-Action Alternative would be compatible with the District's Comprehensive Plan's Future Land Use Map (FLUM).[419] The FLUM is the governing planning document for the long-range buildout of the District. It provides a generalized view of how the District intends to use its land. For the Project Area and its immediate surroundings, the FLUM shows a mix of Federal, High Density Commercial, and Medium to High Density residential.

[419] District of Columbia Office of Planning. 2021b. *Comprehensive Plan – Future Land Use Map.* Accessed from https://planning.dc.gov/sites/default/files/dc/sites/op/publication/attachments/LU_62821.pdf. Accessed on January 16, 2023.

Despite the beneficial impact on land use in the Project Area, the No-Action Alternative would see a marked deterioration of WUS user experience. The number of visitors and travelers would increase substantially. While the improvement projects included in the No-Action Alternative, such as the Concourse Modernization Project, would contribute to improving circulation conditions, they would not be sufficient to prevent increasing congestion in the station. Overcrowding would exacerbate those existing shortcomings that the No-Action Alternative would leave unaddressed (for instance narrow platforms), making boarding and alighting from trains more difficult. While the historic station building would continue to be the center and heart of WUS, congested conditions would keep many visitors and travelers from fully appreciating and enjoying its grand architecture.

Property Ownership, Land Acquisitions, and Displacements

Relative to existing conditions, the No-Action Alternative would have a minor adverse direct operational impact pertaining to property ownership, land acquisitions, or displacements.

With one exception, the projects in the No-Action Alternative would entirely occur within areas already owned or controlled by the respective project proponents. The exception is the private air rights development. North of the H Street Bridge and south of the bridge above the stub-end tracks, the lower limit (vertical datum) of the private air rights stands at elevation 80 feet. South of the H Street Bridge, there would be insufficient vertical space to accommodate the full depth of a structural deck as proposed by the private air rights developer without encroaching into Federal property.[420] A similar encroachment would occur within Amtrak property north of the H Street Bridge. Therefore, construction of this portion of the private air rights deck would require property agreements with the Federal government and Amtrak. The property used would consist only of air rights unneeded by their current owner; therefore, the impact would be minor.

Within the portion of the private air rights where the vertical datum is at 70 feet (southeast of the H Street Bridge above the run-through tracks), there would be sufficient vertical space to construct the structural deck and associated systems within the private air rights.

Consistency with Local and Regional Plans

Relative to existing conditions, the No-Action Alternative would have minor adverse direct operational impacts on most local and regional plans.

As shown in **Table 5-60**, the No-Action Alternative would fail to fully support the relevant goals of most plans, resulting in adverse impacts. These impacts would be minor because the No-Action Alternative would not preclude achieving all or most of the plans' goals.

[420] Akridge. November 15, 2017. *Burnham Place and Washington Union Station. Concept Level Podium Structural Systems for 30'x55' Column Grid Areas*.

Table 5-60. Impacts of the No-Action Alternative on Community Planning

Summary Description of Relevant Elements or Goals	Assessment
Comprehensive Plan for the National Capital-Federal Elements	
Transportation. "Develop and maintain a multimodal regional transportation system that meets the travel needs of workers, residents, and visitors while improving regional mobility, accessibility, air quality, and environmental quality through expanded transportation alternatives and transit-oriented development."	The No-Action Alternative would not support this goal. WUS would not fully meet the needs of workers, residents, and visitors and it would constrain the future expansion of transportation alternatives and transit-oriented development.
Urban Design. "Promote quality design and development in the region that reinforces its unique role as the nation's capital and creates a welcoming and livable environment for people."	The No-Action Alternative would not support this goal. With the exception of the Concourse Modernization, the No-Action Alternative would leave WUS unchanged, but conditions for users would still degrade due to constrained operations and greater crowding.
Historic Preservation. "Preserve, protect, and rehabilitate historic properties in the National Capital Region and promote design and development that is respectful of the guiding principles established by the Plan of the City of Washington and the symbolic character of the capital's setting."	The No-Action Alternative would be consistent with this goal. USRC would continue to preserve and protect the historic station building.
Visitors & Commemoration. "Provide a positive and memorable experience for all visitors to the National Capital Region in a way that showcases the institutions of American culture and democracy, supports planning goals, and enhances activities that are unique to visiting the nation's capital."	The No-Action Alternative would not support this goal. With the exception of the Concourse Modernization, the No-Action Alternative would leave WUS unchanged, but it would still result in worse conditions for users and visitors due to constrained operations and greater crowding.
Comprehensive Plan for the National Capital-District Elements	
Transportation. "Create a safe, sustainable, efficient multimodal transportation system that meets the access and mobility needs of District residents, the regional workforce, and visitors; supports local and regional economic prosperity; and enhances the quality of life for District residents."	The No-Action Alternative would not support this goal. WUS would not fully meet the access and mobility needs of District residents, the regional work force, or visitors as it would constrain the future expansion of multimodal transportation at WUS.
Land Use. Ensure the efficient use of land resources to meet long-term neighborhood, citywide, and regional needs; to help foster other District goals; to protect the health, safety, and welfare of District residents, institutions, and businesses; to sustain, restore, or improve the character, affordability, and equity of neighborhoods in all parts of the city; to provide for additional housing and employment opportunities, and to effectively balance the competing demands for land to support a growing population and the many activities that take place within Washington, DC's boundaries."	The No-Action Alternative would not support this goal. By not expanding US, it would not make an efficient use of land resources to meet neighborhood, citywide, and regional needs.

Summary Description of Relevant Elements or Goals	Assessment
Central Washington. "Central Washington is comprised of 6.8 square miles of land that include the "monumental core" of the city, with such landmarks as the U.S. Capitol and White House, the Washington Monument and Lincoln Memorial, the Federal Triangle and Smithsonian Museums. Planning for this area is done collaboratively with the Federal government, with the National Capital Planning Commission having land use authority over federal lands. Central Washington includes the city's traditional Downtown and other employment centers, it includes Gallery Place and Penn Quarter, the region's entertainment and cultural center, and recently emerging neighborhoods like Mount Vernon Triangle and NoMa […]. As the center of employment in the region, 475,531 people are employed within its boundaries and most commute to the area for its jobs. […]."	WUS is located in the Central Washington planning area and provides a direct local, regional, and national connection to the area. By not expanding and enhancing the station, the No-Action Alternative would fail to facilitate multimodal access to the central area and foster its continued growth and development.
Historic Preservation. "Preserve and enhance the unique cultural heritage, beauty, and identity of the District of Columbia by respecting the historic physical form of the city and the enduring value of its historic structures and places, sharing responsibility for their protection and stewardship, and through planning leadership, ensuring their perpetuation for the benefit of the citizens of the District and the nation."	The No-Action Alternative would be consistent with this goal. USRC would continue to preserve and protect the historic station building.
H Street Strategic Development Plan (2003)	
The *H Street NE Strategic Development Plan* calls for the strengthening of the connection between WUS and the H Street corridor, activation of the streetscape on the H Street Bridge, increased commercial office space, and for the area to serve as a multimodal center.	The No-Action Alternative would not support the plan's connectivity goals to provide new connections between H Street NE and WUS and would constrain WUS's growth as a multimodal center.
NoMA Vision Plan and Development Strategy (2006)	
The *NoMA Vision Plan and Development Strategy* calls for the pursuit of "a balanced approach to transportation, creating a pedestrian-friendly neighborhood with improved transit accessibility. The long-term future of NoMA is dependent on transportation and utility infrastructure demands keeping pace with proposed development. This plan signals the need for multi-agency coordination and a holistic approach to transportation and infrastructure investment that addresses future needs with the most sustainable environmental practices."	The No-Action Alternative would not support the NoMA Vision Plan and Development Strategy's connectivity goals. Connectivity between WUS and the surrounding area would remain limited and external as well as internal pedestrian circulation would deteriorate due to increased crowding. It would constrain WUS's function as a multimodal center capable of fully accommodating future demands.

Summary Description of Relevant Elements or Goals	Assessment
Northwest One Redevelopment Plan (2006)	
The Northwest One Redevelopment Plan makes recommendations to create a vibrant, mixed-income community with a new public school, recreation center, playing fields and parks, health clinic and neighborhood library. The plan also calls for the reconfiguration of some streets, including "extending" K Street to link the neighborhood to those east and west of it to increase connectivity and safety and alleviate congestion.	The No-Action Alternative would not support the Northwest One Redevelopment Plan's connectivity goals, including creating better connections between areas to the east and west of North Capitol Street and WUS.
Downtown East Re-urbanization Strategy (2019)	
Vision goals guiding the strategy include making Downtown East connected and accessible via physical connections, including an emphasis on WUS and its connectivity to surrounding neighborhoods and improving access to all modes of transportation to and through the area, among others. The planned expansion of WUS was one factor that prompted the District to develop the Strategy.	The No-Action Alternative would not support the Strategy's connectivity goals, including creating better connections between the neighborhoods surrounding WUS. It would fail to implement several recommendations of the Strategy, including providing access to WUS from all sides; streamlining transfer between modes of transit; and supporting rail investment.
Move DC 2021	
Move DC 2021 provides an overarching framework of goals and policies that will guide transportation decisions in the District over a 25-year period. It identifies a series of strategies to achieve the goals and policies, and tools to identify needs and priorities for different modes of transportation. Move DC 2021 defines a set of 18 policies and 41 strategies to achieve goals pertaining to safety, equity, mobility, project delivery, management and operations, sustainability, and enjoyable spaces.	The No-Action Alternative, by constraining WUS's function as a multimodal transportation center, would not support the goals of Move DC.
Mount Vernon Triangle Action Agenda (2003), Florida Avenue Market Small Area Plan (2009), and Ward 5 Works (2014)	
The *Mount Vernon Triangle Action Agenda* calls for the enhancement of retail, hotel, recreation, nonprofit, and cultural uses along lively street corridors. The *Florida Avenue Market Small Area Plan* focused on developing a 40-acres area near the intersection of Florida and New York Avenues, north of WUS, into a pedestrian-oriented mix of commercial and residential uses. *Ward 5 Works* is a strategy to transform 1,000 acres of industrial land in Ward 5 north of WUS into a hub of green, food, tech and creative businesses that creates jobs, community amenities and better environmental performance for District residents.	These plans focus on areas that are not immediately adjacent to WUS but can be potentially affected by activities and actions at the station. In general, the No-Action Alternative would not support, but neither would it substantially impede, the goals of these plans.

5.9.2.2 Indirect Operational Impacts

Relative to existing conditions, the No-Action Alternative would have no adverse indirect operational impacts on zoning, land use, or development; property ownership, land acquisitions, and displacement; or local and regional plans.

The development of the private air rights in the Project Area may encourage or accelerate further medium- or high-density development in the H Street Corridor, which currently is comprised of a high-activity street (H Street NE) surrounded by moderate-density residential neighborhoods, and throughout Capitol Hill, where row houses predominate. Land use in the other neighborhoods within the Local and Regional Study Areas, such as Mount Vernon Triangle and NoMA, is already characterized by medium- and high-density development. Everywhere, zoning regulations and applicable plans would continue to guide the density and character of future developments. This would avoid incompatible land uses and ensure that neighborhoods evolve in accordance with the District's vision for their respective futures.

5.9.2.3 Construction Impacts

Construction activities in the No-Action Alternative would result in minor adverse impacts on land use and no impacts on zoning or development; property ownership, land acquisitions, and displacement; or local and regional plans.

In the No-Action Alternative, the Project would not be constructed and would have no construction impacts. Construction of the various projects included in the No-Action Alternative would result in no more than minor adverse impacts on land use. The largest of these projects - the private air rights development, the replacement of the H Street Bridge, and the VRE MRSF - would take place within the footprint of the rail terminal and have the potential to affect its operations. Amtrak must authorize work in the rail terminal. The permitting process would ensure that any impacts to rail operations are minimized.

While construction activities and staging areas would likely remain within the respective footprints of the projects, the noise, pollution, or transportation disruptions typically associated with construction activities in a dense urban environment would affect adjacent land uses. However, these impacts, which would be typical of medium to large construction projects, are not likely to create durable incompatibilities that would prevent adjacent facilities and buildings from continuing to operate or forcing them to relocate.

5.9.3 Impacts of the Preferred Alternative

5.9.3.1 Direct Operational Impacts

Zoning, Land Use, and Development

Relative to the No-Action Alternative, the Preferred Alternative would have no direct operational impact on zoning. It would have a major beneficial direct operational impact on land use and development.

The Preferred Alternative would not affect zoning. Federal buildings and facilities, such as WUS, are not subject to local zoning. Federal development in the District is subject to review and approval by NCPC as the zoning authority. The Preferred Alternative would be subject to review and approval by NCPC. Above-ground Project elements in the Preferred Alternative would be consistent with the height limits set by the USN zoning designation, which applies to the adjacent private air rights and is anticipated to apply to the potential Federal air rights. In the Preferred Alternative, the tallest element would be the new train hall, with an elevation of 55 feet above the high point H Street NE, approximately 40 feet lower than the historic station's roof vault. This height is also compatible with the PDR-3 zoning designation, currently applying to the Federal air rights parcel.

The Preferred Alternative would have a major beneficial impact on land use by enhancing multimodal transportation uses and connectivity within the Project Area. The Preferred Alternative would provide a more accessible and modernized multimodal facility capable of accommodating more passengers and more train and bus service than in the No-Action Alternative. It would make efficient use of a highly constrained area by keeping all WUS-related uses close together south of the H Street Bridge. The Preferred Alternative would also benefit the surrounding neighborhoods by creating new connections between the areas on either side of the rail terminal. It would be compatible with the FLUM.

This beneficial impact on land use would translate into an improvement in WUS user experience relative to the No-Action Alternative. New access points from First, Second, and H Streets NE into the H Street Concourse would make it easier to enter WUS from the surrounding neighborhoods as well as provide connectivity and continuity from First Street to Second Street. Retail in the new concourses could potentially become a destination for local residents, as well as tourists. The historic station building would remain the heart of the station and its most visible and inviting entrance. The additional concourse space and access points would alleviate congestion, especially during peak travel times, making it easier for passengers and visitors to appreciate and enjoy the grand architecture of the historic station. The new train hall would be designed to be a monumental, compelling gateway space worthy of welcoming visitors and travelers to the nation's capital. Areas of architectural interest would extend past the historic station building to encompass part of the track and platform area. In combination with enhanced accessibility through wider platforms, full compliance with ADA requirements, effective signage, more spacious waiting areas, and greater amounts of natural light, this would make boarding or alighting from trains at WUS a much easier and more enjoyable experience than would be the case in the No-Action Alternative.

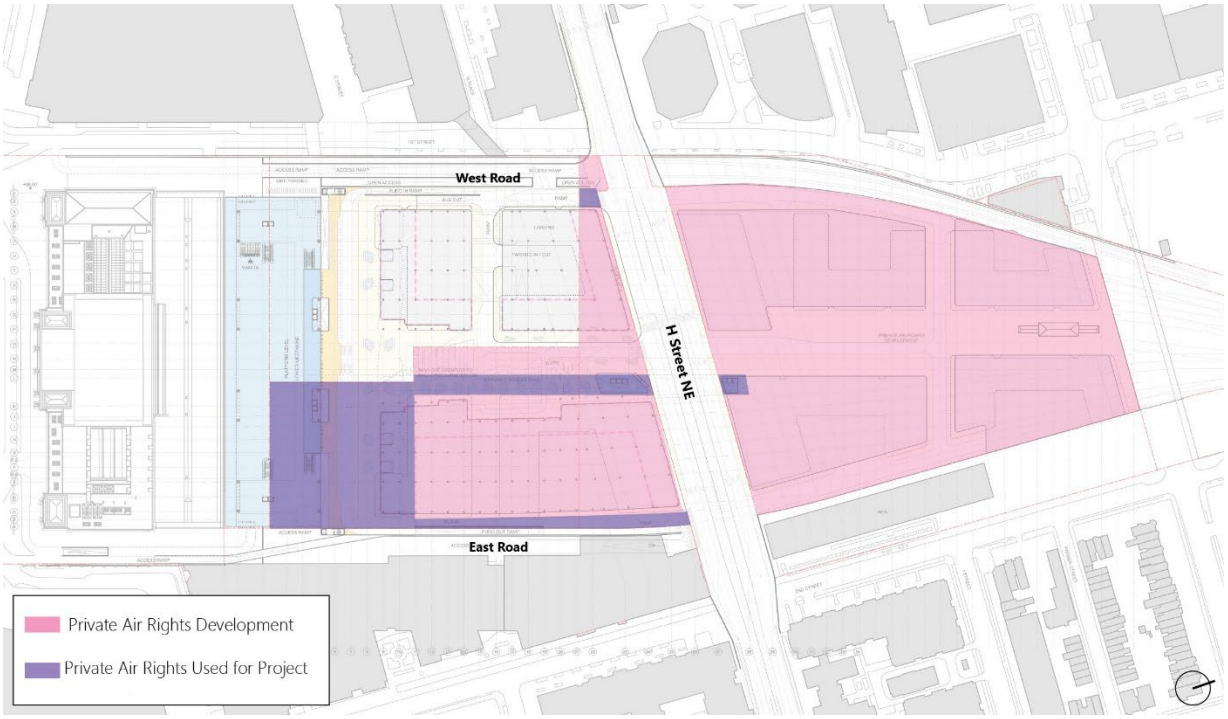
Similarly, intercity bus passengers would enjoy the benefits of a contemporary, purpose-built facility with better amenities and a direct functional and visual integration with the remainder of the station, including the historic station building, via the train hall middle mezzanine. The Preferred Alternative would also provide bus passengers with a more direct and, for many passengers, shorter connection to the Metrorail Station, an important mode of access for WUS users, particularly tourists and travelers unfamiliar with the station. Also, the First Street, Central, and H Street Concourses, along with headhouses on H Street, would provide a more direct and welcoming connection for DC Streetcar users.

Property Ownership, Land Acquisitions, and Displacements

Relative to the No-Action Alternative, the Preferred Alternative would have a major adverse direct operational impact on property ownership, land acquisitions, and displacements.

The Preferred Alternative would have an adverse impact on property ownership because it would involve constructing a portion of the new train hall and other Project features within the private air rights above the rail terminal. Altogether, the Project in the Preferred Alternative would require using approximately 125,823 square feet of private air rights property (approximately 2.9 acres).[421] This would represent approximately 20 percent of the 622,800-gross-square-foot footprint of the private air rights.[422] **Figure 5-3** approximatively illustrates the anticipated impact.

Figure 5-3. Approximate Footprint of Private Air Rights Impacts



According to the current owner of the air rights, this would represent a substantial loss of development opportunities. For instance, the construction of the bus facility inside the deck would eliminate one floor of potential development in the air rights by elevating the surface of the deck. While the affected property would be limited to the area south of H Street NE, except for a small headhouse to be built on

[421] This estimate includes the Daylight Access Zone (approximately 17,647 square feet), only a portion of which would be used to install skylights opening unto the Central Concourse underneath. The method through which the needed private air rights would be made available to the Project has not yet been determined and may vary according to the element being accommodated.

[422] Total area as stated in Letter from Akridge to FRA dated May 31, 2016.

the northern side of the bridge, it would reduce opportunities to build in areas with especially valuable views toward landmarks such as the U.S. Capitol. The developer also stated that shared roadways and the use of the H Street deck for pick-up/drop-off and bus access would adversely affect the private development and that large Project elements such as the train hall present design constraints as well as design opportunities. Therefore, the adverse impact would be major. [423]

The Preferred Alternative would require constructing the new H Street Concourse at the location of the existing H Street Tunnel. The tunnel is the former at-grade alignment of H Street NE between First and Second Streets NE, under the rail terminal. This section of H Street was walled off after the construction of the H Street Bridge. Based on a comment from DDOT on the SDEIS, construction of the H Street Concourse may require formally closing out this portion of H Street, in compliance with the District's Street and Alley Closing Procedures (Code of the District of Columbia, Title 9, Chapter 2), as applicable.

Consistency with Local and Regional Plans

Relative to the No-Action Alternative, the Preferred Alternative would have a major beneficial direct operational impact on community planning through its consistency with the most relevant local and regional plans.

Unlike the No-Action Alternative, the Preferred Alternative would be consistent with and support relevant local and regional plans, as summarized in **Table 5-61**. As such, the Preferred Alternative would have a major beneficial impact on community planning.

Table 5-61. Impacts of the Preferred Alternative on Community Planning

Summary Description of Relevant Elements or Goals	Assessment
Comprehensive Plan for the National Capital-Federal Elements	
Transportation. "Develop and maintain a multimodal regional transportation system that meets the travel needs of workers, residents, and visitors while improving regional mobility, accessibility, air quality, and environmental quality through expanded transportation alternatives and transit-oriented development."	The Preferred Alternative would create an expanded and modern multimodal station that would accommodate the need of a growing number of commuter and intercity train as well as intercity bus passengers and promote the use of non-auto modes of transportation both locally and regionally.

[423] No financial assessment was conducted for the EIS and the finding of major adverse impact is made on a strictly qualitative basis and based on feedback from the developer, with no implications regarding what would be just compensation under the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended, for the approximately 2.9 acres of air rights required to build the Project.

Summary Description of Relevant Elements or Goals	Assessment
Urban Design. "Promote quality design and development in the region that reinforces its unique role as the nation's capital and creates a welcoming and livable environment for people."	The Preferred Alternative would incorporate quality design features that would enhance WUS's role as a monumental gateway to the nation's capital. Enlarged circulation spaces and modern passenger facilities would create a welcoming environment for passengers and visitors.
Historic Preservation. "Preserve, protect, and rehabilitate historic properties in the National Capital Region and promote design and development that is respectful of the guiding principles established by the Plan of the City of Washington and the symbolic character of the capital's setting."	The Preferred Alternative would be designed in accordance with the Secretary of Interior's *Standards for the Treatment of Historic Properties*, specifically the rehabilitation standards. New construction would be compatible with the historic station, which would continue to function as a grand and primary gateway to Washington, DC. Expanded circulation spaces would improve passenger and visitor experience of the historic building.
Visitors & Commemoration. "Provide a positive and memorable experience for all visitors to the National Capital Region in a way that showcases the institutions of American culture and democracy, supports planning goals, and enhances activities that are unique to visiting the nation's capital."	Through quality design respectful of the historic station; expanded circulation spaces; and improved, modern passenger facilities, the Preferred Alternative would create a positive and memorable experience for all visitors.
Comprehensive Plan for the National Capital-District Elements	
Transportation. "Create a safe, sustainable, efficient multimodal transportation system that meets the access and mobility needs of District residents, the regional workforce, and visitors; supports local and regional economic prosperity; and enhances the quality of life for District residents."	The Preferred Alternative would create an expanded and modern multimodal station that would accommodate the need of a growing number of commuter and intercity train as well as intercity bus passengers, including District residents and visitors. The Preferred Alternative would remedy WUS's existing deficiencies (such as antiquated platforms that are not ADA-compliant). The expanded station would contribute to supporting the local economy. By improving connections between the areas to the east and west of the station, it would enhance the quality of life of area residents.

Summary Description of Relevant Elements or Goals	Assessment
Land Use. Ensure the efficient use of land resources to meet long-term neighborhood, citywide, and regional needs; to help foster other District goals; to protect the health, safety, and welfare of District residents, institutions, and businesses; to sustain, restore, or improve the character, affordability, and equity of neighborhoods in all parts of the city; to provide for additional housing and employment opportunities, and to effectively balance the competing demands for land to support a growing population and the many activities that take place within Washington, DC's boundaries."	The Preferred Alternative would make an efficient use of the space (below and above tracks) which is currently occupied by the rail terminal to expand the station in a manner that would enhance connections between the areas to the east and west of the station and contribute to knitting together neighborhoods currently divided by the rail terminal.
Central Washington. "Central Washington is comprised of 6.8 square miles of land that include the "monumental core" of the city, with such landmarks as the U.S. Capitol and White House, the Washington Monument and Lincoln Memorial, the Federal Triangle and Smithsonian Museums. Planning for this area is done collaboratively with the Federal government, with the National Capital Planning Commission having land use authority over federal lands. Central Washington includes the city's traditional Downtown and other employment centers, it includes Gallery Place and Penn Quarter, the region's entertainment and cultural center, and recently emerging neighborhoods like Mount Vernon Triangle and NoMa […]. As the center of employment in the region, 475,531 people are employed within its boundaries and most commute to the area for its jobs. […]."	WUS is located in the Central Washington planning area and provides a direct local, regional, and national connection to the area. By expanding and enhancing the station, the Preferred Alternative would facilitate multimodal access to the central area and foster its continued growth and development. High quality design respectful of the historic station would enhance WUS's role as a grand gateway into central Washington, DC.
Historic Preservation. "Preserve and enhance the unique cultural heritage, beauty, and identity of the District of Columbia by respecting the historic physical form of the city and the enduring value of its historic structures and places, sharing responsibility for their protection and stewardship, and through planning leadership, ensuring their perpetuation for the benefit of the citizens of the District and the nation."	The Preferred Alternative would be designed in accordance with the Secretary of Interior's *Standards for the Treatment of Historic Properties,* specifically the rehabilitation standards. New construction would be compatible with the historic station, which would continue to function as a grand and primary gateway to Washington, DC.

Summary Description of Relevant Elements or Goals	Assessment
H Street Strategic Development Plan (2003)	
The *H Street NE Strategic Development Plan* calls for the strengthening of the connection between WUS and the H Street corridor, activation of the streetscape on the H Street Bridge, increased commercial office space, and for the area to serve as a multimodal center.	The Preferred Alternative would help achieve the plan's connectivity goals by providing new connections between H Street NE and the front of WUS via the new concourses and entrances into the station from the H Street Bridge, Second Street NE, and First Street NE. The Preferred Alternative would also support the plan's transit goals by expanding and modernizing multimodal options at WUS.
NoMA Vision Plan and Development Strategy (2006)	
The *NoMA Vision Plan and Development Strategy* calls for the pursuit of "a balanced approach to transportation, creating a pedestrian-friendly neighborhood with improved transit accessibility. The long-term future of NoMA is dependent on transportation and utility infrastructure demands keeping pace with proposed development. This plan signals the need for multi-agency coordination and a holistic approach to transportation and infrastructure investment that addresses future needs with the most sustainable environmental practices."	The Preferred Alternative would support this strategy's goals. The Preferred Alternative would improve accessibility to transit by bringing the station elements into compliance with ADA and Life Safety requirements; provide new pedestrian entrances under the H Street Bridge at First and Second Streets NE as well as at the headhouses on H Street NE; and increase the capacity for bicycle storage. The new H Street Concourse would create a more pedestrian-friendly environment by connecting the neighborhoods to the east and west of WUS.
Northwest One Redevelopment Plan (2006)	
The Northwest One Redevelopment Plan makes recommendations to create a vibrant, mixed-income community with a new public school, recreation center, playing fields and parks, health clinic and neighborhood library. The plan also calls for the reconfiguration of some streets, including "extending" K Street to link the neighborhood to those east and west of it to increase connectivity and safety and alleviate congestion.	Although it would not alter K Street NE, the Preferred Alternative would contribute to achieving the general connectivity goals of the plan by providing new access points to WUS on and below the H Street Bridge on First and Second Streets NE. This would enhance the connection between the neighborhoods to the east and west of WUS.

Summary Description of Relevant Elements or Goals	Assessment
Downtown East Re-urbanization Strategy (2019)	
Vision goals guiding the strategy include making Downtown East connected and accessible via physical connections, including an emphasis on WUS and its connectivity to surrounding neighborhoods and improving access to all modes of transportation to and through the area, among others. The planned expansion of WUS was one factor that prompted the District to develop the Strategy.	The Preferred Alternative would advance the goals of this strategy by enhancing WUS both as a multimodal facility providing access to downtown and as a local landmark that connects, rather than separates, neighborhoods. The Preferred Alternative would implement several recommendations of this strategy, including providing access to WUS from all sides; streamlining transfer between modes of transit; and supporting rail investment.
Move DC 2021	
Move DC 2021 provides an overarching framework of goals and policies that will guide transportation decisions in the District over a 25-year period. It identifies a series of strategies to achieve the goals and policies, and tools to identify needs and priorities for different modes of transportation. Move DC 2021 defines a set of 18 policies and 41 strategies to achieve goals pertaining to safety, equity, mobility, project delivery, management and operations, sustainability, and enjoyable spaces.	The Preferred Alternative is generally supportive of, or consistent with, Move DC 2021. For instance, the provision of a pedestrian and bicycle ramp along the west side of WUS, which could potentially become part of a future greenway developed as part of a different project, is consistent with the policy to "integrate and expand the pedestrian and bicycle network to ensure safe, connected, and more equitable infrastructure for all users." The inclusion in the Preferred Alternative of a below-ground pick-up and drop-off facility is consistent with the policy to "increase accessibility and efficient delivery of goods and movement of people through curbside management and roadway management." More generally, the expansion of the station to accommodate more trains and passengers, and the reduction in parking capacity at the station, are supportive of the Move DC 2021 policy to "achieve 75% non-auto mode commute trips by 2032."

Summary Description of Relevant Elements or Goals	Assessment
Mount Vernon Triangle Action Agenda (2003), Florida Avenue Market Small Area Plan (2009), and Ward 5 Works (2014)	
The *Mount Vernon Triangle Action Agenda* calls for the enhancement of retail, hotel, recreation, nonprofit, and cultural uses along lively street corridors. The *Florida Avenue Market Small Area Plan* focused on developing a 40-acres area near the intersection of Florida and New York Avenues, north of WUS, into a pedestrian-oriented mix of commercial and residential uses. *Ward 5 Works* is a strategy to transform 1,000 acres of industrial land in Ward 5 north of WUS into a hub of green, food, tech and creative businesses that creates jobs, community amenities and better environmental performance for District residents.	The Preferred Alternative would generally support these plans through improvements in multimodal accessibility and connectivity.

5.9.3.2 Indirect Operational Impacts

Potential Federal Air Rights Development

Relative to the No-Action Alternative, the potential Federal air rights development in the Preferred Alternative would have a major beneficial indirect operational impact on land use and development. It would have a minor indirect operational impact on zoning; [424] it would have no impact on property ownership, land acquisitions, and displacement; or local and regional plans.

In the Preferred Alternative, the demolition of the existing WUS parking garage would make Federal air rights (currently occupied by the WUS parking garage) available for potential future transfer and development. FRA determined that it is reasonably foreseeable that the Federal air rights area would be rezoned to match the District's USN zoning designation that applies to the adjacent private air rights. The USN zoning designation allows for a mix of uses, including residential, retail, and office. The area subject to rezoning would be small and the impact would be minor.

The potential future Federal air rights transfer and development in the Preferred Alternative would be consistent with the USN zoning designation. For the purposes of this FEIS, it is assumed to consist of 310,000 square feet of office; 175,000 square feet of residential uses; and 15,000 square feet of retail uses. While the mechanism to allow for this future transfer and development has not been determined, as an example, FRA could lease the air rights to USRC, which in turn could sublease the development rights to a private party. Other options include transferring the rights to a private party directly or as part of an exchange of property rights.

The potential future transfer and development of the Federal air rights would have a major beneficial impact on land use in the Project Area. It would replace an automobile-focused use with residential and

[424] This impact is not qualified as adverse or beneficial because a change in zoning does not in itself represent a favorable or unfavorable outcome.

commercial uses more consistent with their surroundings. As such, it would become part of a new vibrant neighborhood to the north of WUS, within which the expanded station would be seamlessly integrated.

Regional Study Area

Relative to the No-Action Alternative, the Preferred Alternative would have no adverse indirect operational impacts on zoning, land use, or development; property ownership, land acquisitions, and displacement; or local and regional plans.

The improved connectivity and activity at WUS that the Preferred Alternative would promote may accelerate medium- or high-density development near WUS. Such development already characterizes most of the Regional Study Area, such as Mount Vernon Triangle and NoMA. Indirect impacts from induced development may be more noticeable along and near the H Street Corridor, currently comprised of a high-activity street (H Street NE) surrounded by residential rowhouse neighborhoods, and across Capitol Hill.

However, the District's zoning regulations and applicable plans would continue to guide the density and character of potential future developments in all these areas. This would avoid the development of incompatible land uses and ensure that neighborhoods evolve in accordance with the District's vision for their future. Thus, The Preferred Alternative would have no adverse indirect operational impacts on zoning, land use, or development; property ownership, land acquisitions, and displacement; or local and regional plans

5.9.3.3 Construction Impacts

Construction of the Preferred Alternative would have moderate adverse impacts on land use and development. It would have no impact on zoning; property ownership, land acquisitions, and displacement; or local and regional plans.

Construction activities in the Preferred Alternative would largely be contained within WUS and the rail terminal. Construction would affect rail operations but the phased, east-to-west construction approach would minimize this impact and the resulting disruptions in service as much as possible. At various times during the construction period (approximately 13 years), five areas may be used for access and staging: the West Rail Yard (between K Street and H Street); WUS east access ramp, First Street NE, Second Street NE, and the H Street Bridge curbs; the H Street Tunnel; the REA Parking Lot; and a train access area for potential material delivery and removal in the constricted "throat" of the rail terminal north of K Street NE.

Of these, the WUS east access ramp, First Street NE, and Second Street NE curbs are just outside the Project Area. They would be used as access points for personnel, minor equipment, short-term truck parking, and limited material deliveries, generally consistent with their existing use. The H Street Bridge, although within the Project Area, is a public right-of-way. In addition to the uses just listed, it could also be used to place equipment to hoist or pump materials into and out of the site. This would be a short-

term use occurring multiple times over the entire period of construction. Close coordination with DDOT and Amtrak would ensure that disruptions to street and rail traffic do not occur or remain minimal.

Use of the West Rail Yard area and the REA Parking Lot for construction access and staging would involve a change in the current use of these areas, including demolition of existing buildings and construction of access ramps. The West Rail Yard would be a major staging area during Phases 1 to 3 and part of Phase 4. Use of the REA Parking Lot likely would be mostly during Phase 1. Amtrak, one of the Project Proponents, controls those areas. Construction planning would include minimizing any impacts on the operation of the rail terminal.

The H Street Tunnel (former at-grade H Street right-of-way) would be used for east side access during Phase 1 but that end of the tunnel would be demolished during Phase 1 excavation. The west end of the tunnel would be used for access during Phases 2 through 4.

For the entire duration of the First Street Tunnel column removal work, overlapping Phase 1 and Phase 2 with an intermediate year between the two, part of the Retail and Ticketing Concourse would be closed to the public to allow for the removal of columns within the run-through track tunnel as part of the track reconstruction work. This would affect the uses currently accommodated in the eastern third of the concourse, including retail outlets, which would be displaced for up to approximately 2 years and 6 months. At the beginning of Phase 4 of construction, the existing bus facility and parking garage would be demolished. During all of Phase 4, a temporary bus facility or bus loading zones would be established on the completed portion of the structural deck (see **Section 5.5.3.3**, *Construction Impacts*, *Intercity, Tour/Charter, and Sightseeing Buses*, and **Section 5.5.3.3**, *Construction Impacts*, *Vehicular Parking and Rental Cars*, for further discussion of potential impacts on intercity buses and parking during Phase 4).

Construction of the Preferred Alternative would also affect the development of the private air rights, likely affecting the schedule on which the development could proceed relative to what would occur in the No-Action Alternative, with associated costs. It is not possible to quantify such impacts, as there are no specific plans or schedules for the private air rights development in the No-Action conditions against which the effects of the Preferred Alternative could be measured.

5.9.4 Summary of Impacts

Table 5-62 summarizes the impacts on land use, land planning, and property for the No-Action Alternative and Preferred Alternative.

Table 5-62. Summary of Impacts on Land Use, Land Planning, and Property

Impact Category	Type of Impact	No-Action Alternative	Preferred Alternative
Zoning	**Direct Operational**	No impact	No impact
	Indirect Operational	No impact	Minor impact[425]
	Construction	No impact	No impact
Land Use	**Direct Operational**	Major beneficial impact	Major beneficial
	Indirect Operational	No impact	Major beneficial impact
	Construction	Minor adverse impact	Moderate adverse impact
Property	**Direct Operational**	Minor adverse impact	Major adverse impact
	Indirect Operational	No impact	No impact
	Construction	No impact	No Impact
Local and Regional Plans	**Direct Operational**	Minor adverse impact	Major beneficial impact
	Indirect Operational	No impact	No impact
	Construction	No impact	No impact

5.10 Noise and Vibration

This section addresses the potential noise and vibration impacts of the No-Action Alternative and Preferred Alternative. Primary permanent noise and vibration sources near WUS include street and rail traffic. Construction activities are another common source of noise and vibration in urban environments. The modeling conducted to assess the operational noise impacts of the Project predicted noise levels at 164 receptor locations in the vicinity of WUS.[426]

[425] This impact is not qualified as adverse or beneficial because a change in zoning does not in itself represent a favorable or unfavorable outcome.

[426] Receptors are land uses sensitive to noise and vibration. Consistent with the FTA manual, receptors fall into three categories: Category 1 includes receptors where quiet is an essential element of their use, such as amphitheaters, certain historic landmarks, or recording studios. Category 2 receptors include locations where people sleep, such as residences, hospitals, and

5.10.1 Methodology

5.10.1.1 Operational Impacts

The Project may have operational noise and vibration impacts because of modifications to the transportation infrastructure; increases in vehicle traffic volumes; and increases in train operations. Substantial increases in noise can affect people by interrupting activities, thereby causing annoyance at sensitive locations (for example residences, medical facilities, places of worship, or parks). Increases in vibration levels can have structural effects (e.g., building structural integrity) and can affect people by causing annoyance inside vibration-sensitive buildings. The metrics (ways of measuring) used to quantify noise and vibration levels are explained in **Section 4.10.3**, *Methodology*.

Operational Noise Prediction Methodology

Operational noise after completion of the Project would primarily include noise from train operations and traffic on nearby roadways. Train operations are the predominant source of noise at receptors near the railroad tracks. At distances of 100 feet or farther from the tracks or where there are a substantial number of intervening buildings, vehicular traffic noise is typically the predominant source. Operational noise impacts from mobile sources (trains and street traffic) were modeled quantitatively. Train noise was predicted based on the Federal Transit Administration (FTA)'s *Transit Noise and Vibration Impact Assessment Manual* guidance, which FRA has adopted. [427] Roadway noise was predicted with the Federal Highway Administration (FHWA)'s Traffic Noise Model (TNM) version 2.5. The models were calibrated by comparing them to predictions from standard modeling methods outlined in FTA's *Transit Noise and Vibration Impact Assessment* and FHWA's TNM version 2.5 and to measurement results. A difference within 3 A-weighted decibels (dBA) between the modeled and measured sound levels was considered sufficient to confirm the accuracy of the model at all receptor locations.[428] The noise analysis generated site-specific results at individual receptors and broader noise level mapping across the Study Area. The noise level mapping showed absolute sound level as well as comparative contours showing the change in noise that would occur relative to the baseline.

The Project would also create new stationary sources of noise such as exhaust fans and emergency generators. Potential impacts from stationary sources were assessed qualitatively.

hotels. Category 3 receptors include institutional uses accommodating activities that noise can disrupt, such as schools, places of worship, libraries, and museums.

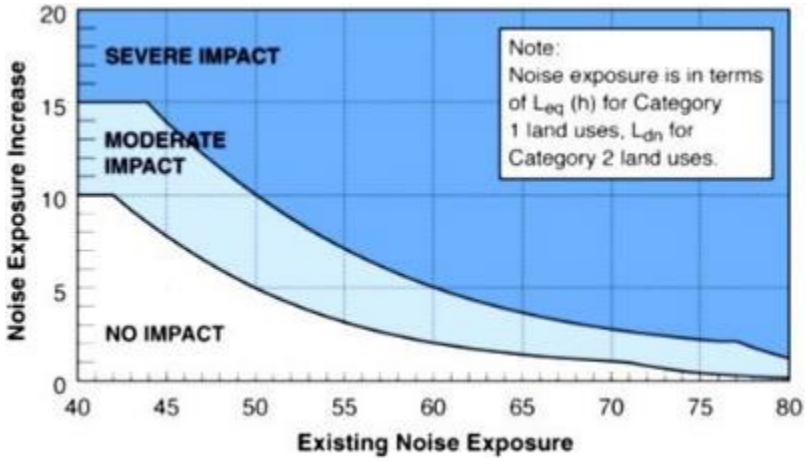
[427] Federal Transit Administration. September 2018. *Transit Noise and Vibration Impact Assessment Manual*. FTA Report No. 0123. Accessed from https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed on August 24, 2023. The Manual is the source for the information presented in **Figure 5-4**, **Figure 5-5**, **Table 5-63**, and **Table 5-64** below.

[428] dBA is the standard metric to measure environmental noise. It is an expression of the relative loudness of sounds as perceived by the human ear. A-weighting gives more value to frequencies in the middle of human hearing and less value to frequencies at the edges.

Operational Noise Impact Criteria

The noise and vibration operational impact assessment is consistent with the guidance in the FTA's *Transit Noise and Vibration Impact Assessment Manual*. The manual defines "ambient based" criteria to evaluate the impact of changes in the noise environment from the introduction of new noise sources or modification of existing sources. Based on those criteria, operational noise assessment results are categorized as no impact, moderate impact, or severe impact. A severe impact means a significant percentage of people would be highly annoyed by a project's noise. A moderate impact means the change in noise level would be noticeable to most people but may not be sufficient to generate strong, adverse reactions. The criteria are a function of the baseline noise; therefore, the threshold between no impact and moderate impact, and moderate impact and severe impact, varies with the baseline noise level at the location being considered, as shown in **Figure 5-4.** The higher the existing noise level, the smaller the change resulting in a moderate or a severe impact.

Figure 5-4. FTA Noise Impact Increase Criteria



Based on the FTA impact criteria, NEPA noise impacts assessments used the following scale: FTA severe impacts were considered major adverse impacts and FTA moderate impacts were considered moderate adverse impacts. No impact per the FTA criteria was considered no adverse impact under NEPA (although some measurable changes in noise levels may occur, they would always be below three dBA, which is the lowest perceptible change). When noise levels would decrease rather than increase, the impact was considered beneficial without further characterization.

Operational Vibration Prediction Methodology

Impacts on vibration levels were evaluated based on increases caused by modifications to the railroad track infrastructure and increases in the number of vibration events resulting from more numerous train operations. A detailed vibration assessment consistent with FTA's *Transit Noise and Vibration Impact Assessment* was conducted to characterize existing vibration conditions and predict future conditions. As rail infrastructure is already present in the Study Area and the same types of trains would continue to operate at WUS, vibration impacts were predicted based primarily on measurements of existing trains. Vibration propagation conditions were determined through measurement of vibration from existing

sources at a range of distances. Typical adjustments were made as needed, such as outdoor-to-indoor building coupling vibration attenuation.

The analysis considered the risk of structural damage from vibration. Typically, vibration from train operations is substantially below the thresholds for potential structural damage; however, historic buildings may be more fragile and susceptible to damage from vibration than more recent structures.

Operational Vibration Impact Criteria

The operational vibration impact assessment is based on FTA's general criteria. The general criteria reflect the potential for human annoyance depending on land use. **Table 5-63** shows the general criteria for ground-borne vibration for the three land use categories defined by FTA.

Table 5-63. FTA General Ground-Borne Vibration Impact Criteria[429]

Land Use Category	Ground-Borne Vibration Levels (Vibration Decibel Level [VdB])		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
1: Buildings where low vibration is essential for interior operations	65	65	65
2: Residences and buildings where people normally sleep	72	75	80
3: Institutional buildings with primarily daytime use	75	78	83

1. More than 70 events per day.
2. Between 30 and 70 events per day.
3.Fewer than 30 events per day.

In general, 65 Vibration Decibels (VdB) is the threshold of human perceptibility of vibration. Vibration assessment also depends on existing conditions. For projects in existing railroad corridors with more than 12 trains per day, a project is considered to cause impacts if (1) projected vibration levels would exceed the FTA criteria; and (2) the project would significantly increase the number of vibration events (approximately doubling it) or increase vibration levels by 3 VdB or more. If a project moves existing railroad tracks, there would be impacts only if the track relocation results in vibration levels exceeding the FTA criteria and increasing vibration levels by more than 3 VdB.

5.10.1.2 Construction Impacts

Noise and vibration from construction activities have the potential to affect nearby receptors by causing annoyance; perceptible vibration inside buildings; and structural damage to buildings and structures.

[429] The general criteria also include criteria for ground-borne noise levels. Ground-borne noise is typically only assessed at locations with subway or tunnel operations where there is no airborne noise path, or for buildings with substantial sound insulation such as a recording studio.

The methodology for predicting and assessing construction noise and vibration impacts depends on the noise and vibration source.

Methodology for Predicting Construction Noise

Construction noise from stationary sources (construction equipment) and mobile sources (trucks and work trains) was modeled quantitatively using computer software and methodologies in accordance with FTA and FHWA 's guidance as noted above for operational impacts.

Construction noise was evaluated at 25 feet from the outermost limits of construction, in accordance with the District's noise ordinance and at specific residential, commercial, and industrial receptor locations, in accordance with FTA guidelines. Noise modeling was based on the type of equipment that would be mobilized during each phase of construction and the amount of time, or utilization factor, that the equipment would be used.

Construction noise was modeled for support of excavation (SOE) construction, excavation, and for drilling, which generally are the longest-lasting and loudest construction activities. Noise was evaluated assuming open-cut excavation methods at both the start of excavation (highest elevation) and the end of excavation (lowest elevation). As excavation proceeds, the active equipment would be deeper and closer to the bottom, resulting in greater sound attenuation from the SOE structures and lower noise levels at nearby receptors.

Construction of the Project would involve substantial excavation and removal of soil and debris for disposal. Excavation spoil removal could occur by dump trucks or gondola trains. Because the removal method is undetermined at this time, the construction noise analysis considered two scenarios for spoil removal: removal by trucks only (120 trucks per day); and removal by work trains (two trains per day). It is anticipated that Amtrak will determine the feasibility of using work trains during construction planning. The first scenario yields a conservative, maximum estimate of construction-related mobile source noise. The second scenario shows by how much noise levels could be reduced by using work trains. Regardless of the spoil removal method, approximately 10 to 20 trucks would travel to and from the site for deliveries every day during the construction period. When modeling noise generated by construction trucks and trains, existing noise from traffic and train operations was taken into account.

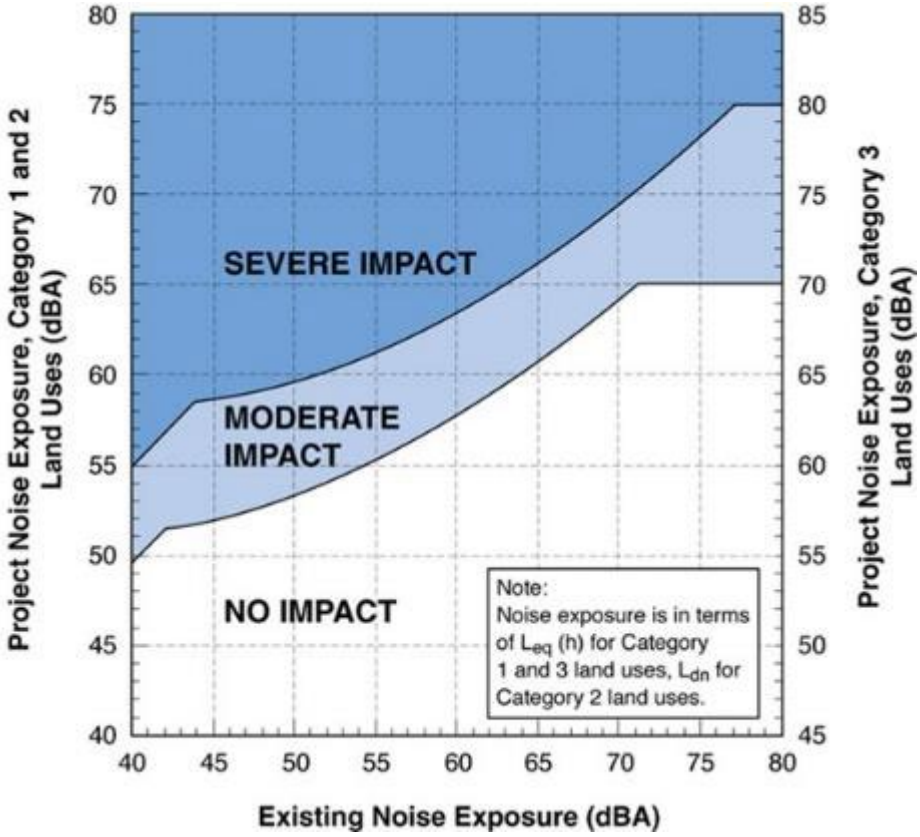
Construction Noise Impact Criteria

FTA has defined construction noise criteria that depend on the type of land use affected and the time of day. However, because Project construction would take place over a long time (approximately 13 years), the construction noise impact analysis used FTA's long-term project noise impact criteria instead. This is a conservative approach, as the project noise criteria are generally lower than the construction criteria. They are shown in **Figure 5-5**.

The District's Noise Ordinance (Municipal Regulations Chapters 20-27 and 20-28) prohibits construction sound levels above 80 dBA Equivalent Sound Level (Leq) (except for pile driving) as measured 25 feet from the outermost limits of the construction site between 7:00 AM and 7:00 PM unless a variance is granted. From 7:00 PM to 7:00 AM, construction activities are limited to 65 dBA Maximum A-weighted

Level (Lmax) 25 feet from the outermost limits of the construction site for noise originating in an industrial zone. [430]

Figure 5-5. FTA Project Noise Impact Criteria (Applied to Long-term Construction)



Methodology for the Prediction of Construction Vibration

The construction vibration analysis was conducted for activities that typically generates substantial vibration such as the use of clam shovels during slurry wall construction; vibratory sheet pile driving; caisson drilling; operation of hoe rams and jackhammers during concrete removal; operation of mounted impact hammers during ramp construction; operation of excavators, backhoes, and loaded trucks during excavation; and use of vibratory rollers for track re-construction.

Impacts were evaluated using FTA's guidance. FTA's assessment methodology includes identifying the types of vibration-generating construction equipment and predicting typical construction vibration levels at various distances from the equipment. This information provides a general estimate of construction vibration and potential increase in the risk of structural damage.

[430] Leq averages noise energy over a period of time and accounts for how loud an event is during that period, how long the sound lasts, and how many times it occurs. Lmax represents the highest sound level generated by a source. These criteria are intended to apply to stationary construction sources.

Construction Vibration Impact Criteria

Construction vibration can damage nearby structures or generate annoyance among local residents or workers. The potential for structural damage is typically limited to impact-type activities, such as drilling and slurry wall construction, which are conducted very close to buildings (within 25 feet). Potential damage from vibration depends on the specific activity and how the building is constructed. FTA criteria for potential structural damage are shown in **Table 5-64**. Criteria for annoyance are the same as for the operational vibration analysis.

Table 5-64. FTA Criteria for Potential Structural Damage

Building Construction	Criterion for Potential Damage to Structures	
	Vibration Level (VdB)	Peak-Particle Velocity (inches/second [in/s])
I. Reinforced-concrete, steel, or timber	102	0.5
II. Engineered-concrete and masonry	98	0.3
III. Non-engineered timber and masonry	94	0.2
IV. Buildings extremely susceptible to vibration damage	90	0.12

5.10.2 Impacts of the No-Action Alternative

5.10.2.1 Direct Operational Impacts

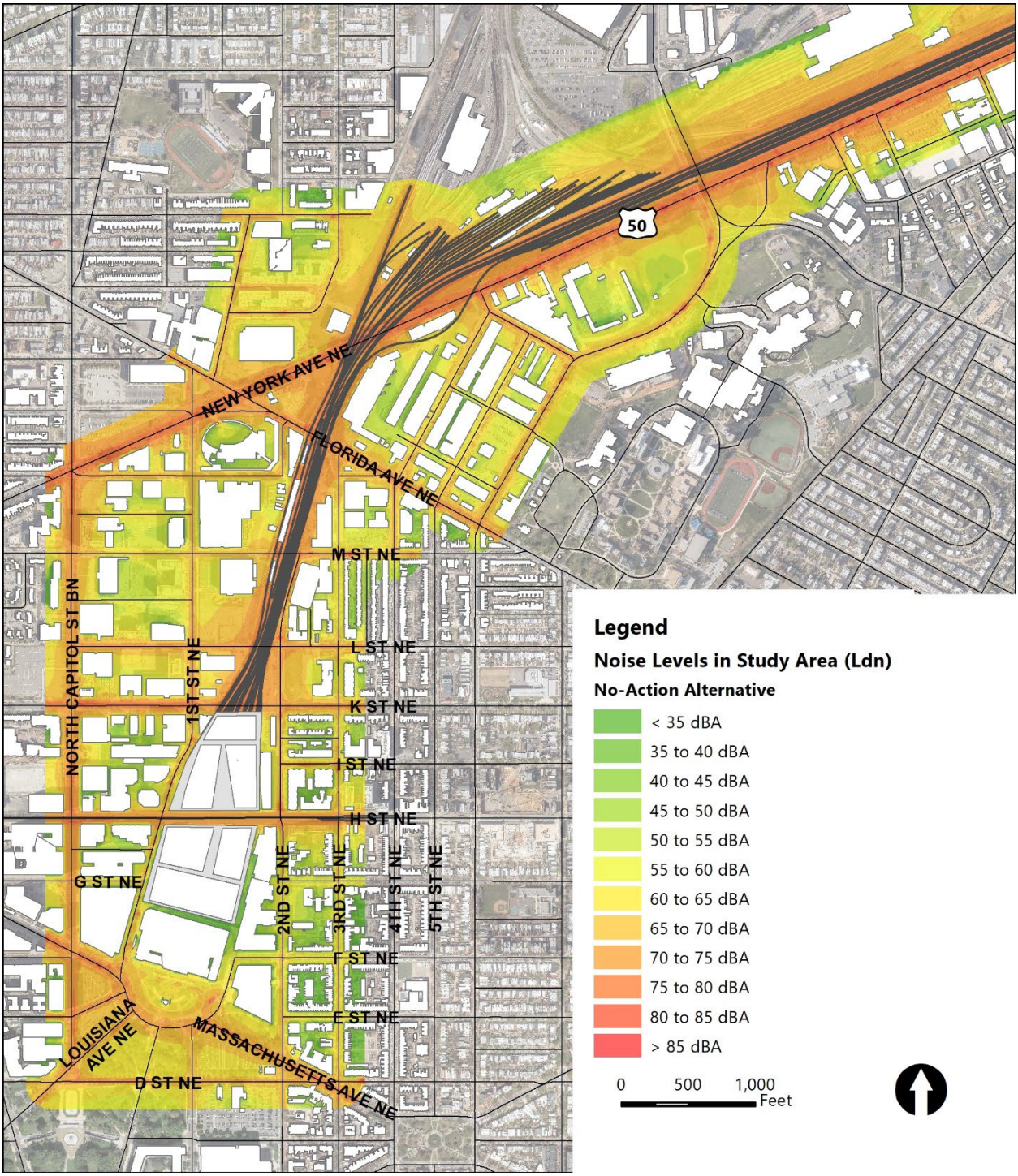
Relative to existing conditions, the No-Action Alternative would have beneficial direct operational noise impacts at locations near the private air rights development. There would be negligible adverse direct operational noise impacts elsewhere in the Study Area as noise levels would increase by no more than 3 dBA relative to existing levels. There would be negligible adverse direct operational impacts on vibration levels.

Operational Noise

Figure 5-6 shows modeled noise levels in the No-Action Alternative. Noise levels would range from 60 to 75 dBA (average day-night sound level [Ldn]) at most locations. [431] Such levels are typical of a dense urban area. Predominant sources of noise include the rail terminal, New York Avenue NE, Florida Avenue NE, K Street NE, and Massachusetts Avenue NE.

[431] Ldn represents the sound energy over a 24-hour period with a 10-decibel penalty applied to sound that occurs between 10:00 PM and 7:00 AM when people are more sensitive to noise. Ldn accounts for how loud events are, how long they last, how many times they occur, and whether they occur at night.

Figure 5-6. Noise Levels, No-Action Alternative



There would be a beneficial impact at receptors adjacent to the private air rights development south of K Street NE. Noise levels there would decrease relative to existing conditions because of the acoustic shielding the development would provide by enclosing the rail terminal**.** Reductions would vary depending on the receptor. At the Kaiser Permanente Medical Center (R123) and REA Building/Center City Public Charter School (R116), it would be greater than 10 dBA. A reduction of 10 dBA is generally perceived as a halving of the noise level. Multiple residential receptors along Second Street NE and Parker Street NE would experience appreciable sound level reductions as well.

At receptors north of K Street NE and away from the private air rights development, noise from trains and traffic would increase because of greater traffic volumes and more train operations. This would be a negligible adverse impact because everywhere increases would be less than 1 dBA, except in the Union Market area. There, increases could be higher because of the introduction of a new track leading to the new VRE MSRF Facility and the operation of non-revenue VRE trains on this track during midday storage. The track would have relatively tight-radius curves, which has the potential to generate wheel squeal and may result in high amplitude, high-frequency noise from the interaction of the wheels with the rail surface. Even assuming that track design would minimize the risk of wheel squeal, modeling shows that noise levels in the Union Market area would increase at some locations. However, the increase would not exceed 3 dBA and remain a negligible impact.

Noise impacts from new stationary sources would also be negligible. Several new stationary sources would likely be introduced in the Project Area by the construction of the private air rights development in the No-Action Alternative. These could include fan plants in the southern portion of the development on the east side of the Project Area south of H Street NE and in the northern portion of the development on both the east and west sides of the Project Area, south of K Street NE. There would also likely be an emergency generator in the private air rights development on the east side of the Project Area, mid-way between H Street NE and K Street NE; and a cooling tower on the east side of the Project Area, mid-way between H Street NE and K Street NE.

This stationary mechanical equipment would likely be located approximately 50 feet from the property line, which would attenuate sound and maintain noise levels below the District's Noise Ordinance standard.[432] The equipment would also be required to meet the noise level requirements set forth in the National Fire Protection Association (NFPA) 130 Standard for Fixed Guideway Transit and Passenger rail Systems. As mechanical equipment designs advance, other sound attenuation elements would likely be incorporated, if and as needed. Adverse impacts from stationary noise sources are anticipated to be negligible.

Operational Vibration

Impacts from changes in vibration levels would be negligible in the No-Action Alternative. Improvements to the track infrastructure would be completed (including introducing new tracks with the proposed VRE

[432] The District's Noise Ordinance (Chapter 20-2801, available at http://dcrules.elaws.us/dcmr/20-2801) limits noise from stationary mechanical equipment such as fan plant rooms, cooling towers, and emergency generators to 60 dBA when measured at the property line or as close to the property lines as practicable if there is an obstruction.

MSRF). These improvements would not affect track location, condition, train operations, or train speeds at most locations. Vibration levels from trains passing by would not change except for receptors in the Union Market area near the new track to the proposed VRE MSRF. While vibration levels at some receptor locations in this area would increase, they would remain below the applicable FTA criteria.

5.10.2.2 Indirect Operational Impacts

Relative to existing conditions, there would be no indirect noise or vibration effects in the No-Action Alternative.

All noise and vibration impacts would take place at the same time as the action, and none would occur beyond the Study Area.

5.10.2.3 Construction Impacts

Construction of the projects included in the No-Action Alternative would cause noise and vibration impacts. Available information on methods and schedules of construction is insufficient to characterize these impacts.

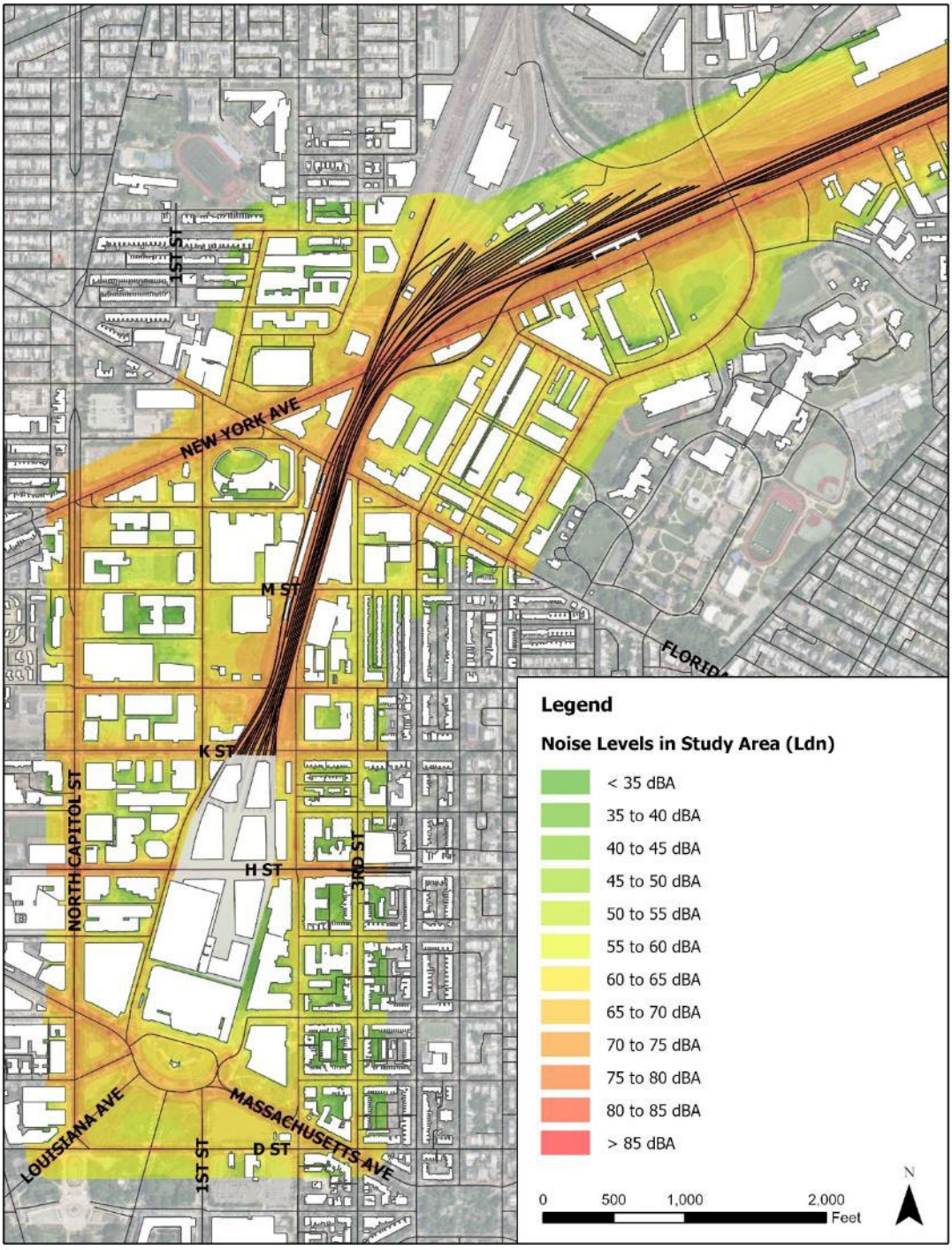
In the No-Action Alternative, the Project would not be constructed and would not cause any construction-related noise or vibration impacts. Construction of the private air rights development, replacement of the H Street Bridge, and other projects included in the No-Action Alternative, would generate noise and vibration from construction equipment and vehicle operations. Noise and vibration levels would depend on the type of equipment and vehicles used as well as the schedule of each project. This information is not currently available. It can be assumed that noise and vibration levels would be typical of medium- to large-scale construction projects.

5.10.3 Impacts of the Preferred Alternative

5.10.3.1 Direct Operational Impacts

Relative to the No-Action Alternative, in the Preferred Alternative, increases in noise levels would result in moderate adverse operational direct impacts at 14 receptor locations. The Preferred Alternative would result in minor localized adverse direct operational impact on vibration near the throat of the rail terminal and negligible adverse operational direct impacts elsewhere.

Figure 5-7. Preferred Alternative Operational Noise Levels



Operational Noise

The modeling conducted to assess the operational noise impacts of the Preferred Alternative predicted ambient noise levels at 164 receptor locations in the vicinity of WUS.[433] The modeled operational noise levels incorporate background noise as well as noise caused by the Preferred Alternative. **Figure 5-7** shows modeled operational noise levels in the Preferred Alternative. At most locations, noise levels would range from 60 to 75 dBA (Ldn). Such levels are typical of a dense urban setting. Predominant noise sources are the rail terminal and vehicular traffic on New York Avenue NE, Florida Avenue NE, K Street NE, and Massachusetts Avenue NE.

Figure 5-8 compares noise levels in the Preferred Alternative and the No-Action Alternative. In some locations closest to the rail terminal, the Preferred Alternative would have a beneficial impact on noise levels relative to existing conditions due to changes in structural design. Outside these areas, increases in train operations and traffic would cause noise levels to increase relative to the No-Action Alternative. In most cases, noise levels would increase by less than 3 dBA. Changes less than 3 dBA are generally not perceptible. At receptors south of K Street NE and west of WUS, and at receptors north of New York Avenue, noise would increase by less than 1 dBA (Ldn). At receptors in the New York Avenue Area, noise levels would increase by less than 2 dBA (Ldn). At receptors north of K Street NE and south of New York Avenue, and at receptors south of K Street NE and east of WUS, noise levels would increase by up to 2 dBA (Ldn).

At receptors south of Florida Avenue NE and north of K Street NE, noise levels would increase by up to 3 dBA (Ldn). At one receptor in the Union Market Area (R181, 1255 Union Street NE), the noise level would increase by up to 9 dBA (Ldn) due to a combination of change in track alignment and increased rail operations (see **Figure 5-9** below for the location of these receptors). Anticipated increases in noise levels would result in negligible adverse noise impacts except at those locations where they would cause the applicable FTA thresholds to be exceeded. As shown in **Figure 5-9**, the Preferred Alternative would result in moderate impacts at 14 of the 164 modeled receptor locations.[434] Noise levels at these 14 locations would range from approximately 59 to 75 dBA (Ldn). Noise impacts occurring adjacent to the rail terminal would be due to the increase in train operations. Noise impacts occurring along New York Avenue would be the result of the projected growth in traffic volumes on this roadway.

[433] Receptors are land uses sensitive to noise and vibration. Consistent with the FTA manual, receptors fall into three categories: Category 1 includes receptors where quiet is an essential element of their use, such as amphitheaters, certain historic landmarks, or recording studios. Category 2 receptors include locations where people sleep, such as residences, hospitals, and hotels. Category 3 receptors include institutional uses accommodating activities that noise can disrupt, such as schools, places of worship, libraries, and museums.

[434] Two of the modeled receptor locations are outside the map extent: both locations are near 1401 New York Avenue NE.

Figure 5-8. Comparison of Preferred Alternative and No-Action Alternative Operational Noise Levels

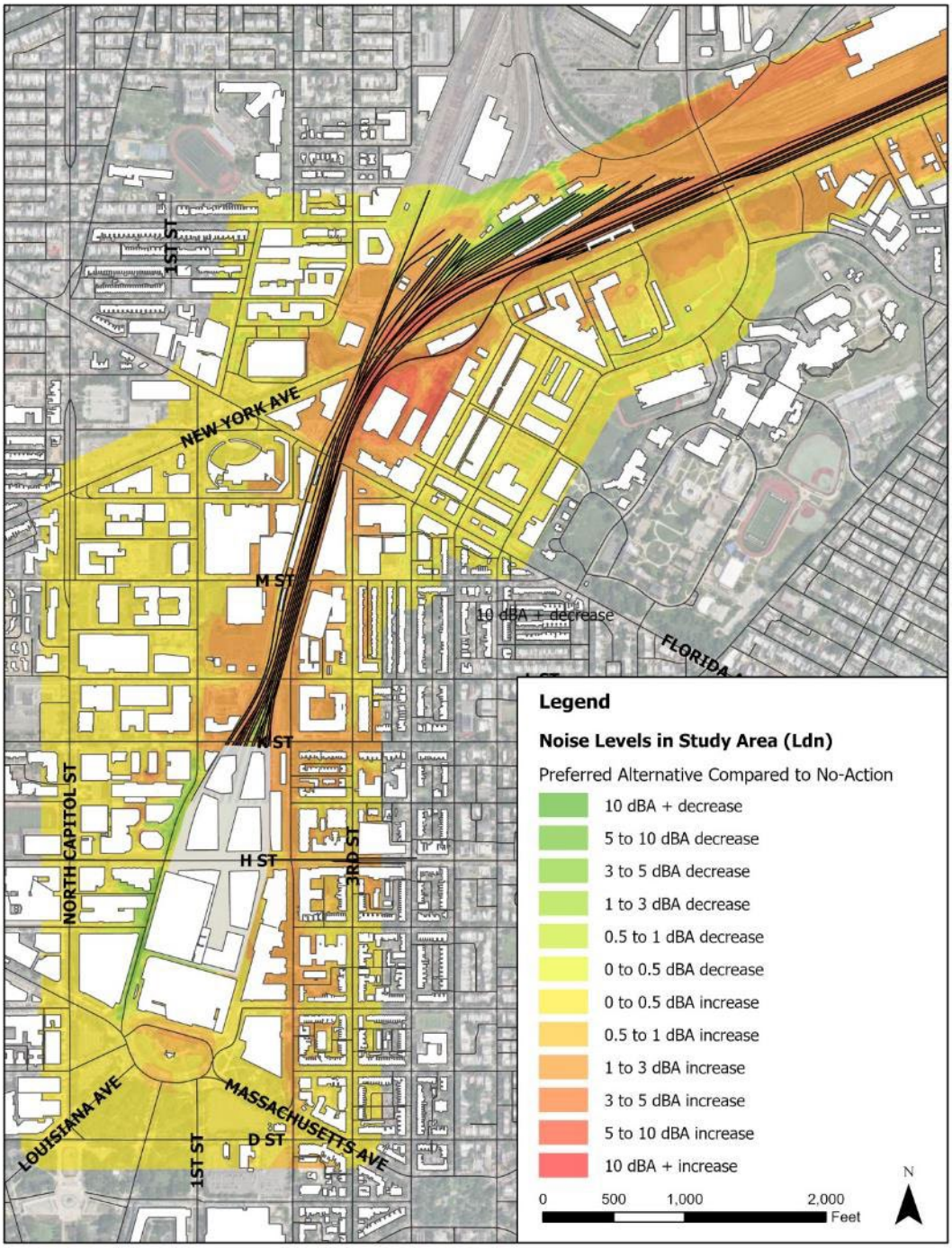
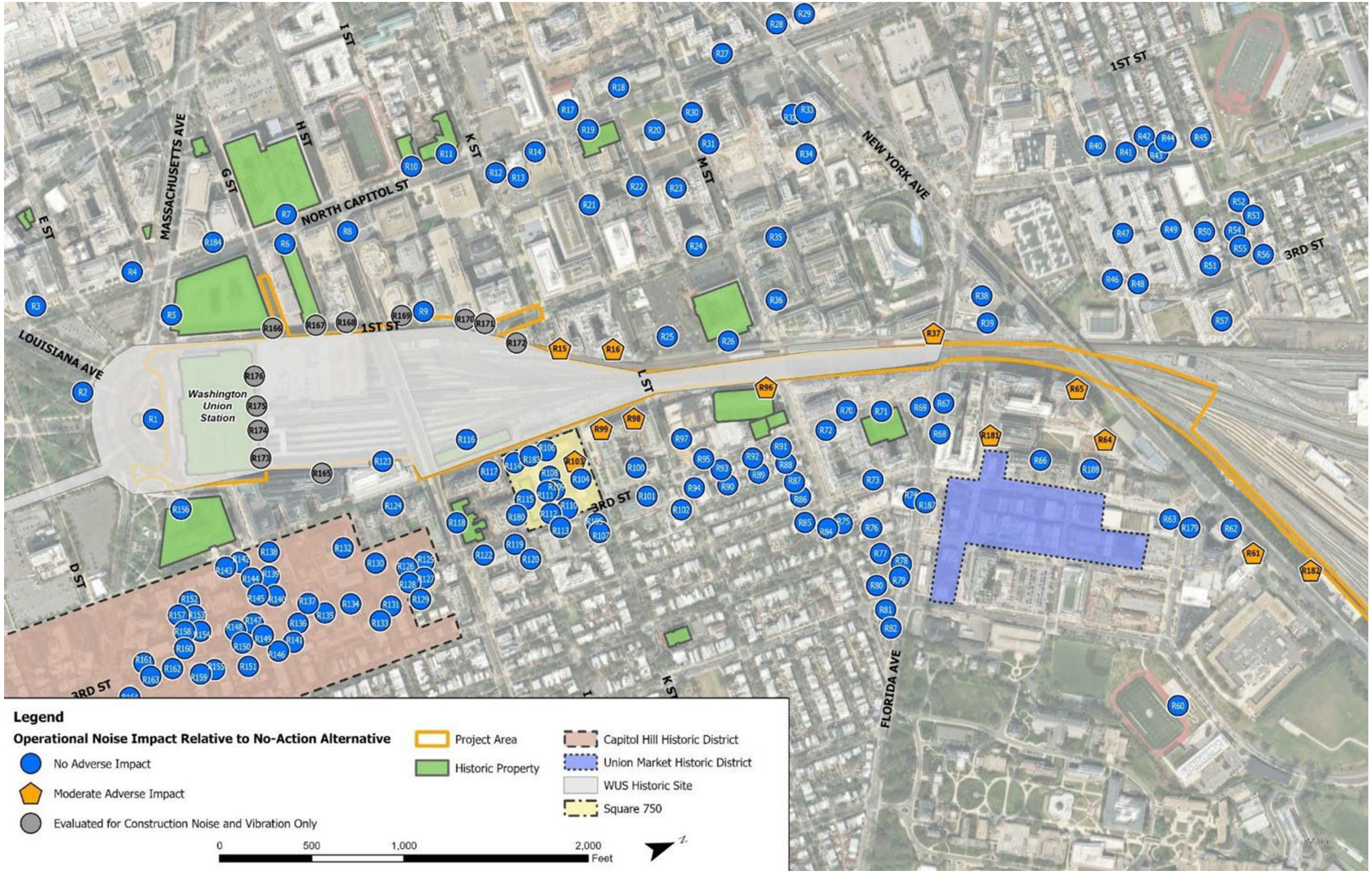


Figure 5-9. Operational Noise Impacts of the Preferred Alternative



Operational Vibration

While, in the Preferred Alternative, the number of train operations would approximately triple relative to the No-Action Alternative, the applicable FTA criteria would not be exceeded. The Preferred Alternative includes improvements to the track infrastructure in the rail terminal and the throat (segment of tracks between K Street NE and New York Avenue NE) that would not affect the specific train types operating on each track or train speeds. Therefore, the level of vibration from train events would not be affected. Track reconstruction would help to improve rail conditions, including reducing rail roughness, minimizing potential for rail corrugation, and minimizing gaps in the rail running surface.

As a result, vibration levels in the Preferred Alternative would be like those in the No-Action Alternative, except at the closest receptors to Track 43 in the throat of the rail terminal, where they would be an increase in vibration of up to 2 VdB due to the realignment of the track. This would be a minor impact.

5.10.3.2 Indirect Operational Impacts

Relative to the No-Action Alternative, there would be negligible adverse indirect noise or vibration operational impacts in the Preferred Alternative.

Indirect noise impacts would result from the traffic associated with the potential development of the Federal air rights. This traffic was incorporated into the traffic impact analysis for the Project (presented in **Section 5.5.3.1**, *Direct Operational Impacts, Vehicular Traffic*) and, as such, it was incorporated into the operational noise analysis presented in **Section 5.10.3.1**, *Direct Operational Impacts.* Traffic associated with the potential Federal air rights development is a small component of the total traffic and a small component of the total noise impacts. As noted above, total noise level increases from vehicular traffic would be below the perception threshold of 3 dBA. The potential Federal air rights development would be a small component of this increase and, therefore, would have a negligible impact on noise. It would not affect rail operations, which are the source of operational vibration impacts. Therefore, it would have no impact on vibration.

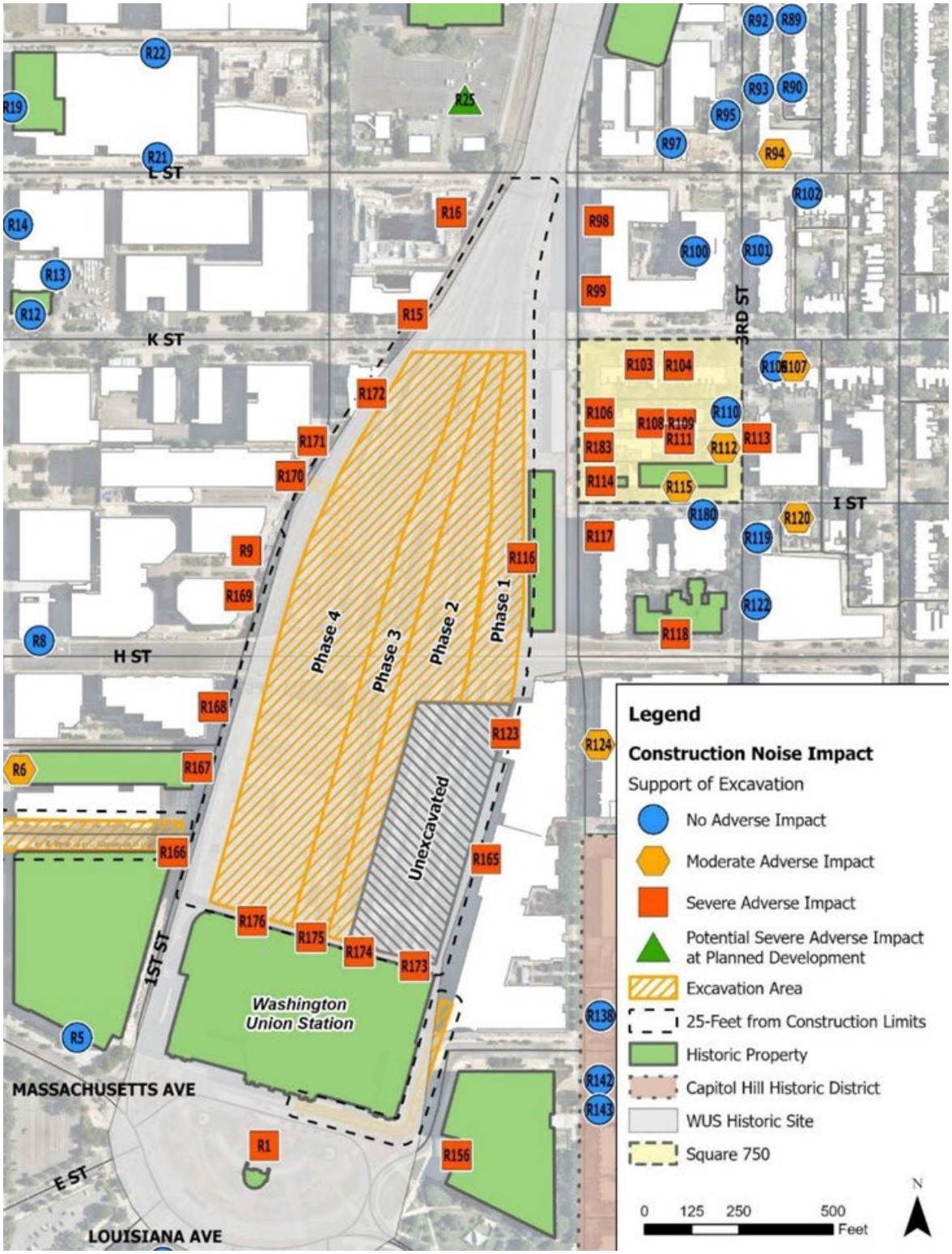
5.10.3.3 Construction Impacts

Support of Excavation Noise

In the Preferred Alternative, SOE construction activities would result in major adverse noise impacts at 32 receptor locations and moderate adverse noise impacts at eight receptor locations.

The Preferred Alternative SOE would include a 49-foot sheet pile wall as well as slurry walls with faces of 49 feet and 62 feet. Construction of the SOE structures would involve the use of cranes, drill rigs, dump trucks, concrete pump trucks, excavators, and vibratory sheet pile drivers that would generate noise while operating. **Figure 5-10** shows noise impacts from SOE construction.

Figure 5-10. Support of Excavation Noise Impacts for the Preferred Alternative



The noise generated by SOE construction activities would exceed applicable FTA criteria at multiple receptors adjacent to WUS, along First, and on Second Street NE, resulting in major adverse impacts at 32 receptor locations and moderate adverse impacts at eight receptor locations.[435] Modeled noise levels at the impacted locations range from 56.6 dBA to 91.8 dBA (the highest levels would be in the rail terminal behind WUS). Noise levels at several locations would also exceed the 65 dBA (Lmax) District noise ordinance limit for nighttime construction. Construction would occur in two 10-hour shifts, for a total of 20 hours a day. Therefore, it would include night work for which a permit would be required.[436]

Locations of severe adverse noise impacts due to SOE construction activities include: WUS at the south end of the rail terminal; the REA Building; the U.S. Securities and Exchange Commission building; the Thurgood Marshall Building and Columbus Circle near the location of the east ramp to the below-ground facility; the Kaiser Permanente Medical Center; as well as multiple residential and commercial building along First, Second, K, I (Eye), and Parker Streets NE.

Excavation Noise

In the Preferred Alternative, the rail terminal would be excavated down to the concourse and B1 level. Equipment used for excavation activities would include dump trucks, excavators, loaders, backhoes, bulldozers, and clam shovels. As noted above, for the purposes of analyzing noise impacts, two scenarios were assumed: under one scenario, spoil removal would be wholly by truck (All Truck Scenario: 120 trucks a day); under the other, work trains would be used (Work Train Scenario: two trains a day). Regardless of the scenario, the modeled noise impacts presented in this section would not occur continuously during the entire 13-year construction period. At the most, they would be limited to the periods during which active excavation activities take place. Phase 1, along the east side of the station, would last approximately 2 years and 4 months, but excavation would only take place over a period of about 5 months. This would be followed by the one-year Intermediate Phase, during which there would be no excavation. Phases 2 and 3 would last approximately 2 years and 8.5 months each, but active excavation would occur only over approximately 10 months (Phase 2) or 11 months (Phase 3). Phase 4 would have the longest excavation period (2 years and 1 month out of 4 years and 3 months). Noise levels were modeled at the beginning of excavation and at the end of excavation. This is because, at the beginning, equipment is at grade, generating more noise. As excavation proceeds, equipment moves below grade and noise becomes attenuated by SOE structures.

Start of Excavation

In the Preferred Alternative, at the start of excavation, there would be major adverse noise impacts at 29 receptor locations (All Truck Scenario) or 26 receptor locations (Work Train Scenario). There would be moderate adverse noise impacts at 14 receptor locations (All Truck Scenario) or 10 receptor locations (Work Train Scenario).

[435] Some locations include multiple modeled receptors.

[436] From 7:00 PM to 7:00 AM, the District of Columbia (Municipal Regulations Chapter 20-2701 and 20-2802) prohibits construction sound levels above 65 dBA (Lmax) at a distance of 25 feet from the outermost limits of the construction site for noise originating in an industrial zone.

Figure 5-11 and **Figure 5-12** illustrate impacts at the start of excavation in the All Truck Scenario and the Work Train Scenario, respectively. [437]

The noise levels generated by start of excavation activities vary according to the methods of spoil removal. In general, noise impacts would be greater in the All Truck Scenario than in the Work Train Scenario. While the highest levels would be similar in both scenarios (around 91 dBA in the All Truck Scenario and around 90 dBA in the Work Train Scenario), they would occur at locations in or immediately on the edge of the rail terminal (such as near the REA Building). Farther away, difference would be more much more noticeable, for instance at 701 Second Street NE (R124; 63.4 dBA in the All Truck Scenario but 59 dBA in the Work Train Scenario); 521-527 Second Street NE (R143; 61 dBA in the All Truck Scenario but 56.5 dBA in the Work Train Scenario); or 603-607 Second Street NE (R138; 61 dBA in the All Truck Scenario but 56.8 dBA in the Work Train Scenario). Other residential locations where the difference would be greater than 3 dBA include 203-219, 221-243, and 301-319 K Street NE (R103, R104, and R107); and 201 I (Eye) Street NE (R117).

Generally, construction noise levels would be approximately 2 dBA (Ldn) higher in the All Truck Scenario than in the Work Train Scenario. Noise level differences are primarily due to nighttime truck operations during over the assumed 20-hour construction day. However, the primary sources of noise during excavation are on-site dump trucks, clam shovels, and excavators. Noise exposure from these stationary sources would occur for longer durations than exposure from dump truck passbys.

At multiple locations and in both scenarios, noise levels would exceed the applicable FTA criteria for severe or moderate impacts. In the All Truck Scenario, the applicable FTA criteria for severe and moderate impacts would be exceeded at 29 receptor locations and 14 locations, respectively. In the Work Train Scenario, they would be exceeded at 26 and 10 locations, respectively.

Locations adjacent to the rail terminal, such as the north side of the historic station building, the REA Building, the U.S. Securities and Exchange Commission Building, the Kaiser Permanente Medical Center, as well as multiple commercial residential uses along K Street NE, First Street NE, Second Street NE north of H Street, and Parker Street NE, would experience major adverse impacts in both scenarios. Locations that would experience lesser impacts in the Work Train Scenario are located along truck routes to and from the Project Area: First Street NE, Second Street NE, and K Street NE. The most notable difference would be on Second Street NE south of H Street NE, where several locations that would experience moderate adverse impacts in the All Truck Scenario would drop below the threshold in the Work Train Scenario.

[437] Five of the modeled receptor locations with moderate adverse impact are outside the **Figure 5-11** map extent and two of the modeled receptor locations with moderate adverse impact are outside of the **Figure 5-12** extent.

Figure 5-11. Start of Excavation Noise Impacts (All Truck Scenario)

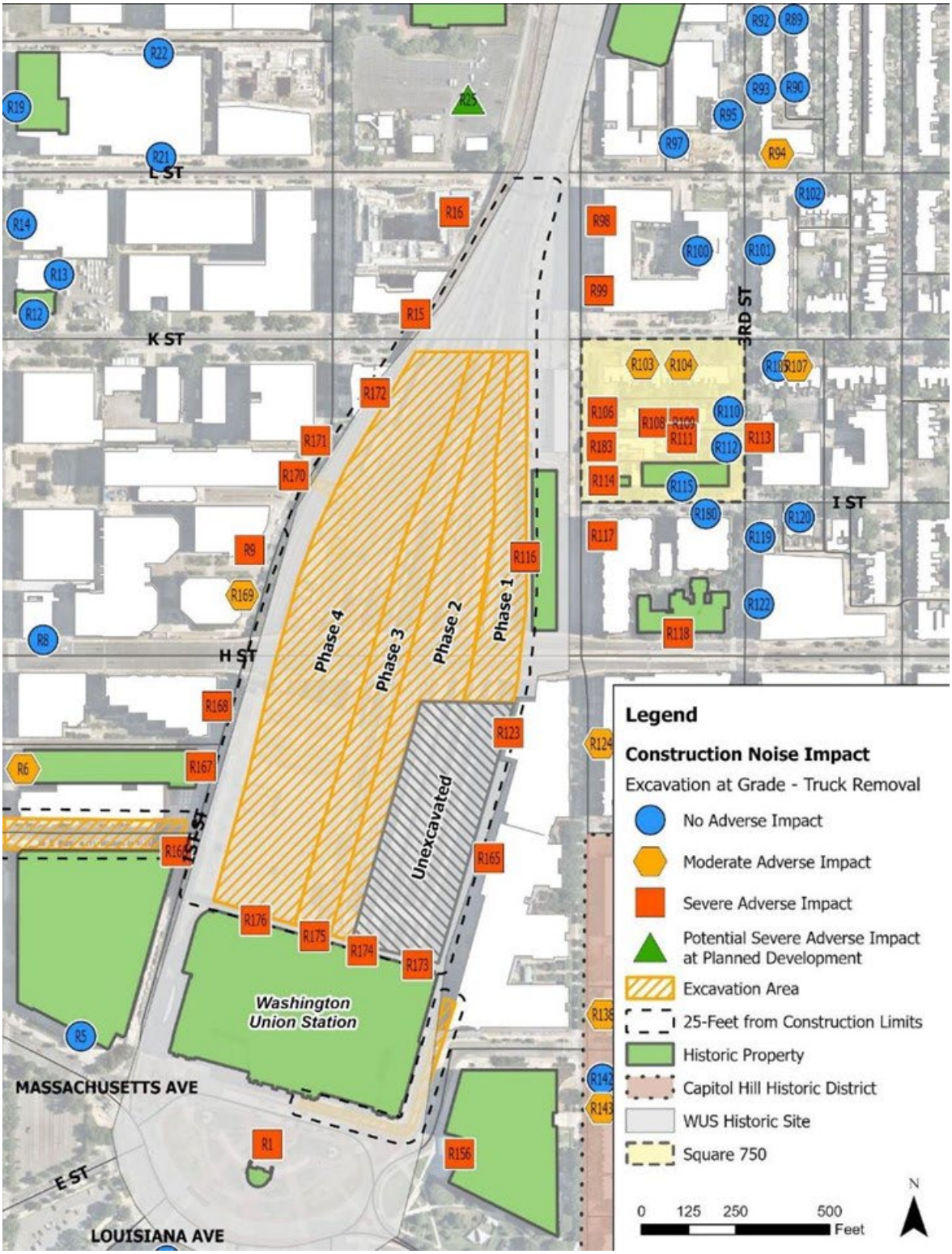
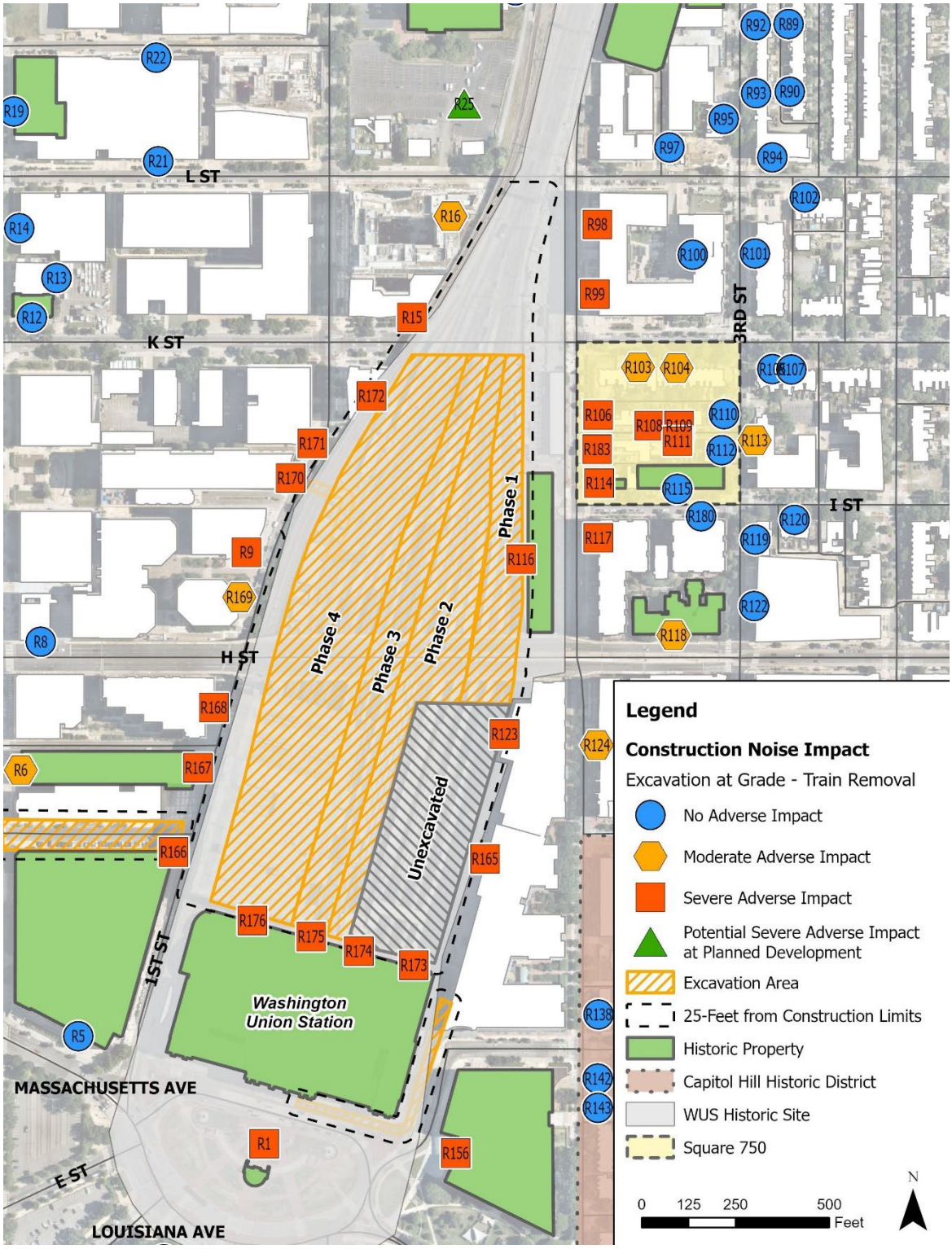


Figure 5-12. Start of Excavation Noise Impacts (Work Train Scenario)



End of Excavation

In the Preferred Alternative, at the end of excavation, there would be major adverse noise impacts at four receptor locations (both scenarios). There would be moderate adverse noise impacts at 20 receptor locations (All Truck Scenario) or 12 receptor locations (Work Train Scenario).

As excavation proceeds, noisy equipment would shift below grade, resulting in greater sound attenuation from the SOE structures and surrounding buildings, and lower noise levels at nearby receptors. By the end of the excavation work, noise levels would be significantly lower than at the start. In the All Truck Scenario, noise levels would be up to 88 dBA (Ldn). In the Work Train Scenario, noise levels would be up to 86 dBA (Ldn). Noise levels would be approximately 2 dBA (Ldn) higher in the All Truck Scenario than in the Work Train Scenario. The greatest differences would occur at the same locations as described for noise levels at the start of excavation.

Figure 5-13 and **Figure 5-14** illustrate impacts in the All Truck Scenario and in the Work Train Scenario, respectively. Noise levels would exceed the long-term construction noise impact criteria for severe or moderate impacts at much fewer locations than at the start of excavation. There would be severe adverse impacts at only four receptors in either scenario. Moderate impacts would occur at 20 or 12 receptor locations depending on the scenario. The Work Train Scenario would result in substantially fewer impacts than the All Truck Scenario. Eight receptor locations that would experience moderate impacts in the latter would experience no impacts in the former, especially along Second Street NE south of H Street NE.

Construction Vibration

In the Preferred Alternative, there could be a major adverse impact from vibration during SOE construction on the REA Building, the Kaiser Permanente Medical Center, and the Union Station historic station building due to potential risk of structural damage. Another major adverse impact with potential risk of structural damage could occur at the City Post Office (Postal Museum) during construction of the G Street ramp. There would be moderate adverse impacts from truck-generated vibration at 14 locations due to annoyance.

Vibration generated by construction equipment has the potential to cause structural damage to buildings close to the construction site and to annoy people in nearby buildings. Activities that would generate vibration in the Preferred Alternative includes drilling during secant pile wall construction; vibratory sheet pile driving; dropping clam shovels and impact pile driving during slurry wall construction; use of hoe rams and jackhammers during concrete removal; use of excavators, back hoes, loaded trucks during excavation; mounted impact hammers during ramp construction; and use of vibratory rollers for track re-construction.

Vibratory pile driving associated with the sheet pile wall SOE has the potential to cause structural damage within 31 feet of the most fragile buildings and within 13 feet of buildings with reinforced concrete, steel, or timber frames. Drilling associated with secant pile wall SOE has the potential to cause structural damage within 20 feet of the most fragile buildings and within 8 feet of buildings with reinforced concrete, steel, or timber frames.

Figure 5-13. End of Excavation Noise Impacts (All Truck Scenario)

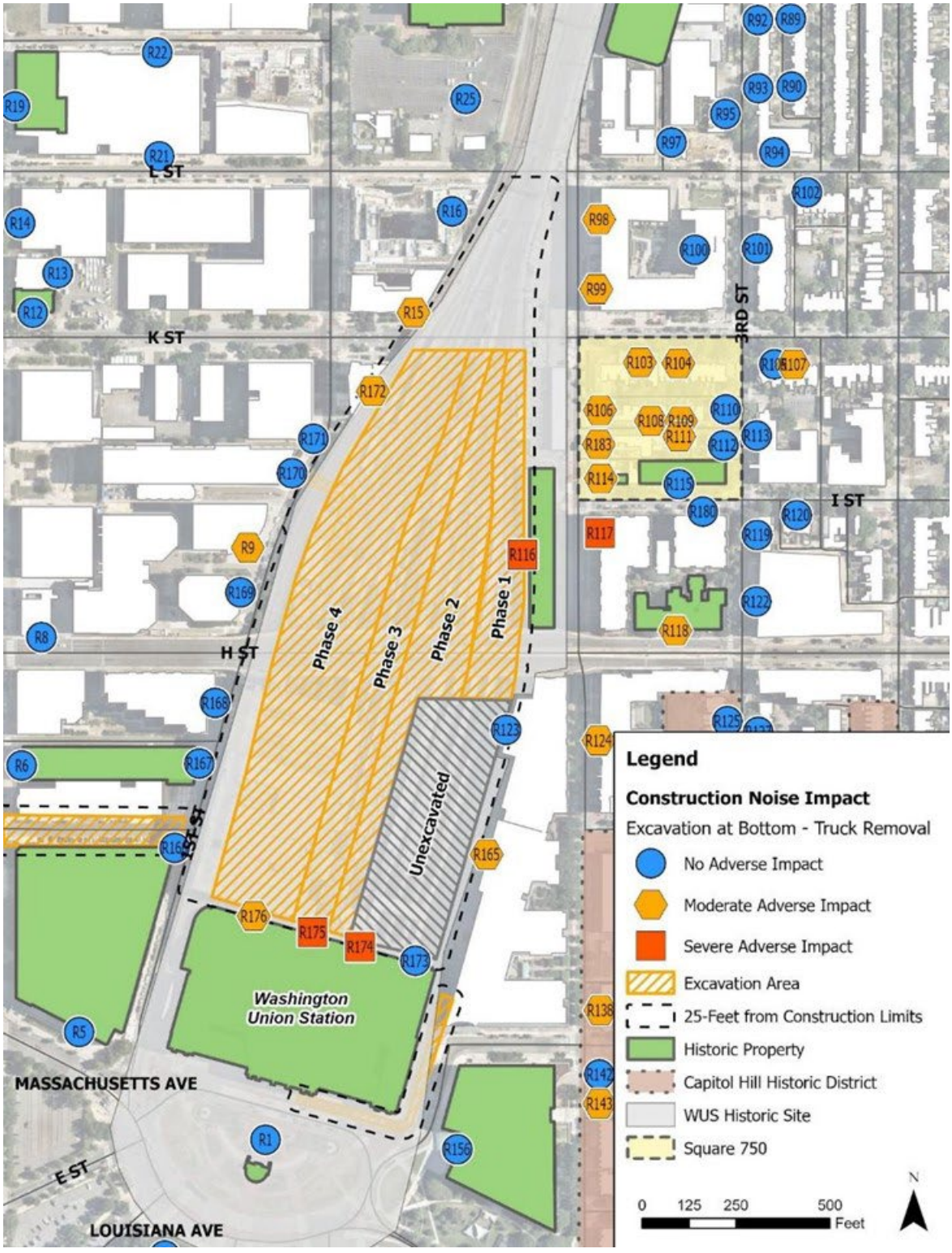


Figure 5-14. End of Excavation Noise Impacts (Work Train Scenario)

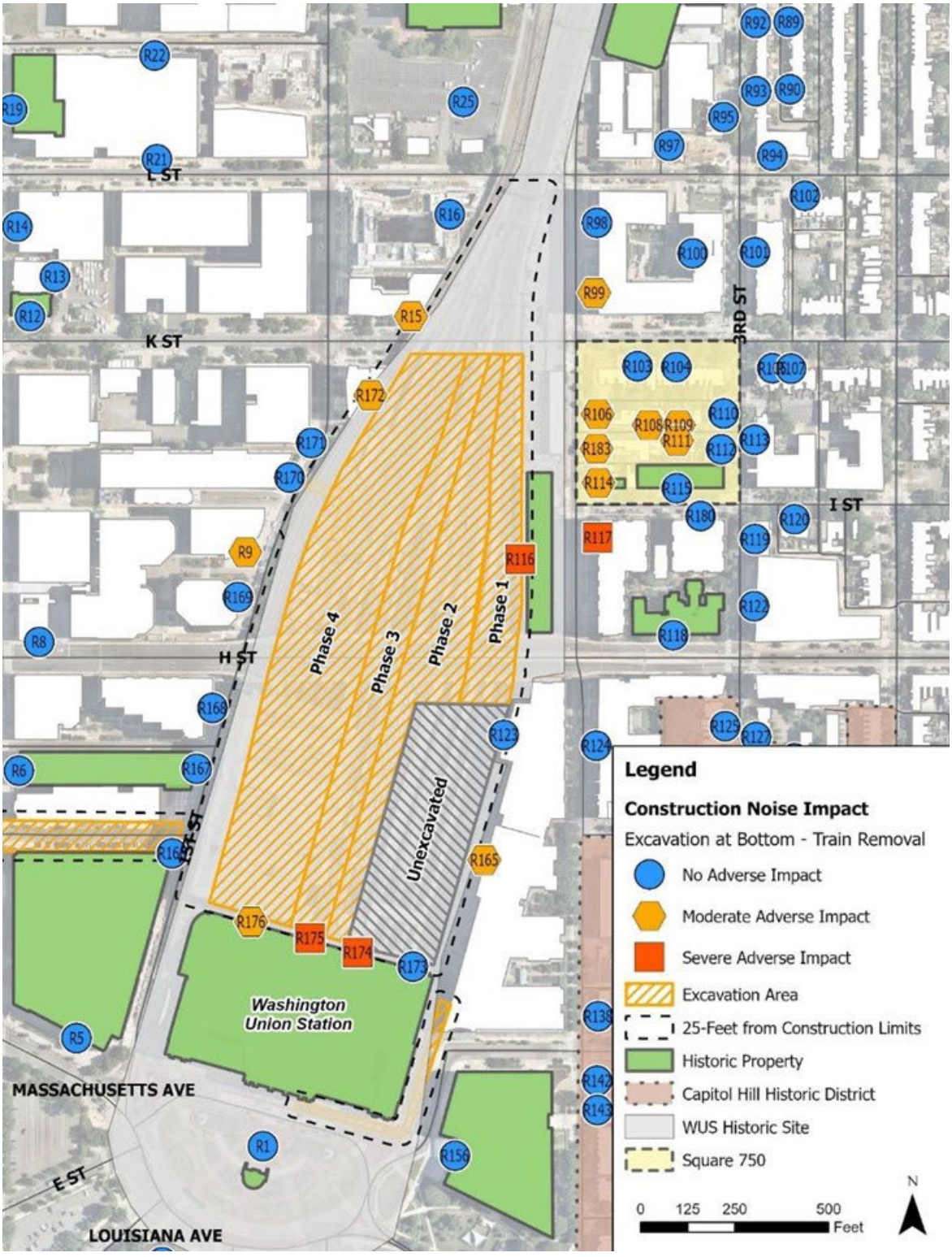


Figure 5-15 illustrates the results of the construction equipment vibration assessment for the Preferred Alternative.[438] There would be major adverse impacts on the REA Building (R116, along the eastern edge of the rail terminal just north of H Street NE), the Kaiser Permanente Medical Center (R123, along the eastern edge of the rail terminal just south of H Street NE), and the Washington Union Station historic station building (R173-176) because vibratory pile driving would occur within 10 to 16 feet of these structures, resulting in vibration levels of approximately 0.33 to 0.67 inches per second (in/s). Another major impact would occur at the City Post Office (Postal Museum) (R166, on Massachusetts Avenue between First Street NE, G Street NE, and North Capitol Street), where mounted impact hammers could be used as close as 5 feet from the building, resulting in vibration levels of approximately 0.39 in/s. In its initial stages, the beginning of the column removal work may generate vibration impacts within the eastern part of the historic station building if jackhammers are to break the existing flooring and access girders and column from above. Such impacts would be of brief duration.

Vibration levels at the four above buildings may exceed the criterion for increased risk of structural damage, but this would depend on building sensitivity, which in turn is a function of the type of construction. All four buildings were designed within the context of an active rail terminal and are all large masonry structures. Therefore, they can be expected to have low sensitivity, reducing the risk of structural impact. However, as historic structures, the REA Building, the City Post Office (Postal Museum), and the historic station building may warrant the application of a lower criterion than the one applicable to buildings of similar construction but more recent. The sensitivity of the buildings would have to be assessed before the beginning of construction activities.[439]

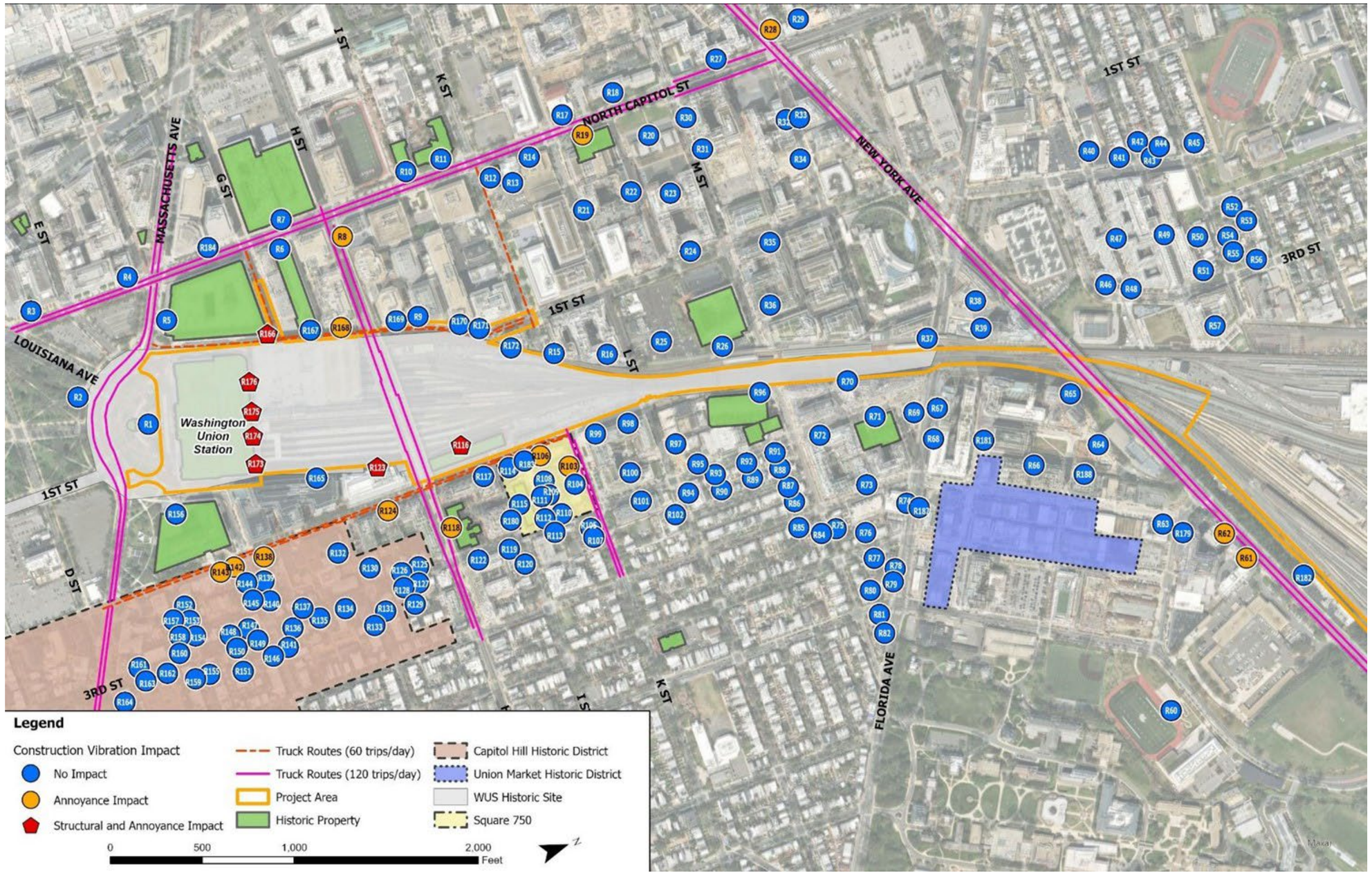
Interior vibration conditions at the same four receptors may range from 80 to 90 VdB, which would exceed the threshold for human annoyance; however, these impacts would only occur when vibration-generating work is conducted near the buildings. Vibration annoyance typically would not occur beyond 50 feet of the vibration source.

Vibration from truck traffic would cause moderate adverse impacts by exceeding the threshold for annoyance at 14 other locations close to New York Avenue, North Capitol Street, Second Street NE, and First Street NE. These impacts would occur in the All Truck Scenario. Vibration in the Work Train Scenario would be much less noticeable.

[438] One of the modeled receptor locations categorized as annoyance is outside the **Figure 5-15** map extent.

[439] See **Table 7-1**, Item #38.

Figure 5-15. Construction Vibration Impacts



5.10.4 Summary of Impacts

Table 5-65 summarizes the noise and vibration impacts of the No-Action Alternative and Preferred Alternative.

Table 5-65. Summary of Impacts on Noise and Vibration

Type of Impact	No-Action Alternative	Preferred Alternative
Direct Operational Noise	**Beneficial impacts:** Decreases in noise south of K Street NE due to private air rights development. **Negligible Adverse impacts**: Noise increases typically less than 1 dBA further away from private air rights development	**Moderate adverse** impacts at **14** locations
SOE Construction Noise	N/A	**Major adverse** impacts at **32** locations and **moderate adverse** impacts at **8** locations
Start of Excavation Noise	N/A	**All Truck Scenario:** **Major adverse** impacts at **29** locations and **moderate adverse** impacts at **14** locations
		Work Train Scenario: **Major adverse** impacts at **26** locations and **moderate adverse** impacts at **10** locations
End of Excavation Noise	N/A	**All Truck Scenario:** **Major adverse** impacts at **4** locations and **moderate adverse** impacts at **20** locations
		Work Train Scenario: **Major adverse** impacts at **4** locations and **moderate adverse** impacts at **12** locations
Direct Operational Vibration Impacts	**Negligible adverse impacts:** Vibration would be similar to existing conditions at most locations and would remain below the FTA criteria	**Minor adverse**, localized vibration impacts.
Construction Vibration Impacts	N/A	**Major Adverse** impacts at **4** locations **Moderate adverse** impacts at **14** locations

[1] N/A = not applicable. Construction of the projects included in the No-Action Alternative would cause noise and vibration impacts. However, available information on methods and schedules of construction is insufficient to characterize these impacts.

5.11 Aesthetics and Visual Quality

This section addresses the potential impacts of the No-Action Alternative and Preferred Alternative on aesthetics and visual quality. Because of its size and high visibility, the Project has the potential to affect the visual quality and character of the Project Area and surrounding views and vistas.

Appendix F5, *Aesthetics and Visual Quality: Visual Assessment*, presents evaluations of the visual impacts of the No-Action Alternative and the Preferred Alternative, respectively, including photo-simulations, for each of the 28 views and viewsheds included in the Study Area. The findings in this section are based on the analyses presented in this appendix.

5.11.1 Methodology

5.11.1.1 Operational Impacts

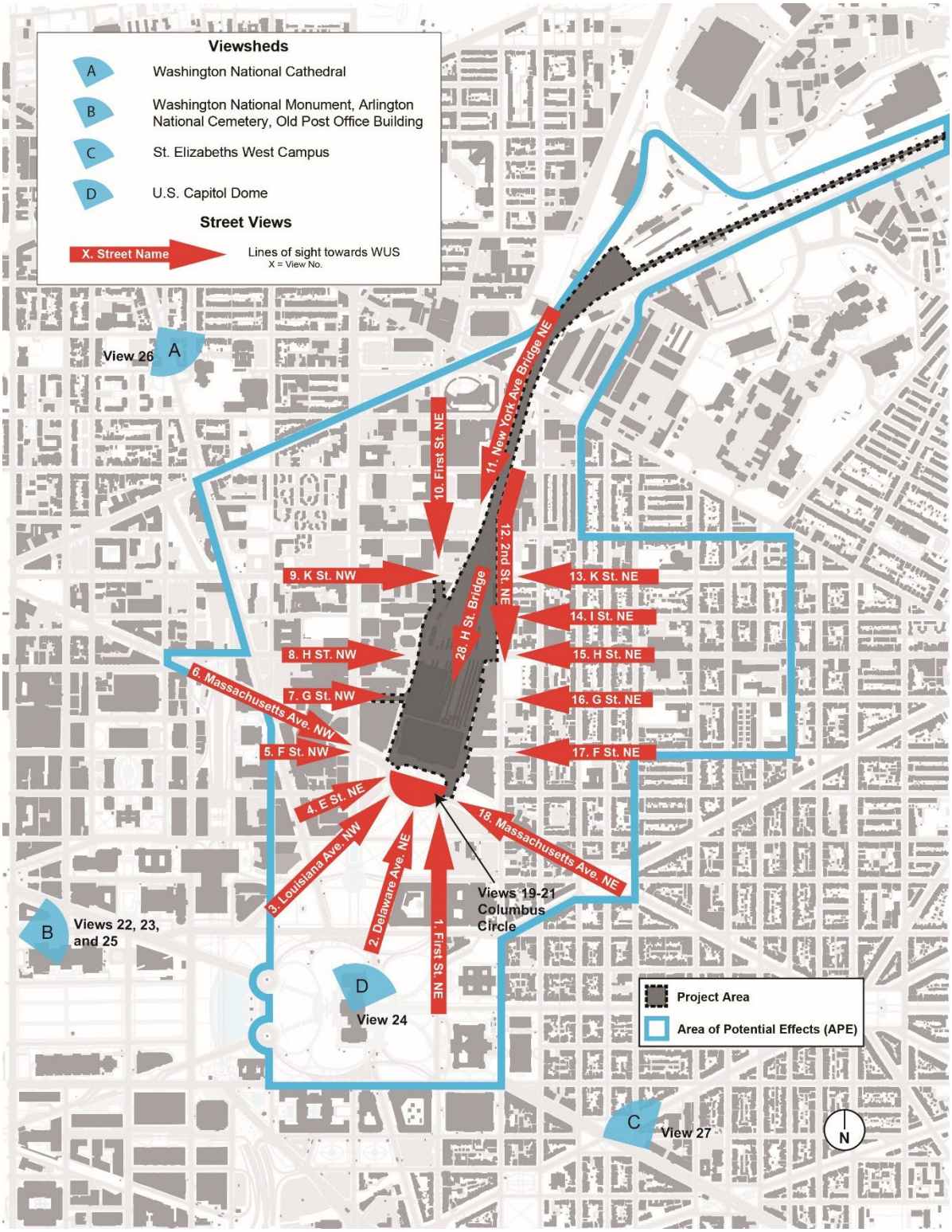
The assessment of impacts on aesthetics and visual quality was conducted based on 22 significant street views and six culturally significant viewsheds with views toward the Project Area, for a total of 28 views as shown in **Figure 5-16** (viewsheds A, C, and D contain one view each and viewshed B containing three views). To assess the visual impacts of the alternatives, visual simulations were developed by superimposing building volumes onto photographs of the 28 views. These simulations convey building mass, height, and setback. For the No-Action Alternative, building volumes reflect the maximum allowable zoning volumes as no more refined plans are available. For the Preferred Alternative, analyses are based on more refined assumptions about mass, height, and setback for the private and potential Federal air rights development, defined in collaboration with the private air rights developer during the post-2020 DEIS refinements of the Preferred Alternative.[440] Neither analysis incorporates any specific design or architectural elements, as these are not available at this early stage of project development.

The intensity of visual impacts for each of the 28 views were measured by the degree of visibility and sensitivity. Sensitivity refers to how much the anticipated change would affect defining elements of the view in a way that would change a viewer's experience. Impact intensities were defined as follows:

- **No Impact:** Changes would not be visible and would not alter the visual or cultural character of the view.
- **Negligible Adverse Impact:** Changes would be just noticeable but have little to no potential to alter the visual or cultural character of the view.
- **Minor Adverse Impact:** Changes would be readily noticeable but would alter the visual and cultural character of the view to only a low degree.
- **Moderate Adverse Impact:** Changes would be very noticeable but would alter the visual and cultural character of the view to only a low or moderate degree.

[440] The massing provided by the developer was illustrative and represents one potential option for the private air rights development.

Figure 5-16. Street Views and Viewsheds



- **Major Adverse Impact:** Changes would be very noticeable and alter the visual and cultural character of the view to a high degree.
- **Beneficial Impact:** Changes would be noticeable but would alter the visual character of a view in such a way as to return an impacted view to its original state or change the view to be less impactful than the existing condition.

The impact discussions list the views that would be affected out of the 28 views considered; the views that are not listed would experience no impacts.

5.11.1.2 Construction Impacts

Construction impacts were evaluated based on the anticipated visibility of the construction site and equipment such trailers, machinery, and material stockpiles.

5.11.2 Impacts of the No-Action Alternative

5.11.2.1 Direct Operational Impacts

Relative to existing conditions, the No-Action Alternative would result in direct operational impacts on 21 out of 28 views, as shown in Table 5-66.

Table 5-66. Direct Operational Visual Impacts in the No-Action Alternative

Impact	Number of Views Affected	Views Affected[1]
Major Adverse	6	First Street NE (#1), Delaware Avenue NE (#2), Louisiana Avenue NE (#3), New York Avenue Bridge (#11), Second Street NE (#12), H Street Bridge (#28)
Moderate Adverse	6	E Street NE (#4), First Street NE (#10), K Street NE (#13), I (eye) Street NE (#14), Columbus Circle Drive (#20), U.S. Capitol Dome (#24)
Minor Adverse	5	H Street NW (#8), K Street NW (#9), H Street NE (#15), G Street NE (#16), Columbus Plaza (#19)
Negligible Adverse	4	F Street NE (#17), Massachusetts Avenue NE (#18), Washington Monument (#22), Old Post Office Building (#25)

1. # refers to the number assigned to the view in **Figure 5-16**.

In the No-Action Alternative, aesthetics and visual quality in the Study Area would be primarily affected by the construction of the private air rights development above the WUS rail terminal. The development would be built on a deck over the entire rail terminal between H and K Streets NE and the eastern part of the terminal between H Street and the historic station building. As the design of the private air rights development in the No-Action Alternative is not defined, its impacts can only be assessed based on the maximum buildable volume allowed by zoning regulations.

The views most affected would be those looking directly onto the rail terminal and those along the corridors adjacent to the terminal. There, the private air rights development would cause highly visible

changes that would alter the character of the views and result in major to moderate adverse impacts. The view along H Street (#28) would be particularly affected, as the perceived openness beyond the barrier wall looking south towards WUS would disappear and the private development facing the bridge would be highly visible.

Views from the east toward the back of WUS would also be affected. The most noticeable change would be to the view along I (Eye) Street NE (#14), which currently terminates at the low-rise REA Building. The private air rights development would close out the view and result in a moderate adverse impact. Other adverse impacts on east-west views from either side of WUS, north of the historic station building, would range from minor to moderate, depending on how visible the new development would be. Visible changes to the H Street Corridor from both the east and the west, where the existing gap on both sides of the H Street Bridge would be replaced with a new streetscape, would result in a minor adverse impact. Views from the east, along Massachusetts Avenue and F Street, would experience barely visible changes and negligible adverse impacts. Seen from these directions, the historic station building would hide most of the development to its north.

Views from the south of WUS toward the historic station building would also be affected. Louisiana and Delaware Avenues, and First Street NE provide direct views of WUS, visually connecting it with the U.S. Capitol and Capitol Grounds. The existing view is characterized by the uninterrupted silhouette of the barrel-vault roof of the historic station building and wide tree-lined streets used for U.S. government parking. The private air rights development would be visible from various points along Louisiana Avenue, Delaware Avenue, and First Street, in addition to views from E Street NE and from the east and west sides of Columbus Circle Drive. Views where the development would interrupt the silhouette of WUS at the barrel vault would cause major or moderate adverse impacts depending on how much of the development would be seen above the station's roofline.

The private air rights development would be barely visible from the Washington Monument and Old Post Office Building and cause negligible impacts to views from these monuments. It would be visible from the U.S. Capitol Dome (#24), resulting in a moderate adverse impact.

5.11.2.2 Indirect Operational Impacts

Relative to existing conditions, there would be no indirect operational visual impacts in the No-Action Alternative.

All visual impacts are direct impacts. The projects included in the No-Action Alternative would not cause visual impacts after their completion or outside the areas from which they would be visible.

5.11.2.3 Construction Impacts

In the No-Action Alternative, there would be a moderate adverse impact on one view, minor adverse construction impacts on 10 views, and negligible adverse construction impacts on nine views, as shown in Table 5-67.

In the No-Action Alternative, the primary cause of visual impacts would be the construction of the private air rights development above the rail terminal. Distance, perspective, and the location and

height of heavy construction equipment and activities would influence the character and intensity of the impacts.

Table 5-67. Visual Construction Impacts in the No-Action Alternative

Impact	Number of Views Affected	Views Affected[1]
Moderate Adverse	1	H Street Bridge (#28)
Minor Adverse	10	First Street NE (#1), H Street NW (#8), K Street NW (#9), First Street NE (#10), New York Avenue Bridge NE (#11), Second Street NE (#12), K Street NE (#13), I (Eye) Street NE (#14), H Street NE (#15), U.S. Capitol Dome (#24).
Negligible Adverse	9	Delaware Avenue NE (#2), Louisiana Avenue NE (#3), E Street NE (#4), G Street NE (#16), Massachusetts Avenue NE (#18), Columbus Plaza (#19), Columbus Circle Drive (#20), Washington Monument (#22), and Old Post Office Building (#25).

1. # refers to the number assigned to the view in **Figure 5-16.**

Nine views would experience negligible impacts. Although construction would be visible from these locations, distance or intervening structures (including the historic station building) would hide or mask most of it. Construction would be more noticeable from ten locations and impacts on these views would be minor. The Project Area, a rail terminal, has a semi-industrial appearance. Visually, construction activities would accentuate this aspect and visual impacts would remain within the range of those typically caused by large-scale construction projects in the District. Impacts would be greater on the view from the H Street Bridge (#28) due to the proximity of the construction relative to the bridge and passersby and, as such, would be of moderate intensity.

5.11.3 Impacts of the Preferred Alternative

5.11.3.1 Direct Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would result in negligible adverse direct operational visual impacts on two views, and beneficial direct operational visual impacts on two views out of 28 views, as shown in Table 5-68.

Table 5-68. Direct Operational Visual Impacts in the Preferred Alternative

Impact	Number of Views Affected	Views Affected[1]
Negligible Adverse	2	K Street NW, looking east (#9); Columbus Circle Drive, east side (#20)
Beneficial	2	G Street NW, looking east (#7); Columbus Circle Drive, west side (#21)

1. # refers to the number assigned to the view in **Figure 5-16.**

The Preferred Alternative would have a negligible direct adverse operational impact on two views. While some Project elements would be somewhat visible from these views, they would be barely noticeable, either because they would occupy space currently occupied by similar built elements (View #9) or because the mass of the private air rights development would obscure or encompass them (View #20). The Preferred Alternative would not change the character of these views.

The Preferred Alternative features an east-west train hall and integrated bus facility that would expand the width of the rail terminal. The existing parking garage would be removed and the portion of the garage projecting over the service roadway on the west side of WUS would be eliminated, re-establishing views along First Street NE. This would result in a beneficial impact on the view from the west side of Columbus Circle Drive (View #21). There would also be a beneficial impact on the view from G Street NW, looking east (View #7), as the Preferred Alternative's elements would be less visible than the existing parking garage.

5.11.3.2 Indirect Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would result in adverse indirect operational impacts on seven views out of 28 views, as shown in Table 5-69.

Table 5-69. Indirect Operational Visual Impacts in the Preferred Alternative

Impact	Number of Views Affected	Views Affected[1]
Moderate Adverse	1	Delaware Avenue NE, looking northeast (#2)
Minor Adverse	2	First Street NE, looking north (#1); Louisiana Avenue NW, looking northeast (#3)
Negligible Adverse	4	E Street NE, looking northeast (#4); F Street NW, looking east (#5), view from the U.S. Capitol Dome (#24); H Street Bridge, looking south (#28)

1. # refers to the number assigned to the view in **Figure 5-16**.

Indirect impacts would be caused by the mass and height of the potential Federal air rights development. Delaware Avenue is one of three radial streets (the others being Louisiana Avenue NW and First Street NE) that provide direct views to WUS from the south, visually connecting it with the U.S. Capitol and Capitol Grounds. This relationship played an important role in determining the site and design of WUS. The existing view is dominated by the uninterrupted silhouette of the barrel-vault roof and wide tree-lined streets currently used for U.S. government parking. The views are characterized by the prominence of the historic station building and Columbus Plaza, designed by D.H. Burnham and Company and completed in 1908 and 1912, respectively.

Relative to the No-Action Alternative, the Preferred Alternative would have a moderate indirect impact on the view from Delaware Avenue NE (View #2) because the potential Federal air rights development would be highly noticeable from there, rising above the roofline of the west pavilion of WUS. The impact

would be moderate because the Federal air rights and the private air rights developments would balance each other out, resulting in a visual symmetry behind WUS that would attenuate the impact.

The Preferred Alternative would also have minor indirect impacts on two views. It would be somewhat visible from First Street NE (View #1) and Louisiana Avenue NW (View #3) but would also be balanced out by the private air rights development and would not change the character of the views.

Finally, the potential Federal air rights development would have negligible impacts on four views. While visible from these views (barely so in the case of View #5), it would blend in with its surroundings, which would be dominated by the private air right development or other existing buildings.

5.11.3.3 Construction Impacts

Construction of the Preferred Alternative would result in negligible adverse impacts on twelve views and minor adverse impacts on six views out of the 28 views that were assessed. One view would have a moderate construction-related visual impact.

Construction of the Preferred Alternative would change the appearance of the rail terminal and its immediate surroundings for the duration of the construction period, approximately 13 years. Features typical of a large construction site such as perimeter fencing, cranes and other large equipment, stockpiles of materials or debris, and partially built structures would be fully or partially visible from outside the Project Area. This would affect the visual quality of several views around WUS. Impacts are shown in **Table 5-70**.

Table 5-70. Visual Construction Impacts in the Preferred Alternative

Impact	Number of Views Affected	Views Affected[1]
Moderate Adverse	1	H Street Bridge (#28)
Minor Adverse	6	G Street NW (#7), First Street NE (#10), New York Avenue Bridge NE (#11), Second Street NE (#12), I (Eye) Street NE (#14), H Street NE (#15).
Negligible Adverse	12	First Street NE (#1), Delaware Avenue NE (#2), Louisiana Avenue NE (#3), E Street NE (#4), H Street NW (#8), K Street NW (#9), K Street NE (#13), G Street NE (#16), Columbus Plaza (#19), Columbus Circle Drive (#20), Columbus Circle (#21), U.S. Capitol Dome (#24).

1. # refers to the number assigned to the view in **Figure 5-16.**

Based on distance, perspective, and the anticipated location and height of heavy construction equipment and activities, construction of the Preferred Alternative would result in negligible adverse impacts on the following views: Views #1, 2, 3, 4, 8, 9, 13, 16, 19, 20, 21, and 24. Distance or intervening structures would hide most of the construction equipment or activities from those views.

The Preferred Alternative would result in minor adverse impacts on Views #7, 10, 11, 12, 14, and 15. Construction equipment and activities would be distinctly visible from those views for at least part of the construction period. Impacts would be minor for the following reasons. The function of the Project Area as a rail terminal already gives it a semi-industrial appearance. Visually, construction would accentuate this aspect of the Project Area rather than represent a major change in visual quality. Also, although construction would take place over more than a decade, the focus of activities, and the corresponding impacts, would change over time. This would make the impacts of constructing the Preferred Alternative on any single view like those of most large-scale construction projects in the District despite the long overall duration of the construction activities. In general, impacts would be greater during construction Phases 1 and 4, when the focus would be on the eastern and western edges of the terminal, respectively, than during Phases 2 and 3, when activities would be in the middle of the terminal and less visible from outside. Impacts would be least during the 12-month period when only column removal work in the First Street Tunnel would take place.

Construction would have a moderate impact on the view from the H Street Bridge (#28) due to the proximity of the construction relative to the bridge and passers-by.

5.11.4 Summary of Impacts

A summary of the operational, permanent impacts of the No-Action Alternative and Preferred Alternative for all views is provided in **Table 5-71**. The views not listed in the table would experience no permanent visual impacts.

Table 5-71. Summary of Operational Visual Impacts

View	No-Action Alternative	Preferred Alternative[1]
1. First Street NE, view looking north	Major adverse	*Minor adverse*
2. Delaware Avenue NE, view looking northeast	Major adverse	*Moderate adverse*
3. Louisiana Avenue NW, view looking northeast	Major adverse	*Minor adverse*
4. E Street NE, looking northeast	Moderate adverse	*Negligible adverse*
5. F Street NW, view looking east	None	*Negligible adverse*
7. G Street NW, view looking east	None	Beneficial
8. H Street NW, view looking east	Minor adverse	None
9. K Street NW, view looking east	Minor adverse	Negligible adverse
10. First Street NE, view looking south	Moderate adverse	None
11. New York Avenue Bridge NE, view looking south	Major adverse	None
12. Second Street NE, view looking south	Major adverse	None
13. K Street NE, view looking west	Moderate adverse	None
14. I Street NE, view looking west	Moderate adverse	None
15. H Street NE, view looking west	Minor adverse	None
16. G Street NE, view looking west	Minor adverse	None
17. F Street NE, view looking west	Negligible adverse	None
18. Massachusetts Avenue NE, view looking northwest	Negligible adverse	None

View	No-Action Alternative	Preferred Alternative[1]
19. View from Columbus Plaza	Minor adverse	None
20. View from Columbus Circle Drive – East Side	Moderate adverse	Negligible adverse
21. View from Columbus Circle Drive – West Side	None	Beneficial
22. View from Washington Monument	Negligible adverse	None
24. View from U.S. Capitol Dome	Moderate adverse	*Negligible adverse*
25. View from the Old Post Office Building	Negligible adverse	None
28. View from H Street Bridge	Major adverse	*Negligible adverse*
Total Views with No Impact	7	17
Total Views with Negligible Adverse Impact[2]	4 (4)(0)	6 (2)(4)
Total Views with Minor Adverse Impact[2]	5 (5)(0)	2 (0)(2)
Total Views with Moderate Adverse Impact[2]	6 (6)(0)	1 (0)(1)
Total Views with Major Adverse Impact	6 (6)(0)	0
Total Views with Beneficial Impacts[2]	0	2 (2)(0)

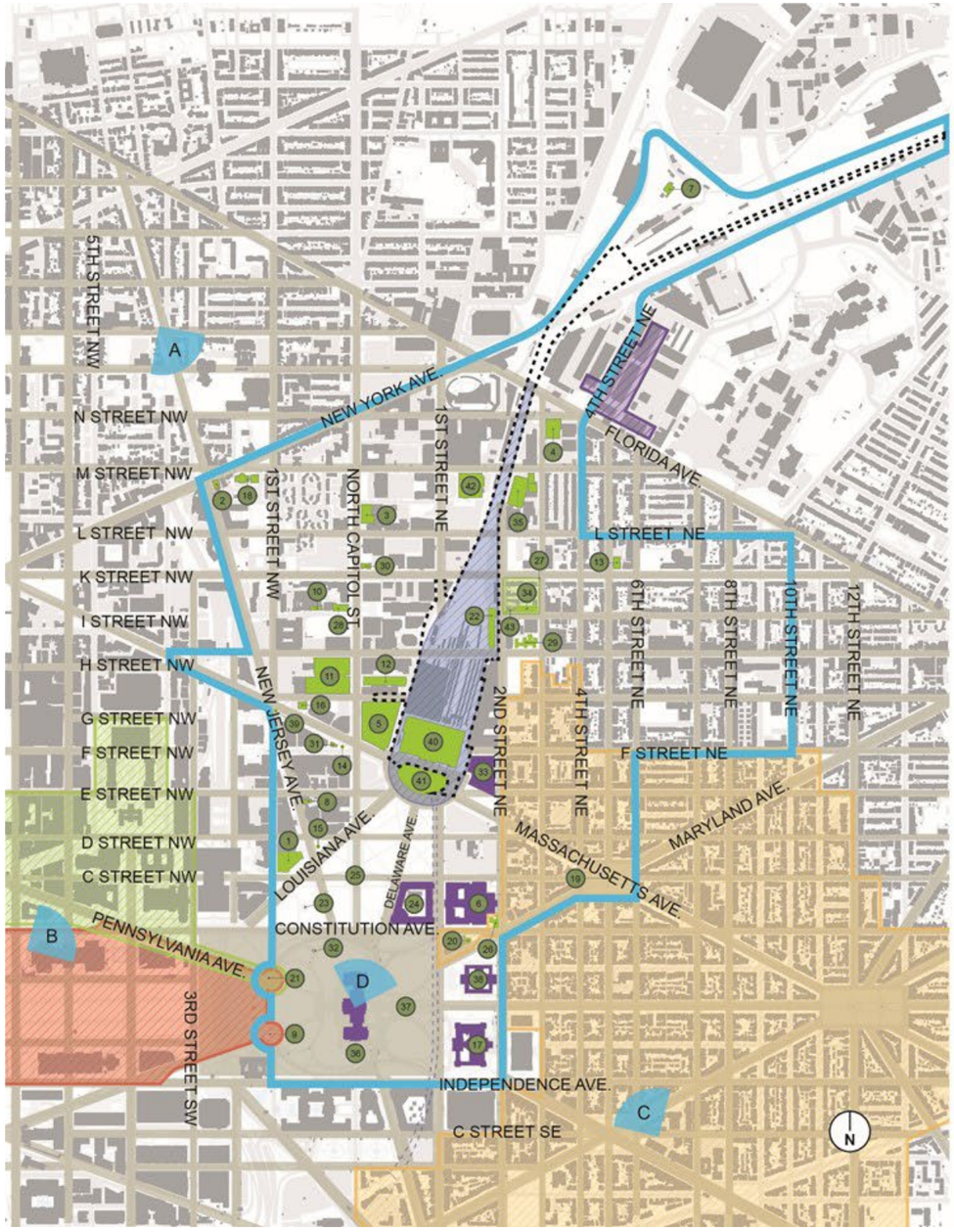
1. Italics indicate a direct impact.
2. Total (direct impact) (indirect impact)

5.12 Cultural Resources

This section describes the impacts of the No-Action Alternative and Preferred Alternative on cultural resources and historic properties. FRA considered 55 historic properties, including significant viewsheds from six historic properties (Washington National Cathedral, Washington National Monument, Old Post Office Building, Arlington National Cemetery, U.S. Capitol Dome, and St. Elizabeths West Campus). **Figure 5-17** shows the location of the 55 historic properties, as well as the Section 106 Area of Potential Effects (APE), which is also the Study Area for the NEPA impact analysis.

Of the 55 historic properties, effect analysis indicated that 25 would not be affected by the Preferred Alternative. This is because these resources are too far from the Project Area to be physically affected; experience changes in noise or vibration levels; or afford distinct views of the Project. Therefore, there would be no impacts on those resources. The unaffected resources are identified in **Table 5-75** with greyed out rows and are not discussed further in this section.

Figure 5-17. Area of Potential Effects



Washington Union Station Expanion Project
Section 106 Area of Potential Effects and Identification of Historic Properties

Project Area

Area of Potential Effects (APE)

Historic Districts and Sites

Capitol Hill Historic District	NR; DC	Pennsylvania Avenue National Historic Site	NR; DC
National Mall Historic District	NR; DC	Union Market Historic District	NR; DC
L'Enfant - McMillan Plan	NR; DC	Washington Union Station Historic Site	[NR and DC Eligible]
		First Street Tunnel (Below-grade)	

Historic Properties ■ Architect of the Capitol Heritage Assets

AOC	Architect of the Capitol
NHL	National Historic Landmark
NR	National Register of Historic Places
NPS	National Park Service
DC	District of Columbia Inventory of Historic Sites

1	Acacia Building	[Potentially NR and DC Eligible]	24	Russell Senate Office Building	AOC
2	Augusta Apartment Building (and Louisa Addition)	NR; DC	25	Senate Parks, Underground Garage, and Fountains	AOC
3	C&P Telephone Company Warehouse	NR; DC	26	Belmont-Paul Women's Equality National Monument	NHL; NR; DC
4	Capital Press Building (Former)	[Potentially NR and DC Eligible]	27	Square 750 Rowhouse Development	[Potentially NR and DC Eligible]
5	City Post Office (Postal Museum)	DC	28	St. Aloysius Catholic Church	NR; DC
6	Dirksen and Hart Senate Office Buildings	AOC	29	St. Joseph's Home (Former)	[Potentially NR and DC Eligible]
7	Eckington Power Plant; Coach Yard Power Plant	[DC Eligible]	30	St. Phillip's Baptist Church	DC
8	Engine Company No. 3	DC	31	SunTrust Bank (Former Childs Restaurant)	[Potentially NR and DC Eligible]
9	Garfield Memorial	AOC	32	The Summerhouse	AOC
10	Gonzaga College High School	[Potentially NR and DC Eligible]	33	Thurgood Marshall Federal Judiciary Building	AOC
11	Government Printing Office	DC	34	Topham's Luggage Factory (Former)	[Potentially NR and DC Eligible]
12	Government Printing Office Warehouse No. 4	[Potentially NR and DC Eligible]	35	Uline Ice Company Plant and Arena Complex	NR; DC
13	Hayes School	DC	36	United States Capitol	AOC
14	Holodomor Ukrainian Holocaust Memorial	NPS	37	United States Capitol Square	AOC
15	Japanese American Memorial to Patriotism During WWII	NPS	38	United States Supreme Court	AOC
16	Joseph Gales School	DC	39	Victims of Communism Memorial	NPS
17	Library of Congress, Thomas Jefferson Building	AOC	40	Washington Union Station (WUS)	NR; DC
18	M Street High School (Perry School)	NR; DC	41	WUS Plaza (Columbus Plaza) and Columbus Fountain	NR; DC
19	Major General Nathaneal Greene Statue	NR; DC	42	Woodward and Lothrop Service Warehouse	NR; DC
20	Mountjoy Bayly House	NHL; NR	43	901 Second Street NE	[Potentially NR and DC Eligible]
21	Peace Monument	AOC			
22	Railway Express Agency Building	[DC Eligible]			
23	Robert A. Taft Memorial	AOC			

Viewsheds

- A Washington National Cathedral
- B Washington Monument, Arlington National Cemetery, Old Post Office Building
- C St. Elizabeths West Campus
- D U.S. Capitol Dome

5.12.1 Methodology

This section summarizes the methodology for evaluating the potential impacts of the No-Action Alternative and Preferred Alternative on cultural resources and historic properties. The impact assessment is based on the effect evaluation prepared in accordance with Section 106, which evaluates effects based on existing conditions. Unlike other resources in this FEIS, the impacts of the Preferred Alternative are assessed relative to existing conditions to remain consistent with the Section 106 assessment. [441] When adverse impacts may occur, but insufficient data are available to determine whether they would occur, they are identified only as potential adverse impacts.

A major adverse impact on a historic property would occur if the Project would cause an adverse effect to the resource under Section 106. The criteria for an adverse effect is stated in 36 CFR Part 800, and is when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register of Historic Places (NRHP) in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. [442] Examples of Section adverse effects to historic properties include:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property that is not consistent with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and applicable guidelines;
- Removal of the property from its historic location;
- Change of character of the property's use or of physical features within the property's setting that contributes to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

If the Project would change or alter a resource's location, design, setting, materials, workmanship, feeling, or association but not sufficiently to result in an adverse effect under Section 106, a negligible, minor, or moderate adverse impact may occur under NEPA. A negligible, minor, or moderate adverse

[441] In the No-Action Alternative, the Project would not occur and, therefore, there would be no Federal undertaking for the purposes of Section 106. For the purpose of the NEPA assessment, the impacts of the No-Action Alternative on cultural resources were assessed based on available data and, when possible, using a similar approach to the approach used for the Action Alternatives, but there are no corresponding Section 106 findings for this alternative.

[442] 36 CFR § 800.5 (1).

impact under NEPA does not mean that there would be an adverse effect under Section 106 because the criteria of adverse effect in 36 CFR Part 800 is not met.

5.12.1.1 Operational Impacts

Operational impacts may be physical, visual, or related to noise and vibration, and traffic. To assess direct operational physical impacts, the alternatives were reviewed to determine whether they would potentially cause the destruction, alteration, or removal of part or whole of a resource and the potential of such changes to diminish the resource's integrity.

Visual impacts may affect a resource's integrity of setting, feeling and association by changing the way it relates to its environment and the experience of users, visitors, or passers-by. Visual simulations prepared as part of the Section 106 assessment are the basis for assessing visual impacts on cultural resources. The assessment of visual impacts on cultural resources was based on the visibility of these changes and the sensitivity of the affected view to such changes. Visibility and sensitivity informed the impact finding as shown in **Table 5-72**.

Table 5-72. Intensity of Visual Impacts on Cultural Resources[443]

Visibility	Sensitivity	Intensity of Impact
None	None	None
Low	Low	Negligible
Low	High	Minor
Low	Moderate	Minor
High	Low	Minor
Moderate	Low	Minor
High	Moderate	Moderate
Moderate	Moderate	Moderate
Moderate	High	Moderate
High	High	Major

Impacts from noise and vibration were assessed based on the analyses presented in **Section 5.10**, *Noise and Vibration*. Impacts from noise and vibration on a cultural resource's integrity of setting, feeling, and association were assessed using the following scale:

- **No Impact:** No measurable change in noise or vibration levels.

[443] For the Preferred Alternative, *No Impact* corresponds to *No Effect* under Section 106; *Negligible*, *Minor*, and *Moderate Impact* correspond to *No Adverse Effect*; *Major Impacts* corresponds to *Adverse Effect*.

- **Negligible Impact:** Change in noise level of less than 3 dBA[444] and resulting in no impact per FTA criteria; vibration levels below FTA criteria.[445]
- **Minor Impact:** Change in noise level less than 3 dBA and resulting in moderate impact per FTA criteria; vibration levels below FTA criteria.
- **Moderate Impacts:** Change in noise levels less than 3 dBA resulting in a severe impact per FTA criteria; vibration levels below FTA criteria.
- **Major Impacts:** Change in noise levels more than 3 dBA resulting in a severe impact per FTA criteria or vibration levels above FTA criteria.

While noise and vibration are the main source of traffic-related impacts on cultural resources, increases in traffic volumes along streets may cause visual impacts, conflicts with pedestrians and bicyclists, and disturbances affecting access to homes and businesses that can potentially affect the integrity of a cultural resource's setting, feeling, or association. Traffic impacts other than noise and vibration were assessed based on the findings of the traffic impact analysis presented in **Section 5.5**, *Transportation,* and a qualitative estimate of the potential for changes in traffic volumes to diminish a resource's integrity of setting, feeling, or association.

5.12.1.2 Construction Impacts

Construction impacts were assessed in a similar manner to operational impacts. Assessment of noise and vibration impacts used the FTA thresholds applicable to construction noise and vibration. Steps to evaluate potential construction impacts to cultural resources included: identifying what physical construction effects may occur; potential visual impacts to cultural resources or visual character due to construction activities; and indirect impacts of noise and vibration.

5.12.2 Impacts of the No-Action Alternative

5.12.2.1 Direct Operational Impacts

Physical Impacts

In the No-Action Alternative, relative to existing conditions, projects that would be completed in the Project Area would potentially result in major direct operational physical impacts on the WUS Historic Site and minor direct operational physical impacts on WUS.

The construction of the private air rights development in the No-Action Alternative would cover the currently open rail terminal between the historic station building and K Street NE. This would involve

[444] A change of less than 3 dBA is generally considered barely perceptible (Federal Highway Administration. 2011. *Highway Traffic Noise: Analysis and Abatement Guidance.* Accessed from https://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf Accessed on February 14, 2024.

[445] See **Section 5.10.1.1,** *Operational Impacts, Operational Vibration Impact Criteria.*

modifications to the physical layout of the rail terminal that would affect the physical integrity of much of the WUS Historic Site, resulting in a major adverse impact on this resource.

Several projects included in the No-Action Alternative could also result in physical impacts to WUS. However, it can be anticipated that station improvement projects would be conducted in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* and the 2015 *Washington Union Station Historic Preservation Plan.* [446] As such, any physical impacts on WUS would be minor.

Visual Impacts

In the No-Action Alternative, relative to existing conditions, visual changes would result in major adverse direct operational impacts on three cultural resources: WUS, the WUS Historic Site, and the REA Building. There would also be moderate visual direct operational impacts on seven cultural resources; minor visual direct operational impacts on five resources; and negligible visual direct operational impacts on four resources.

In the No-Action Alternative, the development of the private air rights above the rail terminal southeast and north of H Street NE and the construction of several building blocks on a deck within this area would noticeably change the visual surroundings of WUS, the WUS Historic Site, and the REA Building. The new visual elements would diminish the integrity of setting, feeling, and association of these three cultural resources and cause a major adverse impact.

The private air rights development north of historic station building would change character of views towards WUS. The top of the new buildings would be visible above the roof of the historic station on the east side, with no change on the west side. This would disrupt the visual symmetry of the station's Beaux Arts design, especially noticeable from Delaware Avenue NE; First Street and C Street NE; and east side of Columbus Circle Drive. Views toward the back of the historic station building from the north, for instance from H Street NE or the New York Avenue Bridge, would be blocked by the new air-rights buildings.

The private air rights development would replace the existing, open rail terminal south of K Street, visually altering the WUS Historic Site. The change would be particularly noticeable from the north (H Street and New York Avenue Bridge). The new development would completely hide the rail terminal and back of the historic station building, breaking visual connection between the rail terminal and the historic station building.

The private air right development would also alter the visual setting of the REA Building, as the eastern edge of the deck and development would rise high behind the building, visually cutting it off from the rest of the associated rail terminal.

[446] Washington Union Station Historic Preservation Plan Partners. 2015. *Washington Union Station Historic Preservation Plan.* Accessed from https://www.usrcdc.com/projects/historic-preservation-plan/. Accessed on August 18, 2023.

Several other cultural resources and one cultural viewshed would also be affected visually in the No-Action Alternative, but not in a manner that would substantially alter any of their respective character-defining features and diminish their integrity of setting, feeling, and association.

There would be moderate visual impacts on seven resources. The private air rights development would be highly to moderately visible from the Square 750 Rowhouse Development; 901 Second Street NE; the Thurgood Marshall Federal Judiciary Building; the Topham's Luggage Factory (Former); and the Woodward and Lothrop Service Warehouse. These five resources all have moderate sensitivity to changes because other large-scale multi-story and mixed-use developments have already compromised their small-scale setting, resulting in moderate adverse visual impacts.

There would also be a moderate visual impact on the L'Enfant-McMillan Plan. The private air rights development would affect vistas along street corridors that are part of the plan. The visibility of the development would vary, but it would not block or interrupt any significant perspectives.

Similarly, the private air rights development would be highly visible from the U.S. Capitol Dome, but it would not interrupt the horizon or any views along North Capitol Street or Delaware Avenue toward Columbus Plaza and the historic station building. The visual impact would be moderate.

There would be minor visual impacts on five resources: Senate Parks, Underground Garage, and Fountains; St. Joseph's Home (Former); Uline Ice Company Plant and Arena Complex; Columbus Plaza; and Capitol Hill Historic District. The private air rights development would be moderately or highly visible from these resources, but they have low sensitivity to visual changes because their integrity of setting, feeling, or association does not depend on the affected visual relationships.

Finally, there would be negligible visual impacts on four resources: Dirksen and Hart Senate Office Buildings; Library of Congress, Thomas Jefferson Building; Russell Senate Office Building; and Washington National Monument Cultural Viewshed. The private air rights development would be barely visible from these resources because of distance and intervening structures or vegetation. The resources' integrity of setting, feeling, or association does not depend on those slightly changed views.

Noise and Vibration

Relative to existing conditions, in the No-Action Alternative, there would be negligible noise and vibration direct operational impacts on 20 cultural resources.

Noise levels from vehicular traffic would increase near the following resources: the C&P Telephone Company Warehouse; the Capitol Press Building (Former); the City Post Office (Postal Museum); Gonzaga College High School; GPO Building; Government Printing Office (GPO) Warehouse No.4; Holodomor Ukrainian Holocaust Memorial; Senate Parks, Underground Garage, and Fountains; Square 750 Rowhouse Development; St. Aloysius Catholic Church; St. Joseph's Home (Former); St. Phillip's Baptist Church; Thurgood Marshall Federal Judiciary Building; Topham's Luggage Factory (Former); Uline Ice Company and Arena Complex; WUS; Columbus Plaza; Woodward and Lothrop Service Warehouse; L'Enfant-McMillan Plan; and Capitol Hill Historic District (along Second Street NE). Noise increases would not exceed 3 dBA and as such, would be below the threshold of perception. The noise impacts on those 20 resources would be negligible.

Traffic

Relative to existing conditions, in the No-Action Alternative, there would be minor traffic impacts on the Capitol Hill Historic District and negligible traffic impacts on 18 resources.

Anticipated traffic impacts in the No-Action Alternative are addressed in **Section 5.5.2.1**, *Direct Operational Impacts*, *Vehicular Traffic*. Relative to existing conditions, the No-Action Alternative is anticipated to see an increase in traffic volumes in the vicinity of WUS caused by greater station activity, in combination with the development of the private air rights above the rail terminal and general background economic and demographic growth.

Table 5-73 shows LOS at the seven study intersections in or bordering the Capital Hill Historic District. DDOT considers LOS of E or F to be unacceptable. As shown in the table, in the AM peak, the intersection of H and 3rd Streets NE, which operates at an unacceptable LOS E in existing conditions, would deteriorate to F. The other intersections would continue to operate at an acceptable LOS (D or better).

Table 5-73. Existing and No-Action Alternative LOS at Study Intersections in or adjacent to the Capitol Hill Historic District

Intersection No.	Intersection	Existing LOS (AM/PM)	No-Action Alternative LOS (AM/PM)
9	3rd Street/H Street NE	E/C	F/C
12	Second Street/G Street NE	B/B	B/B
18	Second Street/F Street NE	B/B	C/C
22	Second Street/D Street NE	D/F	D/D
23	Second Street/Mass. Avenue NE	C/C	C/C
25	4th Street/H Street NE	B/B	C/C
26	Mass. Avenue/C Street/4th Street NE	C/D	D/D

While it is not possible to predict the behavior of future drivers, there is low likelihood that congestion at 3rd and H Streets may lead drivers to divert through the neighborhood toward Massachusetts Avenue.[447] Even if this happened, the volume of diverted traffic would not diminish the integrity of setting and feeling of the Historic District. The significance of the Capitol Hill Historic District, as characterized in the NRHP nomination, is primarily derived from its architectural significance and its historical contribution to the development of the District of Columbia. National Park Service guidelines state that historic districts or components of historic districts lose significance if they contain so many

[447] Whether the AM peak LOS condition at this intersection could affect traffic volumes along streets in the Historic District cannot be reliably determined. Synchro traffic modeling cannot account for the potential reactive and discretionary behavior of drivers diverting their course from the known travel routes because of increased congestion. Projecting such activity with any degree of accuracy is not possible because it deviates substantially from the observed and modeled data that are the basis for understanding traffic impacts. Additionally, several access restrictions already apply to the Capitol Hill Historic District. Standard practice precludes modeling behavior that would violate posted signs.

alterations or new intrusions that they no longer convey a sense of historic environment.[448] The Capitol Hill Historic District already experiences a high volume of traffic. Based on information provided by DDOT, there are currently ten intersections spread throughout the Historic District that operate at an unacceptable LOS (E or F) during at least one peak period. Despite this, the Historic District still maintains the characteristics that qualify it for inclusion in the NRHP and still conveys a sense of historic environment. Traffic impacts in the No-Action Alternative would not reach a level that would diminish the integrity and significance of the Capitol Hill Historic District. As such, they would be minor.

Several other resources are located along streets where operational traffic is expected to increase incrementally. These resources include C&P Telephone Company Warehouse; City Post Office (Postal Museum); GPO; GPO Warehouse No. 4; the Holodomor Ukrainian Holocaust Memorial; Joseph Gales School; the REA Building; Square 750 Rowhouse Development; St. Aloysius Catholic Church; St. Joseph's Home (Former); St. Phillip's Baptist Church; the Suntrust Building (Former Childs Restaurant); the Thurgood Marshall Federal Judiciary Building; WUS; Columbus Plaza; 901 Second Street NE; L'Enfant-McMillan Plan; and WUS Historic Site. Given the urban environment of these resources, incremental impacts on traffic are not anticipated to diminish their integrity or significance. Traffic impacts on these resources would be negligible.

5.12.2.2 Indirect Operational Impacts

In the No-Action Alternative, there would be no indirect operational impact on cultural resources.

The Federally owned air rights would not be developed in the No-Action Alternative.

5.12.2.3 Construction Impacts

In the No-Action Alternative, the construction of projects in the Project Area could cause a range of potential construction-related adverse impacts, including potential adverse impacts on undiscovered archaeological resources within the WUS rail terminal.

Construction of the private air rights development would require establishing foundations within the rail terminal for columns supporting the air rights deck. Based on an archaeological assessment completed in 2015, much of the terminal was identified as having moderate to high archaeological potential, although it contains no known archaeological resources.[449] It is possible that excavation and other ground-disturbance may inadvertently damage or destroy unknown significant archaeological deposits. Any resources present would likely be related to the Swampoodle neighborhood and may include

[448] National Park Service. *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*. Accessed from https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf. Accessed on February 12, 2023.

[449] The archaeological assessment was conducted in support of the 2015 *Washington Union Station Historic Preservation Plan* (accessed from https://www.usrcdc.com/projects/historic-preservation-plan/; accessed on August 18, 2023). The assessment found that there is low to moderate potential that significant prehistoric material is present, and moderate to high potential that significant historic material is present. Any historic material present would mostly date from the 19th and early 20th centuries.

building foundations, wells, privies, infrastructure, and trash pits. Railroad infrastructure dating to the late 19th century and earlier may also be present.

It is likely that the resources that would experience visual operational impacts (see **Section 5.12.2.1**, *Direct Operational Impacts, Visual Impacts*) would also experience construction-related visual impacts. Information to determine the intensity of these impacts is not available. Construction of the private air rights development and other projects in or near the rail terminal would involve storing, staging, and use of construction equipment and materials within or next to the Project Area. While construction equipment and activities may detract from the visual setting of a cultural resource, they are a common sight in an urban environment and their presence would not be a permanent condition.

Construction activities would also generate noise and vibration from the operation of construction equipment such as trucks that would travel on nearby streets to reach the site, including First Street NE, Second Street NE, and H Street NE. It is not possible to assess the intensity of these potential impacts since they would vary with the method and duration of construction for each project, which is unavailable information.

5.12.3 Impacts of the Preferred Alternative

5.12.3.1 Direct Operational Impacts

Physical Impacts

Relative to existing conditions, the Preferred Alternative would have major adverse direct operational physical impacts on WUS and the WUS Historic Site. There would also be a minor direct operational physical impact on the L'Enfant-McMillan Plan and a potential direct operational physical impact on the REA Building.

Washington Union Station

The Preferred Alternative would result in a major physical adverse direct operational impact on WUS. It would involve the demolition of the Claytor Concourse (a non-historic portion of the station constructed in 1988) and construction of a new passenger concourse and train hall north of the historic station building. This would affect the north façade of the Retail and Ticketing Concourse, which was previously altered by the construction of the Claytor Concourse. The Retail and Ticketing Concourse originally featured an immense opening leading to the tracks and platforms. It was punctuated by a colonnade of nine steel-plated Doric columns with cast-iron capitals spaced evenly along its length. Currently, a section of the entablature, supported by the Doric columns, is the only original fabric that remains visible from within the Claytor Concourse, but it is possible that the Doric columns are still in place, encapsulated by the Claytor Concourse.

The Preferred Alternative also includes work to remove columns in the portion of the First Street Tunnel below the Retail and Ticketing Concourse. This would involve accessing the tunnel from above and demolishing a portion of the floor (approximately 15,000 square feet). The current marble finish was installed in the 1980s and is not part of the historic fabric of the building. However, the spaces between

the supporting beams are filled with terra cotta-tile arches that are part of the original fabric. Adverse physical effects due to the demolition of the original floor structure and removal of the original steel columns would be minimized or avoided, as the design would adhere to the Secretary of the Interior's *Standards for the Treatment of Historic Properties*, specifically the rehabilitation standards.

Washington Union Station Historic Site

The Preferred Alternative would result in a major adverse direct operational physical impact to the WUS Historic Site. The Preferred Alternative would involve extensive excavation of and modifications to the railroad terminal. It would require the removal of numerous contributing structures throughout the historic site. Such changes in the defining features of the WUS Historic Site would be detrimental to its integrity of design, setting, materials, workmanship, feeling, and association.

L'Enfant-McMillan Plan

The Preferred Alternative would construct a two-way ramp on G Street NE, a street that that is part of the L'Enfant Plan for the City of Washington. The ramp would provide access to and from the below-ground pick-up and drop-off facility. Such a change would be a minor impact on the L'Enfant-McMillan Plan's overall integrity of design, which covers approximately 3,565 acres of the District. The affected section of G Street NE would remain active and continue to connect North Capitol and First Streets NE. The resource's integrity of feeling and association are connected to its design, which is characterized by the relationships between the diagonal and orthogonal streets, the open space geometries, and the views and vistas created by the streets and open space. Such relationships would not be affected by the Preferred Alternative. The physical impact of the Preferred Alternative on this resource would be minor.

REA Building

The REA Building sits on an approximately 63,000-square-foot parcel between Second Street NE and the eastern edge of the WUS rail terminal. To the south, the parcel partially overlaps with the old H Street alignment (H Street Tunnel), with direct access from the tunnel into the basement of the REA Building.

In the Preferred Alternative, construction of the new H Street Concourse along the alignment of the H Street Tunnel would require using the part of the historic property parcel that overlaps with the alignment (approximately 9,800 square feet). Construction of the H Street concourse would also require modifying or eliminating the connection between the tunnel and the REA Building. At the present stage of design, it cannot be determined how this would affect the REA Building. However, there is potential for a physical impact on the REA Building.

Visual Impacts

Relative to existing conditions, in the Preferred Alternative, there would be major adverse direct operational visual impacts on WUS, the WUS Historic Site, and REA Building. There would also be moderate direct operational visual impacts on two other cultural resources; minor direct operational visual impacts on six resources; and negligible direct operational visual impacts on two resources. The Preferred Alternative would also result in a beneficial direct operational visual impact on two cultural resources.

Visual changes caused by the Preferred Alternative would have major adverse impacts on WUS, the WUS Historic Site, and the REA Building.

These major adverse impacts would result from the reconstruction of the rail terminal and construction of Project elements south of H Street NE, including the new train hall. This would eliminate or substantially alter historic visual connections between and within the three properties, adversely affecting their integrity of setting, feeling, and association. In various degrees, the Preferred Alternative would also affect views toward the properties, although these alterations would not by themselves constitute a major impact.

There would be moderate visual impacts from the Preferred Alternative on two resources: the City Post Office (Postal Museum) and the Thurgood Marshall Building. The Preferred Alternative would be visible from the east elevation of the City Post Office (Postal Museum). The G Street NE vehicular ramp providing access to the below-ground pick-up and drop-off facility would be visible from the north elevation. Wayfinding signs for the new ramp and other WUS-related destinations, which are still undefined, may add to the visual impacts. Based on the visibility and sensitivity of the City Post Office (Postal Museum) to these changes, this would be a moderate visual impact because, while readily noticeable, the changes would not diminish the integrity of the resource. The building's architectural characteristics would not be affected. Its setting, defined by connections to WUS, Columbus Plaza, Massachusetts Avenue, and the Senate parks, would remain unaffected as well.

There would be moderate visual impacts from the Preferred Alternative on the Thurgood Marshall Building. Elements of the Project, including the train hall and ramp along the east side of the station, would be visible from the Thurgood Marshall Building, and based on the visibility and sensitivity of this resource to these changes, this would be a moderate impact. It would not diminish the resource's integrity of setting, which is characterized by existing, modern institutional buildings to the north, open space to the west, and the visual connection to the WUS historic building, Columbus Plaza, and the AOC campus to the south. These connections would not be affected.

There would be minor visual impacts from the Preferred Alternative on six resources: Square 750 Rowhouse Development; St. Joseph's Home (Former); Woodward and Lothrop Service Warehouse; Capitol Hill Historic District; the U.S. Capitol Dome Cultural Viewshed; and the L'Enfant-McMillan Plan. While elements of the Project would be visible from the first four of these resources, the resources have low sensitivity to these changes as they do not derive their significance from their visual connection to WUS.

Views from the U.S. Capitol Dome are more sensitive to WUS, and the new train hall would be visible behind the historic station building. However, the train hall would not rise above the horizon or the historic station, it would be consistent with other modern developments within the viewshed, and no other element of the viewshed would be changed.

Visual changes would occur along multiple streets of the L'Enfant-McMillan Plan, with varying degrees of visibility and sensitivity, depending on the street and the distance from the Project Area. Project elements would be visible from the south, east, and west. Views from First Street NE looking north; Delaware Ave NE looking north/northeast; and Louisiana Avenue NE looking northeast are the most

sensitive. Although elements of the Project would be visible from these locations, no spatial corridors or vistas along contributing streets and avenues would be obstructed. The removal of the existing parking garage would open up the view to the station from G Street NE, resulting in a beneficial visual impact, even with the addition of a new ramp and associated signage. Similarly, removal of the existing parking garage would have a beneficial impact on views from the west side of Columbus Circle, as it would reestablish the view along First street NE. As a whole, while the Preferred Alternative would have potential major visual effects on two contributing streets south of WUS (Delaware Avenue and First Street NE), the setting of the L'Enfant-McMillan Plan, which is connected to the site's architectural design and the resulting vistas, would not change from existing conditions. The Preferred Alternative would not diminish the L'Enfant-McMillan Plan's significance or integrity. The visual impact of the Preferred Alternative on this resource would be minor.

There would be negligible visual impacts from the Preferred Alternative on two resources: Uline Ice Company Plant and Arena Complex, and the Washington National Monument Cultural Viewshed. From these resources, the Project would be barely noticeable. The slight change in the visual environment would not affect their integrity of setting.

There would be beneficial visual impacts from the Preferred Alternative on two resources: the GPO Building and GPO Warehouse No. 4. In both cases, the beneficial impact would result from the removal of the existing parking garage.

Noise and Vibration

Relative to existing conditions, in the Preferred Alternative, there would be minor direct operational noise and vibration impacts on three cultural resources and negligible direct operational noise and vibration impacts on 17 other cultural resources.

There would be minor traffic noise impacts from the Preferred Alternative on the following cultural resources: St. Joseph's Home (Former); Square 750 Rowhouse Development (K Street NE side); and Uline Ice Company Plant and Arena Complex. The operational noise and vibration analysis presented in **Section 5.10.4.1**, *Direct Operational Impacts*, *Operational Noise,* showed that increased street traffic would cause noise levels to exceed the FTA threshold for a moderate impact at or near these three resources. However, the noise increase would be less than 3 dBA, which would make it imperceptible to most people. Such a change would not compromise the resources' integrity of setting, feeling, or association. Additionally, all three resources have already experienced increased traffic on nearby streets and the construction of adjacent multi-story residential, commercial, and mixed-use developments, which have already altered their respective settings. The minimal additional noise from the Preferred Alternative would not further compromise their integrity of setting (St. Joseph's Home and Square 750 Rowhouse Development) or association (Uline Ice Company Plant and Arena Complex).

There would be negligible traffic noise impacts from the Preferred Alternative on 17 cultural resources: the C&P Telephone Company Warehouse; the City Post Office (Postal Museum); Gonzaga College High School; GPO Building; GPO Warehouse No.4; Holodomor Ukrainian Holocaust Memorial; Senate Parks, Underground Garage, and Fountains; St. Aloysius Catholic Church; St. Phillip's Baptist Church; Thurgood Marshall Federal Judiciary Building; Topham's Luggage Factory (Former); WUS; Columbus Plaza;

Woodward and Lothrop Service Warehouse; 901 Second Street NE; the Capitol Hill Historic District (along Second Street NE); and the L'Enfant-McMillan Plan. At these locations, noise would increase by less than 3 dBA and the resulting noise levels would not exceed the FTA thresholds. The change in noise would not compromise the resources' integrity of setting, feeling, or association.

The operational vibration analysis for the Preferred Alternative indicated that changes in vibration levels would be negligible and would not affect the integrity of any cultural resource.

Traffic

Increased traffic volumes in the Preferred Alternative would result in a minor direct operational impact on the Capitol Hill Historic District and in negligible direct operational impacts on 18 other cultural resources.

Anticipated traffic impacts in the Preferred Alternative are described in **Section 5.5.3.1**, *Direct Operational Impacts*, *Vehicular Traffic*. Relative to existing conditions, the Preferred Alternative is anticipated to see an increase in traffic volumes in the vicinity of WUS caused by greater station activity, in combination with the development of the private air rights above the rail terminal and general background economic and demographic growth. Traffic impact modeling indicates that impacts would be concentrated along a few major thoroughfares, especially North Capitol Street and K Street as well as, to a lesser extent, H Street and Massachusetts Avenue. H Street and Massachusetts Avenue border or traverse the Capitol Hill Historic District. There could potentially be a minor impact on the Capitol Hill Historic District if traffic congestion in the Historic District increased, including because of drivers taking short cuts through the residential streets of the district as a result of congestion on nearby thoroughfares.

As noted above, DDOT considers LOS of E or F to be unacceptable. In the Preferred Alternative, LOS at intersections in or on the edges of the Capitol Hill Historic District would all be acceptable, with one exception (**Table 5-74**).

Table 5-74. Existing and Preferred Alternative LOS at Study Intersections in or adjacent to the Capitol Hill Historic District

Intersection No.	Intersection	Existing LOS (AM/PM)	Preferred Alternative LOS (AM/PM)
9	3rd Street/H Street NE	E/C	F/D
12	Second Street/G Street NE	B/B	C/B
18	Second Street/F Street NE	B/B	C/C
22	Second Street/D Street NE	D/F	D/D
23	Second Street/Mass. Avenue NE	C/C	C/D
25	4th Street/H Street NE	B/B	C/B
26	Mass. Avenue/C Street/4th Street NE	C/D	D/D

In the AM peak, the intersection of H and 3rd Streets NE, which operates at an unacceptable LOS E in existing conditions, would deteriorate to F, as in the No-Action Alternative. This intersection is adjacent to, but not within, the Capitol Hill Historic District.

While it is not possible to predict the behavior of future drivers, there is low likelihood that congestion at 3rd and H Streets may lead drivers to divert through the neighborhood toward Massachusetts Avenue.[450] Even if drivers reacted by diverting course through the neighborhood, the volume of diverted traffic would not diminish the integrity of setting and feeling of the district. Increases in operational traffic volumes along H Street NE, Massachusetts Avenue NE, and Second Street NE would not alter their existing, busy, traffic-heavy urban setting. The significance of the Capitol Hill Historic District, as characterized in the NRHP nomination, is primarily derived from its architectural significance and its historical contribution to the development of the District of Columbia. National Park Service guidelines state that historic districts or components of historic districts lose significance if they contain so many alterations or new intrusions that they no longer convey a sense of historic environment.[451] The Capitol Hill Historic District currently experiences a high volume of traffic. Based on information provided by the DDOT, there are currently ten intersections spread throughout the Historic District that operate at an unacceptable LOS (E or F) during at least one peak period. Despite this, the Historic District still maintains the characteristics that qualify it for inclusion in the NRHP and still conveys a sense of historic environment. Traffic impacts from the Preferred Alternative would not reach a level that would diminish the integrity and significance of the Capitol Hill Historic District and would be minor.

Several other resources are located along streets where operational traffic is expected to increase incrementally. These resources include C&P Telephone Company Warehouse; City Post Office (Postal Museum); GPO; GPO Warehouse No. 4; the Holodomor Ukrainian Holocaust Memorial; Joseph Gales School; the REA Building; Square 750 Rowhouse Development; St. Aloysius Catholic Church; St. Joseph's Home (Former); St. Phillip's Baptist Church; the Suntrust Building (Former Childs Restaurant); the Thurgood Marshall Federal Judiciary Building; WUS; Columbus Plaza; 901 Second Street NE; L'Enfant-McMillan Plan; and WUS Historic Site. Given the urban environment of these resources, incremental impacts on traffic are not anticipated to diminish integrity or significance. The traffic Impacts of the Preferred Alternative on these resources would be negligible.

5.12.3.2 Indirect Operational Impacts

Relative to existing conditions, in the Preferred Alternative, the potential Federal air rights development would have the following indirect operational impacts on cultural resources in addition

[450] As previously noted, whether the AM peak LOS condition at this intersection could affect traffic volumes along streets in the Historic District cannot be reliably determined. Synchro traffic modeling cannot account for the potential reactive and discretionary behavior of drivers diverting their course from the known travel routes because of increased congestion. Projecting such activity with any degree of accuracy is not possible because it deviates substantially from the observed and modeled data that are the basis for understanding traffic impacts. Additionally, several access restrictions already apply to the Capitol Hill Historic District. Standard practice precludes modeling behavior that would violate posted signs.

[451] National Park Service. *National Register Bulletin: How to Apply the National Register Criteria for Evaluation*. Accessed from https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf. Accessed on February 12, 2023.

to the direct impacts of the Preferred Alternative: moderate visual impacts on two cultural resources; and negligible visual impacts on seven cultural resources.

In the Preferred Alternative, the potential Federal air rights development would occupy part of the area currently occupied by the existing WUS parking garage. This would result in the following indirect impacts, in addition to the direct impacts described above:

- Moderate visual impacts on WUS and the U.S. Capitol Dome Viewshed.
- Negligible visual impacts on City Post Office (Postal Museum); GPO Building; GPO Warehouse No, 4; Dirksen and Hart Senate Office Buildings; Senate Parks, Underground Garage and Fountains; Library of Congress, Thomas Jefferson Building; and Russell Senate Office Building.

The potential Federal air rights development would be adjacent to the expanded WUS and add new elements to the station's visual environment. The impact would be moderate, based on the respective scale of the structures. Additionally, the potential transfer of the air rights out of Federal ownership could include measures that ensure that any new development would be implemented in a manner sensitive to WUS's historic and aesthetic environment. The Preferred Alternative would also have a moderate indirect adverse visual impact on the U.S. Capitol Dome Viewshed. The potential Federal air rights would be highly visible from the dome. However, the structure would not rise above the horizon or block any views along North Capitol Street. It would not disrupt views along Delaware Avenue toward Columbus Plaza and the historic station building.

The potential Federal air rights development may be visible from the other resources listed above. However, because of distance and intervening structures or vegetation, the change would be barely noticeable and would not affect the resources' integrity. The potential Federal air rights development would also be visible from several of the resources that would experience direct visual impacts. However, it would not create greater impacts than the Preferred Alternative.

5.12.3.3 Construction Impacts

Physical Impacts

Construction of the Preferred Alternative would potentially result in an adverse impact on unidentified archaeological resources within the WUS rail terminal.

Construction of the Preferred Alternative would require excavating most of the rail terminal to reconstruct the tracks and platforms, construct concourses, and set foundations and columns supporting the overbuilt structures south of H Street NE. Based on an archaeological assessment completed in 2015, much of the terminal was identified as having moderate to high archaeological potential, although it contains no known archaeological resources.[452] It is possible that excavations and

[452] The archaeological assessment was conducted in support of the 2015 *Washington Union Station Historic Preservation Plan* (accessed from https://www.usrcdc.com/projects/historic-preservation-plan/; accessed on August 18, 2023). The assessment

ground disturbance could inadvertently damage or destroy unknown significant archaeological deposits, potentially resulting in an adverse impact. Any resources present would likely be related to the Swampoodle neighborhood and may include building foundations, wells, privies, infrastructure, and trash pits. Railroad infrastructure dating to the late 19th century and earlier may also be present.

Visual Impacts

Construction of the Preferred Alternative would result in moderate visual impacts on three cultural resources; minor visual impacts on one cultural resource; and negligible visual impacts on 15 cultural resources.

Construction would take place in phases over approximately 13 years. During much of that time, fencing around the construction site, staging areas, heavy construction equipment, excavated areas, and structures under construction would affect the visual setting of the cultural resources from which they would be visible. Because the focus of construction activities would move across the Project Area depending on the phase, the visually affected resources and the intensity of the impacts would vary over time. Construction activities would likely be visible for at least some time from the same resources that would experience operational visual impacts.

WUS, the WUS Historic Site, and the REA Building would experience the greatest visual impacts throughout construction, which would occur within or directly next to them. The reconstruction of the rail terminal and construction of the various Project elements to the north of the historic station building would turn the WUS Historic Site into an active construction site for more than a decade. Inside WUS, column removal work in the Retail and Ticketing Concourse would require setting up partitions to seal the work area from the rest of the station for more than a year. This would be a highly visible change that would affect the interior appearance of the station and how visitors and passengers experience it.

Although construction would continue for several years, it would not be a permanent condition. None of these three resources' significance and integrity depends on keeping them or their immediate surroundings permanently free of construction activities. Given the phased character of the work, large sections of WUS and the WUS Historic Site would remain operational and free of visual disruptions for much of the construction period. Visual impacts from construction would not in themselves cause a loss of historic integrity that could endanger the historic status of the affected resources. While construction work and associated disturbances would make WUS less attractive to visitors, it would not entirely prevent them from appreciating its architectural and historic importance. There would be moderate visual impacts from the Preferred Alternative on WUS, the WUS Historic Site, and the REA Building.

The Capitol Dome Viewshed would also be affected, as construction activities at WUS would be highly visible from the dome. However, the sensitivity of the viewshed to such disruption is low, given the

found that there is low to moderate potential that significant prehistoric material is present, and moderate to high potential that significant historic material is present. Any historic material present would mostly date from the 19th and early 20th centuries.

distance and the common occurrence of construction within the District. Therefore, there would be minor visual impacts from the Preferred Alternative on the Capitol Dome Viewshed.

Construction would be visible from 15 other cultural resources to a degree that would vary with distance and the phase of construction. These resources include: the City Post Office (Postal Museum); Dirksen and Hart Senate Office Buildings; GPO; GPO Warehouse No. 4; Library of Congress, Thomas Jefferson Building; Russell Senate Office Building; Senate Parks, Underground Garage, and Fountains; Square 750 Rowhouse Development; St. Joseph's Home (Former); Thurgood Marshall Federal Judiciary Building; Uline Ice Company Plant and Arena Complex; Columbus Plaza; Woodward and Lothrop Service Warehouse; Capitol Hill Historic District; and the L'Enfant-McMillan Plan. Distance combined with the moving focus of construction makes the sensitivity of the affected cultural resources to construction activities at WUS low. Additionally, as previously noted, construction sites are a common sight in the District. Visual impacts from construction would not affect the characteristics that give these resources their historic significance. Therefore, there would be negligible visual impacts from the Preferred Alternative on these 15 resources.

Noise and Vibration

Construction activities in the Preferred Alternative would result in major adverse noise and vibration impacts on WUS, the REA Building; and the City Post Office (Postal Museum). There would also be moderate noise and vibration impacts on six cultural resources and minor noise and vibration impacts on four cultural resources.

Construction of the Preferred Alternative would result in major adverse impacts from noise and vibration on WUS, the REA Building, and the City Post Office (Postal Museum). Vibratory pile driving would occur within 10 to 16 feet of these structures, resulting in vibration levels of approximately 0.33 to 0.67 in/s. Another major impact would occur at the Postal Museum where mounted impact hammers could be used as close as 5 feet from the building, resulting in vibration levels of approximately 0.39 in/s. Depending on the sensitivity of the buildings, which has not been determined, this could exceed the threshold for structural damage and compromise the physical integrity of the buildings (see **Table 5-64** above). Additionally, noise levels at all three resources would exceed the FTA threshold for severe impacts.

Construction-related noise and vibration from constructing the Preferred Alternative would result in moderate impacts on the following six cultural resources during SOE construction activities and at the beginning of excavation: GPO Warehouse No. 4; Columbus Plaza; Thurgood Marshall Federal Judiciary Building; Square 750 Rowhouse Development; 901 Second Street NE; and St. Joseph's Home (Former). Noise levels at or near these resources would exceed the FTA thresholds for severe impacts. These impacts would be noticeable but temporary and they would not compromise the resources' integrity of setting, feeling, or association. The significance of these resources is not dependent on a quiet environment; rather, it is linked to their architecture, their connection to the historical development of the District, and the spatial relationships they have with WUS or each other. None of these characteristics would be affected by temporarily high noise or vibration levels.

Construction noise and vibration would result in minor impacts on the following four cultural resources: C&P Telephone Company Warehouse, Topham's Luggage Factory (Former), the Capitol Hill Historic District (northwestern edge); and the L'Enfant-McMillan Plan.

At the C&P Telephone Company Warehouse, vibration from construction truck traffic would exceed the FTA threshold for annoyance. The projected level of vibration, while noticeable, would not create any risk of structural damage and the integrity of the resource does not depend on a quiet and vibration-free setting. Therefore, construction-related vibration from the Preferred Alternative would have a minor impact.

At Topham's Luggage Factory, noise would exceed the FTA threshold for a moderate impact. However, this would not diminish the property's integrity or historical significance, which is related to its historical association with commercial development and industry in the District.

During excavation activities, if trucks are used to haul away spoil, locations on the northwestern edge of the Capitol Hill Historic District would experience noise levels in excess of the FTA threshold for moderate impacts. These locations include 603-607 Second Street NE and 521-527 Second Street NE. The same locations, along with a third one, 205 F Street NE would experience vibrations above the FTA threshold for annoyance. This would result in a minor impact on the Capitol Hill Historic District for several reasons. The noise and vibration impacts would be localized, and the District permits trucks to use Second Street NE, which is classified as a major collector street. The street's setting has also been substantially altered over the years by modern high-density development. The majority of the Historic District would experience no noise or vibration impacts from the Preferred Alternative. Outside of Second Street NE, construction trucks would only use designated truck routes to travel to and from the Project Area. They would not circulate along the residential streets that are one of the Historic District's character-defining features. The impacts to Second Street NE would not be continuous, and they would cease entirely after excavation operations are finished in approximately 5 months during Phase 1 of construction.

Throughout the approximately 13-year construction period, street and sidewalk segments around WUS could be subject to temporary closures. The only street in or adjacent to the Capitol Hill Historic District potentially affected by these closures would be Second Street NE. During closures, non-truck traffic may temporarily move to another street in the Historic District, such as 4th Street NE. Such impacts, and the resulting noise, would be of short duration. Road closures would last from 5 to 6 minutes on average and no more than 20 minutes.

The noise and vibration from constructing the Preferred Alternative would not compromise or diminish the late 19th- and early 20th-century architectural characteristics of the Capitol Hill Historic District or its significance to the development of the District.

Noise and vibration impacts would occur along several portions of the L'Enfant-McMillan Plan, especially First Street NE, Second Street NE, Columbus Circle, G Street NE, K Street, and North Capitol Street. Such temporary effects would not diminish the property's integrity or historical significance, which is related to its 18th- and early 20th-century urban design and association with the history of the development of the District. Noise and vibration impacts from the Preferred Alternative would be minor.

5.12.4 Summary of Impacts

Table 5-75 summarizes the impacts of the No-Action Alternative and the Preferred Alternative on cultural resources. When a resource would experience different types of impacts, only the greatest impact is reported. Major impacts are highlighted. Resources that would experience no impacts under either alternative are grayed out.

Table 5-75. Summary of Impacts on Cultural Resources above Negligible

Cultural Resource	Impact Type	No-Action Alternative	Preferred Alternative
1. Acacia Building	All	No impact	No impact
2. August Apartment Building	All	No impact	No impact
3. C&P Telephone Company Warehouse	Direct Operational	Negligible (N/V, Tr)	Negligible (N/V, Tr)
	Indirect Operational	-	No impact
	Construction	U	Minor (N/V)
4. Capitol Press Building (former)	Direct Operational	Negligible (N/V)	No impact
	Indirect Operational	-	No impact
	Construction	U	No impact
5. City Post Office (Postal Museum)	Direct Operational	Negligible (N/V, Tr)	Moderate (V)
	Indirect Operational	-	Negligible (V)
	Construction	U	Major (N/V)
6. Dirksen and Hart Senate Office Buildings	Direct Operational	Negligible (V)	No impact
	Indirect Operational	-	Negligible (V)
	Construction	U	Negligible (V)
7. Eckington Power Plant; Coach Yard Power Plant	All		No impact
8. Engine Company No. 3	All		No impact
9. Garfield Memorial	All		No impact
10. Gonzaga College High School	Direct Operational	Negligible (N/V)	Negligible (N/V)
	Indirect Operational	-	No impact

Cultural Resource	Impact Type	No-Action Alternative	Preferred Alternative
	Construction	U	No impact
11. Government Printing Office (GPO)	Direct Operational	Negligible (N/V, Tr)	Negligible (N/V, Tr)
	Indirect Operational	-	Negligible (V)
	Construction	U	Negligible (V)
12. Government Printing Office Warehouse No. 4	Direct Operational	Negligible (N/V, Tr)	Negligible (N/V, Tr)
	Indirect Operational	-	Negligible (V)
	Construction	U	Moderate (N/V)
13. Hayes School	All		No impact
14. Holodomor Ukrainian Holocaust Memorial	Direct Operational	Negligible (N/V, Tr)	Negligible (N/V, Tr)
	Indirect Operational	-	No impact
	Construction	U	No impact
15. Japanese American Memorial to Patriotism During WWII	All		No impact
16. Joseph Gales School	Direct Operational	Negligible (Tr)	Negligible (Tr)
	Indirect Operational	-	No impact
	Construction	U	No impact
17. Library of Congress, Thomas Jefferson Building	Direct Operational	Minor (V)	No impact
	Indirect Operational	-	Negligible (V)
	Construction	U	Negligible (V)
18. M Street High School (Perry School)	All		No impact
19. Major General Nathanael Greene Statue	All		No impact
20. Mountjoy Bayly House	All		No impact
21. Peace Memorial	All		No impact
22. REA Building	Direct Operational	Major (V)	Major (V)

Cultural Resource	Impact Type	No-Action Alternative	Preferred Alternative
	Indirect Operational	-	No impact
	Construction	U	Major (N/V)
23. Robert A. Taft Memorial	All		No impact
24. Russell Senate Office Building	Direct Operational	Negligible (V)	No impact
	Indirect Operational	-	No impact
	Construction	U	Negligible (V)
25. Senate Parks, Underground Garage, and Fountains	Direct Operational	Minor (V)	Negligible (N/V, Tr)
	Indirect Operational	-	Negligible (V)
	Construction	U	Negligible (N/V)
26. Belmont-Paul Women's Equality National Monument (Formerly the Sewall-Belmont House)	All		No impact
27. Square 750 Rowhouse Development	Direct Operational	Moderate (V)	Minor (V)
	Indirect Operational	-	Minor (V, N/V)
	Construction	U	Moderate (N/V)
28. St. Aloysius Catholic Church	Direct Operational	Negligible (N/V, Tr)	Negligible (N/V, Tr)
	Indirect Operational	-	No impact
	Construction	U	No impact
29. St. Joseph's Home (Former)	Direct Operational	Minor (V)	Minor (V, V/N)
	Indirect Operational	-	No impact
	Construction	U	Moderate (N/V)
30. St. Phillip's Baptist Church	Direct Operational	Negligible (N/V, Tr)	Negligible (N/V, Tr)
	Indirect Operational	-	No impact
	Construction	U	No impact
31. Suntrust Building (Former Child's Restaurant)	Direct Operational	Negligible (Tr)	Negligible (Tr)
	Indirect Operational	-	No impact

Cultural Resource	Impact Type	No-Action Alternative	Preferred Alternative
	Construction	U	No impact
32. The Summerhouse	All		No impact
33. Thurgood Marshall Federal Judiciary Building	Direct Operational	Moderate (V)	Moderate (V)
	Indirect Operational	-	No impact
	Construction	U	Moderate (N/V)
34. Topham's Luggage Factory (Former)	Direct Operational	Moderate (V)	Negligible (N/V)
	Indirect Operational	-	No impact
	Construction	U	Minor (N/V)
35. Uline Ice Company Plant and Arena Complex	Direct Operational	Minor (V)	Minor (V, N/V)
	Indirect Operational	-	No impact
	Construction	U	Minor (V)
36. United States Capitol	All		No impact
37. United States Capitol Square	All		No impact
38. United States Supreme Court	All		No impact
39. Victims of Communism Memorial	All		No impact
40. Washington Union Station	Direct Operational	Major (P, V)	Major (P, V)
	Indirect Operational	-	Moderate (V)
	Construction	U	Major (N/V)
41. Washington Union Station Plaza (Columbus Plaza) and Columbus Fountain	Direct Operational	Minor (V)	Negligible (N/V, Tr)
	Indirect Operational	-	No impact
	Construction	U	Moderate (N/V)
42. Woodward and Lothrop Service Warehouse	Direct Operational	Moderate (V)	Minor (V)
	Indirect Operational	-	No impact

Cultural Resource	Impact Type	No-Action Alternative	Preferred Alternative
	Construction	U	Negligible (V)
43. 901 Second Street NE	Direct Operational	Moderate (V)	Negligible (N/V, Tr)
	Indirect Operational	-	No impact
	Construction	U	Moderate (N/V)
44. Capitol Hill Historic District	Direct Operational	Minor (V, Tr)	Minor (V, Tr)
	Indirect Operational	-	No impact
	Construction	U	Minor (N/V)
45. L'Enfant-McMillan Plan	Direct Operational	Moderate (V)	Minor (P, V)
	Indirect Operational	-	No impact
	Construction	U	Minor (N/V)
46. National Mall Historic District	All		No impact
47. Pennsylvania Avenue National Historic Site	All		No impact
48. Union Market Historic District	All		No impact
49. Washington Union Station Historic Site	Direct Operational	Major (P, V)	Major (P, V)
	Indirect Operational	-	No impact
	Construction	U	Major (P, N/V)
50. Arlington National Cemetery Viewshed	All		No impact
51. Old Post Office Building Viewshed	All		No impact
52. St. Elizabeth's West Campus Viewshed	All		No impact
53. U.S. Capitol Dome Viewshed	Direct Operational	Moderate (V)	Minor (V)
	Indirect Operational	-	Moderate (V)
	Construction	U	Minor (V)
54. Washington National Cathedral Viewshed	All		No impact

Cultural Resource	Impact Type	No-Action Alternative	Preferred Alternative
55. Washington National Monument Viewshed	Direct Operational	Negligible (V)	Negligible (V)
	Indirect Operational	-	No impact
	Construction	U	No impact

V = visual impact; N/V = noise/vibration impact; P = physical impact; Tr = Traffic impact.

5.13 Parks and Recreation Areas

This section addresses the potential impacts of the No-Action Alternative and Preferred Alternative on parks and recreation areas. These include public parks, private parks open to the public, off-street bicycle trails and walking paths, and other areas used for general recreation.

5.13.1 Methodology

5.13.1.1 Operational Impacts

Potential operational impacts on parks and recreation areas were qualitatively assessed by reviewing how changes in activities and land use in the Project Area would affect these resources. The assessment considered physical integrity, usage, access, and visitor experience.

5.13.1.2 Construction Impacts

Construction impacts were assessed by reviewing the potential for construction activities to affect the use of a park or recreation area. Such activities include ground-disturbing work; use of park areas for staging or parking; limitations in use or access; and other factors that may interfere with user experience or the physical integrity of the park.

5.13.2 Impacts of the No-Action Alternative

5.13.2.1 Direct Operational Impacts

Relative to existing conditions, the No-Action Alternative would have no direct operational impact on parks and recreation areas.

The projects included in the No-Action Alternative would all take place within the Project Area, which contains no parks or recreation areas. Therefore, there would be no direct operational impact on these resources.

5.13.2.2 Indirect Operational Impacts

Relative to existing conditions, the No-Action Alternative would have a minor adverse indirect operational impact on parks and recreation areas, including Columbus Plaza, the Upper and Lower Senate Parks, and the Metropolitan Branch Trail due to increased usage.[453]

In the No-Action Alternative, WUS would continue to serve as a multimodal transportation hub for District residents and visitors. Although the station would not be expanded, the annual number of train and bus passengers would increase from approximately 16.3 million to approximately 20.7 million. WUS is also a major touristic attraction, with approximately 8 million tourists visiting it every year. Visits would likely continue to grow. The private air rights development would bring approximately 2,320 new residents and 10,288 new workers to the Project Area (see **Section 5.14.2.1**, *Direct Operational Impacts*, *Demographics* and *Employment*).

An adverse impact on nearby parks and recreation areas is anticipated because the greater number of people passing through or residing in the Project Area would likely lead to an increase in the number of visitors to these parks and areas. Columbus Plaza and the Upper and Lower Senate Parks would likely see the greatest increase in visits due to their proximity to WUS and because they lie between the station and the U.S. Capitol complex. The Metropolitan Branch Trail may also see an increase in users if WUS commuters or the residents and employees of the private air rights development use it for local travel or recreation.

More visits and greater foot traffic would result in accelerated wear and tear of pavements and landscaped areas in the affected parks and would increase maintenance costs. This impact would be minor for the following reasons. Although it is not possible to reliably quantify the increase in park usage that would occur because of the No-Action Alternative, it would be much smaller than the increase in the number of WUS users and private air rights development residents and employees. This is because most new WUS users would be commuters or travelers passing through the station on their way to another destination and only a portion of the few thousands new residents and employees in the Study Area would likely make use of the local parks and recreation areas at any given time. In the context of the millions of people who visit the District and its parks every year, the contribution of the No-Action Alternative would be minor.[454]

5.13.2.3 Construction Impacts

The No-Action Alternative would result in minor adverse construction impacts on the Metropolitan Branch Trail.

[453] This section addresses the Metropolitan Branch Trail as a recreational facility. However, in their comments on the administrative draft FEIS (provided to FRA by email dated November 9, 2023), DDOT, the official with jurisdiction on the trail, indicated that the Metropolitan Branch Trail is primarily a transportation facility. As such, it is exempt from Section 4(f) requirements.

[454] For instance, 3 to 5 million people visit the U.S. Capitol every year (https://www.aoc.gov/capitol-buildings/about-us-capitol-building. Accessed on August 18, 2023), many of whom may be reasonably assumed to visit or walk through the Upper and Lower Senate Parks as well.

Though the Project would not be constructed in the No-Action Alternative, other projects would be built at various times and on different schedules that are currently unknown. These projects are all located within the Project Area and their construction would not physically affect, or completely block access to, any parks or recreation areas. Construction-related traffic and sidewalk closures may have minor adverse impacts on part of the Metropolitan Branch Trail along Second Street NE and First Street NE during construction of the private air rights development. Minimization or mitigation of the potential impacts would be the responsibility of the projects' respective owners in accordance with the District's Safe Accommodation law. [455]

5.13.3 Impacts of the Preferred Alternative

5.13.3.1 Direct Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have a minor beneficial direct operational impact on Columbus Plaza due to improved access from Columbus Circle.

The Preferred Alternative would not physically affect any parks or recreation areas. It would not require using or taking any part of a park or recreation area, or permanently incorporating it into the Project. The Metropolitan Branch Trail First Street NE segment (First Street Cycle Track) would be maintained along its existing alignment. Improvements, such as a railing, could be included to minimize potential conflicts with pedestrians crossing to or from the H Street Concourse entrance. The intersection of First Street NE and the ramp to and from the below-ground pick-up and drop-off facility would be signalized, which would minimize conflicts between bicycles using the Cycle Track and cars entering or exiting the facility. The Preferred Alternative would not reduce or otherwise affect the overall connectivity or functionality of the trail or the Cycle Track. Thus, it would not adversely affect either resource.

The Preferred Alternative includes improvements to Columbus Circle in front of WUS. These improvements would facilitate access to Columbus Plaza from the station, resulting in a minor beneficial impact on Columbus Plaza because of improved access. The Preferred Alternative would eliminate the ramp connecting southbound First Street NE and Massachusetts Avenue. This would make it easier and safer for pedestrians and bicyclists to reach Columbus Plaza from WUS because they would need to cross only one roadway instead of two, as would be the case in the No-Action Alternative. The larger pedestrian zone created by the removal of the ramp would generally make Columbus Plaza more accessible and integrated with WUS, enhancing visitor experience. The pedestrian and bicycle ramp to H Street NE on the west side of WUS would also enhance access to Columbus Plaza because it would facilitate pedestrian and bicycle access from H Street NE and the air rights development on the deck level to the front of WUS and First Street NE.

[455] District of Columbia Municipal Regulations (DCMR) 24-3315. The law requires that when a bicycle lane or sidewalk is closed for construction, an equally safe accommodation, free of hazards and debris, must be provided.

5.13.3.2 Indirect Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse indirect operational impact on parks and recreation areas, including Columbus Plaza, the Upper and Lower Senate Parks, and the Metropolitan Branch Trail.[456]

Relative to the No-Action Alternative, the Preferred Alternative would result in a substantial increase in the number of passengers and visitors transiting through WUS. This may result in more people using or passing through nearby parks, especially Columbus Plaza and the Upper and Lower Senate Parks. It may also generate additional traffic along the Metropolitan Branch Trail if visitors or commuters use it for local travel. The potential development of the Federal air rights would incrementally add to this effect.

Although parks and recreational facilities are intended to be used by the public, in the long term, increased use because of the Preferred Alternative would cause accelerated wear and tear of pavements and landscaped areas in the affected parks and increased maintenance costs. This impact would be minor. Only a small part of the additional passengers and visitors would likely make use of the nearby parks and recreation areas. Most would only transit through WUS toward other destinations in and outside the District. The Preferred Alternative would be a small contributor to the general visits to parks and recreation areas in the Study Area. By itself, the Preferred Alternative would not cause a marked degradation of user experience.

5.13.3.3 Construction Impacts

Construction of the Preferred Alternative would cause moderate adverse impacts on Columbus Plaza and the Metropolitan Branch Trail.

In the Preferred Alternative, construction-related traffic and sidewalk or lane closures on Second Street NE would affect the Metropolitan Branch Trail along this street. This may lead to temporary closures or rerouting of the trail at this location and diminish the connectivity of the trails to the front of WUS and points south. These disruptions would adversely affect the experience of users at the south end of the trail. Temporary closure of the First Street Cycle Track (part of the Metropolitan Branch Trail along First Street NE) in Phase 4 of construction would also reduce connectivity. These disruptions would adversely affect the experience of users at the south end of the trail. However, these impacts would occur at different times, with those along Second Street NE concentrated in parts of Phase 1 (first 2 years and 4 months of construction) and those along First Street concentrated in Phase 4 (last 4 years and 3 months of construction). When one of the two trail segments would be closed, the other would be operational and could provide an alternative route. Only a small portion of the eight-mile Metropolitan Branch Trail would be affected. As needed, equivalent temporary routes would be provided in accordance with the District's safe accommodation law (DCMR 24-3315). Between Phases 1 and 4 (approximately 5 years and 3 months), disruptions would be minimal, though adjacent construction

[456] As noted above, this section addresses the Metropolitan Branch Trail as a recreational facility. However, in their comments on the administrative draft FEIS (provided to FRA by email dated November 9, 2023), DDOT, the official with jurisdiction on the trail, indicated that the Metropolitan Branch Trail is primarily a transportation facility. As such, it is exempt from Section 4(f) requirements.

traffic and activities (e.g., noise) may detract from user experience. Overall, the anticipated disruptions would be a moderate adverse impact.

The Preferred Alternative would include the realignment of the roadways in front of WUS, adjacent to Columbus Plaza. This would result in a moderate adverse impact on this resource. While Columbus Plaza itself would not be physically affected, construction would temporarily limit pedestrian access from the front of WUS to the plaza. Access would remain available from the south. Construction of the ramp from the below-ground pick-up and drop-off facility on the east side of WUS would generate noise during the excavation phase that would be audible from Columbus Plaza. In general, construction activities on the adjacent roadways would make Columbus Plaza less attractive to visit and diminish visitor experience. The impact would be moderate because although it has not been established how long the construction of the improvements in the vicinity of Columbus Plaza would take, it would be much less than the entire construction period. All other construction activities associated with the Preferred Alternative would take place to the north of the historic station building and would not cause impacts on Columbus Plaza.

5.13.4 Summary of Impacts

Table 5-76 summarizes the impacts of the No-Action Alternative and Preferred Alternative on parks and recreation areas.

Table 5-76. Summary of Impacts on Parks and Recreation Areas

Type of Impact	No-Action Alternative	Preferred Alternative
Direct Operational	No impact	Minor beneficial impact on Columbus Plaza
Indirect Operational	Minor adverse impact	Minor adverse impact
Construction	Minor adverse impact	Moderate adverse impact on Columbus Plaza and Metropolitan Branch Trail

5.14 Social and Economic Conditions

This section addresses the potential impacts of the No-Action Alternative and Preferred Alternative on social and economic conditions. These include impacts on demographics, jobs, taxes, community disruption, commercial activity, and local government services.

5.14.1 Methodology

5.14.1.1 Operational Impacts

Social and economic impacts were assessed by considering how the No-Action and Preferred Alternative would affect: demography; community disruption and benefits; employment; WUS revenue; and other economic measures, as applicable. Demographic impacts were assessed based on anticipated residential

development, assuming an average residential unit size of 950 square and an average household size of 2.1 persons.[457] Impacts on employment were assessed based on planning multipliers for specific land uses (1 employee per 250 square feet of office space; 3 employees per 1,000 square feet of retail use; and 1 employee per 2.67 hotel rooms). Impacts on WUS revenues were assessed using order-of-magnitude estimates based on anticipated changes in the amount of revenue-generating retail and parking at WUS. Other operational impacts were assessed qualitatively.

5.14.1.2 Construction Impacts

Construction impacts on socioeconomic factors other than employment were assessed qualitatively. Impacts on employment were assessed quantitatively using Impact Analysis for Planning (IMPLAN), an economic input-output model software system.

IMPLAN analysis of construction employment generation encompassed the Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical area.[458] Construction employment, wages, and economic output were based on estimated construction costs and calculated from multipliers and datasets for various industries. Outputs included direct jobs; indirect jobs; and induced jobs. Also modeled were total wages from generated jobs; combination of labor income, other property type income and indirect business taxes; and value of production.

5.14.2 Impacts of the No-Action Alternative

5.14.2.1 Direct Operational Impacts

Demographics

Relative to existing conditions, in the No-Action Alternative, there would be a minor direct operational impact on demographic conditions from the private air rights development. [459]

In the No-Action Alternative, the private air rights development above the WUS rail terminal would include approximately 1,050,000 square feet of residential uses. It would add approximately 2,320 residents to the Local Study Area. This would amount to a minor impact on local demography for the following reasons. According to the 2020 Census, the total population of the Local Study Area in 2020

[457] Average household size in the District per https://www.census.gov/quickfacts/fact/table/DC,US/PST045222. Accessed on August 18, 2023.

[458] This area includes: The District of Columbia; Frederick, Montgomery, Calvert, Charles, and Prince George's Counties in Maryland; Arlington, Clarke, Culpeper, Fairfax, Fauquier, Loudoun, Prince William, Rappahannock, Spotsylvania, Stafford, and Warren Counties, and Alexandria City, Fairfax City, Falls Church City, Fredericksburg City, Manassas City, and Manassas Park City in Virginia; and, Jefferson County in West Virginia. These jurisdictions make up the Washington-Arlington-Alexandria, DC-VA-MD-WV metropolitan statistical area as defined by the U.S. Office of Management and Budget and used by the U.S. Census Bureau.

[459] This demographic impact is not characterized as adverse or beneficial because a proportionately small change in residential population does not in itself represent a favorable or unfavorable outcome.

was 29,004.[460] The residents of the private air rights development would increase this total by approximately 8 percent over approximately 15 years, a minor change. The private air rights development population would represent a minute fraction of the District's current population (689,546 residents in 2020) and its forecasted 2040 population (787,144 residents).[461]

Community Disruption and Other Social Benefits or Impacts

Relative to existing conditions, the No-Action Alternative would have moderate beneficial direct operational impacts on local communities.

The projects included in the No-Action Alternative would result in a beneficial impact on local communities because they would improve connectivity between WUS and the surrounding neighborhoods. The Amtrak and USRC-led projects to address ADA compliance and other issues at WUS would improve access to transportation facilities and retail (**Section 3.4.3**, *Near-term Station and Track Improvements at WUS*). WUS would become better integrated with the surrounding areas. None of the projects would reduce access between neighborhoods; erect permanent barriers among communities; or result in any other condition that would permanently disrupt neighborhoods and communities around WUS. The private air rights development would create new connections between the areas on either side of the rail terminal as well as provide new retail opportunities and other urban amenities.

The beneficial impact would be moderate because the No-Action Alternative would leave many existing access and connectivity issues unresolved. No new east-west connections would be created. Pedestrian connections to WUS from the surrounding neighborhoods are currently inadequate and would remain so. This would also be the case for the private air rights development, which would not have direct connections to the station. Entrances would remain concentrated on or near the south side of the station. The only entrance from H Street NE would continue to be through the parking garage, making it difficult for travelers to access adjacent neighborhoods and employment centers to the northwest and east of WUS.

Employment

Relative to existing conditions, the No-Action Alternative would have a moderate beneficial direct operational impact on employment.

The new office, retail, and hotel space in the private air rights development would support approximately 10,288 jobs in the Local Study Area, a beneficial impact. This beneficial impact on anticipated employment would be moderate because, while large in the context of the Project Area, it would be small in the context of the District. According to the most recent information available from the Deputy Mayor for Planning and Economic Development (DMPED) Economic Intelligence Dashboard, as of July 2019, there were an estimated 802,000 jobs in the District. The additional jobs in the Project

[460] **Section 4.14.4.1**, *Demographics, Total Population*.

[461] District of Columbia Office of Planning. *DC Round 10 Forecasts Totals 2020-2050*. Accessed from https://planning.dc.gov/publication/dc-forecasts. Accessed on August 18, 2023.

Area in the No-Action Alternative would represent approximately 1.3 percent of this total. As another benchmark, DCOP projections show an estimated 954,371 jobs in the District by 2040. [462] This amounts to an average growth of 7,620 jobs a year between 2020 and 2040. The jobs associated with the private air rights development would represent over one year of projected growth and be equivalent to 1 percent of the total projected 2040 employment.

Washington Union Station Revenue

Relative to existing conditions, the No-Action Alternative would have no direct operational impact on WUS Revenue.

USRC, which manages WUS, obtains its revenue from the Union Station Investco (USI) sublease for retail space and from the parking garage, operated by Union Station Parking Garage LLC. In the No-Action Alternative, there would be no change in the amount of retail or parking at WUS relative to existing conditions. Existing leases would continue and there would be no changes in WUS's revenue from those leases other than normal fluctuations or adjustments.

Other Direct Economic Impacts

Relative to existing conditions, the No-Action Alternative would have a beneficial direct operational impact on retail and parking at WUS.

In the No-Action Alternative, neither the amount of retail nor the number of parking spaces at WUS would change. However, larger numbers of passengers and visitors would likely benefit WUS's retail outlets through sales growth and potentially generate higher demand and rates for the WUS parking garage. People living or working in the private air rights development would also provide an expanded customer base for retail outlets at WUS. This beneficial impact is not readily quantifiable but would represent a beneficial impact on the local and regional economy.

5.14.2.2 Indirect Operational Impacts

Demographics

Relative to existing conditions, the No-Action Alternative would have a negligible indirect operational impact on demographic conditions. [463]

The private air rights development project may encourage further development in the Local Study Area, as explained in **Section 5.9.2.2**, *Indirect Operational Impacts*. Some of that development may be residential and result in an increase in the population of the Local Study Area and the District. The

[462] District of Columbia Office of Planning. *DC Round 10 Forecasts Totals 2020-2050*. Accessed from https://planning.dc.gov/publication/dc-forecasts. Accessed on August 18, 2023.

[463] This demographic impact is not characterized as adverse or beneficial because a proportionately small change in residential population does not in itself represent a favorable or unfavorable outcome.

population increase would be very small relative to the District's growth through 2040 and the resulting impact negligible.

Community Disruption and Other Social Benefits or Impacts

Relative to existing conditions, the No-Action Alternative would have no indirect operational impacts on local communities.

In the No-Action Alternative, the private air rights development may indirectly encourage development outside the Project area near WUS. This would not result in adverse impacts on local communities. District zoning regulations and applicable plans would continue to guide the density and character of potential future development. This would avoid the development of land uses that could disrupt or dislocate local communities.

Employment

Relative to existing conditions, the No-Action Alternative would have a minor beneficial indirect operational impact on employment in the Local Study Area.

A beneficial indirect impact on employment would result from the private air rights development. New residents and employees would support new jobs in the Local and Regional Study Areas through typical household spending and business-to-business spending. Additionally, the private air rights development and increased ridership and visits to WUS may encourage further development near WUS, with a similar beneficial impact. This beneficial impact cannot be readily quantified but would be minor in the context of the current and projected future employment in the Local Study Area and the District.

Washington Union Station Revenue

Relative to existing conditions, the No-Action Alternative would have a beneficial indirect operational impact on WUS Revenue.

The No-Action Alternative would have a beneficial indirect impact on WUS revenue if greater activity in the Project Area (due to both ridership increases and the private air rights development) results, in the long term, in an increase in demand for services that generate revenue for WUS such as retail and parking. This potential impact would be beneficial, but it cannot be quantified.

Other Indirect Economic Impacts

Relative to existing conditions, the No-Action Alternative would have a beneficial indirect operational impact on tax revenues in the District.

The private air rights development would generate new revenue for the District through new property taxes from newly developed parcels, income tax from new residents, and sales tax revenue from new retail and increased patronage at existing retail. Induced residential and economic growth in the Local Study Area and the District at large would generate further increases in revenue.

Property taxes from the private air rights development would be new but income taxes may not be if residents moved to the new development from elsewhere in the District. Also, increases in the number of visitors or residents would create new demands on municipal services, whose cost would partially offset the increase in tax revenue. The net benefit in tax revenue that would result is not quantifiable, but it would be beneficial, even in the context of the District as a whole, whose total tax revenue in fiscal year 2021 was $8.8 billion.[464].

5.14.2.3 Construction Impacts

Demographics

Construction of the projects included in the No-Action Alternative would have no impact on demography.

The construction of the No-Action Alternative projects would cause neither an influx nor a displacement of residential populations in the Local or the Regional Study Areas**.**

Community Disruption and Other Social Benefits or Impacts

Construction of the No-Action Alternative projects would have minor adverse impacts on local communities.

Construction of the No-Action Alternative projects would create various degrees of disruption within the Local Study Area with adverse impacts on the local communities. Impacts would be minor because they would be spread across several years and varying schedules. They are not likely to keep significant numbers of people from using WUS or to force businesses or residents to relocate.

The most noticeable disruption would be from the partial closures of sidewalks and roadways due to various projects. The H Street Bridge replacement would have the most impact. Travel between the east and west sides of the Local Study Area would be maintained but it would be more difficult during the construction period. The private air rights development construction would likely require temporary sidewalk and roadway closures along First Street NE (north of H Street) and Second Street NE and generate construction vehicle traffic along those streets. Sufficient information is not available to assess the intensity and duration of those impacts, but they would be those typical of medium- to large-scale urban construction projects. In all cases, impacts would be minimized through compliance with the District's Safe Accommodation law. [465]

Construction of the private air rights development and VRE MSRF would take place within the rail terminal and may affect railroad operations. Travelers and commuters may experience delays and

[464] District of Columbia, Office of Chief Financial Officer, Office of Revenue Analysis. *D.C. Tax Facts. 2022*. Accessed from https://cfo.dc.gov/node/1606201. Accessed on November 1, 2022.

[465] District of Columbia Municipal Regulations (DCMR) 24-3315. The law requires that when a bicycle lane or sidewalk is closed for construction, an equally safe accommodation, free of hazards and debris, must be provided.

increased commuting times. Amtrak must authorize work in the rail terminal; this process would help minimize impacts to rail operations.

Construction Employment

Construction of the No-Action Alternative projects would have a minor beneficial impact on employment.

Construction of the No-Action Alternative projects would beneficially affect employment and support construction jobs. Construction workers would likely support business establishments in the Local Study Area. Businesses throughout the District and metropolitan area would also benefit through additional household spending supported by construction wages and the purchase of construction materials, with a spin-off effect on job generation. This beneficial impact, which would be spread over many years through 2040, would be minor in the context of overall employment and economic activity in the District.

Washington Union Station Revenue

Construction of the projects included in the No-Action Alternative would have a minor adverse impact on WUS revenue.

There would be minor adverse impacts on WUS revenue. Construction activities that would modify parking garage access (such as the H Street Bridge replacement) would likely result in a loss of revenue due to fewer cars using the garage. However, the garage would remain open with alternative access points, limiting the loss of revenue. Construction activities could also adversely affect WUS's retail and service establishments if they led to a reduction in visitors and a decrease in spending at the station. Such short-term fluctuations do not affect WUS's revenue from retail, however. Construction activities in the No-Action Alternative are not likely to result in long-term or permanent store closures.

Other Economic Benefits or Impacts

Construction of the project included in the No-Action Alternative would have a minor beneficial impact on the regional economy.

Although a quantitative assessment is not possible, construction of the various projects included in the No-Action Alternative would have a beneficial economic impact at the regional level from the spending of the income generated by the construction of each project and other jobs it would generate.

5.14.3 Impacts of the Preferred Alternative

5.14.3.1 Direct Operational Impacts

Demographics

Relative to the No-Action Alternative, the Preferred Alternative would have a negligible direct operational impact on demographic conditions. [466]

The expansion of WUS in the Preferred Alternative would change the amount of residential uses in the private air right development from an assumed 1,050,000 square feet in the No-Action Alternative to 979,250 square feet. After rounding, this would reduce the residential population in the Project Area by approximately 160 persons in the Preferred Alternative relative to the No-Action Alternative. This would be a negligible impact in the context of the Local Study Area (29,004 residents), the District's current population (689,546 residents in 2020), and its forecasted 2040 population (787,144 residents).[467]

Community Disruption and Other Social Benefits or Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have major beneficial direct operational impacts on local communities.

Relative to the No-Action Alternative, the Preferred Alternative would have a major beneficial impact because it would improve community cohesion by providing new pedestrian connections between WUS and the surrounding neighborhoods. While there would be increases in peak hour vehicular traffic along several thoroughfares around WUS, including North Capitol Street, K Street NE, First Street NE, and Second Street NE (see the analysis of traffic impacts in **Section 5.5.3.1**, *Direct Operational Impacts*, *Vehicular Traffic*), continued implementation of the District Vision Zero strategy would help maintain safe pedestrian and bicycle travel through the area.[468] The new street-level pedestrian entry points along First Street NE and Second Street NE under the H Street Bridge as well as new entry points from the bridge would make WUS easier to access from both the east and west neighborhoods while also improving the connectivity between neighborhoods on either side of the station. The pedestrian and bicycle ramp along the west side of WUS would improve connectivity between the front of the station, the private air rights development, and H Street.

The Preferred Alternative would also provide approximately 64,000 square feet of new retail space in WUS. The provision of additional shopping opportunities and services located in WUS would benefit neighborhood residents as well as travelers and commuters. The access improvements mentioned in the previous paragraph would make it easier for residents to use these new amenities.

[466] This demographic impact is not qualified as adverse or beneficial because a small change in residential population in a dense urban environment does not in itself represent a favorable or unfavorable outcome.

[467] District of Columbia Office of Planning. *DC Round 10 Forecasts Totals 2020-2050*. Accessed from https://planning.dc.gov/publication/dc-forecasts. Accessed on August 18, 2023.

[468] District of Columbia. *Vision Zero DC*. Accessed from https://visionzero.dc.gov/. Accessed on January 23, 2023.

At the regional level, expanded and improved multimodal connections at WUS would result in easier and more efficient travel in and out of the District. This would benefit all District residents and visitors.

Employment

Relative to the No-Action Alternative, the Preferred Alternative would have a minor adverse direct operational impact on employment.

The Preferred Alternative would add approximately 64,000 square feet of WUS retail space to WUS, which would generate approximately 192 new jobs. It would also provide additional space for Amtrak to support expanded rail operations, which would be staffed with approximately 1,629 persons, representing a 1,229-employee increase at WUS over the No-Action Alternative. Altogether, the Preferred Alternative would add up to an estimated 1,421 jobs at WUS relative to the No-Action Alternative.

In the Preferred Alternative, the private air rights development would differ from what it would be in the No-Action Alternative, affecting the number of jobs that the Project Area is anticipated to support by 2040. In the Preferred Alternative, the private air rights development would provide 1,060,000 square feet of office instead of 2,160,000 square feet in the No-Action Alternative, amounting to approximately 4,400 fewer jobs. The amount of retail uses would change from 120,000 square feet to 85,000 square feet, reducing anticipated employment in the Project Area by about 100 jobs in the Project Area. Finally, hotel uses would change from approximately 480 rooms to 453 rooms, reducing the anticipated number of jobs in the Project Area by approximately 70. Overall, the total change in private air rights development jobs would reduce anticipated employment in the Project Area by approximately 4,570 jobs.

Accounting for the additional WUS jobs the Preferred Alternative would support, and after rounding, there would be a net reduction of approximately 3,150 in the number of jobs the Project Area is anticipated to support in the Preferred Alternative relative to the No-Action Alternative. This adverse impact on anticipated employment would be minor because, while large in the context of the Project Area, it would be small in the context of the District. According to the most recent information available from DMPED Economic Intelligence Dashboard, as of July 2019, there were an estimated 802,000 jobs in the District. The reduction in anticipated jobs with the Project Area in the Preferred Alternative would represent approximately 0.4 percent of this total. Additionally, the 3,150 jobs may simply be accommodated elsewhere in the District.

Washington Union Station Revenue

Relative to the No-Action Alternative, the Preferred Alternative would have a major adverse operational direct impact on WUS revenue.

The Preferred Alternative would reduce the number of revenue-generating parking spaces at the station from approximately 2,205 in the No-Action Alternative to no more than 550, or a reduction of approximately 75 percent. Based on USRC's financial report for 2019, parking accounts for 70 percent of USRC's annual revenue. As noted in the report, this revenue "subsidizes USRC's financial responsibilities

with regard to historic preservation." [469] Assuming direct proportionality between parking capacity and parking revenue, the Preferred Alternative would cause at least 52.5 percent decrease in total revenue. Thus, the Preferred Alternative would have a major adverse operational impact on WUS revenue.

This impact would not threaten the long-term economic viability of WUS. The increases in parking rates that the reduced supply may cause; the revenue from the added retail; and revenue from greater multimodal activity would contribute to partially offsetting the loss. Additionally, the Union Station Redevelopment Act of 1981 requires USRC to preserve and maintain the historic Station. [470] While parking is currently a main source of revenue supporting this mission, it is not a necessary one. USRC would identify and secure new funding sources to continue preserving and maintaining the historic Station in compliance with the Act.

Other Direct Economic Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have a beneficial direct operational impact on the local and regional economy.

The Preferred Alternative would have a minor beneficial impact on the local and regional economy because it would add approximately 64,000 square feet of retail at WUS, with a net increase in retail within the Project Area of 29,000 square feet after accounting for the reduction in private air rights retail uses. The new retail would generate revenue for its operators as well as new jobs and sales taxes at WUS, which in turn would generate further economic activity. Existing retail and services at WUS would also benefit from anticipated increases in sales due to greater Amtrak, MARC, VRE, and intercity bus ridership. These economic impacts are not quantifiable at this time but would be a beneficial impact on the local and regional economy.

5.14.3.2 Indirect Operational Impacts

Demographics

Relative to the No-Action Alternative, the Preferred Alternative would have a minor indirect operational impact on demography.[471]

Potential development of the Federal air rights would include approximately 175,000 square feet of residential space. This would add approximately 390 residents to the Project Area (after rounding). This would be a minor impact in the context of the Local Study Area and District of Columbia.

More broadly, improved connectivity and increased activity at WUS in the Preferred Alternative, as well as increased employment opportunities, may indirectly encourage or accelerate development near

[469] Union Station Redevelopment Corporation. *2015-2021 Annual Reports*. Accessed from https://www.usrcdc.com/annual-reports/. Accessed on November 1, 2022. In 2020-2021, operations and revenue were affected by the COVID-19 pandemic, with 2019 being the most recent "normal" year for which financial information is available.

[470] Union Station Redevelopment Act of 1981, Pub. L. 97-125, 95 Stat. 1667 (1981).

[471] This demographic impact is not qualified as adverse or beneficial because a small change in residential population does not in itself represent a favorable or unfavorable outcome.

WUS, including residential development, in addition to what would occur in the No-Action Alternative. This impact is not readily quantifiable but likely would be negligible in the context of anticipated demographic growth in the District through 2040.

Community Disruption and Other Social Benefits or Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have minor beneficial indirect operational impacts on local communities.

In combination with the private air rights development, potential development of the Federal air rights would fill in a gap in the urban fabric, better connecting the neighborhoods around WUS via the H Street Bridge and the pedestrian/bicycle ramp along the west side of the station. This would have a beneficial impact on the local community.

The Preferred Alternative may also indirectly encourage development outside the Project area near WUS. This would not result in adverse impacts on local communities. District zoning regulations and applicable plans would continue to guide the density and character of potential future development. This would avoid the development of land uses that could disrupt or dislocate local communities.

Employment

Relative to the No-Action Alternative, the Preferred Alternative would have a minor beneficial indirect operational impact on employment.

Potential development of the Federal air rights would include approximately 310,000 square feet of office space. This would support approximately 1,240 jobs in the Project Area. The Federal air rights development would also include 15,000 square feet of retail, adding another 45 jobs, for a total of approximately 1,290 jobs after rounding. This beneficial impact would be minor because, while large in the context of Project Area, it would be small in the context of the District. More broadly, the Preferred Alternative would have a beneficial indirect impact on employment because new retail and station workers at WUS and greater numbers of passengers and visitors would increase consumer demand for goods and services. This would support employment both locally and regionally. This beneficial impact is not quantifiable. It likely would be minor in the context of the District's economy.

Washington Union Station Revenue

Relative to the No-Action Alternative, the Preferred Alternative would have a beneficial indirect operational impact on WUS Revenue.

The potential transfer and development of the Federal air rights with a mix of residential, office, and retail uses would have a beneficial impact on WUS revenue through the lease of the space (or other mechanism through which transfer and development would be achieved), as the area is within USRC's lease area. This impact cannot be quantified at this time.

Other Indirect Economic Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have a beneficial indirect operational impact on tax revenues in the District.

Generally, the Preferred Alternative would contribute to expanding tourism and economic activity in the Regional Study Area by making it possible for WUS to overcome capacity constraints and resolve operational inefficiencies. Thanks to these improvements, WUS would continue to be a major transportation hub that supports and bolsters the local and regional economy, with attendant tax benefits. The net benefit in tax revenue that would result is not quantifiable but would be beneficial, even in the context of the District as a whole, whose total tax revenue in fiscal year 2021 was $8.8 billion.[472]

5.14.3.3 Construction Impacts

Demographics

Construction of the Preferred Alternative would have no impact on demography.

The construction of the Preferred Alternative would cause neither an influx nor a displacement of residential populations**.**

Community Disruption and Other Social Benefits or Impacts

Construction of the Preferred Alternative would have moderate adverse impacts on local communities.

There would be adverse impacts on local communities at various times throughout the construction of the Preferred Alternative. Construction would take place over an estimated span of approximately 13 years. Throughout, to accommodate construction activities, there would be periods of rerouting passengers, closing off sections of WUS, and closing some retail space. The column removal component of the Project would close part of the Retail and Ticketing Concourse. Retail outlets located within this part of the concourse and the mezzanine above would have to close for at least the duration of the work, which is anticipated to take place over approximately 2 years and 6 months, overlapping with Phases 1 and 2 of construction. Parking and bus loading and unloading activities would be displaced between the demolition of the existing garage and the completion of the new below-ground facility. Outside of WUS proper, construction traffic and noise as well as partial closures of sidewalks and traffic lanes would adversely affect residents, commuters, and workers.

The impact from this disruption on local communities would be moderate for the following reasons. Although various disruptive activities would occur during the entire construction period, most would last for only a part of it and would be localized. The displacement of parking and bus activities would occur only in Phase 4 (last 4 years and 3 months of construction). Outside of WUS, disruptions would largely

[472] District of Columbia, Office of Chief Financial Officer, Office of Revenue Analysis. *D.C. Tax Facts. 2022*. Accessed from https://cfo.dc.gov/node/1606201. Accessed on November 1, 2022.

concentrate along Second Street NE (south of K Street) during Phase 1 of construction (lasting approximately 2 years and 4 months) and along First Street NE (also south of K Street) during Phase 4. Although adversely affected, access to WUS would remain available throughout the construction period and the phased construction would help minimize reductions in rail operations. While the various inconveniences construction of the Preferred Alternative would create would be highly noticeable and would make WUS and areas close to WUS less attractive to new residents or businesses while construction is ongoing, the directly affected areas would be small and the adverse impacts would decrease quickly with distance.

Construction Employment

Construction of the Preferred Alternative would have a minor beneficial impact on employment.

Construction of the Preferred Alternative would support numerous jobs during the entire construction period. While this would be a beneficial impact, it would be minor in the context of regional employment in the Washington-Arlington-Alexandria Metropolitan Statistical Area, where most of the induced jobs would likely be located. Job generation modeling showed that on average, the Preferred Alternative would support approximately 4,390 direct jobs and 1,956 indirect and induced jobs annually, for a total of 6,346 jobs. Direct jobs would occur within the construction and architectural, engineering, and related services industries. The indirect and induced jobs would occur in a wider range of industries such as wholesale trade; restaurants; real estate; hospitals; retail; and physicians. For purposes of comparison, the total annual average number of direct jobs that the Preferred Alternative would support for the duration of the construction period represents approximately 0.6 percent of total jobs in the two relevant sectors in the Washington-Arlington-Alexandria Metropolitan Statistical Area as of August 2022.

Washington Union Station Revenue

Construction of the Preferred Alternative would have a major adverse impact on WUS revenue.

Construction of the Preferred Alternative would affect the two main sources of WUS revenue: retail and parking. The retail closures due to the column removal work would affect the revenue derived from the retail lease. At this stage, it is not possible to quantify the resulting financial impact on the affected retail outlets, lease holders, and USRC. However, given the duration of the anticipated closure (at least approximately 2 years and 6 months overlapping with Phases 1 and 2 of construction), it is likely to be major. There is also the possibility that, given the duration of the closure, the displaced outlets would not return to WUS after the completion of the work. If this occurs, and if the displaced businesses are not replaced by new tenants, the construction impacts could become permanent.

Construction-related disruptions in WUS access and the demolition of the parking garage would further cause a major reduction in the revenue accruing to WUS from parking operations. During the first three phases of construction, parking would remain available but changes in access and rerouting may reduce the number of users and the revenue generated by parking. During Phase 4, which would start approximately 8 years and 9 months after the beginning of construction and last approximately 4 years and 3 months, parking would not be available.

This impact on WUS revenue would not threaten the long-term economic viability of WUS for the reasons explained in **Section 5.14.3.1**, *Direct Operational Impacts, Washington Union Station Revenue*.

Other Economic Benefits or Impacts

Construction of the Preferred Alternative would have a minor beneficial impact on the regional economy.

Construction of the Preferred Alternative would have a minor regional beneficial economic impact from the spending of the income generated by the jobs construction of the Project would generate. Modeling indicates that the Preferred Alternative construction would produce from $296 to $557 million in estimated annual labor income (including employee compensation and proprietor income) depending upon the year. Annual value added, which is the combination of labor income, other property type income and indirect business taxes, would range from $414 million to $778 million depending on the year. Annual total output, or the value of production, would range from $688 to $1,293 million depending on the year. These economic outputs would spread benefits throughout the Washington DC metropolitan region. While substantial, the impact would be minor in the context of the Washington-Arlington-Alexandria Metropolitan Area. Labor income is one component of gross domestic product (GDP), and in 2020, the GDP of this area was approximately $561 billion.[473]

5.14.4 Summary of Impacts

Table 5-77 summarizes the socioeconomic impacts of the No-Action Alternative and Preferred Alternative.

Table 5-77. Summary of Socioeconomic Impacts

Impact Category	Type of Impact	No-Action Alternative	Preferred Alternative
Demographics	**Direct Operational**	Minor impact	Negligible impact
	Indirect Operational	Negligible impact	Minor impact
	Construction	No impact	No impact
Community Disruption and Other Social Benefits	**Direct Operational**	Moderate beneficial impact	Major beneficial impact
	Indirect Operational	No impact	Minor beneficial impact
	Construction	Minor adverse impact	Moderate adverse impact
Employment	**Direct Operational**	Moderate beneficial impact	Minor adverse impact

[473] United States Bureau of Economic Analysis. *Gross Domestic Product by Metropolitan Area, 2020*. Accessed from https://apps.bea.gov/iTable/?reqid=70&step=1&isuri=1&acrdn=5#. Accessed on November 2, 2022.

Impact Category	Type of Impact	No-Action Alternative	Preferred Alternative
	Indirect Operational	Minor beneficial impact	Minor beneficial impact
	Construction	Minor beneficial impact	Minor beneficial impact
WUS Revenue	**Direct Operational**	No impact	Major adverse impact
	Indirect Operational	Beneficial impact	Beneficial impact
	Construction	Minor adverse impact	Major adverse Impact
Other Economic Impacts	**Direct Operational**	Beneficial impact	Beneficial impact
	Indirect Operational	Beneficial impact	Beneficial impact
	Construction	Beneficial impact	Minor beneficial impact

5.15 Public Safety and Security

This section addresses the potential impacts of the No-Action Alternative and Preferred Alternative on public safety and security conditions.

5.15.1 Methodology

5.15.1.1 Operational Impacts

To assess the operational impacts on public safety and security, the relevant aspects of the No-Action and Preferred Alternatives were reviewed to determine how each would potentially create new or heightened risks (adverse impact) or reduce or eliminate risks (beneficial impact). Relevant considerations included: changes in the number of persons or vehicles that would be able to gain access to WUS; changes in security procedures; changes in or modification of security and safety features; design considerations; and changes in potential demand for police and emergency services.

5.15.1.2 Construction Impacts

Assessing potential construction impacts on public safety and security involved reviewing the security and safety risks that construction operations at WUS would potentially create. Factors considered included: changes in access opportunities; changes in security procedures; removal or addition of security and safety features; closures of roads and sidewalks; and construction-related traffic.

5.15.2 Impacts of the No-Action Alternative

5.15.2.1 Direct Operational Impacts

Relative to existing conditions, in the No-Action Alternative, there would be major adverse direct operational impacts on security and moderate adverse direct operational impacts on public safety.

In the No-Action Alternative, existing safety and security practices at WUS would remain in place. **Section 4.15**, *Public Safety and Security* describes these practices. They include Amtrak Police Department (APD) canine patrols, security cameras, physical access control systems, intrusion detection systems, and random screening and searches.

Impacts on safety and security would result from the increase in WUS passengers across all modes of transportation. Average daily passenger numbers would grow from approximately 58,400 to 77,500, a 33 percent increase over existing conditions. The number of visitors would also increase and the private air rights development above the rail terminal would generate more access activity. This would result in additional car and truck traffic next to and above the rail terminal. This in turn would increase the risk of vehicle-related crashes and vehicle-based attacks (such as vehicle-borne improvised explosive devices [VBIED] or chemical, biological, radiological, nuclear, and explosive [CBRNE] threats). Unscreened bus and freight movements would also increase at WUS.

The private air rights deck would have to comply with Amtrak's vertical clearance requirements. Amtrak would review and approve plans to ensure that applicable clearances are met. Based on this requirement, no adverse impacts are anticipated on the safety of rail operations.

Regarding security, based on available concepts, the private air rights development may include vehicular parking within the overbuild deck structure, above WUS's tracks and platforms. [474] Public access to areas inside the structural deck for parking would create new VBIED risks at a sensitive location. Such risks have been identified and considered in a Threat and Vulnerability Risk Assessment (TVRA).[475] This would be a major adverse impact on security at WUS. It is anticipated that USRC and Amtrak would work with the private air rights developer to address such risks consistent with the recommendations of the TVRA including consideration of solutions that would not place parking in the deck.

5.15.2.2 Indirect Operational Impacts

Relative to existing conditions, the No-Action Alternative would result in minor adverse indirect operational impacts on public safety and security.

Larger passenger and visitor volumes would result in greater potential demands on security and emergency services at WUS. APD would likely need to add staff to continue effectively policing the

[474] Akridge. November 15, 2017. *Burnham Place and Washington Union Station. Concept Level Podium Structural Systems for 30'x55' Column Grid Areas*.

[475] The TVRA was developed by FRA and the Project Proponents in collaboration with multiple agencies and stakeholders. It was completed in July 2016.

station. The local units of the Metropolitan Police Department (MPD) and DC Fire and Emergency Medical Services would likely have to respond to a greater number of incidents at and near WUS than currently. There may be a need to update emergency operations plans and hire new emergency responders. The adverse impact would be minor because the affected services would have ample time to evaluate and plan for future demand and incorporate it in their respective staffing and operations plans.

5.15.2.3 Construction Impacts

Construction activities in the No-Action Alternative would result in moderate adverse impacts on public safety and security.

Construction of the projects included in the No-Action Alternative would take place according to different schedules and using construction methods. In general, each project would have adverse impacts on security to the extent that it would require granting access to WUS or the rail terminal to workers and vehicles during the construction period. Specific security risks would depend on the size of each construction site and the type and duration of construction operations. It would be the responsibility of the respective project owners and their contractors to minimize security risks. Adverse impacts would be moderate based on the size of the projects and because they would not all take place at the same time.

Construction activities would have adverse impacts on public safety because construction inherently poses safety risks on and adjacent to the construction site. Impacts on public safety in the No-Action Alternative would be moderate based on the size and location of the projects. On site, work would have to comply with applicable Occupational Safety and Health Administration (OSHA) requirements and guidelines. Construction activities within the rail terminal would also be subject to Amtrak's authorization. Construction occurring within 25 feet of any track or overhead catenary system requires Amtrak approval and the use of track protection personnel.

5.15.3 Impacts of the Preferred Alternative

5.15.3.1 Direct Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have a major beneficial direct operational impact on public security and safety at WUS.

The Preferred Alternative could potentially have adverse impacts on security at WUS due to the increase in passenger and visitor volumes, deliveries, and support services. This would generate additional car and truck traffic next to, above, and within the rail terminal. The new below-ground pick-up and drop-off, and parking facility would bring vehicles directly under the rail terminal and deck-level development via a ramp below the Metrorail Red Line tunnel, which is owned by WMATA. The integrated bus facility would bring vehicles directly under the deck, next to the train hall and the private air rights development. These features would increase the risk of vehicle-related crashes and vehicle-based attacks such as the use of VBIED and drones, as well as CBRNE threats.

This potential impact would be fully offset by the security improvements that would result from the Preferred Alternative, resulting in a net beneficial major effect. The Project Proponents and FRA coordinated with the Federal Protective Service (FPS) and Department of Homeland Security when planning concourses, new loading dock, and new bus facility. During the early stages of planning for the Project, FRA and the Project Proponents completed a TVRA to identify threats to WUS. At a minimum, the design and operation of the Preferred Alternative would incorporate recommended safety and security principles, such as clear sightlines, adequate and intuitive access for emergency responders, appropriate levels of patrol and video surveillance, access control, and spatial flexibility for future security measures. The design of the Preferred Alternative would allow for the potential screening of passengers and their luggage when entering the ticketed area to board trains. Amtrak would review and approve plans to ensure that applicable vertical clearances are met, resulting in no adverse impacts on the safety of rail operations.

In contrast to the No-Action Alternative, in which no pre-screening of the goods delivered through the WUS loading docks would occur, FPS would provide screening services at an existing or to-be-constructed screening facility in the Preferred Alternative.[476] These services would be provided in coordination with Amtrak Emergency Management and Corporate Security (EMCS) and USRC. Bus operations would be subject to some level of screening through authentication and passenger screening practices, but not through physical screening of buses at WUS.

As explained in **Section 2.4.1.2**, *Accessibility, Security and Life Safety Codes*, safety features and performance, including peak platform clearance times, do not fully meet building, fire, and life safety codes currently and this would continue to be the case in the No-Action Alternative. The Preferred Alternative would fully address these shortcomings, resulting in a major beneficial impact on safety at WUS.

5.15.3.2 Indirect Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have minor adverse indirect operational impacts on public safety and security.

The potential transfer and development of the Federal air rights in the Preferred Alternative would bring additional residents and workers to WUS and place another large development over the station's tracks and platforms. Any security risks associated with this development would be addressed in accordance with the TVRA.

Increased activity at WUS would likely result in greater demands for emergency services at WUS, with potential increases in personnel and equipment maintenance costs. The APD and Amtrak EMCS would likely need to add staff to continue effectively policing the station and to coordinate further with the Metropolitan Police Department (MPD) and U.S. Capitol Police. Emergency responders would need to allocate additional resources to firehouses and police service areas to cover the additional passengers.

[476] Loading dock deliveries includes those for the Commissary (food and beverage for Amtrak trains), retail (including restaurants), and Package Express, a service that ships packages via Amtrak trains.

Additionally, medical responders would have to deal with changing traffic patterns and additional entry/exit points. Additional resources would need to be allocated to training personnel in navigating this new geography. While this would adversely affect emergency services, the adverse impact would be minor because growth would take place over time and the various affected services would have time to plan to avoid personnel shortages or a significant deterioration of response times. Amtrak has an established relationship with local first-responders who participate in tabletop exercises. Any updates to operational plans would be coordinated through the Amtrak Regional Emergency Manager.

5.15.3.3 Construction Impacts

Construction of the Preferred Alternative would have major adverse impacts on security and moderate adverse impacts on public safety.

Construction of the Preferred Alternative would have major adverse impacts on security because construction operations would require granting access to WUS and the rail terminal to many workers and vehicles for approximately 13 years. Entrance and exit points would change depending on the construction phase but at any time, deliveries and loading of construction materials would use multiple access points.

Physical and non-physical access by workers would pose risks as well. Physical access to the construction site may make it a target for terrorism and criminal activity. Non-physical access to construction information, such as scheduling dates, storage locations, and management activities may also make the site vulnerable.

Construction would also affect operational station security. Vehicles and workers may have access to internal station areas not normally accessible to the public. Construction vehicles and large construction equipment such as cranes may disrupt video monitoring and patrolling of select areas of WUS, leading to diminished security monitoring.

All these security risks would be compounded by the size of the construction site, the sensitivity of WUS as a major transportation hub and potential target, and the duration of the construction activities.

Construction of the Preferred Alternative would have adverse impacts on public safety because construction inherently poses safety risks. These risks result from the wide range of simultaneous activities large construction projects involve. Adverse impacts on safety may arise from the physical disturbance associated with construction. Examples include the excavation of open trenches or pits; the movement and operation of equipment and trucks; or the closure of sidewalks, disruption of well-used pathways, and changes in traffic patterns. The impacts on public safety would be moderate because most construction-related activities would take place within the Project Area; members of the public would not have access to the construction zone.

On site, work would comply with applicable OSHA requirements and guidelines for general and construction industries. Construction activities within the rail terminal would also be subject to Amtrak's requirements and authorization for work near live railroad tracks. Emergency egress in accordance with the standards defined in National Fire Protection Association (NFPA) 130 routes would be maintained at all times. Construction work in the vicinity of the DC Streetcar would require contractors to comply with

the safety training requirements of the DC Streetcar Track Allocation Program. Safety issues related to tunneling below the existing Metrorail tunnel to build the access ramp to the below-ground facility would be addressed in coordination with WMATA as part of Joint Development and Adjacent Construction (JDAC) Program coordination.

Within WUS, the First Street Tunnel column removal work would potentially involve the demolition of existing flooring and structural elements within parts of the Retail and Ticketing Concourse. Physical risks to persons (for instance trip and fall accidents) would be avoided by closing off the area and ensuring it is only accessible to authorized personnel.

Outside the construction site, construction of the Preferred Alternative would require operating and moving equipment and other materials on public streets throughout each phase of construction over most of the entire construction period of approximately 13 years. The movement of heavy trucks and heavy material would pose safety risks. Trucks traveling on public streets could cause conflicts and accidents with other vehicles, pedestrians, and bicyclists. Sidewalk, bike lane, and road closures as well as the creation of temporary drop-off and pick-up areas may cause confusion for drivers, bicyclists, and pedestrians in a changing environment, increasing the risk of conflicts. Construction may diminish lines of sight.

Construction would potentially affect emergency response services when road closures are in effect. Lane closures with various timing plans may take place throughout the construction period. Construction activities would not affect nearby schools or other public facilities from a public safety perspective, as they would take place at least one block away from these facilities.

There would likely be hazardous materials (such as fuel, lubricants, or solvents among others) and hazardous waste stored on the construction site. These must be contained securely, and in accordance with all applicable occupational health and safety regulations. Spills or leaching of these materials can cause danger to people and property in the vicinity. Emergency and security personnel would need to be prepared to encounter potentially hazardous materials if they respond to an emergency at WUS during construction.

5.15.4 Summary of Impacts

Table 5-78 summarizes the safety and security impacts of the No-Action Alternative and Preferred Alternative.

Table 5-78. Summary of Impacts on Safety and Security

Resource Category	Type of Impact	No-Action Alternative	Preferred Alternative
Security	**Direct Operational**	Major adverse impact	Major beneficial impact
	Indirect Operational	Minor adverse impact	Minor adverse impact
	Construction	Moderate adverse impact	Major adverse impact

Resource Category	Type of Impact	No-Action Alternative	Preferred Alternative
Safety	**Direct Operational**	Moderate adverse impact	Major beneficial impact
	Indirect Operational	Minor adverse impact	Minor adverse impact
	Construction	Moderate adverse impact	Moderate adverse impact

5.16 Public Health, Elderly and Persons with Disabilities

This section addresses the impacts of the No-Action Alternative and Preferred Alternative on public health and the welfare of the elderly and persons with disabilities. In accordance with FRA's *Procedures for Considering Environmental Impacts*, it also considers the impacts of the No-Action Alternative and Preferred Alternative on the transportation and general mobility of the elderly and persons with disabilities.

5.16.1 Methodology

5.16.1.1 Operational Impacts

Potential operational impacts on public health were assessed qualitatively. Operational impacts as described elsewhere in this chapter were reviewed to determine whether they may affect public health or the health of sensitive populations. Impacts may occur via exposure to potentially harmful substances such as ingestion (swallowing), inhalation (breathing), and absorption (penetration through a barrier such as the skin). Potential impacts on the transportation and general mobility of the elderly and persons with disabilities were assessed through a review of the changes in the transportation infrastructure (including WUS) that would result from the Project and how they would affect these persons' movements within and near WUS.

5.16.1.2 Construction Impacts

The analysis of construction impacts was conducted using a similar approach to that used for the operational impacts. It included a review of construction impacts and an analysis of how they would affect public health. The analysis also considered how construction activities would affect the way the elderly and persons with disabilities would be able to access WUS and move in and around the station during the construction period.

5.16.2 Impacts of the No-Action Alternative

5.16.2.1 Direct Operational Impacts

Relative to existing conditions, in the No-Action Alternative, there would be no direct operational impacts on public health. There would be moderate beneficial direct operational impacts on the transportation and mobility of the elderly and persons with disabilities.

In the No-Action Alternative, the Project would not take place. Several other public and private projects would be implemented in the Project Area. None of these projects would create conditions that would adversely affect public health. They would support activities and functions typical of a multimodal transportation facility and dense urban environment.

There would be no noise-related impacts on public health. The primary public health concern associated with noise is noise-induced hearing loss (NIHL) from long-term exposure to elevated noise levels. EPA has identified 70 decibels as the level of environmental noise which will prevent any measurable hearing loss over a lifetime.[477] The standard assumes 24-hour, 365-day exposure over a period of 40 years. There would be no risk of such exposure in the No-Action Alternative. Noise and vibration analysis (**Section 5.10.2.1,** *Direct Operational impacts*) shows that in this alternative, anticipated noise levels near WUS would not exceed 60 to 75 dBA. In areas nearer the station, noise levels would decrease relative to existing conditions following the construction of the private air rights development.

The No-Action Alternative would have beneficial impacts on the transportation and mobility of the elderly and persons with disabilities. These beneficial impacts would be moderate because, while they would make noticeable improvements, they would still leave some known deficiencies unaddressed.

WUS has a number of accessibility issues and some station elements do not meet the current standards. Several of the station improvement projects included in the No-Action Alternative would help remedy a few of the known issues. A recently completed example of such projects is the installation of new ADA-compliant elevators to Track 27-28. Other projects, such as the Concourse Modernization Project, would improve access for all passengers. However, several of WUS's shortcomings, such the lack of level boarding and excessive gaps between platforms and trains, would not be remedied under the No-Action Alternative.

5.16.2.2 Indirect Operational Impacts

Relative to existing conditions, in the No-Action Alternative, there would be no indirect operational impacts on public health and negligible adverse indirect operational impacts on the transportation and mobility of the elderly and persons with disabilities outside WUS.

[477] U.S. Environmental Protection Agency. 1981. *Noise Effects Handbook*. Accessed from https://www.nonoise.org/library/handbook/handbook.htm. Accessed on November 11, 2022.
U.S. Environmental Protection Agency. 1974. *EPA Identifies Noise Levels Affecting Health and Welfare*. Accessed from https://www.epa.gov/archive/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare.html. Accessed on November 11, 2022.

As explained above in **5.6.2.2**, *Indirect Operational Impacts*, regional emissions of criteria pollutants would decrease by 2040. Emissions of PM_{10} would increase only slightly. Reduction in air emissions would have a global beneficial effect in the long-term but would likely not be noticeable in the Study Area by 2040.

Impacts on transportation and mobility of the elderly and persons with disabilities outside WUS would be negligible. Increased roadway traffic may create a perceived barrier to circulation because of the greater potential for conflict between pedestrians and vehicles. However, most intersections near WUS have high visibility sidewalks across major approaches, with wheelchair ramps and detectable warning surfaces to aid visually impaired individuals. Most intersections also have accessible pedestrian signal equipment. Those that do not currently have such equipment are expected to be rebuilt or retrofitted in a few years.

5.16.2.3 Construction Impacts

In the No-Action Alternative, there would be minor adverse construction impacts on public health and moderate adverse construction impacts on the transportation and mobility of the elderly and persons with disabilities.

Construction of the various projects included in the No-Action Alternative, such as the private air rights development, would inherently generate public health-related risks. Direct impacts may arise from the physical disturbance associated with construction, such as excavation of open trenches or pits; the movement and operation of large motorized equipment and trucks, and associated emissions of air pollutants and dust; or the closure of sidewalks, disruption of well-used pathways, and changes in traffic patterns.

Potential adverse impacts on public health from these activities would be minor because best management practices that minimize risks from physical disturbance are a standard feature of all large construction sites. These include, for instance, fencing, clear separation of storage and staging area from the public way; and warning signs and alternative pathways during sidewalk closures.

Public health impacts may also arise from accidental spills of fuel or hazardous material. As explained in **Section 5.4.2.3**, *Construction Impacts*, compliance with applicable regulatory requirements would minimize the risk of spilled materials that could adversely affecting the public.

Construction activities would have moderate adverse impacts on the transportation and mobility of elderly persons and persons with disabilities. During the replacement of the H Street Bridge, walking across the bridge may be more challenging because of sidewalk closures and the proximity of construction activities. Construction of the various WUS improvement projects included in the No-Action Alternative would close parts of the station or make it challenging to navigate. Installation of the columns supporting the private air rights deck in the rail terminal may reduce platform space and make the platforms narrower and more crowded. These impacts would occur at different locations and on different schedules and, as such, would be moderate. The majority of WUS would remain accessible most of the time.

5.16.3 Impacts of the Preferred Alternative

5.16.3.1 Direct Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have negligible adverse direct operational impact on public health. It would have a major beneficial direct operational impact on the transportation and mobility of the elderly or persons with disabilities at WUS.

The Preferred Alternative would not introduce functions or activities that could adversely affect public health in or near the Project Area. The Preferred Alternative would include an air conditioning strategy that would isolate areas within which fumes, heat, and noise associated with operating diesel trains occur from areas where passengers and visitors would wait or remain for any significant amount of time. The tracks and platform areas would ventilate to the outside of the station.

Relative to the No-Action Alternative, ambient noise levels would increase at several locations under the Preferred Alternative, as explained in **Section 5.10.4.1**, *Direct Operational Impacts*, *Operational Noise*. However, increases would generally not exceed 3 dBA and, as such, would be barely perceptible and negligible. Nowhere would noise levels reach levels and durations that could cause NIHL. Impacts would be negligible.

The Preferred Alternative would have a major beneficial impact on the transportation and mobility of the elderly and persons with disabilities by making WUS easier to access and navigate. It would bring WUS into full compliance with applicable accessibility codes and regulations, including the *2010 Americans with Disabilities Act (ADA) Standards for Accessible Design.* [478] This would remedy accessibility shortcomings that the No-Action Alternative would not address. Elevators and wheelchair ramps would be provided as required. The parking facility would contain sufficient handicapped and van spaces (at least nine for a facility with 401 to 500 spaces, or at least two percent for a facility with more than 500 spaces, including van-accessible spaces). The new platforms would be wider and would allow for level boarding, addressing a significant existing shortcoming.

Several other features would benefit the elderly and persons with disabilities as well as the general public. New entrances to WUS on First, Second, and H Streets NE would reduce the distance many people must travel within WUS to reach trains or buses. Improved private pick-up and drop-off areas in front of WUS and new ones on First and Second Streets NE, next to the train hall, and in the new below-ground facility, would also facilitate access.

The new concourses and train hall would provide climate-controlled, more spacious transitional spaces than the existing Claytor Concourse, which would remain in the No-Action Alternative. The new bus facility would provide upgraded waiting spaces and other amenities relative to the existing ones, which the No-Action Alternative would keep in their current condition. The bus facility would be integrated with the train hall and provide more direct, easier, and friendlier access to the historic station building.

[478] US Department of Justice. *2010 ADA Standards for Accessible Design*. Accessed from https://www.ada.gov/2010ADAstandards_index.htm. Accessed on November 10, 2022; District of Columbia Department of Buildings. *2017 Building Codes*. Accessed from https://dob.dc.gov/node/1615636. Accessed on October 26, 2022.

By making boarding and alighting from trains or buses easier and reducing congestion in transitional spaces such as concourses, the Preferred Alternative would reduce trip, slip, and fall risks, which are a consideration in an environment where people are often moving hurriedly and encumbered with luggage. While this would benefit all passengers and visitors, it would particularly benefit the elderly and persons with disabilities, making it easier for them to navigate the station and move between multimodal elements.

Increased accessibility at WUS would also provide direct access to the Kaiser Permanente Capitol Hill Medical Center at 700 Second Street, NE at the corner of Second Street NE and H Street NE. The new H Street entrance to the station would provide the public, the elderly, and persons with disabilities new access to the medical center when using public transportation.

5.16.3.2 Indirect Operational Impacts

Relative to the No-Action Alternative, the Preferred Alternative would have negligible adverse indirect operational impacts on public health and minor adverse indirect operational impacts on the transportation and mobility of the elderly and persons with disabilities outside WUS.

Section 5.6.3.2, *Indirect Operational Impacts*, *Mesoscale Analysis*, indicates that the Preferred Alternative would cause additional regional emissions of all criteria pollutants relative to the No-Action Alternative. No indirect impacts on public health would result from these emissions, which would not result in exceedances of the NAAQS. The purpose of the NAAQS is in part to provide public health protection and protect the health of sensitive populations such as asthmatics, children, and the elderly. While there are health risks associated with any level of air pollution, emissions associated with the Preferred Alternative are not likely to measurably increase these risks. Additional emissions of MSAT cannot be quantified but are expected to be minor and regional MSAT levels expected to be lower by 2040 than currently. Public health impacts linked to air pollution would be negligible.

There would be minor adverse indirect impacts on the transportation and mobility of the elderly and persons with disabilities in the Preferred Alternative. Increased roadway traffic may create an actual or perceived barrier to the transportation and mobility of such persons near WUS because of the greater potential for conflict between pedestrians and vehicles. This would occur in the No-Action Alternative as well, but the Preferred Alternative would generate more traffic than the No-Action Alternative, especially along H Street NE, Second Street NE, North Capitol Street, and the north side of Columbus Circle.

The Preferred Alternative has several features that would contribute to offsetting potential risks to pedestrians. These include additional access points (on First, Second, and H Streets NE), which would reduce the distance some people would need to walk on public streets to reach the station. Also, the reconfiguration of the multiple pick-up and drop-off lanes in front of WUS and the reconfiguration of sidewalks in front of the station would facilitate access to WUS, with fewer roadways to cross. The removal of hop-on hop-off and tour bus traffic from that area would also make access to the front of WUS easier.

5.16.3.3 Construction Impacts

Construction of the Preferred Alternative would result in minor adverse impacts on public health and major adverse impacts on the transportation and mobility of the elderly and persons with disabilities.

Construction of the Preferred Alternative would take approximately 13 years to complete. Construction would take place in four phases moving from east to west plus an Intermediate Phase between Phases 1 and 2 during which only First Street Tunnel column removal work would be conducted. Construction activities, especially on the scale of the Project, inherently generate public-health-related risks. Direct impacts may arise from the physical disturbance associated with construction. Examples include the excavation of open trenches or pits; the movement and operation of equipment and trucks; or the closure of sidewalks, disruption of known pathways, and changes in traffic patterns.

Potential adverse impacts on public health from these activities would be minor because best management practices that are standard for all large construction sites would minimize risks from physical disturbance. All areas under construction would be fenced, screened, and inaccessible to the public either from the surrounding neighborhoods or from within WUS.

Public health impacts may arise from the air pollution and noise caused by construction work or if a large spill of fuel or hazardous material occurred. For the reasons described in the following paragraphs, these impacts would be minor.

During construction, fuel and hazardous materials would be stored and used on site. Accidental spills may occur, which could pose a risk to public health. Compliance with applicable Federal laws and regulations, including EPCRA, OPA, and RCRA, would minimize the risk of spilled materials migrating outside the Project Area and coming into contact with the public. Construction activities would cause air pollutant emissions from the operation of motorized equipment and movement of construction trucks to and from the site. The quantity of emissions would vary with each construction phase, and within each phase, with the type of activity. Quantitative estimates of construction-related emissions of criteria pollutants in the Preferred Alternative are presented in **Section 5.6.3.3**, *Construction Impacts*. The estimates include each phase's most emissions-intensive activities. The analysis showed that there would be no exceedance of the applicable *de minimis* levels. As such, these emissions would not adversely affect public health.

During column removal work, when part of the Retail and Ticketing Concourse would be demolished and the tunnel underneath exposed, there is potential for fumes from train engines to enter the station – both public areas and back of house areas – because several tracks would remain active at all times to minimize impacts on train service. These impacts would be avoided by closing off the construction area.

Construction of the Preferred Alternative would also cause noise impacts (see **Section 5.10.4.3**, *Construction Impacts*). Compliance with applicable OSHA requirements would ensure that workers are adequately protected from NIHL if they are exposed to noise above the relevant thresholds. Members of the public or WUS workers would not be at risk of exposure to noise levels capable of causing hearing loss, as any exposure would be temporary and brief. Non-authorized persons would not be allowed within the construction site or near noisy equipment. The partitions used to close off the part of the

station where the column removal work would take place from the rest of the building would be designed to provide an adequate level of noise shielding.

Construction of the Preferred Alternative would have major adverse impacts on the transportation and mobility of elderly persons and persons with disabilities. WUS would continue to operate throughout the construction period of approximately 13 years. During that time, depending on the phase of construction, parts of WUS would be closed to the public. This would result in congested conditions during periods of peak passenger activity. Areas that would remain open to the public may have to be temporarily reconfigured. Access to and from train platforms, bus facility, and parking facility would be relocated as construction proceeds. The disruption of usual pathways within WUS may be confusing to everyday riders and may make WUS more challenging to navigate for occasional users. Combined with increased congestion, it would create a heightened risk of trip, slip, and fall accidents or make access by elderly persons or persons with disabilities more difficult. During Phase 4 of construction, the unavailability of parking would restrict options for access to WUS. It may be more difficult or costly for the elderly and persons with disabilities to switch to alternative modes of access such as transit or for-hire vehicles. Also, during Phase 4, the existing bus facility would be demolished and temporarily replaced with an interim bus facility or bus loading zones on the completed portion of the structural deck (see **Section 5.5.3.3**, *Construction Impacts*, *Intercity, Tour/Charter, and Sightseeing Buses*). These interim facilities would have fewer amenities than the existing and future ones and may be more difficult for the elderly and persons with disabilities to use.

Outside of WUS, temporary sidewalk and lane closures would occur at various times during construction. Temporary relocation of bus stops and rerouting may be necessary. During Phase 1 of construction (lasting approximately 2 years and 4 months), sidewalk or lane closures may make access to the Kaiser Permanente Medical Building (700 Second Street NE) more challenging, although ADA-compliant access would be maintained.

Although much of the main public spaces in the station, including those in the historic station building, would remain open and unencumbered, access to and from WUS during construction, as well as internal circulation, would unavoidably remain more challenging than normal for the elderly and persons with disabilities. Because of the length of construction (approximately 13 years), this would be a major adverse impact.

5.16.4 Summary of Impacts

Table 5-79 summarizes the health and mobility impacts of the No-Action Alternative and Preferred Alternative.

Table 5-79. Summary of impacts on Health and Mobility

Impact Category	Type of Impact	No-Action Alternative	Preferred Alternative
Public Health	**Direct Operational**	No impact	Negligible adverse impact
	Indirect Operational	No impact	Negligible adverse impact
	Construction	Minor adverse impact	Minor adverse impact
Transportation and Mobility of Elderly and Persons with Disabilities	**Direct Operational**	Moderate beneficial impact	Major beneficial impact
	Indirect Operational	Negligible adverse impact	Minor adverse impact
	Construction	Moderate adverse impact	Major adverse impact

5.17 Environmental Justice

This section evaluates the potential of the Preferred Alternative to cause disproportionately high and adverse impacts on environmental justice (EJ) populations in accordance with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.* EO 12898 requires that Federal agencies identify and address disproportionately high and adverse impacts resulting from Federal projects on minority and low-income communities. EO 14096—*Revitalizing Our Nation's Commitment to Environmental Justice for All* was enacted on April 21, 2023. EO 14096 on environmental justice does not rescind EO 12898, which has been in effect since February 11, 1994, and is currently implemented through DOT Order 5610.2C. This implementation will continue until further guidance is provided regarding the implementation of the new EO 14096 on environmental justice.

As stated in Federal Transit Administration (FTA) Circular 4703.1, *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*, the USDOT must make EJ part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority populations or low-income populations. Consistent with this directive, the FRA is committed to the EJ principles, which include:

- Avoiding, minimizing, or mitigating disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- Ensuring the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Preventing the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

5.17.1 Methodology

The EJ analysis evaluated whether the No-Action Alternative and Preferred Alternative would result in disproportionately high and adverse impacts on minority and low-income populations by considering whether:

- Adverse impacts would be predominantly borne or concentrated in minority or low-income populations.
- Adverse impacts to EJ populations would be appreciably more severe or greater in magnitude than those on non-EJ populations.
- Alternatives would affect resources especially important to EJ population (such as social, religious, or cultural functions).
- Any benefits would be accompanied by impacts to environmental justice populations.
- Mitigation measures, enhancements, and betterments are needed.

All resource categories considered in this FEIS were reviewed to identify those with potential to result in disproportionately high and adverse effects on EJ populations. Resource categories with no impacts or negligible impacts were dismissed from analysis because, by definition, they would not disproportionately affect EJ populations. Resource categories that would result in more than negligible impacts were then screened to determine whether these impacts had potential to result in disproportionately high and adverse effects on EJ populations.[479] Based on this screening, the following resource categories were identified as having potential to cause disproportionately high and adverse effects and therefore requiring further analysis: Transportation (Intercity Buses, City and Commuter Buses, and Vehicular Traffic); Noise and Vibration; and Social and Economic Conditions (Community Disruption). These categories are the focus of the following sections.[480]

Analyses are based on the impact assessments presented in the relevant sections of the FEIS and a qualitative estimate of the potential for adverse impacts to be predominantly borne or concentrated in minority or low-income populations. For impacts related to traffic, additional quantitative analysis is provided using two metrics:

[479] The results of this screening are presented Table 17-4 of Appendix C3S, *Washington Union Station Expansion Project Supplemental Environmental Consequences Technical Report*: Available at https://railroads.dot.gov/elibrary/washington-union-station-expansion-project-supplemental-draft-environmental-impact-3.

[480] No distinction is made between direct and indirect operational impacts because the character of the impacts does not affect whether they would affect some populations more than others. Also, for both the No-Action Alternative and the Action Alternatives, EJ determinations were made based on existing demographic and economic conditions (based on 2020 Census data). It is not possible to predict the demographic and economic make-up of the Study Area in 2040.

- The proportion of intersections of EJ concern that would experience a major impact relative to all such intersections;[481] and
- The proportion of minority residents living near an adversely affected intersection relative to the entire population of the Local Study Area.

During the preparation of the SDEIS, FRA conducted a focused outreach effort to meaningfully engage the EJ communities potentially affected by traffic impacts, gain a better understanding of how these communities would be affected, and obtain input and feedback from them. This effort, which focused on neighborhoods and communities west of WUS along the North Capitol Street corridor, is documented in **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*. The feedback received during this effort contributed to inform the EJ analysis.

5.17.2 Impacts of the No-Action Alternative

5.17.2.1 Operational Impacts

Relative to existing conditions, in the No-Action Alternative, not expanding WUS would have a disproportionately high and adverse operational impacts on EJ communities because of projected increase in bus facility operations with no improvements to the facility and overcrowding on some city buses.

Transportation

Intercity Buses

The No-Action Alternative would result in a major adverse operational impact on bus passenger facilities' ability to accommodate projected increases in users at WUS (see **Section 5.5.2.1**, *Direct Operational Impacts, Intercity, Tour/Charter, and Sightseeing Buses*). Local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*) did not raise the specific issue of intercity bus operations. However, available data indicate that minority and low-income passengers make up a substantial portion of intercity bus passengers.[482]

[481] Intersections of EJ concern are intersections in or adjacent to a Census block with more than 50 percent resident minority population. For both metrics, because of the larger Census geography used for income data, analysis of impacts on minorities also covers impacts on low-income populations.

[482] Based on a *Northeast Corridor Intercity Travel Study* published in 2015, 55 percent of intercity bus passengers in the Northeast Corridor were white; passenger median household income was in the $50,000-$75,000 range: *Northeast Corridor Intercity Travel Study*. Accessed from https://nec-commission.com/app/uploads/2018/04/2015-09-14_NEC-Intercity-Travel-Summary-Report_Website.pdf. Accessed on November 11, 2022. A 2015 study of curbside bus operations in the northeast found that, depending on the bus company, the percentage of white passengers ranged from 60 percent (for what the study defines as "corporate curbside buses," which included Boltbus and Megabus) to 37 percent (for what the study defined as "Chinatown buses."). Forty percent of Corporate curbside bus passengers reported an annual household income of less than $40,000, with a similar proportion for Chinatown buses: Nicolas J. Klein. 2015. "Get on the (Curbside) Bus: The New Intercity

Data also suggest that minorities and low-income populations rely on the bus for intercity travel much more than other demographics.[483]

On this basis, the major adverse operational impact on intercity bus operations in the No-Action Alternative would represent a disproportionately high and adverse impact on EJ populations, as it would be appreciably greater in magnitude for these populations than for non-EJ populations.

City and Commuter Buses

In the No-Action Alternative, anticipated increases in ridership and traffic volumes would cause a moderate adverse direct operational impact on city buses due to overcrowding of some buses and likely decreases in average bus speeds and reliability (see **Section 5.5.2.1**, *Direct Operational Impacts, City and Commuter Buses*). The impact would affect members of EJ populations, who make up a large proportion of bus passengers (81 percent minorities and 46 percent low-income in fiscal year 2019)[484]. Impacts on city buses were among the topics raised by local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*). On this basis, the moderate adverse operational impact on city bus operations would be a disproportionately high and adverse impacts on EJ populations, as it would be borne predominantly by members of EJ populations.

Vehicular Traffic

In the No-Action Alternative, roadway traffic around WUS would increase because of increased activity at WUS as well as general development and population growth. As shown by the results of the traffic impact analysis (**Section 5.5.2.2**, *Direct Operational Impacts*, *Vehicular Traffic*), this would cause a degradation of operational conditions at several intersections relative to the No-Action Alternative.

The following paragraphs discuss whether these impacts have the potential to be a disproportionately high and adverse effect on EJ population by (1) assessing the proportion of intersections of EJ concern that would experience a major impact relative to all such intersections; and (2) assessing the proportion of minority residents living near an adversely affected intersection relative to the entire population of the Local Study Area.

Ten (29 percent) out of the 35 studied intersections evaluated in the traffic analysis are intersections of EJ concern. These 10 intersections are listed in **Table 5-80**.[485] **Table 5-80** also shows which of the 10

Bus" in *The Journal of Transport and Land Use*, Vol. 8, No.1, pp, 155-169. Accessed from https://www.researchgate.net/publication/276474451_Get_on_the_Curbside_bus_The_new_intercity_bus. Accessed on November 11, 2022.

[483] The 2015 *Northeast Corridor Intercity Travel Study* finds that while racial minorities make up only 4 percent of intercity travelers by car, they make up 45 percent of bus passengers, indicating an appreciably greater reliance on bus travel by EJ than non-EJ populations. Similarly, people with household incomes less than $25,000 represent 2 percent of drivers but 22 percent of bus passengers.

[484] Washington Metropolitan Area Transit Authority. *2020 Title VI Update*. Accessed from https://www.wmata.com/about/board/meetings/board-pdfs/upload/20200910-EXEC-3B-Title-VI-Update-2020.pdf. Accessed on November 11, 2022.

[485] Intersections adjacent to blocks without residential uses are not included.

intersections would experience a major impact in the No-Action Alternative under one of three indicators used to assess traffic impacts. As shown in the table, 9 (90 percent) of the 10 intersections would experience a major impact. These intersections are largely concentrated along North Capitol Street between New York Avenue and Massachusetts Avenue, and K Street between Second Street NE and North Capitol Street.

Table 5-80. Traffic Impacts of EJ Concern in the No-Action Alternative[1]

Int. No.	Intersection Adjacent to EJ Population	Degradation to Level of Service (LOS) F	Delay Increase >5 seconds	Queue Increase Greater than 150 Feet
1	North Capitol Street/K Street	X	X	X
2	First Street/K Street NE	X	X	
3	Second Street/K Street NE	X	X	X
5	North Capitol Street/H Street	X	X	X
10	North Capitol Street/G Street			X
28	First Street/D Street NW			
29	Second Street/D Street NW			X
31	3rd Street/E Street NW		X	X
33	North Capitol Street (SB Ramp)/New York Avenue			X
34	North Capitol Street (NB Ramp)/New York Avenue			X

1. "X" under any of the three indicators indicates a major impact in the No-Action Alternative.

As explained in **Section 5.5.2.1**, *Direct Operational Impacts, Vehicular Traffic*, in the No-Action Alternative, a total of 25 study intersections would experience a major adverse impact. Nine (26 percent) of the 35 study intersections would degrade to Level of Service (LOS) F from a better LOS during at least one peak period; 18 (51 percent) would experience an increase in average delay of more than 5 seconds; and 25 (71 percent) would experience an increase in queue length of more than 150 feet.

The 9 intersections of EJ concern that would experience a major adverse impact include 4 of the 9 intersections that would degrade to LOS F (44 percent); 5 out of the 18 intersections where delays would increase by more than 5 seconds (28 percent); and 8 out of the 25 intersections where there would be an increase in queue length of more than 150 feet (32 percent).

Table 5-81 shows the number of minority persons (non-Hispanic or Latino White or Caucasian) within the Census blocks adjacent to intersections that would experience a major adverse impact. [486] As shown in the table, in the No-Action Alternative, minorities represent almost 54 percent of the persons living near an adversely affected intersection while being 44 percent of the population of the Local Study Area.

[486] Intersections of EJ concern are intersections in or adjacent to Census blocks with 50 percent minority residents or more, or Census block groups with 23% low-income household or more.

Table 5-81. Total EJ Population near Adversely Affected Intersections in the No-Action Alternative

Int. No.	Impacted Intersection[1]	Impact[2]			Affected Population		
		LOS	Delay	Queuing	Minority Pop.[3,4]	Total Pop.[4]	% Minority
1	North Capitol Street/K Street	X	X	X	666	713	93%
2	First Street/K Street NE	X	X		+217	+395	55%
3	Second Street/K Street NE	X	X		+341	+863	40%
5	North Capitol Street/H Street	X	X	X	+120	+301	40%
6	WUS West Intersection/H Street NE		X	X	+44	+48	92%
8	WUS East Intersection/H Street NE	X	X	X	+0	+0	-
10	North Capitol Street/G Street			X	+87	+97	90%
9	3rd Street/H Street NE	X	X	X	+668	+2,049	33%
13	North Capitol Street/Massachusetts Avenue		X	X	+11	+12	90%
22	Second Street/D Street NE			X	+67	+162	41%
23	Second Street/Massachusetts Avenue			X	+2	+2	100%
25	4th Street/H Street NE		X	X	+74	+201	37%
26	Massachusetts Avenue/C Street/4th Street NE		X	X	+25	+152	16%
29	Second Street/D Street NW			X	+30	+33	91%
30	3rd Street/I-395 On-ramp/D Street NW			x	+46	+55	84%
31	3rd Street/E Street NW		X	x	+27	+35	77%
32	3rd Street/Massachusetts Avenue/ H Street NW	X	X	X	+163	+581	28%
33	North Capitol Street (SB Ramp) / New York Avenue			X	+2,007	+2,807	71%
34	North Capitol Street (NB Ramp) / New York Avenue			X	+0	+0	-
	TOTAL				**4,595**	**8,506**	**54%**
	Total Local Study Area				**12,774**	**29,004**	**44%**

1. Intersections with no adjacent population are not shown.
2. "X" under any of the three indicators indicates a major impact in the No-Action Alternative.
3. Non-Hispanic or Latino White or Caucasian.
4. Blocks common to two or more intersections are counted only once to avoid double-counting.

Based on this analysis, there is potential for the traffic impacts in the No-Action Alternative to bear disproportionately on EJ communities. Impacts related to traffic were among the topics raised by local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*). In the No-Action Alternative, intersections of EJ concern are overrepresented among the intersections that would be impacted, and members of EJ populations are overrepresented among residents near an impacted intersection.

Noise and Vibration

As explained in **Section 5.10.2.1**, *Direct Operational Impacts*, ambient noise near WUS and the rail terminal would decrease in the No-Action Alternative because the private air rights development would mask train noise. Farther away, small increases in noise would occur because of greater traffic. Slightly greater increases in noise levels would occur near New York Avenue due to the VRE MSRF, but nowhere would increases exceed 3 dBA, which is the threshold of perception. Such changes in noise levels have no potential to result in disproportionately high and adverse impacts on EJ communities.

Social and Economic Conditions

In the No-Action Alternative, the private air rights development would bring approximately 2,320 new residents to the area; the new office, retail, and hotel space included in the development would support approximately 10,288 jobs (see **Section 5.14.2***, Impacts of the No-Action Alternative*). The private air rights development would not replace or eliminate any existing housing or other land uses, as it would be constructed in what is now open space above the WUS rail terminal. Members of EJ communities would be able to take advantage of the new residential and economic opportunities created by the development. The private air rights development would create new connections between the areas on either side of the rail terminal, which would benefit all local residents, including members of EJ communities. Members of EJ communities would also benefit, along with the rest of WUS users, from the WUS improvement projects included in the No-Action Alternative, which would make the station more accessible. None of the projects would reduce access between neighborhoods; erect permanent barriers among communities; or result in any other condition that would permanently disrupt neighborhoods and communities around WUS, including EJ Communities.

5.17.2.2 Construction Impacts

Not constructing the Project has no potential to cause disproportionately high and adverse impacts on EJ communities. Construction of the projects included in the No-Action Alternative may displace persons experiencing homelessness, if any are present nearby.

In the No-Action Alternative, the Project would not take place, which has no potential to generate construction-related disproportionately high and adverse impacts on EJ communities. Construction of the various No-Action Alternative projects would generate transportation and noise impacts. While it is not possible to assess the intensity and duration of these impacts, they would generally be most noticeable immediately adjacent to the respective project sites.

Construction of larger-scale projects, such as the private air rights development or the replacement of the H Street Bridge, may affect and displace persons experiencing homelessness if any are present nearby when construction occurs. Because of the transient, mobile, and changing character of this population, as well as evolving economic conditions and District policies, it is not possible to predict how many people this could affect and whether it would amount to a disproportionately high and adverse impact on EJ communities. The District's has articulated a vision to make homelessness in the District of Columbia "rare, brief, and nonrecurring;" this vision guides *Homeward DC 2.0*, which is the District's

strategic plan to end long-term homelessness.[487] The District also has a policy in place to address encampments, including a protocol for cleaning public spaces when a site presents a security, health, or safety risk, or interferes with community use of such spaces.[488] The No-Action Alternative would not adversely affect District policies to address homelessness. Existing and future homeless assistance resources would remain available to persons in situation of homelessness. The project owners would have the option to work with the District if and when it is necessary to remove homeless encampments and address the needs of their residents.

5.17.3 Impacts of the Preferred Alternative

5.17.3.1 Operational Impacts

The Preferred Alternative is not anticipated to have disproportionately high and adverse impacts on EJ communities after full mitigation of traffic impacts.

Transportation

Intercity Buses

The Preferred Alternative would have a moderate beneficial impact on intercity bus operations, as explained in **Section 5.5.3.1**, *Direct Operational Impacts*, *Intercity, Tour/Charter, and Sightseeing Buses*. As noted above (**Section 5.17.2.1**, *Operational Impacts, Transportation, Intercity Buses*), local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*) did not raise the specific issue of intercity bus operations; however, available data indicate that minority and low-income passengers make up a substantial portion of intercity bus passengers. Data also suggest that minorities and low-income populations rely on the bus for intercity travel much more than other demographics.

Minority and low-income passengers would directly benefit from the improved bus facility at WUS. As explained in **Section 5.5.3.1**, *Direct Operational Impacts*, *Intercity, Tour/Charter, and Sightseeing Buses*, this new, purpose-built facility would be integrated into the overbuild deck. It would open directly onto the train hall's lower mezzanine, where waiting areas, information displays, and other bus passenger amenities would be located. Through the train hall, bus passengers would have direct access to the multimodal connections available at WUS, including rail, Metrorail, and the pick-up and drop-off facility.

[487] District of Columbia Interagency Council on Homelessness. *Homeward DC 2.0: ICH Strategic Plan FY2021 - FY2025*. Accessed from https://ich.dc.gov/page/homeward-dc-20-ich-strategic-plan-fy2021-fy2025. Accessed on August 20, 2023.

[488] Office of the Deputy Mayor for Health and Human Services. *Encampments*. Accessed from https://dmhhs.dc.gov/page/encampments. Accessed on August 20, 2023. In January 2020, the District closed the encampment in the K Street NE underpass, near WUS. Some of the displaced persons moved to nearby locations on First Street NE. Encampments at this location were closed in June 2023: Annemarie Cuccia and Athiyah Azeem, "DC is quietly closing more encampments, as residents have fewer places to go." *Street Sense Media*. June 7, 2023. Accessed from https://streetsensemedia.org/article/dc-is-quietly-closing-more-encampments/. Accessed on August 20. 2023.

This would result in a substantial improvement in passenger experience relative to the No-Action Alternative.

All intercity and tour/charter buses that serve WUS would use the facility. Based on FRA's analysis, the 39-slip facility would be able to accommodate all regular demand and all peak intercity demand during holidays or other times of high bus activity. In the infrequent cases when bus activity may cause the facility's capacity to be exceeded, buses would make use of the pick-up and drop-off area on the H Street deck level, next to the train hall. Approximately 15 buses could be accommodated in this area.

City and Commuter Buses

As explained in **Section 5.5.4.2**, *Preferred Alternative*, *Direct Operational Impacts*, *City and Commuter Buses,* the Preferred Alternative would have a minor adverse direct operational impact on city and commuter buses, as increases in WUS-generated ridership would incrementally contribute to the peak-time overcrowding of some city buses. Also, increases in traffic congestion would incrementally contribute to delays experienced by all city and commuter buses.

This would not amount to a disproportionately high and adverse impact on EJ communities. The impact would affect members of EJ populations, who make up a large proportion of bus passengers (81 percent minorities and 46 percent low-income in fiscal year 2019). However, the increase in congestion and delay attributable to the Project in the Preferred Alternative would be small relative to the No-Action Alternative and the same bus lines would be affected. Congestion would also affect all road users, not only bus riders.

Impacts on city buses), including effects on existing bus routes and the effects of traffic on bus operations, were among the topics raised by local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*. Such concerns would be addressed through the avoidance, minimization, and mitigation measures specified in **Table 7-1**, Items #25a through 25f. City buses would also be among the transportation modes that would be subject to the Performance Monitoring Plan (PMP) defined in **Table 7-1**, Item #28a. With these measures, while there would be an impact on EJ communities with respect to buses, it would not be disproportionately high and adverse.

Vehicular Traffic

In the Preferred Alternative, roadway traffic around WUS would increase because of increased activity at WUS as well as general development and population growth. As shown by the results of the traffic impact analysis (**Section 5.5.3.1**, *Direct Operational Impacts, Vehicular Traffic*), this would cause a degradation of operational conditions at several intersections relative to the No-Action Alternative.

As explained in **Section 5.5.1.1**, *Operational Impacts,* in this FEIS, the traffic analysis presented in the SDEIS for the Preferred Alternative has been revised to assume a 25 percent reduction in auto mode share for trips to and from WUS, in coordination with DDOT and consistent with the District's goal

identified in Move DC, the District's long-range transportation plan.[489] The analysis presented in this section has been updated accordingly.

Figure 5-18 shows the distribution of traffic impacts across the study area relative to the distribution of minority populations in the Preferred Alternative.[490]

The following paragraphs discuss whether these impacts have the potential to be a disproportionately high and adverse effect on EJ population by (1) assessing the proportion of intersections of EJ concern that would experience a major impact relative to all such intersections; and (2) assessing the proportion of minority residents living near an adversely affected intersection relative to the entire population of the Local Study Area.

The first assessment showed that 10 out of 35 study intersections (29 percent) are intersections of EJ concern. As shown in **Table 5-82**, of these 10 intersections, 6 (60 percent) would experience a major adverse impact.

Table 5-82. Traffic Impacts on Intersections of EJ Concern in the Preferred Alternative

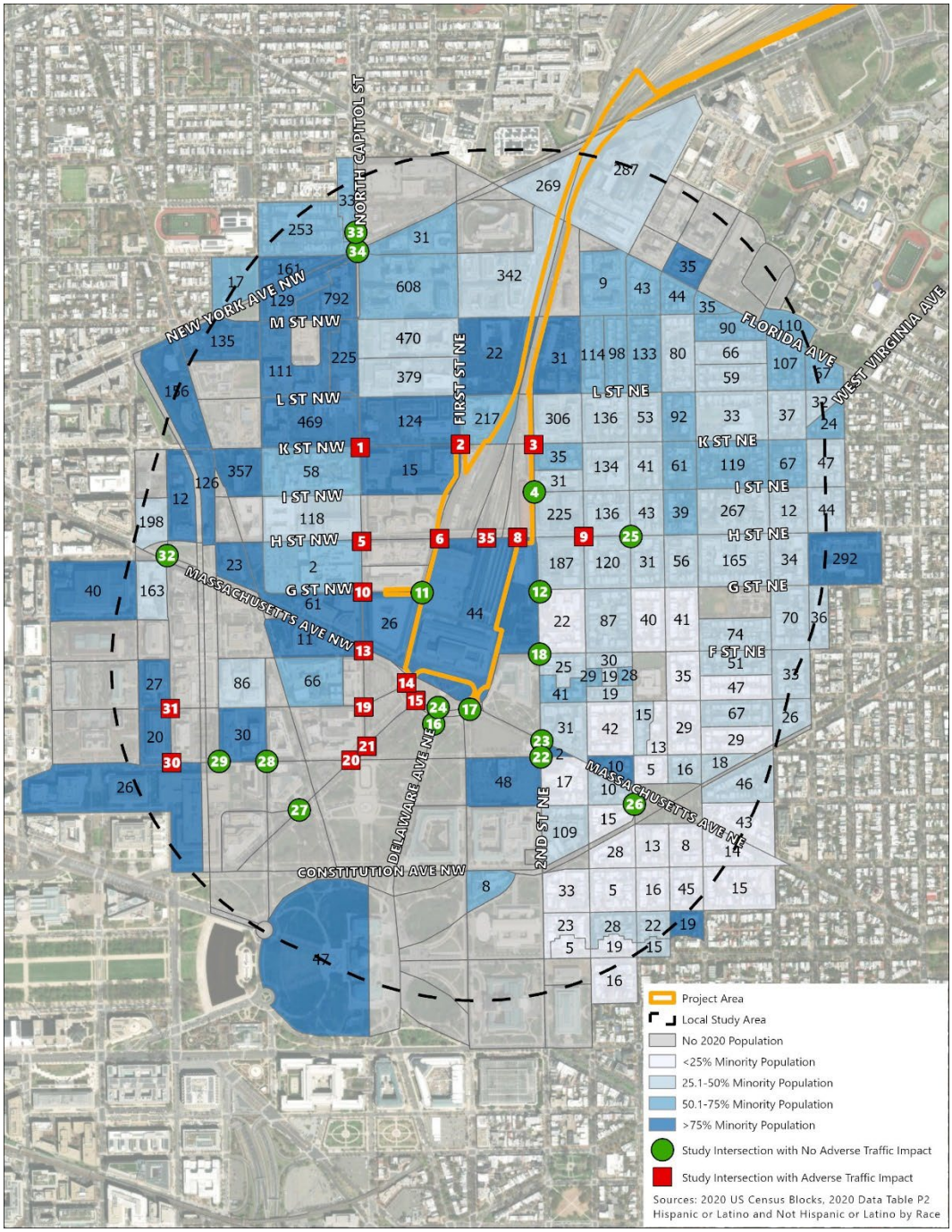
Int. No.[1]	Intersection Name	Impact[2]		
		LOS	Delay	Queuing
1	**North Capitol Street/K Street**		X	X
2	**First Street/K Street NE**		X	X
3	**Second Street/K Street NE**			X
5	**North Capitol Street/H Street**		X	
10	**North Capitol Street/G Street**	X	X	X
28	**First Street/D Street NW**			
29	**Second Street/D Street NW**			
31	**3rd Street/E Street NW**		X	X
33	**North Capitol Street (SB Ramp)/New York Avenue**			
34	**North Capitol Street (NB Ramp)/New York Avenue**			

1. See **Figure 5-18**.
2. Cells with an "X" indicate an impact to LOS, queuing, or delay as described in **Section 5.5.3.1**, *Direct Operational Impacts, Vehicular Traffic*.

[489] District Department of Transportation. 2021b. *Move DC. The District of Columbia's Multimodal Long-Range Transportation Plan*. Accessed from https://movedc-dcgis.hub.arcgis.com/. Accessed on August 11, 2023.

[490] Because of the larger Census geography used for income data (block groups instead of blocks), analysis of impacts on minorities also covers impacts on low-income populations. Therefore, the analysis focuses on minority populations.

Figure 5-18. Distribution of Traffic Impacts in the Preferred Alternative[491]



[491] Numbers are the number of minority (Non-Hispanic or Latino White or Caucasian) persons in each block per the 2020 Census.

As explained in **Section 5.5.3.1**, *Preferred Alternative*, *Direct Operational Impacts*, *Vehicular Traffic*, in the Preferred Alternative, 17 of the 35 study intersections (49 percent) would experience a major impact. Three of these 17 intersections (18 percent) would degrade to LOS F from a better LOS during at least one peak period; 12 of the 17 intersections (71 percent) would experience an increase in average delay of more than 5 seconds; and 15 of the 17 intersections (88 percent) would experience an increase in queue length of more than 150 feet.

The six intersections of EJ concern that would experience a major impact include 1 of the 3 intersections (33 percent) that would degrade LOS F; 5 of the 12 intersections (42 percent) that would experience delay increases of more than 5 seconds; and 5 of the 15 intersections (33 percent) that would see an increase in queue length of more than 150 feet.

The second assessment (see **Table 5-83**) showed that minorities represent approximately 49 percent of the persons living near an adversely affected intersection while being 44 percent of the population of the Local Study Area.

Table 5-83. Total EJ Population near Adversely Affected Intersections in the Preferred Alternative

Int. No.[1]	Impacted Intersection[2]	Impact[3]			Affected Population		
		LOS	Delay	Queuing	Minority Pop.[4, 5]	Total Pop.[5]	% Minority
1	**North Capitol Street/K Street**		X	X	666	713	93%
2	**First Street/K Street NE**		X	X	+217	+395	55%
3	**Second Street/K Street NE**			X	+341	+863	40%
5	**North Capitol Street/H Street**		X		+120	+301	40%
6	**WUS West Intersection/H Street NE**	X	X	X	+44	+48	92%
8	**WUS East Intersection/H Street NE**			X	+0	+0	-
9	**3rd Street/H Street NE**		X	X	+668	+2,049	33%
10	**North Capitol Street/G Street**	X	X	X	+87	+97	90%
13	**North Capitol Street/Mass. Avenue**	X	X	X	+11	+12	90%
30	**3rd Street/I-395 On-ramp/D Street NW**		X	X	+46	+55	84%
31	**3rd Street/E Street NW**			X	+27	+35	77%
TOTAL					**2,227**	**4,568**	**48.75%**
Total Study Area					**12,774**	**29,004**	**44%**

1. See **Figure 5-18**.
2. Intersections with no adjacent population are not shown.
3. "X" under any of the three indicators indicates a major traffic impact in the Preferred Alternative as described in **Section 5.5.3.1**, *Direct Operational Impacts, Vehicular Traffic*.
4. Non-Hispanic or Latino White or Caucasian.
5. Blocks common to two or more intersections are counted only once to avoid double-counting.

While both assessments indicate a greater proportion of minorities among those residents that would be affected by traffic impacts than in the Study Area as a whole, the difference would be substantially less than in the No-Action Alternative. When combined with the considerations below, it would not constitute a disproportionately high and adverse impact.

The affected intersections are along major thoroughfares, such as North Capitol Street and K Street NW/NE, which already carry large amounts of commuter traffic. Drivers transiting this area during peak times would be a large proportion of the persons experiencing these impacts. Local residents likely make use of these roadways to travel by car and would also be affected as well. However, congestion along these corridors, while the Preferred Alternative would aggravate it, would also occur in the No-Action Alternative due to their role as commuter routes. The same reason accounts in part for the fact the Preferred Alternative would generate additional traffic along both corridors. Additionally, most of the WUS-generated traffic is to or from the west of the station because most regional highway connections lie in that direction. This would continue to be the case in both the No-Action and the Preferred Alternative.

Local residents may experience secondary effects from increased traffic, such as noise and general disturbance, including increased pedestrian and car conflicts. Outside the immediate frontage of North Capitol Street and K Street NW/NE, such impacts are most likely to occur if increased congestion leads drivers to divert through residential streets in search of short-cuts. It is reasonably likely that such traffic diversion, if it occurs, would be primarily between North Capitol Street and the downtown area, potentially affecting neighborhoods immediately to the west of North Capitol Street. WUS-bound drivers would have no incentive to cut through residential streets. In general, downtown traffic seeking to avoid North Capitol Street is more likely to use New York Avenue rather than divert through residential streets to the west of North Capitol Street. This is because opportunities to do so are limited to such thoroughfares as K Street NW and H Street NW, as other cross streets do not offer convenient alternative routes. Therefore, any impacts are likely to be felt only along these two corridors, with the potentially affected areas mostly on North Capitol Street between K and M Streets NW/NE and on K Street NW/NE between Second Street NE and New Jersey Avenue NW.

The noise analysis for the Preferred Alternative indicates that noise from traffic would not increase in a perceptible manner within the Local Study Area (see *Noise and Vibration*, below). Increased traffic would result in increased air pollutant emissions. Based on the air quality impacts presented Section 5.6, *Air Quality*, pollutant emissions are anticipated to remain within all applicable *de minimis* thresholds. Any disturbance and safety issues associated with greater traffic would be limited to the vicinity of the affected intersections. The lack of opportunities or incentives for diversion through side streets, as noted above, would limit the extent of such risks.

Impacts related to traffic were among the topics raised by local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*). The mitigation measures that would be implemented as part of the Project to minimize and mitigate impacts on traffic would further reduce traffic impacts to the west of WUS. These measures are listed in **Table 7-1,** Items #28a through 28h. They would be implemented by USRC, the Project Sponsor, in coordination with DDOT, and include:

- Developing and implementing a PMP consistent with DDOT's Comprehensive Transportation Review (CTR) guidelines for Performance Monitoring.
- Based on the results of monitoring and whether targets or thresholds have been exceeded by a pre-determined amount, working with DDOT to identify specific mitigations strategies that may include measures to incentivize the use of non-auto modes to travel to or from WUS as well as improvements at specific intersections, including, for instance, turning movement restrictions; alternative intersection phasing; geometry modifications or traffic lanes reassignment; traffic control device improvements, including new traffic signal where warranted; pedestrian crossing safety treatments, including markings, signs, beacons, or raised crossings; sidewalk widening or enhancement; and on-street parking restrictions.
- Participating in DDOT's mobility study for the North Capitol Street corridor to understand how Project and DDOT policies and strategies could reduce congestion along the North Capitol Street corridor.
- Performing a signal and mobility study of the southern portion of the Study Area, around the intersection of Louisiana Avenue and North Capitol Street, to identify how changes to signalization could address degraded traffic conditions.

When implementing all transportation mitigation measures, USRC would incorporate EJ considerations informed by the focused community outreach effort documented in this section and in **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*, as applicable.

Noise and Vibration

Adverse noise and vibration impacts would not be predominantly borne by EJ communities or be appreciably more severe for these communities than for non-EJ communities. Increased train and car traffic in the Preferred Alternative would cause increases in operational noise throughout the Local Study Area. As explained in **Section 5.10.4.1**, *Direct Operational Impacts*, *Operational Noise*, increases in noise levels would not cause any exceedance of the applicable FTA threshold for a severe noise impact. There would be a moderate impact at 14 locations. Increases in volumes would be less than 3 dBA, which is barely perceptible, except at one location. At a modeled receptor near 1255 Union Street NE, there would be a noticeable increase in noise levels of about 9 dBA. This single impact would not constitute a disproportionately high and adverse impact on EJ communities. While noise was among the concerns expressed by local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*), this concern pertained to construction rather than operational noise.

Social and Economic Conditions

Relative to the No-Action Alternative, the Preferred Alternative would have a major beneficial impact on local communities by improving community cohesion and providing new pedestrian connections between WUS and the surrounding neighborhoods. The Preferred Alternative would result in more and improved bus and train service at WUS. It would provide enhanced connections between the

neighborhoods to the east and west of WUS as well as make the station more accessible to pedestrians, bicycles, and persons with reduced mobility.

The Preferred Alternative would establish more direct and safer pedestrian and bicycle east-west connections across the rail terminal south of K Street NE, via the new H Street Concourse. In addition to better access to land uses to the east of WUS, including retail on H Street NE and community uses (such as the Kaiser Permanente Medical Center), the concourse would also provide better access to the new retail and various multimodal transportation connections at WUS for people coming from northwest of the station.

While there would be increases in peak hour vehicular traffic along several thoroughfares around WUS, including North Capitol Street, K Street NE, First Street NE, and Second Street NE (see the analysis of traffic impacts in **Section 5.5.3.1**, *Direct Operational Impacts*, *Vehicular Traffic*), continued implementation of the District Vision Zero strategy would help maintain safe pedestrian and bicycle travel through the area.[492] Increased congestion along major thoroughfares would not offset the benefits from new and improved connections.

The Preferred Alternative also would have positive economic impacts through the addition of new retail space at WUS and the intensification of train operations, adding up to approximately 1,421 new jobs at WUS compared to the No-Action Alternative (see **Section 5.14.3.1**, *Direct Operational Impacts, Employment*). New jobs and retail were among the topics raised by local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*). Commenters were generally supportive of the Project in this respect. Minority and low-income persons would enjoy the employment benefits from the Project at WUS as much as the general population. While there would be a net reduction in employment in the Project Area due to the reduction in the size of the private air rights development that would occur in the Preferred Alternative relative to the No-Action Alternative (see **Section 5.14.3.1**, *Direct Operational Impacts*), there is no reason to think that minority or low-income populations would experience disproportionately high and adverse impacts as a result.

5.17.3.2 Construction Impacts

Construction of the Preferred Alternative would not have disproportionately high and adverse impacts on EJ communities.

Transportation

Intercity Buses

As explained in **Section 5.5.3.3**, *Construction Impacts*, *Intercity, Tour/Charter, and Sightseeing Buses*, impacts on intercity bus operations would be concentrated in Phases 3 and 4 of construction. During Phase 3, which would last for approximately 2 years and 8.5 months, the relocation of the facility within the existing parking structure would create some disruptions although operations would generally be

[492] District of Columbia. *Vision Zero DC*. Accessed from https://visionzero.dc.gov/. Accessed on January 23, 2023.

able to continue. At the beginning of Phase 4, the entire existing bus facility and parking garage would be demolished. There would be no permanent bus facility at WUS until the completion of the new facility at the end of Phase 4. Phase 4 would last for approximately 4 years and 3 months.

During Phase 3 if needed and during Phase 4, a temporary bus facility or temporary bus loading zones would be established on the completed portion of the structural deck, including the private air rights deck. FRA confirmed with the private air rights developer that this approach is feasible.

Such interim bus facilities would be sufficient to maintain adequate intercity and charter bus service at WUS until the new facility is operational. They would not provide the same amenities as the new facility and, depending on their location, may increase the distance to the front of the station. This would be a moderate adverse impact, as service would continue, and intermodal connections would remain available throughout. USRC would work with the private air rights developer and the bus carriers to ensure that the temporary facilities are sited and designed in a manner that provides users with the highest reasonably achievable level of comfort.

As explained above, available data suggest that EJ populations rely on the bus for intercity travel appreciably more than non-EJ populations, although local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*) did not raise the specific issue of intercity bus operations. The temporary facilities would adequately accommodate intercity bus travel during Phase 4. Therefore, there would not be any reduced opportunities for members of EJ communities to travel by bus between the demolition of the existing bus facility and the completion of the new one. All bus facility users would experience temporary moderate adverse impacts due to limited user amenities while waiting for, or alighting from, a bus. Such experiences would be short and occasional for most riders regardless of their EJ status. Therefore, construction of the Preferred Alternative would not result in disproportionately high and adverse impacts on EJ communities with respect to intercity buses.

Vehicular Traffic

As explained in **Section 5.5.3.3**, *Construction Impacts*, *Vehicular Traffic,* construction activities at WUS would generate traffic to and from the Project Area throughout the day during the entire construction period. The volume and nature of this traffic would vary depending on the construction phase and type of activities being conducted. It would be greatest during excavations activities, when up to 120 trucks per 20-hour day could be traveling to and from the site. This is a maximum, conservative estimate that assumes that no work trains would be used to haul spoils away.

Traffic during construction was one of several construction-period concerns about impacts from building the Project on local modes of transportation that were raised by the local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*). As part of the Integrated Construction Transportation Management Plan that USRC, the Project Sponsor, would prepare for the Project (see **Table 7-1**, Item #12), construction trucks would be required to avoid residential neighborhoods and travel only along designated truck routes, with the exception of short stretches of First and Second Streets NE, to reach the nearest designated route. Therefore, trucks would not travel

through neighborhoods in a manner that could result in disproportionately high and adverse impacts on EJ communities. The Integrated Construction Transportation Management Plan would also minimize sidewalk and bicycle lane closures and ensure safe passage for pedestrians and cyclists around the construction site with as little inconvenience, impact, and delay as possible, another concern raised during the focused outreach effort.

Noise and Vibration

Construction of the Preferred Alternative would cause noise and vibrations. The construction noise impact analysis (**Section 5.10.3.3**, *Construction Impacts*) for the Preferred Alternative shows that there would be major construction noise impacts at up to 43 receptor locations, including residential and commercial uses, where noise levels would exceed the FTA criteria for moderate or severe impacts during SOE construction, which would be the noisiest activity. Most of the affected receptors are located close to the edge of the rail terminal, within which the work would take place, along First and Second Streets NE south of L Street and west of 3rd Street NE.

Construction noise was one of several construction-period concerns about impacts from building the Project that were raised by the local community members who provided input during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*). Noise impact analysis showed that some minority or low-income persons and locations of significance to EJ populations would experience severe or moderate noise impacts, with a cluster of impacted receptors between K and I Streets NE, just east of the rail terminal. However, due to their narrow geographical range, these impacts would not be predominantly borne by EJ communities or be appreciably more severe for these communities than for non-EJ communities. Measures that would be implemented to avoid, minimize, or mitigate noise impacts (see **Table 7-1**, Items #37a to 39b) would reduce impacts on EJ as well as non-EJ communities.

Construction would also generate vibration. Modeling indicated that the greatest levels of vibration would be along the eastern side of the Project Area (affecting the REA Building and the Kaiser Permanente Medical Center) as well as near the City Post Office (Postal Museum), on the west side. Vibration from truck traffic is expected to generate annoyance at 14 locations close to New York Avenue, North Capitol Street, G Street NE, and Second Street NE. These locations are not concentrated in areas with large minority or low-income populations. While minority or low-income people may experience annoyance-generating vibration levels, vibration impacts would not be predominantly borne by EJ populations or be appreciably more severe for these populations than for non-EJ communities.

Social and Economic Conditions

Construction of the Preferred Alternative may affect and displace persons experiencing homelessness if any are present nearby when it occurs. This topic was not raised during the focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*). Because of the transient, mobile, and changing character of this population, as well as evolving economic conditions and District policies, it is not possible to predict how many people this could affect and whether it would amount to a disproportionately high and adverse impact on EJ

communities. The District's has articulated a vision to make homelessness in the District of Columbia "rare, brief, and nonrecurring;" this vision guides *Homeward DC 2.0*, which is the District's strategic plan to end long-term homelessness.[493] The District also has a policy in place to address encampments, including a protocol for cleaning public spaces when a site presents a security, health, or safety risk, or interferes with community use of such spaces.[494] The No-Action Alternative would not adversely affect District policies to address homelessness. Existing and future homeless assistance resources would remain available to persons in situation of homelessness. The project owners would have the option to work with the District if and when it is necessary to remove homeless encampments and address the needs of their residents.

5.17.4 Summary of Impacts

The No-Action Alternate would have a disproportionately high and adverse operational impacts on EJ communities because of projected increase in bus facility operations with no improvements to the facility and overcrowding on some city buses.

After mitigation, no disproportionately high and adverse impacts on EJ communities would result from the Preferred Alternative. The Preferred Alternative would likely require the displacement of any homeless persons who would be using the area around WUS when construction begins.

The focused outreach effort conducted during the preparation of the SDEIS (see **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*) did not identify significant new concerns or interests in addition to those addressed during the EIS process, with impacts pertaining to transportation and access; cultural resources including the historic station building; construction duration and construction impacts on noise levels, air quality, and WUS access; and positive interest in the economic and community benefits of the Project dominating the feedback received. One recurring theme was the desire of the community to be kept informed about the Project, its anticipated impacts, and the implementation of the measures to address those impacts. As specified in **Table 7-1**, Item #52, USRC, as the Project Sponsor, would incorporate EJ considerations informed by the targeted outreach effort in the Project's mitigation measures as appropriate, including information sharing activities. In particular, the Construction Noise and Vibration Control Plan to be prepared for the Project (**Table 7-1**, Item #37a) would contain a public engagement plan specifying measures that would be implemented to inform neighbors and other relevant parties of anticipated noisy activities, noise or vibration level projections and exceedances, and measures to be taken to remedy these exceedances.

[493] District of Columbia Interagency Council on Homelessness. *Homeward DC 2.0: ICH Strategic Plan FY2021 - FY2025*. Accessed from https://ich.dc.gov/page/homeward-dc-20-ich-strategic-plan-fy2021-fy2025. Accessed on August 20, 2023.

[494] Office of the Deputy Mayor for Health and Human Services. *Encampments*. Accessed from https://dmhhs.dc.gov/page/encampments. Accessed on August 20, 2023. In January 2020, the District closed the encampment in the K Street NE underpass, near WUS. Some of the displaced persons moved to nearby locations on First Street NE. Encampments at this location were closed in June 2023: Annemarie Cuccia and Athiyah Azeem, "DC is quietly closing more encampments, as residents have fewer places to go." *Street Sense Media*. June 7, 2023. Accessed from https://streetsensemedia.org/article/dc-is-quietly-closing-more-encampments/. Accessed on August 20. 2023.

5.18 Cumulative Impacts

This section describes the cumulative impacts without the Project and under the Preferred Alternative. The Preferred Alternative would result in direct and indirect adverse or beneficial impacts on a range of resources, as described in prior impact sections. Under NEPA, a cumulative impact is defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."[495]

5.18.1 Methodology

The cumulative impact analysis was conducted based on a review of planned or ongoing projects in the vicinity of WUS. Altogether, planned or under construction private projects amount to approximately 13,060 residential units, 685,700 square feet of retail, 8,056,000 million square feet of office space, and 2,940 hotel rooms. [496] Where applicable, quantitative estimates of the impacts of the cumulative projects are provided.[497]

5.18.2 Cumulative Impacts on Natural Ecological Systems

The Project would have no cumulative impact on natural ecological systems.

[495] 40 CFR § 1508.7. This FEIS is being prepared in accordance with CEQ's regulations implementing NEPA (40 CFR Parts 1500-1508) from 1978, as amended in 1986 and 2005. CEQ comprehensively updated its NEPA implementing regulations effective September 14, 2020; the revised regulations apply to any NEPA process begun after that date. For NEPA reviews initiated prior to September 14, 2020, the lead Federal agency may continue to apply the prior regulations. CEQ is reviewing the 2020 regulations and finalized a phase 1 rulemaking in April 2022 that maintained this approach. FRA initiated the NEPA process for the Project on November 4, 2015, and is applying the CEQ regulations that were in effect at that time.

[496] Sources for the review included NoMA Business Improvement District (BID) Development Map (accessed from https://nomabid.org/wp-content/uploads/2023/03/NoMa-BID-Development-Map-March-2023_8.5-x-11in-version-1.pdf); Mount Vernon Triangle BID Development Map (accessed from https://www.mountvernontriangle.org/development-map/); Capitol Crossing Mixed-Used Development (accessed from https://capitolcrossingdc.com/project/); Nena Perry-Brown, October 14, 2021, "The Next Phase of Capitol Crossing Looks to Get Key Approval," *Urban Turf* (accessed from https://dc.urbanturf.com/articles/blog/the-next-phase-of-capitol-crossing-looks-to-get-key-approval/18821); Nena Perry-Brown, March 21, 2022, "715 Units Proposed For Second Phase of Development for DC's Sursum Corda Site," *Urban Turf* (accessed from https://dc.urbanturf.com/articles/blog/pud-application-seeks-to-add-another-715-units-to-sursum-corda-site/19413); "Highline Union Market," *Urban Turf* (accessed from https://dc.urbanturf.com/pipeline/403/Highline_Union_Market); Urban Turf Staff, July 25, 2022, "JBG/Gallaudet Pitch 650-Unit Development Behind Union Market," *Urban Turf* (accessed from https://dc.urbanturf.com/articles/blog/jbggallaudet-pitch-650-unit-behind-union-market/19909); Nena Perry-Brown, November 20, 2020, "First Phase of 740-Unit Development Breaks Ground at Northwest One," *Urban Turf* (https://dc.urbanturf.com/articles/blog/first-phase-of-740-unit-development-breaks-ground-at-northwest-one/17567). All websites last accessed on April 5, 2023.

[497] The scale and type of planned private developments often change in keeping with evolving market and regulatory conditions. Therefore, these numbers should be considered order-of-magnitude estimates.

The Preferred Alternative would not have any long-term impact on natural ecological systems due to the lack of natural resources in or near the Project Area. The Preferred Alternative would generate no cumulative impacts to natural ecological systems.

5.18.3 Cumulative Impacts on Water Resources and Water Quality

5.18.3.1 Surface Waters

In the Preferred Alternative, when considered with past, present, and reasonably foreseeable actions, the Project would have a negligible adverse cumulative impact on surface waters.

The Preferred Alternative would generate wastewater that would be conveyed through DC Water's combined sewer system to either Blue Plains or, during larger storms, CSO outfalls in the Anacostia River. This could result in a slightly greater risk of untreated wastewater being released into the Anacostia River relative to what past, present, and reasonably foreseeable actions would cause without the Project. The contribution of the Preferred Alternative to wastewater generation in the District would be very small and the risk would be substantially reduced by the completion of the Clean Rivers Project.[498] The adverse cumulative impact on surface waters would be negligible.

5.18.3.2 Groundwater

In the Preferred Alternative, when considered with past, present, and reasonably foreseeable actions, the Project would have a negligible adverse cumulative impact on groundwater.

The Preferred Alternative would add to the local adverse impacts of past, present, and reasonably foreseeable projects on groundwater because of construction-related and operational dewatering. The rate of dewatering in the Preferred Alternative would be an estimated 220 to 280 gallons per minute (gpm) during construction and an estimated 20 to 30 gpm in the long term (operational phase). This has the potential to aggravate the risk of ground settlement in the area near WUS once these impacts are added to those of past, future, and reasonably foreseeable actions. While data indicate declines in hydraulic pressure at several wells in the Patuxent Aquifer, these declines are most likely due to several large DC Water Long Term Control Plan (Clean Rivers) dewatering projects along the Anacostia River, with dewatering rates exceeding one million gallons per day at some locations. [499] Additional groundwater withdrawal from the implementation of the Preferred Alternative is not likely to have a

[498] The Clean Rivers Project is DC Water's ongoing program to reduce CSO's into the District's waterways - the Anacostia and Potomac Rivers and Rock Creek. The Project is a massive infrastructure and support program designed to capture and clean wastewater during rainfalls before it ever reaches our rivers. Accessed from https://www.dcwater.com/cleanrivers. Accessed on August 20, 2023.

[499] District Department of Energy and Environment. *Water Quality Assessment 2020 Integrated Report to EPA, Sections 305(b) and 303(d) Clean Water Act*. Accessed from 2020 IR 06-25-2020.pdf. Accessed on November 11, 2022.

measurable effect and would be negligible. DOEE considers that long-term dewatering associated with basements and parking garages has no potential to significantly deplete groundwater.[500]

5.18.3.3 Stormwater

In the Preferred Alternative, when considered with past, present, and reasonably foreseeable actions, the Project would have a minor beneficial cumulative impact on stormwater infrastructure and flow.

The Preferred Alternative would upgrade stormwater management systems within the footprint of the station elements and the potential Federal air rights development to meet current District and Federal regulations. When added to similar upgrades from past, present, and reasonably foreseeable actions (which must comply with current District regulations at a minimum), this would be a beneficial impact. This beneficial impact would be minor, as the upgraded areas would represent a relatively small part of the District.

5.18.3.4 Wastewater

In the Preferred Alternative, when considered with past, present, and reasonably foreseeable actions, the Project would have a minor adverse cumulative impact on wastewater generation.

The Preferred Alternative would generate wastewater because of greater passenger and visitor activity at WUS and the potential development of the Federal air rights above the rail terminal. This wastewater would be conveyed through DC Water's sewer infrastructure. Though the Preferred Alternative would add to the total wastewater generated by past, present, and reasonably foreseeable actions, this contribution would be small: approximately 89,730 gpd from the expansion of WUS and up to 43,200 gpd from long-term dewatering (see **Section 5.3.3.1**, *Direct Operational Impacts, Wastewater*) as well as approximately 51,810 gpd from the potential Federal air rights development (see **Section 5.3.3.2**, *Indirect Operational Impacts, Wastewater*), for a total of approximately 184,740 gpd. This represents approximately 0.06 percent of the 300 million gpd that Blue Plains currently processes on average, 0.05 percent of its 384 million gpd capacity, and about 0.12 percent of its average unused daily capacity. This increase has no potential to create a capacity shortage. Adding the demand generated by the Preferred Alternative to the demand from the reasonably foreseeable projects in the vicinity of WUS (approximately 3.3 million gpd)[501] would result in a cumulative demand representing around 4 percent of Blue Plain's unused capacity. The adverse cumulative impact would be minor.

5.18.3.5 Drinking Water

In the Preferred Alternative, when considered with past, present, and reasonably foreseeable actions, the Project would have a minor adverse cumulative impact on drinking water demand.

[500] District Department of Energy and Environment. *Protection of the District's Groundwater and the EISF Review Process*. Accessed from https://doee.dc.gov/publication/policy-protection-districts-groundwater. Accessed on November 11, 2022.

[501] See **Section 5.3.2.1**, *Direct Operational Impact*, *Wastewater*, for information on how wastewater demand is estimated based on land use.

The Preferred Alternative would generate demand for drinking water from greater passenger and visitor activity at WUS and from the potential development of the Federal air rights above the rail terminal. Projected water demand from the Project would be approximately 155,694 gpd (see **Table 5-5**: 98,703 gpd from WUS and 56,991 gpd from the potential Federal air rights development). This would be a small addition to the demand past, present, and reasonably foreseeable projects would generate. It would represent approximately 0.1 percent of the 135 million gpd the Washington Aqueduct produces on average. This increase has no potential to create a capacity shortage. Adding the demand generated by the Preferred Alternative to the demand from the reasonably foreseeable projects in the vicinity of WUS (approximately 3.63 million gpd) [502] would result in a cumulative demand representing approximately 3 percent of the 135 million gpd the Washington Aqueduct produces on average. The adverse cumulative impact would be minor.

5.18.4 Cumulative Impacts on Solid Waste Disposal and Hazardous Materials

5.18.4.1 Municipal Solid Waste

In the Preferred Alternative, when considered along with past, present, and reasonably foreseeable actions, the Project would have a minor adverse cumulative impact on municipal solid waste generation.

The Preferred Alternative would generate municipal solid waste from increased numbers of passengers and visitors, as well as retail uses, at WUS (approximately 2,662 tpy) as well as from the potential development of the Federal air rights above the rail terminal (approximately 1,865 tpy), for a total of approximately 4,527 tpy. This would be a small addition to the waste produced in the District by past, present, and reasonably foreseeable actions, as it would represent approximately 0.4 percent of the 1,139,846 tons of waste produced in the District in 2018 and 0.002 percent of the 245.4 million tons of landfilling capacity in Virginia alone in late 2021. The increase from the Preferred Alternative is not likely to cause capacity problems at disposal facilities. Adding the demand generated by the Preferred Alternative to the demand anticipated to result from the reasonably foreseeable cumulative projects (approximately 69,370 tpy) [503] would result in a cumulative demand representing approximately 0.03 percent of landfilling capacity in Virginia alone in late 2020. The adverse cumulative impact would be minor.

5.18.4.2 Hazardous Materials and Waste

In the Preferred Alternative, when considered along with past, present, and reasonably foreseeable actions, the Project would have a minor adverse and beneficial cumulative impact on hazardous materials and waste.

[502] See **Section 5.3.2.1**, *Direct Operational Impact*, *Drinking Water*, for information on how drinking water demand is estimated.

[503] See **Section 5.4.2.1**, *Direct Operational Impact*, *Municipal Solid Waste,* for information on how solid waste generation is estimated based on land use.

The Preferred Alternative would involve excavating the rail terminal and disposing of soil that is likely to be contaminated. Approximately 1.5 million cubic yards of soil would be removed. The removal and disposal of potentially contaminated soils in accordance with applicable regulations would positively contribute to the cumulative removal or cleaning up of legacy hazardous material issues in the District. This beneficial cumulative impact would be minor because of the likely limited level of contamination that would be encountered and removed.

The Preferred Alternative would increase the amount of hazardous material stored and used at WUS, in addition to what would be stored and used in past, present, and reasonably foreseeable developments and projects. While this increase would be an adverse cumulative impact, the storage, utilization, and disposal of hazardous materials would continue to be performed in compliance with applicable laws, regulations, and policies. The adverse cumulative impact would be minor.

5.18.5 Cumulative Impacts on Transportation

The analysis of transportation impacts in **Section 5.5.3,** *Impacts of the Preferred Alternative*, incorporates background growth from past, present, and reasonably foreseeable actions in its No-Action baseline. Therefore, the Preferred Alternative's transportation impacts are also cumulative impacts on transportation.

5.18.6 Cumulative Impacts on Air Quality

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would cause a minor adverse cumulative impact on regional air quality.

The Preferred Alternative would generate additional emissions of criteria pollutants from mobile sources relative to the No-Action Alternative, as described in **Section 5.6.3**, *Impacts of the Preferred Alternative*. The No-Action Alternative air quality analysis incorporated emissions from mobile sources associated with past, present, and reasonably foreseeable actions through the inclusion of background traffic in the traffic analysis. Therefore, total emissions under the Preferred Alternative represent the cumulative impacts of the Project on air quality. The cumulative adverse impact would be minor, as it would not exceed the applicable *de minimis* thresholds.

5.18.7 Cumulative Impacts on Greenhouse Gas Emissions and Resilience

5.18.7.1 Greenhouse Gas Emissions

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would result in a moderate adverse cumulative impact on GHG emissions.

As explained in **Section 5.7.3.2**, *Indirect Operational Impacts*, the Preferred Alternative would potentially generate additional annual emissions of GHG from mobile and stationary sources relative to the No-Action Alternative, including approximately 9,791 metric tons from stationary sources; approximately 3,661 metric tons from the potential Federal air rights development; and approximately 9,247 metric tons from mobile sources. Therefore, the amount of potential stationary source emissions contributed

by the Preferred Alternative in addition to those of past, present, and foreseeable actions would be approximately 22,699 metric tons. This would represent approximately 0.3 percent of the District's 2019 CO_2e emissions (7,170,450 metric tons) and 0.5 percent of the District's emission target for 2032 (4,614,141 metric tons). This would be a moderate adverse impact.

5.18.7.2 Resilience

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would result in a beneficial cumulative impact on resilience.

The Preferred Alternative, when added to past, present, and foreseeable actions, would increase District-wide resilience, resulting in a beneficial cumulative impact. Specifically, it would contribute to fulfilling one of *Resilient DC*'s initiatives, which is to "call on regional transit providers (WMATA, MARC, VRE, Circulator) to improve regional integration (such as coordinated schedule, *increased Union Station capacity and frequency*, fare integration, free transfers) and expand night and weekend service for key residential and employment zones" (emphasis added). The Project would incorporate features that enhance its resilience (see **Section 5.7.3.2**, *Indirect Operational Impacts, Resilience*). As such, it would cumulatively contribute to improving local resiliency.

5.18.8 Cumulative Impacts on Energy Resources

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would cause a minor adverse cumulative impact on energy resources.

The Preferred Alternative would cause an increase in energy use at WUS to light, heat, cool, and ventilate the expanded station. As explained in **Section 5.8.3.1**, *Direct Operational Impacts*, *Buildings*, the additional amount of energy used at WUS would be approximately 72,904,000 kBTUs. As explained in **Section 5.8.3.2**, *Indirect Operational Impacts*, *Potential Federal Air Rights Development*, the potential Federal air rights development would use approximately 27,600,000 kBTUs. Total additional consumption associated would be approximately 100,504,000 kBTUs per year. This would be a small increment over consumption from past, present, and reasonably foreseeable actions, representing approximately 0.07 percent of the District's 2021 energy consumption of 151 billion kBTUs. This increase is not likely to cause energy shortages or other issues. Adding the demand generated by the Preferred Alternative to the demand from the reasonably foreseeable projects in the cumulative impact study area (approximately 1.358 billion kBTUs) [504] would result in a cumulative demand representing approximately 1 percent of the District's 2021 energy consumption. The adverse cumulative impact would be minor.

[504] See **Section 5.8.1.1**, *Operational Impacts,* for information on how energy demand is estimated based on land use.

5.18.9 Cumulative Impacts on Land Use, Land Planning, and Property

5.18.9.1 Zoning, Land Use, and Development

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have a major beneficial cumulative impact on land use.

The expansion of WUS in the Preferred Alternative would enhance WUS's functionality as a multimodal facility and improve connectivity among the neighborhoods on either side of the rail terminal. The expanded station would accommodate increased intercity and commuter train service, which in turn would support nearby existing and future residential and commercial developments by making the area more accessible. The Preferred Alternative would also make available for potential mixed-use development the Federally owned air rights currently occupied by the WUS parking garage. The Preferred Alternative would render the neighborhoods around WUS more accessible and better connected which each other and the rest of the District. Together with past, present, and reasonably foreseeable actions, it would contribute to the continuing development of the areas around WUS, a major beneficial cumulative impact.

5.18.9.2 Property Ownership, Land Acquisitions, and Displacements

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would result in a major adverse cumulative impact on property.

Of the reasonably foreseeable projects in the vicinity of WUS, only the private air rights development may have an impact on property, as it may require the use of air rights currently controlled by FRA or Amtrak below the private air rights. No other past, present, and reasonably foreseeable actions have had or would have impacts on these air rights. The Preferred Alternative would additionally use approximately 2.9 acres of the privately owned air rights above the WUS rail terminal. Taken together, cumulative impact on property would be major.

5.18.9.3 Consistency with Local and Regional Plans

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have a major beneficial cumulative impact on community planning through its consistency with local and regional plans.

The Preferred Alternative would be consistent with and support many of the relevant plans' goals and objectives, especially those pertaining to transportation and connectivity. These impacts, when added to those of past, present, and reasonably foreseeable actions, would result in beneficial cumulative impacts.

5.18.10 Cumulative Impacts on Noise and Vibration

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would cause negligible adverse impacts on noise and vibrations, except at 14 modeled locations, where it would result in moderate adverse cumulative impacts on noise levels.

The Preferred Alternative would generate additional noise and vibration because of the associated increase in train and motor vehicle traffic. The noise analysis conducted for the Preferred Alternative is cumulative in that it incorporates noise from present and reasonably foreseeable traffic, along with that associated with the Project. The analysis shows that noise levels would generally be within 1 to 3 dBA of No-Action Alternative levels, which is an imperceptible difference; noise levels would continue to range from 60 to 75 dBA, typical of an urban environment. Similarly, vibration levels from trains would not perceptibly change. Therefore, the cumulative adverse impacts of the Project would be negligible except at the 14 modeled locations, where increases would bring noise levels above the thresholds for a moderate impact (see **Section 5.10.3.1**, *Direct Operational Impacts*, *Operational Noise*).

5.18.11 Cumulative Impacts on Aesthetics and Visual Quality

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have potential negligible to moderate cumulative adverse and beneficial impacts on aesthetics and visual quality, depending on the location.

In general, the Preferred Alternative, when added to past, present, and future reasonably foreseeable actions, would introduce new visual elements in the Project Area that would be visible from areas near WUS. However, the private air rights development would surround, obscure, encompass, or balance these elements, reducing their visibility. The visual impact analysis conducted for the Preferred Alternative is cumulative in that it considers the private air rights development when assessing anticipated changes in views. This development is the only other project through which the Preferred Alternative would generate noticeable cumulative impacts. The visual impact analysis shows that it may adversely affect 9 of the 28 views and vistas considered in the analysis, with impacts ranging from moderate to negligible. The Project may also have beneficial impacts on two views.

5.18.12 Cumulative Impacts on Cultural Resources

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have potential major cumulative adverse impacts on WUS, the WUS Historic Site, and the REA Building.

The Preferred Alternative, when added to past, present, and reasonably foreseeable actions, would result in major cumulative adverse impacts on WUS, the WUS Historic Site, and the REA Building, as explained in **Section 5.12.3.1**, *Direct Operational Impacts*. Because of the reconstruction of the rail terminal and column removal work, the Project would also increase the risk of major potential adverse impacts on archaeological resources if any are present. These impacts would be minimized and mitigated through the Section 106 process.

5.18.13 Cumulative Impacts on Parks and Recreation Areas

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have minor cumulative adverse impacts on parks and recreation areas.

The Preferred Alternative would generate more activity at WUS, bringing more people to the area. Some of these people may use local parks and recreation areas, leading to accelerated wear and tear and increased maintenance costs. The increase in visits and foot traffic attributable to the Project would likely be small, however, and cumulative adverse impacts would be minor.

5.18.14 Cumulative Impacts on Social and Economic Conditions

5.18.14.1 Demographics

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would result in a minor cumulative impact on demography.

The Preferred Alternative would add residents to the Project Area through the potential development of the Federal air rights. It may also indirectly cause more people to move to areas near WUS by improving connectivity through, and increasing activity at, WUS, although this impact cannot be quantified. Some of the potentially induced growth may be accommodated by the residential component of the reasonably foreseeable projects, which include approximately 13,060 new residential units. In the context of the District as a whole, the impact would be minor.

5.18.14.2 Community Disruption and Other Social Benefits or Impacts

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would result in a major beneficial cumulative impact with regard to community disruption and other social benefits.

The Preferred Alternative, when added to past, present, and reasonably foreseeable actions, would have a major beneficial impact by providing more and better intermodal connectivity that would benefit the Project Area, its surroundings, and the District as a whole. It would make the Study Area more accessible, providing residents and employees with improved commuting options. This would support ongoing and future development and help address the consequences of this development on the transportation system. The Project would also directly contribute additional economic activity through new retail at WUS, though it would be a small increase to the area's past, present, and planned retail. The Project would also potentially lead to the development of the remaining Federal air rights above the rail terminal, further contributing to the economic development of the Study Area and the District.

5.18.14.3 Employment

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have a minor beneficial cumulative impact on employment.

As explained in **Section 5.14.3.1**, *Direct Operational Impacts*, *Employment*, the Preferred Alternative would add approximately 1,421 jobs at WUS; as explained in **Section 5.14.3.2**, *Indirect Operational Impacts*, *Employment*, the potential Federal air rights development would add approximately another 1,290 jobs to the Project Area, resulting in a total (after rounding) of approximately 2,710 jobs that would be added to those associated with past, present, and reasonably foreseeable actions. While this

would be a beneficial cumulative impact, it would be minor compared to overall present and future employment in the District.

5.18.14.4 Washington Union Station Revenue

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have a major adverse cumulative impact on WUS revenue.

The Preferred Alternative would reduce the number of parking spaces at WUS by approximately 75 percent, thereby reducing the station's revenue by more than half. No other past, present, and reasonably foreseeable actions have had or would have any substantial impacts on WUS revenue. The Preferred Alternative's cumulative impact is the impact of the Project alone. This impact would be major.[505]

5.18.14.5 Other Economic Impacts

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have a minor beneficial cumulative impact on economic conditions.

The Preferred Alternative would have beneficial cumulative impacts on the economy through the economic activity it would support and promote at WUS and in the District, in addition to the activity supported by the past, present, and foreseeable actions in the area. The spending of Project-generated private and commercial income would in turn generate more economic activity both locally and regionally. This activity would generate revenue for the District through sales, property taxes, and income taxes. While these economic and fiscal benefits cannot be quantified, they likely would be proportionately minor in the context of the District's economy.

5.18.15 Cumulative Impacts on Public Safety and Security

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have a major beneficial impact on security and a minor adverse impact on public safety.

As explained in **Section 5.15.3.1**, *Direct Operational Impacts*, the Preferred Alternative would create new security risks at WUS but also provide the opportunity to enhance security measures there. This would result in a major beneficial cumulative impact on security in the area, given WUS's central and highly visible presence, and its potential as a target.

The Preferred Alternative would also have an adverse cumulative impact on safety, as it would add further to the demand for emergency services that past, present, and foreseeable actions would generate. However, emergency services would have time to plan for increases in personnel and equipment need. The adverse impact would be minor.

[505] This impact on WUS revenue would not threaten the long-term economic viability of WUS for the reasons explained in **Section 5.14.3.1**, *Direct Operational Impacts, Washington Union Station Revenue*.

5.18.16 Cumulative Impacts on Public Health, Elderly, and Persons with Disabilities

In the Preferred Alternative, when considered with other past, present, and reasonably foreseeable actions, the Project would have a negligible cumulative impact on public health and a major beneficial cumulative impact on the transportation and mobility of the elderly and persons with disabilities at WUS.

As explained in **Section 5.16.3.1**, *Direct Operational Impacts*, the Preferred Alternative would have negligible adverse impacts on health. When considered with other past, present, and reasonably foreseeable actions, it would not create conditions that would directly threaten or diminish public health. Cumulative impacts would be negligible. The Project would also have a major cumulative beneficial impact on the mobility of the elderly and persons with disabilities at WUS by improving the accessibility of WUS and creating new connections between WUS and the adjacent neighborhoods.

5.19 Comparison of Alternatives

Table 5-84 provides a summary comparison of the impacts of the No-Action Alternative and the Preferred Alternative. In general, both alternatives would affect the same resources and have impacts that are, broadly, of the same order of magnitude. This is largely because the No-Action Alternative includes the development of the private air rights above the rail terminal, a large-scale, mixed-use development within the Project Area. The private air rights development would also occur in the Preferred Alternative, although it would be smaller than in the No-Action Alternative. In both alternatives, a substantial amount of new development would be constructed in the Project Area.

Table 5-84. Comparison of Alternatives

Resource	Sub-Resource (if applicable)	Type of Impact	No-Action Alternative	Preferred Alternative[1]
Natural Ecological Systems		**Direct Operational**	No	No
		Indirect Operational	No	No
		Construction	No	Minor adverse
Water Resources and Water Quality	**Surface Waters**	**Direct Operational**	No	No
		Indirect Operational	Negligible adverse	Negligible adverse
		Construction	No	No
	Groundwater	**Direct Operational**	Negligible adverse	Moderate adverse
		Indirect Operational	No	No

Resource	Sub-Resource (if applicable)	Type of Impact	No-Action Alternative	Preferred Alternative[1]
		Construction	Negligible adverse	Moderate adverse
	Stormwater	**Direct Operational**	Major beneficial	Moderate beneficial
		Indirect Operational	No	Moderate beneficial
		Construction	Minor adverse	Minor adverse
	Wastewater	**Direct Operational**	Minor adverse	Minor adverse
		Indirect Operational	No	Minor adverse
		Construction	Negligible adverse	Minor adverse
	Drinking Water	**Direct Operational**	Minor adverse	Minor adverse
		Indirect Operational	No	Minor adverse
		Construction	Negligible adverse	Negligible adverse
Solid Waste Disposal and Hazardous Materials	**Municipal Solid Waste**	**Direct operational**	Minor adverse	Minor beneficial
		Indirect operational	No	Minor adverse
		Construction	Minor adverse	Minor adverse
	Hazardous Materials and Waste	**Direct operational**	Negligible adverse	Negligible adverse
		Indirect operational	No	Negligible adverse
		Construction	Negligible adverse Minor beneficial	Minor adverse Minor beneficial
Transportation	**Commuter and Intercity Railroads**	**Direct Operational**	Major adverse	Major beneficial
		Construction	Undetermined	Moderate adverse
	WMATA Metrorail	**Direct Operational**	Moderate adverse	Minor adverse
		Construction	Undetermined	Moderate adverse
	DC Streetcar	**Direct Operational**	Moderate beneficial	Minor beneficial
		Construction	Undetermined	Moderate adverse
	Intercity, Tour/Charter, and Sightseeing Buses	**Direct Operational**	Major adverse	Moderate beneficial
		Construction	Undetermined	Moderate adverse

Resource	Sub-Resource (if applicable)	Type of Impact	No-Action Alternative	Preferred Alternative[1]
	Loading	**Direct Operational**	No	No adverse
		Construction	Undetermined	Major adverse
	Pedestrians	**Direct Operational**	Major adverse (inside WUS) Minor adverse (outside WUS)	Major beneficial (inside WUS) Minor adverse (outside WUS)
		Construction	Undetermined	Moderate adverse
	Bicycle Activity	**Direct Operational**	Moderate adverse	Major beneficial
		Construction	Undetermined	Moderate adverse
	City and Commuter Buses	**Direct Operational**	Moderate adverse	Minor adverse
		Construction	Undetermined	Negligible adverse
	Vehicular Parking	**Direct Operational**	No	Moderate adverse
		Construction	Undetermined	Major adverse
	Rental Cars	**Direct Operational**	Minor adverse	Minor adverse
		Construction	Undetermined	Major adverse
	For-hire Vehicles	**Direct Operational**	Major adverse	Moderate beneficial
		Construction	Undetermined	Major adverse
	Private Pick-up/drop-off	**Direct Operational**	Major adverse	Moderate beneficial
		Construction	Undetermined	Moderate adverse
	Vehicular Traffic (35 intersections)	**Direct Operational**	Major adverse LOS: 9 Intersections Delay: 18 Intersections Queueing: 25 Intersections	Major adverse LOS: 3 Intersections Delay: 12 Intersections Queueing: 15 Intersections
		Construction	Undetermined	Major adverse
	All Modes	**Indirect Operational**	Undetermined	Minor adverse
Air Quality		**Direct Operational**	Negligible adverse	Negligible adverse
		Indirect Operational – Mesoscale Analysis	Minor adverse	Minor adverse
		Indirect Operational – MSAT	Minor adverse	Minor adverse
		Construction	Undetermined	Minor adverse
	GHG	**Direct Operational**	Not applicable	Not applicable
		Indirect Operational	Moderate adverse	Moderate adverse

Resource	Sub-Resource (if applicable)	Type of Impact	No-Action Alternative	Preferred Alternative[1]
Greenhouse Gas Emissions and Resilience		**Construction**	Undetermined	Moderate adverse
	Resilience	-	Moderate adverse	Beneficial
Energy		**Direct Operational**	Minor adverse	Minor adverse
		Indirect Operational	No	Minor adverse
		Construction	Minor adverse	Minor adverse
Land Use, Land Planning, and Property	**Zoning**	**Direct Operational**	No	No
		Indirect Operational	No	Minor[506]
		Construction	No	No
	Land Use	**Direct Operational**	Major beneficial	Major beneficial
		Indirect Operational	No	Major beneficial
		Construction	Minor adverse	Moderate adverse
	Property	**Direct Operational**	Minor Adverse	Major adverse
		Indirect Operational	No	No
		Construction	No	No
	Local and Regional Plans	**Direct Operational**	Minor adverse	Major beneficial
		Indirect Operational	No	No
		Construction	No	No
Noise and Vibration	**Noise**	**Direct Operational**	Beneficial Negligible Adverse	Moderate adverse (14 locations)
		Indirect Operational	No	No
		Construction: Support of Excavation	Undetermined	Major adverse: 32 locations Moderate adverse: 8 locations

[506] This is not qualified as adverse or beneficial because a change in zoning does not in itself represent a favorable or unfavorable outcome.

Resource	Sub-Resource (if applicable)	Type of Impact	No-Action Alternative	Preferred Alternative[1]
		Construction: Start of Excavation	Undetermined	All Truck Scenario Major adverse: 29 location) Moderate adverse: 14 locations
				Work Train Scenario Major adverse: 26 locations Moderate adverse: 10 locations
		Construction: End of Excavation Noise	Undetermined	All Truck Scenario Major adverse: 4 locations Moderate adverse: 20 locations
				Work Train Scenario Major adverse: 4 locations Moderate adverse: 12 locations
	Vibration	**Direct Operational**	Negligible adverse	Minor adverse
		Indirect Operational		No
		Construction	N/A	Major adverse 4 locations Moderate adverse 14 locations
Aesthetics and Visual Quality	**28 Views**	**Direct Operational Impacts**	No: 7 views Negligible, minor, or moderate adverse: 15 views Major adverse: 6 views	No: 24 views Negligible, minor, or moderate adverse: 2 views Beneficial: 2 views
		Indirect Operational Impacts	No	No: 21 views Negligible, minor, or moderate adverse: 7 views
		Construction	Negligible, minor, or moderate adverse: 20 views	Negligible, minor, or moderate adverse: 21 views

Resource	Sub-Resource (if applicable)	Type of Impact	No-Action Alternative	Preferred Alternative[1]
Cultural Resources	**55 resources**	**Direct Operational Impacts**	No: 25 resources Negligible, minor, or moderate: 27 resources Major adverse: 3 resources	No 29 resources: Negligible, minor, or moderate: 23 resources Major adverse: 3 resources
		Indirect Operational Impacts	No	No 46 resources Negligible, minor, or moderate: 9 resources
		Construction	Undetermined	No: 33 resources Negligible, minor, or moderate: 18 resources Major adverse: 4 resources
Parks and Recreation Areas		**Direct Operational**	No	Minor beneficial
		Indirect Operational	Minor adverse	Minor adverse
		Construction	Minor adverse	Moderate adverse
Social and Economic Conditions	**Demographics**	**Direct Operational**	Minor	Negligible
		Indirect Operational	Negligible	Minor
		Construction	No	No
	Community Disruption and Other Social Benefits	**Direct Operational**	Moderate beneficial	Major beneficial
		Indirect Operational	No	Minor beneficial
		Construction	Minor adverse	Moderate adverse
	Employment	**Direct Operational**	Moderate beneficial	Minor adverse
		Indirect Operational	Minor beneficial	Minor beneficial
		Construction	Minor beneficial	Minor beneficial
	WUS Revenue	**Direct Operational**	No	Major adverse

Resource	Sub-Resource (if applicable)	Type of Impact	No-Action Alternative	Preferred Alternative[1]
		Indirect Operational	Beneficial	Beneficial
		Construction	Minor adverse	Major adverse
	Other Economic Impacts	**Direct Operational**	Beneficial	Beneficial
		Indirect Operational	Beneficial	Beneficial
		Construction	Beneficial	Minor beneficial
Public Safety and Security	**Security**	**Direct Operational**	Major adverse	Major beneficial
		Indirect Operational	Minor adverse	Minor adverse
		Construction	Moderate adverse	Major adverse
	Safety	**Direct Operational**	Moderate adverse	Major beneficial
		Indirect Operational	Minor adverse	Minor adverse
		Construction	Moderate adverse	Moderate adverse
Public Health, Elderly and Persons with Disabilities	**Public Health**	**Direct Operational**	No	Negligible adverse
		Indirect Operational	No	Negligible adverse
		Construction	Minor adverse	Minor adverse
	Transportation and Mobility of Elderly and Persons with Disabilities	**Direct Operational**	Moderate beneficial	Major beneficial
		Indirect Operational	Negligible adverse	Minor adverse
		Construction	Moderate adverse	Major adverse

[1] Impact determination is relative to the No-Action Alternative.

5.19.1 Summary Comparison of Operational Impacts

Because of the urban, developed character of the Project Area and its surroundings, neither alternative would have substantial impacts on natural ecological systems.

With regard to water resources, the primary difference between the alternatives would pertain to groundwater, as the Preferred Alternative would likely require long-term pumping and disposal of groundwater to maintain the below-ground parking and pick-up/drop-off facility. Both alternatives would improve stormwater management in the Project Area, and both would result in greater demand

for drinking water and wastewater on a scale DC Water and the Washington Aqueduct would be able to manage.

Both the private air rights development and the Preferred Alternative would create new sources of municipal waste in the Project Area. Because in the Preferred Alternative the private air rights development would be smaller, however, the net result is anticipated to be a reduction in the Preferred Alternative relative to the No-Action Alternative. Additionally, only the Preferred Alternative would have a long-term beneficial impact on hazardous materials through the excavation for construction and disposal of soils in the Project Area that may contain low levels of contaminants.

With regard to the transportation system, the main difference between the No-Action Alternative and the Preferred Alternative would be the beneficial impacts that the Preferred Alternative would have on intermodal transportation at WUS (including rail, intercity bus, and pedestrian and bicycle access), which would not occur in the No-Action Alternative. Because of greater activity at the Station, the Preferred Alternative would generate more vehicular traffic, with adverse impacts to the operation of the local street network. These adverse impacts would be incremental to those that would occur in the No-Action Alternative due to background growth and the private air rights development.

Because of the expansion of, and greater activity at, WUS, as well as the greater demand for energy at the Station, the Preferred Alternative would potentially generate additional emissions of air pollutants and GHG relative to the No-Action Alternative. However, the quantitative estimates presented in the FEIS are very conservative. The greater availability of rail and bus travel along the Northeast Corridor made possible by the Preferred Alternative; the growing use of electric or clean energy vehicles; the realization of Net-Zero strategies put in place by the District and Amtrak; the improvement of access to WUS by non-auto modes; and the incorporation in Project design of energy saving and efficiency measures, while not quantifiable for the purposes of this FEIS, are anticipated to significantly reduce long-term air pollutant and GHG emissions relative to what is estimated in this FEIS. Even with the conservative approach taken in the FEIS, emissions of criteria pollutants in the Preferred Alternative are projected to remain below the *de minimis* levels applicable in the District.

Both the No-Action Alternative and the Preferred Alternative would have beneficial impacts on land use, as both would fill the gap in the urban fabric around the Station created by the existing, open-air rail terminal. In the Preferred Alternative, this would result in a better connected and more accessible new neighborhood than in the No-Action Alternative.

Increased rail and road traffic in the Preferred Alternative would cause incremental increases in noise levels in areas around WUS, but these increases are anticipated to remain at or below the level of perception (3 dBA) at all but one modeled receptor location - Union Market Area (R181, 1255 Union Street NE).

Construction of the private air rights development in the No-Action Alternative would have substantial visual impacts, as it would replace an empty space above the rail terminal with buildings and associated infrastructure very visible from the surrounding areas. The Preferred Alternative would incrementally add to these impacts by constructing a new train hall behind the historic station building, but it would

also provide opportunities to improve some views by removing visually intrusive elements, such as the existing WUS parking garage.

The same three cultural resources – WUS, the WUS Historic Site, and the REA Building – would be adversely affected in the No-Action Alternative and the Preferred Alternative. However, the Preferred Alternative would have a greater physical impact on the WUS Historic Site, as only this alternative would involve the excavation and reconstruction of the entire rail terminal south of K Street NE.

Neither alternative would have substantial adverse impacts on parks and recreational areas near WUS. Both would have beneficial impacts on socioeconomic conditions locally and regionally. Only the Preferred Alternative would result in a substantial loss of revenue for WUS, because of the reduction in the number of parking spaces.

Development of the private air rights and greater activity at and around WUS would create new security challenges in both alternatives. In the Preferred Alternative, the Project would address these challenges as part of the Station expansion. The Project would also substantially improve WUS accessibility relative to the No Action Alternative, by providing new circulation spaces, new access points, and making the station fully ADA compliant. While improvements to accessibility would occur in the No-Action Alternative, they would be more piecemeal and limited.

5.19.2 Construction Impacts

Construction of the Preferred Alternative is anticipated to take approximately 13 years. As documented in the FEIS, construction activities would generate a wide range of impacts during that period, with adverse impacts on transportation and on noise and vibration being the most prominent. Construction activities would also generate pollutant emissions, mostly from the operation of mobile and stationary construction equipment. The type and intensity of the impacts would substantially vary over time, however, as construction proceeds from the east to the west side of the rail terminal, and excavation (the most impact intensive activity) is completed within each phase of construction.

In the No-Action Alternative, major construction would also take place in the Project Area, such as the replacement of the H Street Bridge and the development of the private air rights. Construction of these projects would generate impacts like those of the Preferred Alternative, though the intensity of these impacts would likely be less because they would not involve as much excavation of the rail terminal. Although no specific plans or schedules have been developed for the development of the private air rights in the No-Action Alternative, it is likely that it would proceed in phases and take several years.

5.20 Commitment of Resources

In accordance with NEPA, the CEQ Implementing Regulations for NEPA, and FRA's Procedures for Considering Environmental Impacts, this section includes an analysis of any irreversible or irretrievable commitment of resources that would occur due to implementation of the Project under the Preferred Alternative. This section also considers the relationship between the Project's potential short-term uses

of the human environment and the maintenance and enhancement of long-term productivity throughout the life of the Project.

5.20.1 Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources results from the use of a resource that cannot be replaced or recovered and causes the permanent loss of the resource for any future or alternate use. **Table 7-1** of this FEIS lists the measures that would be implemented along with the Preferred Alternative to avoid, minimize, and mitigate adverse impacts to the various resources affected.

Construction of the Preferred Alternative would require a greater commitment of natural, human, and monetary resources than the No-Action Alternative. These resources would be committed irreversibly and irretrievably. Construction materials such as concrete, steel, cement, and glass would be irretrievably expended during construction, in addition to what would be used in the No-Action Alternative. Although these materials would be largely irretrievable when used, they are not in short supply and some could be recycled for other projects in the long term, if and when they no longer meet WUS needs. The Preferred Alternative would also consume a greater amount of energy in the form of fossil fuels and electricity during construction of the Project than the No-Action Alternative. These resources are readily available and their use for the Project would not affect their continued availability for other purposes.

In addition to materials and energy, a greater investment of funds and human labor would be needed to design and construct the Preferred Alternative than for the No-Action Alternative. The funds are irretrievable and would not be available for other projects but the benefits of allowing WUS to better support greater rail and bus activity both locally and along the entire Northeast Corridor is anticipated to outweigh the commitment of monetary resources.

5.20.2 Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Short-term impacts on the environment typically result from construction impacts. Long-term impacts generally relate to the operation and maintenance of a project, including consistency of a project with local and regional economic, social, planning, and sustainability objectives.

5.20.2.1 Short-term Uses

Construction of the Preferred Alternative would have greater short-term impacts on the environment than the No-Action Alternative. Construction would take approximately 13 years, during which the intensity of construction-related impacts would vary. It would be lowest during the 12-month Intermediate Phase, during which only column removal work inside WUS would be conducted, and greatest during periods of excavation. The shortest excavation period would be during Construction Phase 1 (approximately 5 months) and the longest one during Construction Phase 4 (approximately 2 years and 1 month). All construction-related environmental impacts would cease when construction is

complete and would be avoided, minimized, and mitigated wherever practicable as discussed in the other sections of this chapter.

5.20.2.2 Long-term Productivity

The No-Action Alternative would result in adverse impacts to long-term productivity because it would not address most of the issues that currently make WUS inadequate to meet current or anticipated future passenger and station needs. Cumulative train ridership across Amtrak, MARC, and VRE is anticipated to more than double by 2040. Without the Project, this growth would push WUS beyond its capacity. The No-Action Alternative would constrain future growth in rail operations locally and along the entire Northeast Corridor. Without the Project, only 50 percent of Amtrak's 2040 unconstrained service levels and 68 percent of its unconstrained ridership levels would be realized.[507] Only 42 percent of MARC's service and 53 percent of MARC's ridership would be achieved as well as only 37 percent of VRE's service and 36 percent of VRE's ridership.[508,509]

The Preferred Alternative would result in benefits to long-term productivity. By providing new tracks and platforms that would support simultaneous boarding of trains, quicker turnaround times for trains, and double berthing, it would adequately support the anticipated growth in service and ridership at WUS, including future low-cost intercity service (the "Metropolitan") and MARC's through-running trains to Virginia. The Preferred Alternative would address congestion issues inside WUS by providing more concourse space, more access points, and more amenities, including more retail, for both rail and intercity bus passengers and visitors.

The Preferred Alternative would also improve WUS's accessibility through full ADA compliance; offer opportunities to improve WUS's resilience; and enhance the connections between the neighborhoods on either side of the rail terminal.

5.20.2.3 Short-Term Uses Versus Long-Term Productivity

The short-term impacts that would result from construction of the Project in the Preferred Alternative would vary substantially over the entire period of construction and would cease when construction is complete. They would be offset by the benefits from greater rail and bus capacity at WUS and improved passenger and visitor amenities that would result from the Project. When reviewed in the overall context of the Project and taken in total, the benefits the Project offers are greater than the short-term impacts of construction.

[507] FRA. 2016. *NEC FUTURE FEIS*. Accessed from https://www.fra.dot.gov/necfuture/tier1_eis/feis/. Accessed on September 26, 2023.

[508] Maryland Transit Administration. 2013. *MARC Growth and Investment Plan Update 2013-2050*.

[509] VRE. 2014. *VRE System Plan 2040*. Accessed from https://www.vre.org/development/system-enhancements/20401/. Accessed on September 23, 2023.

6 Final Section 4(f) Evaluation

6.1 Introduction

Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966 states that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." This Final Section 4(f) Evaluation discusses:

- The applicability of Section 4(f) to the Project;
- The Project's Purpose and Need;
- The Project's Action Alternatives;
- The Section 4(f) properties that may be affected by the Action Alternatives;
- The impacts of the Action Alternatives on the Section 4(f) properties;
- Avoidance Alternatives;
- Minimization and Mitigation of Harm; and
- Coordination.

The Federal Railroad Administration (FRA) prepared this Section 4(f) Evaluation because the Washington Union Station (WUS) Expansion Project (Project) is in a culturally rich and historically significant area of the District of Columbia (District) that includes several public parks as well as numerous historic properties and districts either listed or eligible for listing in the National Register of Historic Places (NRHP) and District Inventory of Historic Sites (DCI). The evaluation of impacts relies on the information and analyses presented in previous chapters of this Final Environmental Impact Statement (FEIS).

6.2 Section 4(f) Applicability

6.2.1 Introduction

Section 4(f) prohibits an operating administration of USDOT, including FRA, from approving a project that uses public parks and recreational lands; wildlife refuges; and public or private historic properties listed or eligible for listing in the NRHP unless it determines there is no feasible and prudent avoidance alternative to avoid the use and the project includes all possible planning to minimize harm to the resources, or the use meets the requirements for a *de minimis* impact.

FRA's *Procedures for Considering Environmental Impacts* (64 Federal Register [FR] 28545, Section 12, May 26, 1999, as updated by 78 FR 2713, January 14, 2013) outlines the Section 4(f) process that is

applicable for this Project. FRA applied Section 4(f) implementing regulations at 23 CFR Part 774 in preparing this Section 4(f) evaluation.

For the purposes of this Project, the Section 4(f) evaluation included coordination with Officials with Jurisdiction (OWJ) over the Section 4(f) resources (the State Historic Preservation Office [SHPO] for historic properties, and the property owner for parks and other recreational resources). FRA must also coordinate with the United States Department of Interior (DOI) when it makes a Section 4(f) finding.

6.2.2 Use of Section 4(f) Properties

Section 4(f) requires FRA to assess the impacts of the Project on Section 4(f) properties based on whether a "use" would occur. A "use" of a Section 4(f) property can occur in one of three ways:

- When land is permanently incorporated into a transportation project or facility;
- When there is a temporary occupancy of land that is adverse in terms of the statute's preservation purposes; or
- When there is a constructive use of a Section 4(f) property. A constructive use occurs when the project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the property are substantially diminished. There is no constructive use of a historic property when Section 106 consultation resulted in a finding of "No Effect" or "No Adverse Effect" for the historic property because both findings demonstrate that the Project's proximity impacts are not at a level of severity that would substantially impair the historic property's protected activities, features, or attributes that qualify it for protection under Section 4(f).There are several exceptions to a Section 4(f) use finding.

Even when land is permanently incorporated into a transportation facility, FRA may find that there is a *de minimis* impact on a property protected by Section 4(f) when the impacts meet specific criteria.[510] "For historic sites, *de minimis* impact means that FRA has determined, in accordance with 36 CFR Part 800, that no historic property is affected by the project or that the project will have "no adverse effect" on the historic property in question."[511] "For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f)."[512] In addition, a temporary occupancy of land is not a Section 4(f) use if:

[510] For a description of these criteria, see https://www.environment.fhwa.dot.gov/env_topics/4f_tutorial/use_deminimis.aspx (accessed on October 5, 2023).

[511] 23 CFR § 774.17.

[512] 23 CFR § 774.17

- The duration of the occupancy of the Section 4(f) property is less than the time needed for the construction of a project and there is no change in ownership of the property;
- Both the nature and magnitude of the changes to the Section 4(f) property are minimal;
- There are no anticipated permanent adverse physical impacts nor interference with the protected activities, features, or attributes of the property on a temporary or permanent basis;
- The land is fully restored to the same or better condition after the temporary occupancy; and
- There is a documented agreement of the appropriate Federal, state, or local official(s) with jurisdiction over the property regarding the above conditions.

If FRA determines that a project would result in the use of a protected resource, it can only approve the project if there are no prudent and feasible alternatives avoiding the use and if the project incorporates all possible planning to minimize harm. If a prudent and feasible alternative exists that avoids Section 4(f) properties and meets the project's purpose and need, FRA may not select the alternative that uses a Section 4(f) property for implementation.

An alternative is considered infeasible if it cannot be built as a matter of sound engineering judgment. In determining whether an alternative is prudent, FRA considers whether the alternative:

- Compromises the project to a degree that it is unreasonable to proceed based on the project's stated purpose and need;
- Results in unacceptable safety or operational problems;
- After reasonable mitigation, still causes severe social, economic, or environmental impacts; severe disruption to established communities; severe or disproportionate impacts to minority or low-income populations; or severe impacts to environmental resources protected under other federal statutes;
- Results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- Causes other unique problems or unusual factors; or
- Involves multiple factors that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

6.3 Project Purpose and Need

The purpose of the Project is to support current and future long-term growth in rail service and operational needs; achieve compliance with the Americans with Disabilities Act of 1990 (ADA) and emergency egress requirements; facilitate intermodal travel; provide a positive customer experience;

enhance integration with the adjacent neighborhoods, businesses, and planned land uses; sustain WUS's economic viability; and support continued preservation and use of the historic station building.

The Project is needed to improve rail capacity, reliability, safety, efficiency, accessibility, and security for both current and future long-term railroad operations at WUS. **Chapter 2**, *Purpose and Need*, describes the Purpose and Need for the Project in more detail.

6.4 Action Alternatives

If a project uses a Section 4(f) resource, and FRA does not find the impact is *de minimis*, FRA must complete an analysis to determine whether a feasible and prudent avoidance alternative exists. **Chapter 3**, *Alternatives*, describes the process through which FRA and the Project Proponents identified the Action Alternatives for the Project.

The Project Proponents initially developed 18 preliminary concepts for the Project. FRA evaluated the preliminary concepts against various Project elements and objectives based on the Project's Purpose and Need. After seeking and considering public and agency input, in October 2016, FRA retained nine preliminary concepts for concept screening. Concept screening resulted in five retained concepts. After further refinement, these five concepts yielded five Action Alternatives (Alternatives A through E), including one with two options (Alternative C East and Alternative C West), which FRA determined constituted a reasonable range of alternatives consistent with the requirements of NEPA. FRA shared the Action Alternatives, along with the No-Action Alternative, with agencies and the public in March 2018.

After the March 2018 presentation, preliminary impact analysis, agency and stakeholder feedback, and continued coordination with the Cooperating Agencies revealed several issues of concern with the Action Alternatives. To address these issues, FRA, working with the Project Proponents, combined key features of Alternative A and Alternative C to develop a sixth Action Alternative, Alternative A-C. FRA and the Project Proponents agreed that Alternative A-C addressed the identified issues while being consistent with the Project's Purpose and Need. FRA and the Proponents shared Alternative A-C with agencies and the public in fall 2019. The six Action Alternatives (Alternatives A through E and Alternative A-C) were evaluated in the Draft Environmental Impact Statement (DEIS) published in June 2020. The DEIS identified Alternative A-C as the Preferred Alternative.

After review of public and agency comments on the 2020 DEIS, FRA paused the NEPA process. During the pause, FRA and the Project Proponents developed a new alternative (Alternative F) in response to the comments received on the 2020 DEIS alternatives. In July 2022, FRA identified Alternative F as the new Preferred Alternative and re-initiated the NEPA process. FRA analyzed the impacts of the new Preferred Alternative in a Supplemental SDEIS published in May 2023. In the Preferred Alternative:

- The rail terminal would be reconstructed to replace the existing tracks and platforms with 19 new tracks: 12 stub-end tracks on the west side and seven run-through tracks on the east side, along with associated platforms.

- Four new concourses would be provided to facilitate public access and circulation; the concourses would also accommodate new retail.
- An east-west train hall would be constructed just north of the historic station building, replacing the existing, non-historic Claytor Concourse.
- Parking would be in a one-level, below-ground parking facility shared with a pick-up and drop-off facility. The parking facility would provide from 400 to 550 spaces. Access would be via ramps on G Street NE and First Street NE. In addition, there would be an exit ramp on the east side of WUS allowing taxis to drive to the front of the station to pick up passengers.
- A 39-slip bus facility integrated into the H Street deck and connecting directly to the train hall would be built. In times of unusually high demand, buses would make use of the deck-level pick-up and drop-off area adjacent to the train hall, which would provide the equivalent of approximately 15 bus slips, for a total peak capacity of 54 spots.
- Bicycle access would be facilitated by two ramps, one on the west side and one on the east side of the station. Bicycle parking and storage would be provided beneath the ramps and in the H Street Concourse near the entrances from First and Second Streets NE. Additional Bikeshare spots would also be provided.
- New pedestrian access would be provided under the H Street Bridge, on the sides of the train halls, and via headhouses at the deck level on both sides of the H Street Bridge.
- Areas enabling the development of a civic space on the H street deck consistent with the significance of the historic station would be defined, including a “Visual Access Zone”, free of Project elements between H Street and the train hall; and a “Daylight Access Zone,” also mostly free of Project elements but within which skylights would be installed to provide the new station concourse underneath with natural light. The design and construction of the civic space are not part of the Project and would be the responsibility of the developer of the privately owned air rights above the rail terminal.
- The Federal air rights above the rail terminal not needed for the Project would be available for potential future transfer, lease, or sale, and development.

6.5 Section 4(f) Properties

This section identifies the Section 4(f) properties within the Study Area (**Figure 6-1**). The Section 4(f) Study Area incorporates the Parks and Recreation Areas (**Figure 4-22**) and the Section 106 Area of Potential Effects (APE**; Figure 4-20**).

Figure 6-1. Section 4(f) Protected Properties

6.5.1 Public Parks, Recreation Areas, and Wildlife and Waterfowl Refuges

Public parks, recreation areas, and wildlife and waterfowl refuges that the Project may potentially affect were identified through coordination with relevant local, national, and regional recreation area authorities, review of Geographic Information System (GIS)-based data, and aerial photography. There are four publicly owned parks or recreation areas that may be potentially affected by the Project. No wildlife or waterfowl refuges are present. **Table 6-1** lists the identified public parks and recreation areas.[513] **Figure 6-1** shows their respective locations. **Section 6.5.1.1**, *Columbus Plaza*, through **Section 6.5.1.4**, *Swampoodle Park*, provide summary descriptions.[514]

Table 6-1. Section 4(f) Parks and Recreation Areas within the Study Area

#	Resource Name	Ownership[1]	Estimated Size	Approximate Distance (Feet) from WUS
A	Columbus Plaza	Federal (NPS)	1,400 square feet	25
B	Playground at Capitol Hill Montessori (Public School)	District (DCPS)	300 square feet	600
C	Upper and Lower Senate Parks	Federal (AOC)	5,700 square feet	420
D	Swampoodle Park	District Department of Parks and Recreation	8,200 square feet	350

refers to **Figure 6-1**.
1. Acronyms: NPS: National Park Service; DDOT: District Department of Transportation; DCDGS: District of Columbia Department of General Services; DCPS: District of Columbia Public Schools; AOC: Architect of the Capitol.

6.5.1.1 Columbus Plaza

Built in 1912, Columbus Plaza serves as a grand forecourt to WUS. The design was by Daniel Burnham and Peirce Anderson of D.H. Burnham & Company. The semicircular plaza consists of brick pavement and lawn panels surrounded by roadways, including the roadways used for for-hire and private pick-up and drop-off in front of the station. The focal point of the plaza is the Columbus Fountain, sculpted by artist Lorado Z. Taft (1860-1936) and completed in 1909.

[513] Private parks are not subject to Section 4(f).

[514] The draft Section 4(f) Evaluation presented in the DEIS and SDEIS addressed impacts to the Metropolitan Branch Trail. However, in their comments on the administrative draft FEIS (provided to FRA by email dated November 9, 2023), DDOT, the official with jurisdiction on the trail, indicated that the Metropolitan Branch Trail is primarily a transportation facility. As such, it is exempt from Section 4(f) requirements. Therefore, the Metropolitan Branch Trail is not considered in this Final Section 4(f) Evaluation.

6.5.1.2 Playground at Capitol Hill Montessori (Public School)

This children's playground associated with Capitol Hill Montessori features play equipment such as slides and climbing structures. It is available to children at the school as well as members of the public outside of school hours. The property has an access point on 3rd Street NE.

6.5.1.3 Upper and Lower Senate Parks

The Upper and Lower Senate Parks are part of the Capitol Complex. The parks include lawns, plazas, and landscaped areas on the north side of the Complex. There are fountains and small memorials throughout. The parks provide pedestrian connections to WUS, the National Mall, and surrounding neighborhoods. There are numerous pedestrian and vehicular access points to the parks.

6.5.1.4 Swampoodle Park

Swampoodle Park is a District park on the corner of L Street NE and 3rd Street NE. The primary park features include a children's playground, dog park, and public seating. Landscaping and infrastructure include planting beds, a bioretention structure, specialty lighting, irrigation and water stations, and custom fencing with two electronic dog-entry gates.

6.5.2 Historic Properties

Historic properties affected by the Project were identified through the Section 106 process. Within the APE of the Project, there are 25 properties listed in the NRHP or the DC Inventory of Historic Sites (DCI). Twelve other properties in the APE are eligible or potentially eligible for listing in the NRHP or the DCI and 12 are Architect of the Capitol (AOC) Heritage Assets. **Table 6-2** shows the historic properties in the APE along with their status.

Table 6-2. Section 4(f) Historic Properties

#	Name	Historic Designation
1	Acacia Building	Potentially NRHP and DCI Eligible
2	Augusta Apartment Building (and Louisa Addition)	NRHP and DCI
3	C&P Telephone Company Warehouse	NRHP and DCI
4	Capital Press Building (Former)	Potentially NRHP and DCI Eligible
5	City Post Office (Postal Museum)	DCI
6	Dirksen and Hart Senate Office Buildings	AOC Heritage Asset
7	Eckington Power Plant; Coach Yard Power Plant	DCI Eligible
8	Engine Company No. 3	DCI

#	Name	Historic Designation
9	Garfield Memorial	AOC Heritage Asset
10	Gonzaga College High School	Potentially NRHP and DCI Eligible
11	Government Printing Office	DCI
12	Government Printing Office Warehouse No. 4	Potentially NRHP and DCI Eligible
13	Hayes School	DCI
14	Holodomor Ukrainian Holocaust Memorial	NPS memorial
15	Japanese American Memorial to Patriotism During WWII	NPS memorial
16	Joseph Gales School	DCI
17	Library of Congress, Thomas Jefferson Building	AOC Heritage Asset
18	M Street High School (Perry School)	NRHP and DCI
19	Major General Nathaneal Greene Statue	NRHP and DCI
20	Mountjoy Bayly House	NRHP; National Historic Landmark
21	Peace Monument	AOC Heritage Asset
22	Railway Express Agency (REA) Building	DCI Eligible
23	Robert A. Taft Memorial	AOC Heritage Asset
24	Russell Senate Office Building	AOC Heritage Asset
25	Senate Parks, Underground Garage, and Fountains	AOC Heritage Asset
26	Belmont-Paul Women's Equality National Monument	National Historic Landmark; NRHP and DCI
27	Square 750 Rowhouse Development	Potentially NRHP and DCI Eligible
28	St. Aloysius Catholic Church	NRHP and DCI
29	St. Joseph's Home (Former)	Potentially NRHP and DCI Eligible
30	St. Philip's Baptist Church	DCI
31	Sun Trust Bank (Former Childs Restaurant	Potentially NRHP and DCI Eligible
32	The Summerhouse	AOC Heritage Asset
33	Thurgood Marshall Federal Judiciary Building	AOC Heritage Asset

#	Name	Historic Designation
34	Topham's Luggage Factory (Former)	Potentially NRHP and DCI Eligible
35	Uline Ice Company Plant and Arena Complex	NRHP and DCI
36	United States Capitol	AOC Heritage Asset
37	United States Capitol Square	AOC Heritage Asset
38	United States Supreme Court	AOC Heritage Asset
39	Victims of Communism Memorial	NPS memorial
40	Washington Union Station (WUS)	NRHP and DCI
41	Washington Union Station Plaza (Columbus Plaza and Columbus Fountain)	NRHP and DCI
42	Woodward and Lothrop Service Warehouse	NRHP and DCI
43	901 Second Street NE	NRHP and DCI Eligible
44	Capitol Hill Historic District	NRHP and DCI
45	L'Enfant – McMillan Plan	NRHP and DCI
46	National Mall Historic District	NRHP and DCI
47	Pennsylvania Avenue National Historic Site	NRHP and DCI
48	Union Market Historic District	NRHP and DCI
49	Washington Union Station Historic Site	NRHP and DCI Eligible

# refers to **Figure 6-1**.
AOC = Architect of the Capitol; DCI = District Inventory of Historic Sites; NPS = National Park Service; NRHP = National Register of Historic Places

6.5.3 Archaeological Resources

The Project would involve extensive ground disturbance within the rail terminal from excavation and more limited disturbance to areas below the historic station building from the installation of foundations for temporary shoring towers as part of the column removal work. There are no known archaeological sites or resources in the affected areas. However, an archaeological assessment completed in 2015 concluded that the terminal is likely to contain a range of prehistoric and historic archaeological materials, from isolated artifacts to significant cultural features. Potential archaeological resources (including artifacts and archaeological features) likely would include remnants of the Swampoodle neighborhood, a residential and commercial area that developed in the mid-to-late 19th century, which was home to many African American as well as Irish and Italian immigrants.

The Project Area is an active rail terminal, and no archaeological field assessment has been conducted. Therefore, no Section 4(f)-protected archaeological properties have been identified to date. Any archaeological resources discovered during construction would undergo Section 4(f) evaluation to determine their eligibility as protected properties under Section 4(f) and, if necessary, to evaluate any feasible and prudent avoidance alternatives.

6.6 Section 4(f) Findings

6.6.1 Public Parks, Recreation Areas, and Wildlife and Waterfowl Refuges

Table 6-3 provides a summary of the findings of the Section 4(f) use analysis for the public parks and recreation areas the Preferred Alternative has the potential to affect. **Section 6.6.1.1**, *Columbus Plaza* through **Section 6.6.1.4**, *Upper and Lower Senate Parks* present the analysis. The Preferred Alternative would not result in the use of any public parks or recreation areas.

Table 6-3. Summary of Use Analysis: Public Parks and Recreation Areas in the Preferred Alternative

Section 4(f) Property	Incorporation Analysis	Temporary Occupancy Analysis	Constructive Use Analysis
Columbus Plaza	No use	No use	No use
Playground at Capitol Hill Montessori (Public School)	No use	No use	No use
Upper and Lower Senate Parks	No use	No use	No use
Swampoodle Park	No Use	No use	No use

6.6.1.1 Columbus Plaza[515]

Permanent Incorporation Analysis

The Preferred Alternative would not permanently incorporate Columbus Plaza into a transportation facility. The improvements to the traffic lanes that separate the plaza from WUS would take place within the existing right-of-way and would not require using any part of the plaza. There would be no changes to the physical or visual relationship of Columbus Plaza to WUS.

Temporary Occupancy Analysis

The Preferred Alternative would not require temporarily physically occupying Columbus Plaza. During construction of the improvements to the traffic lanes between WUS and the property, staging and

[515] Columbus Plaza is also a historic property listed in the NRHP and DCI (**Table 6-2**, Item 41). As explained in **Section 6.6.2**, *Historic Properties*, the Preferred Alternative would have no adverse effect on this property under Section 106 and would involve no use of it under Section 4(f).

storage areas would be outside the plaza. Construction activities would temporarily limit pedestrian circulation between Columbus Plaza and the front of WUS. In general, construction activities on the adjacent roadways and along the sides of the historic station building would make Columbus Plaza temporarily less attractive to visitors. Columbus Plaza would always remain accessible from the south. Construction would not affect the activities, features, and attributes that qualify Columbus Plaza for protection under Section 4(f). There would be no temporary occupancy of Columbus Plaza.

Constructive Use Analysis

The Preferred Alternative would not severely impact any of the protected features, activities, or attributes that qualify Columbus Plaza for protection under Section 4(f) and substantially impair this resource. The Project would result in additional air pollutant emissions, as described in **Section 5.6.3.1,** *Direct Operational Impacts* and **Section 5.6.3.2,** *Indirect Operational Impacts*. However, all emissions would remain below the applicable General Conformity *de minimis* thresholds and activities or attributes of Columbus Plaza would not be severely impacted.

The Project would also result in increases in noise levels of less than 3 A-weighted decibels (dBA) (with one exception well away from the plaza), which is generally imperceptible, resulting in no impact on Columbus Plaza, as described in **Section 5.10.3.1**, *Direct Operational Impacts*.

The Preferred Alternative would result in a negligible adverse impact to the views from Columbus Plaza, as noted in **Section 5.11.3.1**, *Direct Operational Impacts*. This negligible adverse impact would not severely impact any protected features, activities, or attributes that qualify Columbus Plaza for protection under Section 4(f) and thus would not substantially impair or diminish this resource.

6.6.1.2 Playground at Capitol Hill Montessori (Public School)

Permanent Incorporation Analysis

The Preferred Alternative would not permanently incorporate the Capitol Hill Montessori Playground into a transportation facility.

Temporary Occupancy Analysis

The Preferred Alternative would not require temporarily physically occupying the Capitol Hill Montessori Playground. The playground is located approximately 600 feet from the Project Area.

Constructive Use Analysis

The Preferred Alternative would not result in effects that would severely impact any protected features, activities, or attributes, such as its recreational uses and public accessibility, which qualify the Capitol Hill Montessori Playground for protection under Section 4(f) and substantially impair this resource. The Project would result in additional air pollutant emissions, as described in **Section 5.6.3.1**, *Direct Operational Impacts* and **Section 5.6.3.2,** *Indirect Operational Impacts*. However, all emissions would remain below the applicable General Conformity *de minimis* thresholds and activities or attributes of the playground would not be severely impacted.

The Project would also result in increases in noise levels of less than 3 dBA (with one exception well away from the playground), which is generally imperceptible. No receptors near the playground would experience an impact (see **Section 5.10.1,** *Direct Operational Impacts*). The Project would not be visible from the Capitol Hill Montessori Playground.

6.6.1.3 Upper and Lower Senate Parks

Permanent Incorporation Analysis

The Preferred Alternative would not require using any part of the Upper and Lower Senate Parks or result in their permanent, whole or partial incorporation into a transportation facility. This property is located approximately 420 feet south of the Project Area.

Temporary Occupancy Analysis

The Preferred Alternative would not require temporarily physically occupying the Upper and Lower Senate Parks.

Constructive Use Analysis

The Preferred Alternative would not result in effects that would severely impact any of the protected features, activities, or attributes, such as it landscaping, pedestrian connections, and public accessibility, which qualify the Upper and Lower Senate Parks for protection under Section 4(f) and substantially impair this resource. The Project would result in additional air pollutant emissions, as described in **Section 5.6.3.1,** *Direct Operational Impacts and* **Section 5.6.3.2,** *Indirect Operational Impacts*. However, all emissions would remain below the applicable General Conformity *de minimis* thresholds and activities or attributes of the parks would not be severely impacted.

The Project would also result in increases in noise levels of less than 3 dBA (with one exception well away from the parks), which is generally imperceptible. No receptors near the Upper and Lower Senate Parks would experience an impact (see **Section 5.10.1**, *Direct Operational Impacts*).

In the Preferred Alternative, views along the streets that run through the Upper and Lower Senate Parks (First Street NE south of Massachusetts Avenue, Delaware Avenue NE, Louisiana Avenue NW) toward WUS would experience minor to moderate adverse impacts from the potential development of the Federal air rights north of WUS, as explained in **Section 5.11.3.2**, *Indirect Operational Impacts*. This would not severely impact the protected features, activities, or attributes of the Upper and Lower Senate Parks. To the north, the historic station building would remain the dominant visual elements. To the south, connections with the U.S. Capitol would not be affected.

6.6.1.4 Swampoodle Park

Permanent Incorporation Analysis

The Preferred Alternative would not permanently incorporate Swampoodle Park into a transportation facility.

Temporary Occupancy Analysis

The Preferred Alternative would not require temporarily physically occupying Swampoodle Park. The park is located approximately 350 feet from the Project Area.

Constructive Use Analysis

The Preferred Alternative would not result in effects that would severely impact any protected features, activities, or attributes that qualify Swampoodle Park for protection under Section 4(f) and substantially impair this resource. The Project would result in additional air pollutant emissions, as described in **Section 5.6.3.1**, *Direct Operational Impacts* and **Section 5.6.3.2,** *Indirect Operational Impacts*. However, all emissions would remain below the applicable General Conformity *de minimis* thresholds and activities or attributes of the park would not be severely impacted.

The Project would also result in increases in noise levels of less than 3 dBA (with one exception well away from the park), which is generally imperceptible. No receptors near the park would experience an impact (see **Section 5.10.1,** *Direct Operational Impacts*). There would be no visual impacts. The Project would not be visible from Swampoodle Park.

6.6.2 Historic Properties

The Preferred Alternative would result in a Section 4(f) use due to permanent incorporation of three historic properties:

- WUS—Listed in the NRHP and DCI;
- WUS Historic Site—Eligible for listing in the NRHP and the DCI; and
- Railway Express Agency (REA) Building—Contributing element to the NHRP-eligible, WUS Historic Site, potentially eligible for listing in the NRHP, and individually eligible for listing in the DCI.

Of the other historic properties that are present in the APE, FRA has determined that the 22 properties shown in **Table 6-4** would experience "No Adverse Effect" under Section 106 and 23 properties would experience "No Effect," as documented in the Supplemental Assessment of Effects (SAOE) report prepared in compliance with Section 106. The Preferred Alternative would not result in the permanent incorporation of any of these properties in a transportation facility or require temporarily physically occupying any of them. The properties would experience either no effect or no adverse effect from the Preferred Alternative; therefore, there would be no constructive use.

Table 6-4. Historic Properties with No Adverse Effect Finding under Section 106

Property Name	
C&P Telephone Company Warehouse	St Joseph's Home (Former)
Dirksen and Hart Senate Office Buildings	St. Phillip's Baptist Church
Government Printing Office	Suntrust Building (Former Child's Restaurant)

Property Name	
Government Printing Office Warehouse No.4	Thurgood Marshall Federal Judiciary Building
Holodomor Ukrainian Holocaust Memorial	Topham's Luggage Factory (Former)
Joseph Gales School	Uline Ice Company Plant and Arena Complex
Library of Congress, Thomas Jefferson Building	Washington Union Station Plaza and Columbus Fountain
Russell Senate Office Building	Woodward and Lothrop Service Warehouse
Senate Parks, Underground Parking and Fountain	901 Second Street NE
Square 750 Rowhouse Development	Capitol Hill Historic District
St. Aloysius Catholic Church	L'Enfant – McMillan Plan

One property, the City Post Office (Postal Museum) would experience a potential adverse effect, based on the high level of noise and vibration near the building during construction of the ramp on G Street NE. The building is located across First Street NE from WUS and would be physically unaffected by the Project and its construction. The Project would not cause the permanent incorporation of the City Post Office (Postal Museum) into a transportation facility and no temporary occupancy would be required to construct the Project. Vibration effects would be temporary (limited to a part of construction Phase 4) and it would be avoided, minimized, or mitigated through the same monitoring and minimization measures that would apply to WUS and the REA Building. Monitoring would ensure that no permanent damage to the fabric of the building occurs. There would be no constructive use under Section 4(f) because temporary construction vibration would not substantially impair the features and attributes that qualify the City Post Office (Postal Museum) as a historic property protected under Section 4(f). The City Post Office (Postal Museum) is eligible for the NRHP for its association with Washington Union Station and the surrounding area, as well as the history of the U.S. Postal Service; it is also eligible for its design by Daniel Burnham. None of these characteristics would be affected by temporary construction vibration.

These 46 properties are not discussed further. The following sections address only the three historic properties that would incur a permanent incorporation use under Section 4(f)

6.6.2.1 Washington Union Station

WUS is an example of Beaux Arts architecture designed by D.H. Burnham & Company. It consists of three primary spaces: the historic headhouse (1908); the original passenger concourse (1908), currently used for retail and Amtrak ticketing (Retail and Ticketing Concourse); and the Claytor Concourse, completed in 1988. WUS is significant for its association with railroad transportation improvements facilitated by the Washington Terminal Company. It established a monumental landscape befitting the capital city, allowed for increased safety and future rail growth, and initiated the twentieth-century development and urban design of Washington DC. The location, design, setting, materials, workmanship, feeling, and association of the Beaux-Arts building contribute to the understanding of the station as a prominent transportation hub and monumental gateway to Washington DC.

Use Analysis

The Preferred Alternative would physically impact WUS and permanently incorporate it into the expanded multimodal transportation hub the Project would construct. Because FRA determined that the Preferred Alternative would result in an adverse effect to WUS under Section 106, this Section 4(f) use does not qualify as *de minimis*.

Physical impacts would include the removal of the Claytor Concourse (built in 1988) and the construction of a new passenger concourse and train hall on the north side of the historic station building as well as and the removal of original columns in the portion of the First Street Tunnel below the historic Retail and Ticketing Concourse. While the Claytor concourse does not contribute to the historic integrity of WUS, its removal as well as the construction of the concourse and train hall would impact the north façade of the Retail and Ticketing Concourse. It is not known how much of the original fabric remains on the north elevation of the Retail and Ticketing Concourse. The original construction featured an immense opening leading to the tracks and platforms and was punctuated by nine steel-plated Doric columns with cast-iron capitals spaced evenly along its length. The view from the original passenger concourse to the north was of the rail terminal. Views of the north elevation from the rail terminal were only available to rail workers. Currently, a section of the entablature supported by the Doric columns is the only original element visible from within the Claytor Concourse. It is possible that the Doric columns remain *in situ*, encapsulated by the Claytor Concourse construction. Until the Project advances to later stages of design, the extent of the physical alterations to the north elevation of the original concourse cannot be determined. However, construction of the Project in the Preferred Alternative would adversely affect the building's overall integrity of design as it would substantially increase the mass of the station.

Further physical impacts on WUS would include the demolition of approximately 15,000 square feet of the Retail and Ticketing Concourse floor to allow for column removal in the underlying tunnel. While the current marble finish of the floor was installed in the 1980s, the floor structure is original. It is constructed of a steelwork frame and terracotta tile arches. The demolition of the original floor structure and removal of the original steel columns would affect the integrity of the station.

There may also be as yet undetermined physical effects related to the design of the Project, including interior changes that would affect the historic materials, design, workmanship, or circulation flow in the station. Such changes have the potential to result in adverse effects to WUS.

Additionally, physical impacts could occur during excavation activities because of the use of vibration-generating equipment. Vibratory pile driving and drill rigging may occur within approximately 10 feet of the north elevation of WUS, resulting in vibration levels of up to approximately 0.67 inches per second (in/s). The Federal Transit Administration (FTA) thresholds for potential structural damage to buildings from vibration range from 0.5 to 0.12 in/s, depending on the type of building construction. Although WUS was designed to facilitate train operations and may be capable of withstanding vibration levels that exceed the thresholds, its sensitivity to vibration has not been specifically determined at this stage of Project planning.

6.6.2.2 Washington Union Station Historic Site

FRA prepared a determination of NRHP eligibility for this property, which comprises approximately 60 acres and consists of four areas: Columbus Plaza, the historic Union Station building, the rail terminal, and the First Street Tunnel. The station building and Columbus Plaza are both individually listed in the NRHP and are discussed separately. This section focuses on impacts on the rail terminal and the First Street Tunnel.

The rail terminal is 760 feet wide at its greatest extent, immediately north of Union Station. It narrows along its length to 135 feet wide at its narrowest point at Florida Avenue. The length of the terminal from the station to Florida Avenue is approximately 3,725 feet or 0.7 mile. Several contributing buildings, structures, and objects that date to the terminal's original construction in 1903-1907 and to the electrification project of the 1930s are extant. These include the REA Building (discussed as an individual property below); K Tower; umbrella sheds and platforms dating from 1903-1935; retaining walls (known as the Burnham Walls); bridge underpasses and associated infrastructure; Signal Bridges H, J, and K; single catenaries dating from 1903-1935, a catenary with cross beam, P&W Ownership Marker, and pneumatic switch valves dating from 1903-1935. In addition to the visible contributing buildings, structures, and objects in the rail terminal, archaeological resources may exist below ground.

The First Street Tunnel extends 4,033 feet from the north face of Union Station to the intersection of New Jersey Avenue SE and D Street SE. The tunnel was completed in 1906 to serve the Pennsylvania Railroad rail lines south of the District. It runs below the station along First Street NE and SE until C Street SE, where it turns west towards its terminus.

Use Analysis

The Preferred Alternative would physically impact the WUS Historic Site and permanently incorporate it into the expanded multimodal transportation hub the Project would construct. Because FRA determined that this would result in an adverse effect to the WUS Historic Site under Section 106, this Section 4(f) use does not qualify as *de minimis*.

The Preferred Alternative would cause extensive physical impacts within the rail terminal, including the reconstruction of all tracks, platforms, and associated infrastructure, although the new track layout would continue to be divided between stub-end tracks and run-through tracks and would maintain the rail terminal's general layout. Reconstruction of the rail terminal would require the removal of the K Tower; all existing platforms and umbrella sheds; the original retaining wall dividing the run-through tracks from the rest of the terminal; catenary poles; catenary with cross beam; signal bridges; and pneumatic switch valves. In addition, the excavation of the rail terminal may cause adverse effects to any significant archaeological resources, if present, within its footprint.

The Preferred Alternative would also cause physical changes to the portion of the First Street Tunnel underneath the historic station building due to the column removal work, as described in **Section 6.6.2.1**, *Washington Union Station, Use Analysis*. The H Street Underpass (which was closed and used to support WUS after the construction of the H Street Bridge in 1976) would be removed and converted to a concourse. A portal to provide access to and from the below-ground parking facility would be

constructed in the western wall along First Street NE. In addition, the ventilation intake required for the operation of the expanded Station may require the potential reconstruction and the insertion of vents in the southwest portion of the Burnham Wall.

6.6.2.3 REA Building

The REA Building is directly adjacent to the east side of the rail terminal. It was constructed in 1908 and designed by D.H. Burnham and Co. in conjunction with the development of WUS. The rectangular two-story plus attic and basement brick structure has an elongated footprint common to American industrial buildings. Prominent ground-floor arches encircle the building and express its use as an operational warehouse. A train platform runs the full length along the west elevation of the building. The REA Building is an example of early 20th-century industrial architecture in Washington. It exemplifies the thoughtful design consideration given to even the utilitarian structures associated with WUS.

As defined in the NRHP Nomination Form and District Historic Preservation Review Board Application for Historic Landmark of Historic District Designation prepared for this resource, the REA Building occupies Lot 812 of Square 717 in the District. The historic property boundary, which is the same as the parcel boundary, is approximately 63,000 square feet in size. It is located between Second Street NE and the eastern edge of the WUS rail terminal. To the south, the parcel partially overlaps with the old H Street right-of-way and current H Street Tunnel. There is direct access from the tunnel into the basement of the REA Building.

Use Analysis

The Preferred Alternative would permanently incorporate some land within the REA Building historic property boundary into the expanded multimodal transportation hub the Project would construct. Because FRA determined that the Preferred Alternative would result in an adverse effect to the REA Building under Section 106, this Section 4(f) use does not qualify as *de minimis*.

In the Preferred Alternative, the new H Street Concourse would be constructed along the old alignment of H Street, replacing the H Street Underpass. The portion of the old alignment within the REA Building historic property boundary, which is approximately 9,800 square feet in size, would be used, like the rest of the underpass, for the new concourse. Construction of the H Street Concourse would also modify or eliminate the direct access to the basement of the building from the H Street Tunnel, resulting in a potential physical impact to the building (at this stage of design, the extent and character of this impact are undetermined).

Additionally, the REA Building's integrity of setting, feeling, and association depends directly on its design and relationship with WUS and the rail terminal. The Preferred Alternative would fully reconstruct the rail terminal, requiring the demolition or removal of all existing tracks and platforms; umbrella sheds; K Tower; single catenaries; catenary with cross beam; pneumatic switch valves; and signal bridges. Such physical and visual changes would alter the connection between the REA Building, the rail terminal, and the historic station building, compromising its integrity of setting, feeling, and association.

6.7 Avoidance Alternatives Analysis

This section provides an avoidance alternative analysis for the three Section 4(f) properties the Preferred Alternative would use: WUS, the WUS Historic Site, and the REA Building. As discussed below, there is no feasible and prudent alternative that would avoid the use of these properties.

An avoidance alternative is not feasible if it is not possible to build it as a matter of sound engineering judgment. It is not prudent if, among other criteria, it compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need.

As explained above, the Section 4(f) use of WUS, the WUS Historic Site, and the REA Building in the Preferred Alternative would result primarily from the reconstruction of the rail terminal and construction of the Project elements within the rail terminal. This includes Concourse A and a train hall, adjacent to the north elevation of the historic station building, which would require the demolition of the existing Claytor Concourse; and the H Street Concourse along the old H Street alignment and current H Street Tunnel, including the part within the REA Building historic property boundary. Column removal in the First Street Tunnel and the associated demolition of part of the floor of the Retail and Ticketing Concourse would further affect the physical fabric of the WUS historic station building.

An alternative that would avoid these impacts would need to leave the rail terminal, Claytor Concourse, First Street Tunnel, and the eastern end of the H Street Tunnel in their existing condition. This would preclude the construction of new concourses and train hall and keep WUS from being able to adequately accommodate projected future ridership.

Such an alternative, including the No-Action Alternative, would be unreasonable because it would fail to meet the Purpose and Need for the Project. As documented in Chapter 3, *Alternatives*, the Project Proponents and FRA conducted an extensive alternative development, screening, and refinement process to define a reasonable range of Action Alternatives. Through this process, the Proponents and FRA determined the Project elements needed to meet the Purpose and Need and considered multiple options to construct those elements. The initial outcome of this process was the six Action Alternatives evaluated in the 2020 DEIS. Following the publication of the 2020 DEIS, FRA paused the NEPA process and develop the Preferred Alternative evaluated in this FEIS, in response to the comments received on the DEIS.

All Action Alternatives considered, including the Preferred Alternative, feature the reconstruction of the rail terminal and column removal because there is a need for new tracks and platforms that can adequately support current and future long-term growth in rail service as well as achieve compliance with ADA and emergency egress requirements. Similarly, all Action Alternatives considered include the removal of the modern Claytor Concourse, construction of Concourse A, and construction of the H Street Concourse to provide adequate circulation space and connections between WUS and the surrounding neighborhoods. Not constructing the new concourses and train hall to avoid impacts to the north façade of the historic station building and REA Building property would fail to support the following components of the Purpose and Need for the Project: facilitate intermodal travel; provide a positive customer experience; enhance integration with the adjacent neighborhoods, businesses, and planned land uses; and sustain WUS's economic viability.

The Claytor Concourse is commonly overcrowded, and its passenger facilities do not reliably provide a positive customer experience. The Claytor Concourse is not adequate to handle future demand and passenger loadings. Provision of a new, improved concourse and train hall space is necessary to facilitate the movement of increasing numbers of passengers across the various transportation modes at WUS. It is also needed to provide the retail and passenger support facilities needed to support WUS's economic viability and create a positive experience for travelers and visitors. The H Street Concourse would create a link between the neighborhoods to the east and west of WUS that are currently separated by the expanse of the rail terminal and only connected via the pedestrian-unfriendly H Street Bridge.

Because these Project elements are needed together to meet the Project's Purpose and Need, all Action Alternatives considered include the reconstruction of the rail terminal, First Street Tunnel column removal, demolition of the Claytor Concourse to build Concourse A and a train hall; and construction of the H Street Concourse along the H Street Tunnel. Therefore, there is no prudent and reasonable alternative that would avoid a Section 4(f) use of WUS, the WUS Historic Site, or the REA Building.

6.8 Least Overall Harm Analysis

When there are no avoidance alternatives that would be feasible and prudent, FRA performs a least overall harm analysis of the remaining alternatives under consideration by balancing or comparing the alternatives in terms of the seven factors identified below:

- The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);
- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- The relative significance of each Section 4(f) property;
- The views of the official(s) with jurisdiction (OWJ) over each Section 4(f) property;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- Substantial differences in costs among the alternatives.

The following sections compare the Action Alternatives based on each of these seven factors.

6.8.1 Ability to Mitigate

All Action Alternatives, including those analyzed in the 2020 DEIS, would have the same or similar physical impacts on WUS, the WUS Historic Site, and the REA Building. Potential mitigation for these impacts would be the same or similar across the alternatives as well. However, the refinements that resulted in the Preferred Alternative included design-related considerations that were responsive to comments from the SHPO on the alternatives considered in the 2020 DEIS.

In a letter to FRA dated September 28, 2020, the SHPO made the following comments:

- FRA should revise the Preferred Alternative (Alternative A-C) in whatever ways are necessary to guarantee civic space will be integrated into the design.
- The Visual Access Zone (VAZ) must be centered on the historic station and wide enough to allow users to view as much of the barrel vault as possible.
- The proposed VAZ is going to be largely defined by a six-story parking garage that is not compatible with and does not contribute to the civic character which is so important for the new entrance. SHPO requests that FRA reduce the amount of parking and revise the Preferred Alternative to remove most or all parking from this area.
- SHPO also requests that FRA include a below grade parking deck in the Preferred Alternative.
- Because buses do not contribute to civic character SHPO also requests that FRA eliminate the unnecessary slips and promote better bus management practices to facilitate improved design options for the bus facility and its surroundings.
- Because the intensity of the adverse effects will depend upon the height of new construction on either side of Union Station's barrel vault and the extent to which incongruous asymmetry or a visually incompatible parking garage disrupts or competes with the historic character of the station, SHPO requests that FRA work with appropriate entities to develop design guidelines that would apply to all new development, both public and private, north of Union Station.
- The preferred alternative should also be revised to reflect parking facilities consistent with the recommendations of local and Federal planning agencies. Below-grade parking options should be pursued and the proposed vehicular circulation around the terminal should be revised to avoid and minimize the use of ramps and roads directly encircling the historic building. Alternative treatments of the historic train concourse should also be considered to restore its historic integrity, improve pedestrian access, and enhance intermodal transit facilities.
- It is important that FRA commit to collecting traffic-related data and continuing to evaluate and implement alternative solutions that may avoid or substantially minimize traffic-related effects at both the station and the adjacent Capitol Hill Historic District.

These comments were considered when developing the new Preferred Alternative (Alternative F) evaluated in this SDEIS. As summarized in **Section 3.2.2.2**, *Updates and* R*efinements, Urban Design*, the post-DEIS refinements that led to the development of the Preferred Alternative included coordinating with the private air rights developer to create opportunities for the creation of a civic space north of WUS that would be commensurate with WUS's historic and architectural significance and centered on the historic station building. This would allow for an overall site design respectful of the symmetry of WUS. This was in part achieved by moving all parking below ground and integrating the bus facility in the structural deck. Parking capacity was substantially reduced. While the development of the civic space

remains the responsibility of the private air rights developer, coordination between the projects will continue through the design phase.

FRA concludes that the Preferred Alternative (Alternative F) offers more and better opportunities for successful minimization and mitigation of the remaining adverse effects than the Action Alternatives previously considered in the 2020 DEIS.

6.8.2 Relative Severity of Remaining Harm

Some of the most severe physical impacts of the Project, such as the impact of the reconstruction of the rail terminal on the WUS Historic Site and the acquisition of the portion of the REA Building property that overlaps with the old H Street alignment and H Street Tunnel, would remain in the Preferred Alternative (Alternative F). However, because the Preferred Alternative incorporates refinements that address other concerns, it offers better opportunities for successful mitigation than the Action Alternatives previously considered in the 2020 DEIS, as explained above. This would ensure that any remaining harm is less severe under the Preferred Alternative (Alternative F) than under the other Action Alternatives.

6.8.3 Relative Significance of Each Property

With respect to significance, the three historic properties that the Preferred Alternative would affect are closely connected, as WUS and the REA Building are contributing elements to the WUS Historic Site. However, as a stand-alone property, WUS itself is the most significant of the three, both historically and architecturally. The Preferred Alternative would affect all three properties, including WUS. However, based on the refinements that were incorporated in it, summarized in **Section 6.8.1**, *Ability to Mitigate*, above, the Preferred Alternative (Alternative F) would result in less severe impacts on WUS than the Action Alternatives previously considered in the 2020 DEIS, both before and after mitigation.

6.8.4 Views of OWJ

The SHPO is the OWJ for all three affected properties. FRA consulted with the SHPO in compliance with Section 106 and sought SHPO's views on the Preferred Alternative (Alternative F) as part of that consultation. In a letter dated February 9, 2023, SHPO concurred on findings of adverse effect for WUS, the WUS Historic Site, and the REA Building, and on a finding of potential adverse effect for the City Post Office (Postal Museum). In the same letter, the SHPO stated: "We applaud FRA, USRC, Amtrak and Akridge for working cooperatively to develop the Revised Preferred Alternative known as "Alternative F." …This revised scheme represents a very substantial improvement over the previously proposed "Alternative A-C" and addresses many of the Consulting Parties' comments in meaningful ways. We recognize that a project of this magnitude cannot be implemented without causing some adverse effects and we sincerely appreciate that many of the most significant, such as those associated with above-grade parking, were avoided or greatly minimized by developing the revised alternative." Correspondence with the SHPO is included in **Appendix F4**.

6.8.5 Degree to Which Alternatives Meet the Purpose and Need

As explained in **Section 3.2.2.3**, *Purpose and Need Analysis*, the Preferred Alternative meets the Project's Purpose and Need as well as, or better than, the other Action Alternatives that FRA considered. In particular, by integrating the bus facility in the structural deck adjacent to, and visible from, the train hall, intermodal connections would be more efficient and clearer than in the other Action Alternatives. While the Preferred Alternative (Alternative F) would result in a greater reduction in WUS revenue than the 2020 DEIS Action Alternatives because of the smaller parking program, as explained in **Section 5.14.3.**1, *Direct Operational Impacts, Washington Union Station Revenue*, this would not threaten the long-term economic viability of WUS.

6.8.6 Magnitude of Adverse Impacts to Resources Not Protected by Section 4(f)

The magnitude of the Preferred Alternative's impacts on resources that are not protected by Section 4(f) varies according to the resource and type of impact. In this respect, the greatest differences among the Action Alternatives are the depth of excavation and the duration of the construction period and associated impacts. Both are related, as deeper excavation would require more construction time. With one below-ground level, the Preferred Alternative (Alternative F) is in the middle range of the Action Alternatives that FRA considered. It would take 13 years to construct Alternative F. This is longer than the two 2020 DEIS Action Alternatives with no below-ground levels (Alternatives A and A-C); shorter than the two 2020 DEIS Action Alternatives with two below-ground levels (Alternatives B and E); and similar to the 2020 DEIS Action Alternatives with one below-ground level (Alternatives C and D). Accordingly, the construction impacts of the Preferred Alternative (Alternative F) are within the range defined by the 2020 DEIS Action Alternatives, as are its operational impacts.

6.8.7 Substantial Differences in Costs

The estimated cost to construct the Preferred Alternative (Alternative F) is $8.8 billion. This estimate is higher than those developed for the 2020 DEIS Action Alternatives (which ranged from $5.8 billion to $7.5 billion). The cost of construction is largely driven by the Project elements, construction complexity and methods, and the duration of the construction period. Greater escalation rates account for part of the difference between the Preferred Alternative (Alternative F) and the 2020 DEIS Action Alternatives.

6.8.8 Determination

Based on the above considerations, FRA concludes that the Preferred Alternative (Alternative F) would result in least overall harm. It would offer the best opportunities for successful mitigation and, consequently, for less severe remaining harm after mitigation than the Action Alternatives previously considered.

6.9 Minimization and Mitigation of Harm

The following measures would be implemented to minimize and mitigate harm include:

- USRC would require the construction contractor to prepare and implement a Construction Noise and Vibration Control Plan. This plan would include detailed predictions of construction noise and vibration levels; requirements for conducting construction noise and vibration monitoring; and, if necessary, detailed approaches to mitigate construction-period noise and vibration impact. The plan would assess buildings at risk from vibration to determine the appropriate threshold applicable to each based on its type of construction and condition. The plan would define measures to be taken to minimize the risk of damage based on these thresholds.
- Properties that would be used for the Project would experience an adverse effect under Section 106. Per 36 Code of Federal Regulations (CFR) § 800.6, a finding of adverse effect requires that Section 106 consultation continue to avoid, minimize, or mitigate effects to historic properties that would alter the characteristics that qualify the properties for inclusion in the NRHP. USRC would implement the mitigation stipulations outlined in the Project's Programmatic Agreement (PA) to resolve the known adverse effects of the Project on historic properties in accordance with 36 CFR § 800.14(b)(1)(ii). The PA is included in **Appendix F4** of this FEIS. The PA includes the following measures (the following bullets are a summary; see **Appendix F4** for the complete stipulations):
  - To the extent authorized by law, prior to any transfer of air rights property out of Federal ownership, FRA would include a historic preservation covenant in the transfer instrument to be recorded in the real estate records of the District of Columbia.
  - USRC, in consultation with the PA Signatories, would develop and comply with one set of Design and Planning Guidelines that are tailored to and guide the future design and review of the Project and the future design and review of the potential development within the Federally owned air rights.
  - USRC, in consultation with the PA Signatories, would establish and implement a Design Review process to review specified phases of the Project's architectural design.
  - Prior to 60 percent design or the initiation of any demolition, construction, or ground-disturbing activity, USRC would complete the documentation of the WUS Historic site in accordance with the Secretary of the Interior's Guidelines for Architectural and Engineering Documentation for inclusion in the Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER).
  - USRC, in consultation with the PA Signatories, would prepare and implement an Architectural Salvage Plan to identify and salvage historic materials and elements that contribute to the WUS Historic Site and must be removed to construct the Project.
  - USRC would interpret the history, evolution, and significance of the WUS Historic Site from its prehistory, its construction, and its continued and future use. In consultation

with the PA Signatories and Consulting Parties, USRC would develop and implement an Interpretation Plan that identifies the most appropriate methods for interpretation.

- USRC, in coordination with FRA, would prepare an NRHP Nomination Form for the WUS Historic Site, based on the Determination of Eligibility Form for the WUS Historic Site finalized in 2019.
- USRC, in consultation with the PA Signatories, would prepare and implement a Historic Properties Construction Protection and Signage Plan to protect against, monitor for, and manage construction-related effects on identified historic properties during Project Implementation.
- USRC would require the construction contractor to prepare and implement a Construction Noise and Vibration Control Plan that incorporates an assessment of buildings (including historic properties) at risk of structural damage from construction vibration, as identified in the SDEIS and FEIS.
- USRC would require the construction contractor to prepare and implement an integrated Construction Transportation Management Plan that aims to provide safe passage for pedestrians, cyclists, and vehicular traffic around a construction site with as little inconvenience, impact, and delay as possible. USRC would also work with DDOT to identify traffic mitigation approaches to address congestion at the most impacted intersections in the transportation study area.
- USRC, in consultation with the PA Signatories, would prepare a feasibility study that identifies and evaluates a range of projects to rehabilitate the historic station building.
- Prior to 30 percent design or prior to any ground disturbing activities, USRC would complete a Phase IB archaeological identification and survey. If archaeological sites are identified in the Phase IB, prior to any ground-disturbing activities, USRC would consult with SHPO on the need to complete one or more Phase II survey(s) to evaluate the NRHP eligibility of any intact archaeological resources and determine if there is an adverse effect on a historic property. If adverse effects on NRHP-eligible archaeological historic properties are identified, USRC, in consultation with the PA Signatories, would either propose a minimization and/or Phase III recovery plan or commensurate strategy agreed upon by SHPO; or propose a resource-specific Memorandum of Agreement or amendment to the PA to resolve the adverse effects.
- If a previously undiscovered archeological or cultural resource that is or could reasonably be a historic property is encountered or a previously known historic property would be affected in an unanticipated manner during construction, USRC would follow the Unanticipated Discovery or Effect to Cultural Resources procedures specified in the PA.

6.10 Coordination and Consultation

6.10.1 Public Comments on the Draft Section 4(f) Evaluation

FRA provided an opportunity for public review and comment on the Draft Section 4(f) Evaluation for the Project in conjunction with the public review period for the DEIS from June 4, 2020, through September 28, 2020. Regarding the 2020 DEIS, two organizations commented on the Draft Section 4(f) Evaluation:

- **The Capitol Hill Restoration Society (CHRS)** disagreed with the statement in the Draft Evaluation that a potential adverse effects on the Capitol Hill Historic District from increased traffic and potential traffic diversion through the historic district would not constitute a substantial impairment for the purposes of the constructive use analysis.
- **The National Trust for Historic Preservation (NTHP)**, while acknowledging that the Project would "use" the historic properties of Union Station, the Union Station Historic Site, and the REA Building and that there is no alternative that would avoid that use altogether, commented that the requirement to identify the alternative with the least overall harm was not adequately addressed. To do so, NTHP stated that the number of parking spaces should be reduced; functions such as parking and pick-up-drop-off moved underground; and visual access north of WUS should be maximized and centered.

In response to these and other public and agency comments received on the 2020 DEIS, FRA and the Project Proponents developed the Preferred Alternative analyzed in the 2023 SDEIS and this FEIS (Alternative F). The process through which the new Preferred Alternative was developed is summarized in **Section 3.2**, *Development of the Preferred Alternative*, of this FEIS. FRA also prepared a Supplemental Assessment of Effects (SAOE) to evaluate the effects of the Preferred Alternative (Alternative F) on historic properties in accordance with Section 106.

In the SAOE, FRA found that the Preferred Alternative (Alternative F) would result in mostly acceptable levels of service (LOS) at the six intersections in and surrounding the Capitol Hill Historic District. This statement is based on the traffic impact analysis presented in **Section 5.5.3.1**, *Direct Operational Impacts*, *Vehicular Traffic*, of this FEIS. The SAOE explained that these acceptable conditions make it less likely that traffic would divert through the historic district than was the case with the 2020 Preferred Alternative (Alternative A-C) referenced in the comment. As a result, FRA found that the Preferred Alternative would have no adverse effect on the Capitol Hill Historic District and, therefore, no potential to result in a permanent or constructive use of the Capitol Hill Historic District.

The Preferred Alternative (alternative F) addresses NTHP's comments by providing for a reduced parking program collocated below ground with a pick-up and drop-off facility anticipated to accommodate approximately half of all pick-ups and drop-offs are Union Station. It also allows for the establishment of a central civic space behind WUS as part of the private air rights development.

FRA provided an opportunity for public review and comment on the Supplemental Draft Section 4(f) Evaluation in conjunction with public review period for the SDEIS from May 12 through July 6, 2023.

No public comments were received specifically on the Supplemental Draft Section 4(f) Evaluation published with the SDEIS. However, CHRS and NTHP expressed disagreement with the Section 106 finding of No Adverse Effect on the Capitol Hill Historic District. As previously mentioned, the SHPO is the OWJ for the WUS, the WUS Historic Site, and the REA Building. FRA consulted with the SHPO in compliance with Section 106 and sought SHPO's views on the Preferred Alternative as part of that consultation. In a letter dated February 9, 2023, SHPO concurred on findings of adverse effect for WUS, the WUS Historic Site, and the REA Building, and on a finding of potential adverse effect for the City Post Office (Postal Museum).

6.10.2 Coordination with the OWJ

The SHPO is the OWJ for all three affected properties. FRA provided the Draft Section 4(f) Evaluation and Supplemental Draft Section 4(f) Evaluation to the OWJs during the DEIS and SDEIS comment periods. FRA also provided both documents to the Department of the Interior (DOI).

Extensive coordination with the SHPO was conducted in the context of the Section 106 process. The consultation process is summarized in **Section 8.11**, *National Historic Preservation Act Section 106 Consultation*, of this FEIS. With regard to the DEIS, in a comment letter dated September 28, 2020, on the DEIS, SHPO noted that prior favorable comments cited in **Section 6.8.4**, *Views of the OWJ*, of the Draft Section 4(f) Evaluation should not be interpreted as agreeing that the Project includes all possible planning to minimize harm. The SHPO did not comment on the Supplemental Draft Section 4(f) Evaluation.

DOI commented on the 2020 Draft Section 4(f) Evaluation by letter dated September 28, 2020, acknowledging the contents of the Evaluation and noting that DOI would provide its concurrence decision on the Final Section 4(f) documentation once the *de minimis* findings presented in the Draft Evaluation have been confirmed, and it is assured that no modifications to Alternative A-C were made that would alter the least overall harm analysis.

DOI commented on the Supplemental Draft Section 4(f) Evaluation by letter dated July 6, 2023. In the letter, DOI stated that "Upon review of the Draft Section 4(f), the Department agrees that there is no feasible and prudent alternative, as defined in 23 CFR § 774.17, to the "use" of land outlined in this Supplemental DEIS. We also concur with the findings of the least harm analysis and that while the Preferred Alternative will have impacts to Section 4(f) resources, most of these impacts will be mitigated through measures implemented as part of the Section 106 Programmatic Agreement."

6.10.3 Coordination with Cooperating Agencies

Cooperating Agencies for the Project include the National Capital Planning Commission (NCPC); FTA; and DDOT.[516] The Cooperating Agencies have specific opportunities for meaningful participation in the decision-making process for the Project, including review and comment on the Draft Section 4(f)

[516] Until early 2023, the National Park Service (NPS) was a Cooperating Agency as well. On January 24, 2023, NPS indicated that they would no longer serve as a Cooperating Agency as none of the resources under their control would be affected.

Evaluation. For this Project, FRA provided an opportunity for Cooperating Agency review and comment on the Draft Section 4(f) Evaluation and Supplemental Draft Section 4(f) Evaluation in conjunction with their review period for the DEIS and SDEIS, respectively. FRA also provided the three Cooperating Agencies with an opportunity to review and comment on the administrative draft of this FEIS and Final Section 4(f) Evaluation.

Neither NCPC nor FTA commented on the Draft Section 4(f) Determination or Supplemental Draft Section 4(f) Evaluation. DDOT provided editorial comments on the Supplemental Draft Section 4(f) Evaluation, which have been incorporated in this Final Evaluation. In the agency's comments on the administrative draft of the FEIS and Final Section 4(f) Evaluation, DDOT stated that the Metropolitan Branch Trail, which was considered in the Draft Section (4) Evaluation as a recreational facility, is a transportation facility, and as such, exempt from Section 4(f). Based on this statement, FRA revised the Evaluation to remove consideration of the Metropolitan Branch Trail.

FRA coordinated with the Cooperating Agency throughout the NEPA process. **Table 8-1** and **Table 8-9** of this FEIS identify key agency coordination points.

6.10.4 Section 106 Consultation

FRA conducted Section 106 consultation concurrently with development of the EIS and Section 4(f) Evaluation. For this project, Section 106 consultation involved coordination with ACHP, SHPO, and other Section 106 Consulting Parties regarding the potential impacts of the Project on historic properties. Consultation also included discussion of measures to minimize and mitigate adverse specified in the PA for the Project. FRA incorporated these measures into mitigation for impacts to Section 4(f) resources.

Section 8.11, *National Historic Preservation Act Section 106 Consultation*, provides additional detail on the Section 106 consultation process, including a list of Consulting Parties and Consulting Party meetings.

6.11 Section 4(f) Determination

As described in **Section 6.6**, *Section 4(f) Findings*, the Preferred Alternative for the Washington Union Station Expansion Project would result in use of the following Section 4(f) properties:

- Washington Union Station
- Washington Union Station Historic Site
- REA Building

FRA finds that there is no feasible and prudent alternative to the use of Section 4(f) properties for the Project. USRC as the Project Sponsor and FRA have committed to minimizing the harm to these resources associated with the Project by implementing the measures of the Section 106 PA (**Appendix F4**).

As described in **Section 6.8**, *Least Overall Harm Analysis*, the Preferred Alternative would cause the least overall harm in light of Section 4(f)'s preservation purpose in comparison to the other Project alternatives considered.

7 Mitigation Measures, Project Commitments, and Permits

7.1 Mitigation Measures and Project Commitments

Following a review of the impacts of the Preferred Alternative and regulatory requirements; agency consultation; and consideration of the comments received on the Draft Environmental Impact Statement (DEIS) and the Supplemental DEIS (SDEIS), the Federal Railroad Administration (FRA) identified the measures listed in **Table 7-1** to avoid, minimize, or mitigate the potential adverse impacts of the Preferred Alternative. Union Station Redevelopment Corporation (USRC) as Project Sponsor is responsible for implementing these measures unless otherwise specified in the table. Some of the measures involve coordination with other agencies and organizations, as noted in the table. The measures would be implemented, as appropriate, during design, construction, or following construction, as specified in the table.

Table 7-1. Avoidance, Minimization, and Mitigation Measures, and Project Commitments

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	Water Resources and Water Quality		
1	▪ **USRC** to ensure that Project design incorporates stormwater management features, including green infrastructure practices such as rainwater collection and reuse, green roofs, and bioretention facilities, as appropriate to manage stormwater flows in accordance with the Department of Energy and Environment (DOEE)'s *Stormwater Management Guidebook* and restore pre-development site hydrology to the maximum extent technically feasible in compliance with Section 438 of the Energy Independence and Security Act (EISA).	Operational-phase stormwater runoff.	During Project Engineering & Design.
2a	▪ Prior to the beginning of construction, **USRC** to conduct additional groundwater studies, including: ▪ Performing additional borings to depths of 120 to 150 feet inside and along the perimeter of the Project Area to better characterize the lower aquifer's composition and extents and any discontinuities of the Potomac Clay layer separating the aquifers. ▪ Performing research of adjacent properties to understand the local impacts of ongoing or periodic dewatering systems acting around the Project Area. ▪ Performing additional pump testing that targets zones of clay discontinuity in the lower aquifer. ▪ If warranted by the above, performing further modeling to map the areas that have high potential to experience ground subsidence from drawdown.	Construction-phase groundwater dewatering.	During Project Engineering & Design.
2b	▪ If warranted by the studies listed in Item #2a, **USRC** to require the construction contractor to monitor and control the amount of active dewatering on the site so dewatering does not create subsidence in and around adjacent properties.		During Construction.
2c	▪ **USRC** to require that the construction contractor provide on-site monitoring and treatment of pumped groundwater and obtain a Temporary Discharge Authorization permit for discharge through the District's combined sewer system.		During Final Design and Construction.
3	▪ **USRC** to require the construction contractor to implement erosion and sedimentation controls compliant with National Pollutant Discharge Elimination System (NPDES) construction general permit and District Department of Environment and Energy (DOEE)'s *Erosion and Sediment Control Manual.*	Construction-phase erosion and sedimentation.	During Final Design and Construction.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
Solid Waste Disposal and Hazardous Materials			
4	▪ **USRC** to update existing Spill Prevention Control and Countermeasure (SPCC) Plan to reflect any major changes to on-site petroleum product or liquid hazardous waste storage.	Operational-phase petroleum and hazardous waste storage.	Post-construction.
5	▪ **USRC** to require the construction contractor to develop and implement a construction-specific SPCC.	Construction-phase petroleum and hazardous waste storage.	During Final Design and Construction.
6a	▪ **USRC** to require the construction contractor to identify hazardous building materials (asbestos-containing materials, lead-based paint, polychlorinated biphenyls [PCBs], mercury, etc.) prior to any demolition work.	Construction-phase demolition and disposal of hazardous building materials and debris.	During Final Design and Construction.
6b	▪ As warranted by Item #6a, **USRC** to require that abatement of hazardous materials be conducted by a licensed contractor in accordance with District regulations; debris to go to a receiving facility licensed to handle the relevant type of waste in compliance with applicable shipping regulations.		During Construction.
7	▪ **USRC** to require the construction contractor to develop a Soil Management Plan (SMP) based upon subsurface investigations, as needed. The purpose of these investigations will be to pre-characterize the soils to be removed during the construction of the Project. The SMP typically outlines standards and procedures for the identification and disposal of contaminated materials encountered during construction.	Construction-phase removal and disposal of potentially contaminated soils.	During Final Design and Construction.
8	▪ **USRC** to require the construction contractor to exclusively use certified clean soil to replace excavated soil.	Construction-phase excavation and replacement of potentially contaminated soils.	During Construction.
9	▪ **USRC** to require the construction contractor to control fugitive dust through wetting, sweeping, and other suppression techniques.	Construction-phase fugitive dust emissions.	During Construction.
10	▪ **USRC** to require the construction contractor to develop and implement a Health and Safety Plan that provides the minimum health and safety specifications that must be met during construction, including requirements for environmental monitoring, personnel protective equipment, site control and security, and training.	Construction-phase human and environmental health and safety risks.	During Final Design and Construction.
11	▪ **USRC** to maximize opportunities for recycling or other waste diversion methods in support of the District's vision of an 80% or more solid waste diversion.	Construction- and operational-phases solid waste disposal.	During Final Design and Construction.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	Transportation		
12	▪ **USRC** to require the construction contractor to prepare and implement an *Integrated Construction Transportation Management Plan*. The Plan will define the measures to be implemented by the construction contractor to avoid, minimize, or mitigate impacts from construction on all transportation modes in each phase of construction, along with procedures to enforce, monitor, and evaluate these measures and ensure consistency with District requirements for managing construction impacts: ▪ The Plan will minimize sidewalk and bicycle lane closures, and ensure safe passage for pedestrians and cyclists around the construction site with as little inconvenience, impact, and delay as possible, in accordance with the District's Safe Accommodation law (DCMR 24-3315). ▪ As needed, the plan will identify adequate passenger loading/unloading and layover locations for the DC Circulator during Phases 3 and 4 of construction. ▪ The plan will identify ways to route vehicular traffic around the construction site with as little inconvenience and delays as possible, including avoiding impacts on residential streets. ▪ The plan will identify an adequate interim transfer and screening location for use when the First Street Loading Dock is closed and the new Second Street Loading Dock not yet operational. ▪ The plan will be coordinated with the District Department of Transportation (DDOT), the Washington Metropolitan Area Transit Authority (WMATA), Architect of the Capitol (AOC), and other relevant agencies. ▪ See also Items #13a, 26, 29a, and 41.	All construction-related transportation impacts.	During Final Design and Construction.
13a	▪ **Amtrak** to coordinate with Maryland Area Regional Commuter trains (MARC), Virginia Railway Express (VRE), and USRC to (1) refine construction-period operating plans as appropriate (including further modeling if needed) to ensure that construction-period travel demand is reasonably accommodated and (2) identify feasible solutions to reasonably accommodate operators' layover, storage, and inspection needs during the construction period. Outcomes to be incorporated into the Integrated Construction Transportation Management Plan (see Item #12).	During construction, several Amtrak, MARC, and VRE trains may be cancelled daily.	During Project Engineering & Design.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
13b	▪ **Amtrak** to coordinate with USRC, MARC, and VRE to identify opportunities to avoid service cancellation as much as possible and identify reasonable travel alternatives for passengers affected by construction-period service adjustments.		During Construction.
14a	▪ **USRC** to fund a new Union Station WMATA Station Access and Capacity Study.	Increased passenger volumes at the WUS WMATA Station.	During Project Engineering & Design.
14b	▪ **USRC** to contribute to improvements identified in the study (see Item #14a) that have not been addressed by the Concourse Modernization Project or by WMATA by the time of implementation.		During Final Design and Construction.
15a	▪ **USRC**, in coordination with DDOT, to engage with WMATA about the determination of the Preferred Alternative for a new core line in the context of the Blue/Orange/Silver Capacity & Reliability Study.	Increase in passenger volumes and capacity issues on WMATA Red Line.	During Project Engineering & Design.
15b	▪ **USRC** to coordinate with WMATA during the engineering and design phase of the Project to work on maintaining compatibility between the Project and a potential construction of a new Metrorail tunnel and station as an outcome of the Blue/Orange/Silver Capacity & Reliability study.		
16	▪ **USRC** to develop and implement, with WMATA, construction approaches that minimize delays or stoppages on the Red Line.	Need for schedule adjustments or temporary stoppage on the Red Line during Phase 4 of construction.	During Final Design and Construction.
17a	▪ **USRC** to develop, with DDOT, options for temporary access to WUS DC Streetcar station during construction and take steps with the District State Safety Office to address issues that may affect Streetcar certification.	Construction activities may block direct access from DC Streetcar station to WUS facilities.	During Final Design and Construction.
17b	▪ **USRC** to implement any changes to public access required, subject to DDOT approval, and provide safe accommodations for pedestrians in accordance with the District's Safe Accommodation law.		During Construction.
18a	▪ **USRC** to develop a *Bus Facility Operations Plan* in coordination with the bus carriers using the facility, DDOT, and the Mayor's Office of Special Events. The private air rights developer will be given the opportunity to comment on the draft plan. At a minimum, the plan will address: ▪ Approach to gate management, including use of zones and patterns to improve wayfinding and operations; ▪ Technology used to implement management approach;	Impacts to the operation of the bus facility.	During Project Engineering & Design.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	▪ Management of special events in the District to minimize impacts to core operations and adjacent streets, including the streets of the private air rights development; ▪ Management of peak intercity periods; ▪ Management and allocation of revenues, costs, and slip fees to balance operational and maintenance needs and bus industry economics; ▪ Safety and security systems planning; and ▪ Exclusion of non-reserved, non-paying bus service from the facility.		
18b	▪ **USRC** to coordinate with the bus carriers on the design of the future facility to facilitate connections and provide amenities for bus passengers, including bus slip design in light of the operators' need to back up and turn safely and serve passengers with mobility challenges. ▪ As part of the design, **USRC** to consider accommodating infrastructure supporting zero-emission vehicles, which may include accommodations for electric/zero emission commercial or alternative fuel vehicles.		During Project Engineering & Design.
18c	▪ **USRC** to regularly evaluate trends in bus demand at WUS and in the District to identify future refinements to operations planning or design.		During Operation.
19	▪ **USRC** to confirm that hop-on/hop-off sightseeing bus operations can be accommodated in the middle lanes in front of WUS as part of the Performance Monitoring Plan (see Item #28a). If they cannot be accommodated, USRC to coordinate with DDOT to identify a nearby location for these operations.	Accommodation of hop-on/hop-off buses at the front of WUS.	During Project Engineering & Design.
20	▪ **USRC** to accommodate Gallaudet University shuttle on the H Street Deck level/train hall curbside.	Loss of space for Gallaudet University shuttle.	During Operation.
21	▪ **USRC** to work with the private air rights developer to build the interim bus facilities as close as possible to an access point to the station and Metrorail, and with the best user amenities achievable; USRC to coordinate with bus carriers in its design.	Unavailability of a permanent bus facility in Phase 4, possibly starting during Phase 3.	During Final Design and Construction.
22a	▪ **USRC** to perform a pedestrian crossing study to identify and recommend to DDOT signal timing adjustments needed to provide sufficient crossing time for pedestrians exiting the front of WUS. ▪ The study also to identify opportunities to provide enhanced pedestrian accommodations at the front of WUS and to work with DDOT to implement such opportunities. ▪ **USRC** to design, permit, and install the agreed-upon upgrades.	Increases in passenger volumes may have a moderate impact on pedestrian crossing and queueing conditions adjacent to WUS.	During Operation.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	▪ **USRC** to coordinate with the National Park Service (NPS), which has jurisdiction on Columbus Plaza, about the agreed-upon improvements, as appropriate.		
22b	▪ **USRC** to design, permit, and install signalization at the intersection of First and G Streets NE, and a raised crosswalk at the H Street Concourse on First and Second Streets NE, subject to warrant study and DDOT review and approval.		During Final Design and Construction.
22c	▪ **USRC** to design, permit, and install pedestrian safety improvements, such as raised crosswalks or Americans with Disabilities Act (ADA) improvements, at Level of Service (LOS) F intersections on North Capitol Street and K Street NE, in coordination with DDOT. ▪ These intersections to be defined based on the analysis presented in the FEIS and confirmed through the Performance Monitoring Plan to be implemented under Item #28a.		During Operation.

23	▪ **USRC,** in coordination with DDOT, to develop strategies for and design, permit, and install upgrades to bicycle facilities as needed to reduce conflicts among bicyclists, pedestrians, and vehicles on First Street NE, between Massachusetts Avenue and M Street NE at the First Street Loading Dock, the entrance to the H Street Concourse, and the ramp to the below-ground bus facility.
	▪ **USRC,** in coordination with DDOT, to incorporate into the design of the new Second Street loading dock measures to minimize as much as possible conflicts between users of the Metropolitan Branch Trail and vehicular traffic in and out of the loading dock.
	▪ **USRC** to coordinate with DDOT to identify, design, permit, and install bicycle facilities or upgrade existing facilities on I (Eye) Street between Fifth and Second Streets NE and on the east side of WUS, between Columbus Circle and F Street NE.
	▪ Upgrades to be considered may include, as appropriate:
	  ▪ New standard or separated bicycle facilities on priority streets;
	  ▪ Conventional bike lanes & intersections to separated facilities;
	  ▪ Floating bus island or modular bus landings within separated bike facilities;
	  ▪ Reconstruction of existing bicycle facilities at sidewalk level; or
	  ▪ Reconstruction of existing bicycle facilities with pre-cast or raised concrete buffer separation.
		Conflicts between bicycles, pedestrians, and vehicles.	During Project Engineering & Design.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
24	▪ **USRC** to develop, with DDOT and in accordance with the District's Safe Accommodation law, appropriate bicycle accommodations and wayfinding plan to direct bicyclists to the Second Street NE shared-use portion of the Metropolitan Branch Trail when the First Street Cycle Track is disrupted. ▪ See also Items #42c and 42d.	Work on First Street NE would disrupt use of the cycle track during parts of the construction period.	During Construction.
25a	▪ **USRC**, in coordination with DDOT and WMATA, to reallocate the middle lanes in front of WUS to be used for transit bus passenger boarding and alighting for Metrobus, Circulator, and hop-on/hop-off routes terminating or passing through the area in front of the station; the middle lanes also to provide layover space for the DC Circulator if possible (see also Item #25f).	Multiple bus lines would experience increased overcrowding and delays.	During Operation.
25b	▪ **USRC**, in coordination with DDOT and WMATA, to relocate bus stops from adjacent streets, including Columbus Circle and E Street, to these middle lanes, based on which services are relocated to the front of WUS. ▪ **USRC** also to evaluate whether context-appropriate bus passenger amenities can be installed in the median serving the middle lanes; USRC also to evaluate whether electric bus charging stations can be installed.		During Project Engineering & Design.
25c	▪ **USRC,** in coordination with DDOT and WMATA, to provide a bus stop on H Street adjacent to, or incorporated into, the north and south station headhouses with shelter, seating, and real-time information displays.		During Project Engineering & Design.
25d	▪ **USRC** in coordination with DDOT and WMATA, to design, permit, and install improved wayfinding, shelters, and other accommodations for major commuter bus stops serving WUS on North Capitol Street. ▪ **USRC** to obtain all DDOT's approval for bus shelters and street furniture, as required (also applicable to all other measures involving bus shelters and street furniture).		During Project Engineering & Design.

25e	▪ **USRC** to coordinate with DDOT and WMATA to identify, study, design, and construct bus priority measures in the vicinity of Union Station, consistent with the District of Columbia's Long Range Transportation Plan, Move DC., within the following corridors:
	  ▪ Massachusetts Avenue between New Jersey Avenue NW and 4th Street NE; and
	  ▪ North Capitol Street between Massachusetts Avenue and New York Avenue.
			During Project Engineering & Design.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
25f	▪ If DC Circulator layover space cannot be provided in the middle lanes in front of WUS (see Item #25a), **URSC** to work with DDOT to identify, design, and install a layover location, including electric bus charging, adjacent to or near WUS.		During Project Engineering & Design.
26	▪ **USRC** to develop a for-hire vehicle operations plan as part of the *Integrated Construction Transportation Management Plan* (see #12 above). The plan to prioritize maintaining safe traffic operations and distributing pick-ups and drop-offs to minimize congestion.	During Phase 4 of the construction period, the west ramp and back ramp would become unavailable, forcing for-hire vehicles to queue on the southeast road and east ramp. This queue could interfere with traffic operations on the deck.	During Final Design and Construction.
27a	▪ **USRC** to ensure that there is sufficient staffing to manage curb activity along USRC-controlled curbsides.	Increased traffic congestion may negatively affect pick-up and drop-off operations.	During Construction & Operation.
27b	▪ **USRC** to coordinate with the District Department of Public Works and the Metropolitan Police Department (MPD) to provide coordinated enforcement of active curb areas along public streets and discourage use of non-designated curb areas.		Post Construction.
27c	▪ **USRC** to coordinate with MPD to provide coordinated enforcement to prevent queues on public roadways.		During Operation.
27d	▪ **USRC** to coordinate with DDOT and the District Department of For-Hire Vehicles (DDFHV) to develop and implement regulatory strategies to reduce excess taxi and Transportation Networking Companies (TNC) pick-up and drop-off activity at WUS; promote shared rides; and avoid adjacent spillovers or excessive congestion, including the creation of a geofenced area that determines specific pick-up locations; incentives; and pricing policies for for-hire vehicles.		Post Construction.
27e	▪ **USRC** to develop, in coordination with DDOT and DDFHV, an advanced vehicle dispatching and dynamic wayfinding strategy to distribute taxis and TNC vehicles within the below-ground facility, from the facility to the front of WUS, and around the site, alongside an internal wayfinding strategy to direct passengers to appropriate curbsides based on traffic and queueing conditions.		During Operation.
27f	▪ **USRC** to monitor through the Performance Monitoring Plan (see Item #28a) future pick-up and drop-off conditions to support the refinement of operational approaches, as needed.		During Operation.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
28a	▪ **USRC**, in coordination with DDOT, to develop and implement a Performance Monitoring Plan (PMP) consistent with DDOT's Comprehensive Transportation Review (CTR) guidelines for Performance Monitoring. Key steps and elements will include (may be refined during Scoping): ▪ PMP Scoping; ▪ PMP Baseline Travel Demand Study (prior to Phase 1 of construction or during the Intermediate Phase, as determined during scoping); ▪ PMP Monitoring Study #1 (one year following end of construction); ▪ PMP Monitoring Study #2 (three years following end of construction); ▪ If needed, PMP Monitoring Study #3 (five years following end of construction); ▪ If needed, PMP Monitoring Study #4 (ten years following end of construction). ▪ The need for Monitoring Studies #3 and 4 to be determined based on achievement of performance metrics results and mitigations completed. ▪ At a minimum, the PMP Baseline Travel Demand Study to include data on (may be refined during Scoping): ▪ Existing peak period (AM, PM, weekend) vehicular trip generation at all publicly accessible WUS entrances; ▪ Existing peak period trip generation at pick-up/drop-off zones at or adjacent to WUS; ▪ Existing peak WUS parking occupancy; ▪ Existing intercity bus vehicle trips using the bus facility; ▪ Existing tour/charter bus vehicle trips using the bus facility; ▪ Existing transit bus and hop-on/hop-off vehicle trips at Columbus Circle; ▪ Union Station Metrorail Station ridership; and ▪ Capital Bikeshare usage. ▪ The PMP Baseline Travel Demand Study to include the intersections anticipated to be adversely impacted by the Project in the FEIS as well as other intersections within a half-mile of WUS determined to warrant inclusion during the Scoping step. ▪ PMP Monitoring Studies to include performance targets or thresholds for data collection for the following metrics (may be refined during Scoping): ▪ Increases in peak period vehicular trip generation at station access points; ▪ Increases in pick-up/drop-off activity in designated zones; ▪ Increases in Metrorail ridership; ▪ Peak parking occupancy;	Increases in traffic volumes would result in increases in delay and queueing at multiple intersections.	During Project Engineering & Design, Construction, and Operation.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	▪ Intercity bus vehicle trips using the 39-slip facility; ▪ Tour/charter bus vehicle trips using the 39-slip facility; ▪ Days tour/charter buses and number of vehicle trips using the 15-space deck-level area; ▪ Days intercity buses and number of vehicle trips using the 15-space deck-level area; ▪ Transit and hop-on/hop-off bus vehicle trips using the center lanes in front of WUS; and ▪ Traffic analysis metrics, including volume/capacity ratio, LOS, delays, and queue increases. ▪ Specific mitigations strategies to be agreed upon between USRC and DDOT based on the result of the monitoring and whether targets or thresholds have been exceeded by a pre-determined amount. Strategies may include measures to incentivize the use of non-auto modes to travel to or from WUS as well as improvements at specific intersections, including, for instance: ▪ Turning movement restrictions; ▪ Alternative signal phasing; ▪ Signal timing adjustments and optimization; ▪ Geometry modifications or travel lanes reconfiguration; ▪ Traffic control device improvements, including modifications to existing traffic signals or new traffic signals where warranted; ▪ Pedestrian crossing safety treatments, including markings, signs, beacons, or raised crossings; ▪ Sidewalk widening or enhancement; and ▪ On-street parking restrictions. ▪ **USRC** to be responsible for the design, permitting, and installation of the agreed-upon improvements, subject to DDOT approvals. ▪ Items #28c through 28g below to be reviewed and refined, as needed, based on the results of the PMP.		
28b	▪ **USRC** to coordinate with the U.S. Government Publishing Office (GPO) to open up currently closed sections of First Street and G Street NW to public access and to fund costs associated with this opening to meet GPO requirements and requirements for public access.		During Project Engineering & Design.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
28c	▪ **USRC** to perform a signal and mobility study of the portion of the Study Area encompassing Study Intersections 13 (North Capitol Street/Massachusetts Avenue), 19 (North Capitol Street/E Street), 20 (Louisiana Avenue/D Street NW), and 21 (Louisiana Avenue/North Capitol Street) to identify how changes to signalization could improve operations. ▪ **USRC**, in coordination with DDOT, to install study-identified improvements and support DDOT signalization changes.		During Project Engineering & Design, Construction, and Operation.
28d	▪ **USRC** to coordinate with the private air rights developer on strategies for traffic distribution and circulation to improve traffic conditions on H Street, as needed and possible. ▪ **USRC**, in coordination with the private air rights developer, to design and install wayfinding and other measures to improve traffic distribution on H Street.		During Project Engineering & Design, Construction, and Operation.
28e	▪ **USRC** to participate in DDOT's mobility study for the North Capitol Street corridor to understand how Project and DDOT policies and strategies could reduce congestion along the North Capitol Street corridor. USRC to provide technical support and information on future WUS operations to inform the study's recommendations.		During Project Engineering & Design.
28f	▪ **USRC** to advance facility design that implements internal wayfinding prioritizing transit access and balancing pick-up and drop-off demand across different locations based on congestion; this wayfinding to be provided through static and variable signage.		During Project Engineering & Design.
28g	▪ **USRC**, in coordination with DDOT, to develop external wayfinding to reduce turn pressures on congested intersections, including, as appropriate, static and variable signage on the Center Leg Freeway to direct traffic to appropriate locations. USRC to design, permit, and install the agreed-upon wayfinding.		During Project Engineering & Design, Construction, and Operation.
28h	▪ **USRC** to allot sufficient resources to implement identified mitigations.		During Project Engineering & Design, Construction, and Operation.
28i	▪ On a case-by-case basis, **USRC**, in coordination with DDOT, to look for opportunities within each traffic mitigation approach to inform and involve the Section 106 PA Signatories and relevant Consulting Parties on a case-by-case basis: see also Item #41.		During Project Engineering & Design, Construction, and Operation.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
29a	▪ **USRC** to incorporate a Truck Traffic Plan into the *Integrated Construction Transportation Management Plan* (see #12) that identifies ways to avoid impacts of truck traffic on residential neighborhoods. The Truck Traffic Plan to be coordinated with DDOT. Affected Advisory Neighborhood Commissions (ANCs) to be given an opportunity to comment on it. The Truck Traffic Plan to be consistent with District commercial vehicle regulations and oversize permitting requirements and make use of DDOT routing tool, as needed.[517] ▪ See also Items #39a and 39b.	During excavation, up to 120 daily construction trucks would enter and exit the site.	During Final Design and Construction.
29b	▪ **USRC** to coordinate with **Amtrak** to evaluate and maximize to the extent practicable the use of work trains instead of dump trucks to haul away excavation spoil during construction. This approach would substantially eliminate the work truck traffic associated with excavation. Typical construction truck traffic is to be addressed by the Truck Traffic Plan (see Item #29a).		During Final Design and Construction.
30	▪ **USRC** to coordinate with DDOT and the new owner, transferee, or lessee of the Federal air rights to follow required transportation demand management practices to reduce traffic activity associated with the development of the Federal air rights through the CTR process.	Potential Federal air rights development would generate additional vehicular activity.	Post Construction.
Air Quality			
31a	▪ **USRC** to ensure that Project design places ventilation fans at least 30 feet from the nearest operable windows, louvers, or doors and emergency generators at least 30 feet from the nearest building or on a rooftop.	Operational-phase air pollutant emissions.	During Project Engineering & Design.
31b	▪ **USRC** to coordinate with rail operators to minimize diesel locomotive idling in order to reduce Mobile Source Air Toxics (MSAT) emissions. ▪ **USRC** to ensure that signs promoting awareness of the District's anti-idling laws are posted in the below-ground facility and the bus facility.		During Construction and Operation.

[517] DDOT. *Commercial Vehicles.* Accessed from https://ddot.dc.gov/service/commercial-vehicles. Accessed on March 11, 2023.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
32a	▪ **USRC** to require the construction contractor to implement measures to reduce pollutant emissions, including but not limited to dust suppression; idling restrictions; use of zero-emissions equipment and Ultra Low Sulfur Diesel (ULSD) fuel; proper maintenance of all motor vehicles, machinery, and equipment; and fitting of equipment with mufflers or other regulatory-required emissions control devices.	Construction-related air pollutant emissions.	During Construction.
32b	▪ **USRC** to require the construction contractor to limit non-road engine idling to 3 minutes in compliance with District anti-idling law in all phases of construction, and place idling restriction signs on the premises. Drivers and equipment operators to be trained accordingly.		During Construction.
32c	▪ **USRC** to require the construction contractor to fit all diesel-fuel construction equipment with after-engine emission controls; use ULSD fuel for all off-road construction vehicles; use nonroad diesel equipment rated 50 horsepower or greater to meet U.S. Environmental Protection Agency (EPA)'s Tier 4 emission limits or retrofitted with appropriate emission reduction equipment. Emission reduction equipment potentially to include EPA-verified or California Air Resource Board-verified diesel oxidation catalysts or diesel particulate filters.		During Construction.
32d	▪ **USRC** to require the construction contractor to implement measures to protect local residents, visitors, passengers, and passers-by from off-site exposure to dust and debris. Appropriate methods of dust control to be determined according to the surfaces concerned (roadways or disturbed areas) and include, as applicable: application of water during ground-disturbing activities; stone surfacing of construction roads; seeding of areas of exposed or stock-piled soils; wheel washing; and regular sweeping of paved roadways. Recycling construction waste and demolition materials may also reduce dust emissions		During Construction.
32e	▪ During construction in or immediately adjacent to the historic station building (demolition of the Claytor Concourse, column removal), **USRC** to require the construction contractor to set up airtight walls or partitions around the construction areas as needed to eliminate the risk of train engine exhaust fumes or dust drifting into the indoor areas accessible to the public or station employees.		During Construction.
Greenhouse Gas Emissions and Resilience			
33	▪ **USRC** to prepare a *Life Cycle Assessment* of total greenhouse gas (GHG) emissions associated with the Project (embodied emissions).	Potential net emissions of GHG.	During Final Design and Construction.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	▪ **USRC** to use the *Life Cycle Assessment* to inform future decisions regarding the type of materials used and their sourcing so that associated GHG emissions are minimized to the extent practicable. ▪ To the extent practicable, **USRC** to use low GHG emissions materials for the Project.		

34	▪ **USRC** to design and operate the Project to achieve compliance with EO 14057, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, Section 205, as applicable, and, wherever possible, to ensure that at least the Federally owned portion of the Project achieves the requirements and standards of Public Buildings Service (PBS)-P100. PBS-P100 provides performance-based standards and prescriptive requirements focused on energy efficiency, carbon neutrality, and practices that protect against climate risks (excluding the historic station building).
	▪ As required by PBS-P100, **USRC** to direct that at least the Federally owned portion of the Project achieve a Leadership in Energy and Environmental Design (LEED) v4 Gold rating within a boundary encompassing all station areas that support typical operations (excluding the historic station building).
	▪ Examples of measures the **USRC** could include in Project design include but are not limited to:
	  ▪ Design and technology features to minimize buckled railroad tracks.
	  ▪ Power supply redundancy and backup generation.
	  ▪ Reduced dependency on centralized power by installing renewable energy systems at WUS, including for instance solar panels.
	  ▪ Shelter facilities to provide shading and natural ventilation for passenger comfort and safety.
	  ▪ Water conservation features (See also *Water Resources and Water Quality* above).
	  ▪ Reflective roofs or green roofs to reduce urban heat island effect.
	  ▪ Appropriate glazing for the train hall so that it can control solar heat gain by season.
	  ▪ Placement of electrical components above ground level to protect them from flash flood events during extreme storm events.
	  ▪ Use of building materials that can withstand inundation or installing flood barriers at openings of below-grade structures that may become vulnerable to flooding.
	  ▪ Dry and wet floodproofing measures for below-grade parking areas.
		Need for greater resilience in the context of climate change.	During Project Engineering & Design.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	Energy Resources		
35a	▪ **USRC** to develop and incorporate Net-Zero Energy strategies into the design of the Project to the greatest extent practicable, including for instance, solar panels.	Energy consumption increases.	During Project Engineering & Design.
35b	▪ **USRC** to incorporate cost-effective energy efficiency technologies in Project design. Examples include but are not limited to programmable and learning thermostats; energy management systems that react to utility price signals and energy demand in the region; and light motion sensors and dimmers.		During Project Engineering & Design.
35c	▪ **USRC** to develop a *Tenant Manual* to help current and future tenants make their operations more sustainable and energy efficient, and reduce overall energy demand.		During Construction.
35d	▪ **USRC** to coordinate with AOC regarding any increase in chill water and steam demand from the expanded station and any revisions to the existing Memorandum of Understanding.		During Project Engineering & Design.
	Land Use, Land Planning, and Property		
36	▪ **USRC** to ensure that the acquisition of the privately owned air rights needed to construct the Project is conducted in accordance with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended.	Need to use approximately 2.9 acres of private air rights for Project elements.	During Project Engineering & Design.
	Noise and Vibration		
37a	▪ **USRC** to require the construction contractor to prepare and implement a *Construction Noise and Vibration Control Plan*. The plan to: ▪ Include detailed predictions of construction noise and vibration levels; requirements for conducting construction noise and vibration monitoring; and, if necessary, detailed approaches to mitigate potential construction-period noise and vibration impacts. ▪ Set acceptable vibrations limits and address the need for a pre-construction crack survey, install crack detection monitors, and conduct vibration monitoring. ▪ Define a process to alert the contractor of any limit exceedances and implement corrective actions. ▪ Contain a public engagement plan specifying measures that will be implemented to inform neighbors and other relevant parties (including as	General construction noise and vibration.	During Final Design and Construction.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	required by the Section 106 Programmatic Agreement [PA]) of anticipated noisy activities, noise or vibration level projections and exceedances, and measures to be taken to remedy these exceedances. ▪ At a minimum, include the following measures, unless equivalent but more Project-or location-specific measures are identified during the preparation of the plan: - Ensuring equipment is properly functioning and equipped with mufflers and other noise-reducing features. - Locating especially noisy equipment as far from sensitive receptors as possible. - Using quieter construction equipment and methods, as feasible. - Using noise control measures along construction paths such as temporary noise barriers, portable enclosures for small equipment (such as jackhammers and concrete saws). - Replacing back up alarms with strobes if and as allowed by Occupational Safety and Health Administration (OSHA) regulations. - Maintaining smooth truck route surfaces within and next to the Project Area. - Establishing and implementing procedures to maintain robust communications with neighbors. ▪ See also Items #38 and 39a.		
37b	▪ If warranted by the projections in the *Construction Noise and Vibration Control Plan*, **USRC** to require the construction contractor to construct a temporary noise wall approximately 12 feet tall along the perimeter of the Project Area where there are no adjacent buildings.		During Construction.
38	▪ **USRC** to require that the *Construction Noise and Vibration Control Plan* (see Item #37a): ▪ Include an assessment of the buildings at risk to determine the appropriate threshold applicable to each based on its type of construction and condition. Such buildings to include at a minimum: Washington Union Station, Railway Express Agency (REA) Building, City Post Office (Postal Museum), and Kaiser Permanente Medical Center. ▪ Define measures to be taken to minimize the risk of damage to the buildings at risk based on these thresholds. As warranted by the assessment and	Risk of structural damage to buildings from construction vibration.	During Final Design and Construction.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	projections in the plan, and as technically feasible, alternative construction methods to be implemented may include, but are not limited to, the following: - Using a hydromill instead of a clam shovel for slurry wall construction when working close to a building. - Using push-in type sheeting equipment rather than vibratory equipment to install sheet-pile walls. - Using sonic drill rigs instead of traditional drill rigs.		
39a	▪ **USRC** to require in the *Construction Noise and Vibration Control Plan* (See Item #37a) that, when there is a choice, construction trucks use those truck routes with the fewest residential receptors. ▪ See also Item #29a.	Annoyance from construction trucks.	During Final Design and Construction.
39b	▪ **USRC** to require that the *Construction Noise and Vibration Control Plan* limit truck speeds or direct trucks to use the travel lanes farthest from receptors on multi-lane roads such as New York Avenue. ▪ See also Item #29a.		During Final Design and Construction.
	Aesthetics and Visual Quality		
40	▪ **USRC** to design the Project with context-compatible architecture and materials, and in a manner sensitive to surrounding structures.	Potential impacts to views around WUS.	During Project Engineering & Design.
	Cultural Resources		
41	▪ **USRC** to implement the mitigation stipulations outlined in the Project's Programmatic Agreement (PA) to resolve the known adverse effects of the Project on historic properties in accordance with 36 CFR § 800.14(b)(1)(ii). The Final PA is available in **Appendix F4** of the FEIS. Measures stipulated in the PA include (the following bullets are brief summaries; refer to the PA for the complete stipulations): ▪ To the extent authorized by law, prior to any transfer of air rights property out of Federal ownership, FRA to include a historic preservation covenant in the transfer instrument to be recorded in the real estate records of the District of Columbia.	Mitigates adverse effects on WUS, WUS Historic Site, REA Building, and potential adverse effects on the City Post Office (Postal Museum). Avoids adverse effects to other historic properties in the Area of Potential Effects.	During Project Engineering, Construction, and Operation.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	▪ USRC, in consultation with the PA Signatories, to develop and comply with one set of Design and Planning Guidelines that are tailored to and guide the future design and review of the Project and the future design and review of the potential development within the Federally owned air rights. ▪ USRC, in consultation with the PA Signatories, to establish and implement a Design Review process to review specified phases of the Project's architectural design. ▪ Prior to 60 percent design or the initiation of any demolition, construction, or ground-disturbing activity, USRC to complete the documentation of the WUS Historic site in accordance with the *Secretary of the Interior's Guidelines for Architectural and Engineering Documentation* for inclusion in the Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER). ▪ USRC, in consultation with the PA Signatories, to prepare and implement an Architectural Salvage Plan to identify and salvage historic materials and elements that contribute to the WUS Historic Site and must be removed to construct the Project. ▪ USRC to interpret the history, evolution, and significance of the WUS Historic Site from its prehistory, its construction, and its continued and future use. In consultation with the PA Signatories and Consulting Parties, USRC to develop and implement an Interpretation Plan that identifies the most appropriate methods for interpretation. ▪ USRC, in coordination with FRA, to prepare a National Register of Historic Places (NRHP) Nomination Form for the WUS Historic Site, based on the Determination of Eligibility Form for the WUS Historic Site finalized in 2019. ▪ USRC, in consultation with the PA Signatories, to prepare and implement a Historic Properties Construction Protection and Signage Plan to protect against, monitor for, and manage construction-related effects on identified historic properties during Project Implementation. ▪ USRC to require the construction contractor to prepare and implement a Construction Noise and Vibration Control Plan that incorporates an assessment of buildings (including historic properties) at risk of structural damage from construction vibration, as identified in the SDEIS and FEIS.		

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	▪ USRC to require the construction contractor to prepare and implement an integrated Construction Transportation Management Plan that aims to provide safe passage for pedestrians, cyclists, and vehicular traffic around a construction site with as little inconvenience, impact, and delay as possible. USRC also to work with DDOT to identify traffic mitigation approaches to address congestion at the most impacted intersections in the transportation study area. ▪ USRC, in consultation with the PA Signatories, to prepare a feasibility study that identifies and evaluates a range of projects to rehabilitate the historic station building. ▪ Prior to 30 percent design or prior to any ground disturbing activities, USRC to complete a Phase IB archaeological identification and survey. If archaeological sites are identified in the Phase IB, prior to any ground-disturbing activities, USRC to consult with the District's State Historic Preservation Officer (SHPO) on the need to complete one or more Phase II survey(s) to evaluate NRHP eligibility of any intact archaeological resources and determine if there is an adverse effect on a historic property. If adverse effects on NRHP-eligible archaeological historic properties are identified, USRC, in consultation with the PA Signatories, to either propose a minimization and/or Phase III recovery plan or commensurate strategy agreed upon by SHPO; or propose a resource-specific Memorandum of Agreement or amendment to the PA to resolve the adverse effects. ▪ If a previously undiscovered archeological or cultural resource that is or could reasonably be a historic property is encountered or a previously known historic property would be affected in an unanticipated manner during construction, USRC to follow the Unanticipated Discovery or Effect to Cultural Resources procedures specified in the PA.		
Parks and Recreation Areas			
42a	▪ **USRC** to coordinate with NPS during construction planning to develop measures to maintain as much as possible access to Columbus Plaza during the construction of the Columbus Circle improvements.	Partial reduction in access to Columbus Plaza and the Metropolitan Branch Trail.	During Final Design and Construction.
42b	▪ **USRC** to prohibit the construction contractor from using Columbus Plaza as a staging area during construction.		During Construction.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
42c	▪ **USRC** to coordinate with the DDOT to plan and maintain alternative routes for users of the Metropolitan Branch Trail when parts of the trail are closed, in accordance with the District's Safe Accommodation law. ▪ See also Item #24.		During Final Design and Construction.
42d	▪ **USRC** to work with DDOT to appropriately advertise construction-related closures of the Metropolitan Branch Trail and establish alternative routes, as needed, in accordance with the District's Safe Accommodation law. ▪ See also Item #24.		During Construction.
	Social and Economic Conditions		
43	▪ **USRC** to identify new funding sources sufficient, at a minimum, to ensure the continued preservation and maintenance of the historic station building.	Loss of WUS revenue from parking.	During Project Engineering & Design, Construction, and Operation.
	Safety and Security		
44	▪ **USRC** to develop and implement a *Safety and Security Operations Plan* that identifies procedures appropriate to the level of passenger activity; evaluates appropriate passenger screening practices; and identifies funding for these purposes.	Safety and security issue associated with increased passenger volumes.	During Project Engineering and Design.
45	▪ **USRC**, in coordination with Federal law enforcement and security agencies, as necessary, to identify security features that the Project design will incorporate, including measures recommended in the Project's Threat and Vulnerability Risk Assessment (TVRA), as appropriate.	Increased risks and threats from increased vehicular volumes.	During Project Engineering and Design.
46	▪ **USRC** to develop a *Construction Safety and Security Plan* for the Project. This plan to include procedures to screen people, equipment, and goods, and to reduce the risk of injury to workers, passengers, and passers-by from construction activities. May also include background checks for contractors and their employees.	Public safety and security threats during construction.	Final Design and Construction.
47	▪ **USRC** to require the construction contractor to ensure that the movement of heavy motorized equipment and trucks in and out of the construction site is through designated access points and designated truck routes only; use flaggers as needed to prevent conflicts between trucks and street traffic; and ensure that construction-related traffic proceed in compliance with applicable speed limitations and other District traffic laws.	Public safety risks from construction traffic.	During Construction.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
48	▪ During column removal work within WUS, **USRC** to require the construction contractor to close off the portions of the historic station building where the column removal work is conducted from the areas remaining accessible to the public or to station or Amtrak employees. Walls and partitions to be sufficient to provide fire protection at least equal to that provided by the existing floor and walls. Only authorized personnel to have access to the area.	Public safety risks from column removal work.	During Construction.
49	▪ **USRC** to ensure that the bus facility and structural deck are designed in accordance with the recommendations of the TVRA and in a manner that minimizes risks to adjacent development.	Potential Risks to WUS from bus facility integrated within the Deck Structure.	During Project Engineering and Design.
50	▪ **FRA** and **USRC** to ensure that any new owner, transferee, or lessee develop a safety and security plan that Amtrak and FRA will review and approve in any sale, transfer, or lease of the Federal air rights.	Indirect impacts of potential Federal air rights development on safety and security.	Post Construction.
Public Health, Elderly and Persons with Disabilities			
51a	▪ **USRC** to require the construction contractor to install temporary walls and partitions to close off the portions of the Retail and Ticketing Concourse where the column removal work is conducted from the areas remaining accessible to the public or to station or Amtrak employees. These walls and partitions are to be sufficient to prevent the fumes from train operations in the tunnel, as well as dust from the demolition or construction work and emissions from construction equipment, from entering these areas. They will also provide adequate shielding from noise.	Construction impacts to transportation and mobility of elderly or persons with disabilities.	During Construction.
51b	▪ **USRC** to ensure that the construction contractor maintains accessibility during construction in compliance with ADA requirements and DDOT's *Pedestrian Safety and Work Zone Standards*, including avoiding or minimizing narrow passages, bottlenecks, or areas otherwise difficult for persons with disabilities or elderly persons with reduced mobility to navigate.		During Construction.
51c	▪ Outside WUS, **USRC** to require the construction contractor to provide protected pedestrian passages along with appropriate signage and compliant with the District's Safe Accommodation law. As appropriate, signs will be clear and concise and designed to communicate information to visually impaired as well as non-visually impaired persons. Where possible, audible direction will be provided. Pedestrian pathways will be kept clear of debris and obstructions, adequately drained, and provide adequate passing spaces. Pedestrian pathways will have		During Construction.

No.	Measure/Project Commitment	Impacts Addressed /Commitment Goal	Timeframe (To Start No Later Than)
	detectable edges or channelizing equipment. Pedestrians will be protected from vehicular traffic with crash-worthy barriers. Barriers will be equipped with reflective material for delineation on the side exposed to traffic.		
51d	▪ **USRC** to require the construction contractor to properly and clearly advertise lane closures, detours, alternative parking access, or use of metal plates to cover temporary trenches across roadways.		During Construction.
51e	▪ **USRC** to require the construction contractor to notify the owners and occupants of the Kaiser Permanente Medical Building of any planned road or sidewalk closures sufficiently in advance to allow them to publicize these disruptions to their patients and customers as appropriate. Temporary entrances or pathways will be clearly marked and advertised. ADA-compliant access to the building will be maintained at all times.		During Construction.
	Environmental Justice		
52	▪ When implementing mitigation measures, **USRC** to incorporate EJ considerations informed by the targeted community outreach effort documented in **Sections 5.17 and 8.8.2** of the FEIS, as appropriate, including information sharing activities.	Impacts on EJ communities.	During Project Engineering & Design, Construction, and Operation.
53	▪ **USRC** to require that, if and when the construction contractor encounters persons in situation of homelessness during staging and construction, the contractor will contact and coordinate with the appropriate authorities and organizations to ensure the displaced persons are given access to assistance services, including opportunities for shelter, and health and mental health care; that they are not deprived of their belongings or otherwise mistreated; and that neither they nor the workers interacting with them are put at risk of harm.	Impacts on people experiencing homelessness.	During Construction.

7.2 Permits and Key Regulatory Processes

Table 7-2 lists the applicable permits and key regulatory processes for the Preferred Alternative. USRC would be responsible for obtaining the necessary permits to construct and operate the Project.

Table 7-2. Permits and Key Regulatory Processes for the Preferred Alternative

No.	Permit
	Natural Ecological Systems
1	▪ DDOT Urban Forestry Division Public Space Tree permit, including compensation, as applicable. Non-hazardous street trees require payment of $200 per inch diameter. Hazardous street trees require planting a new street tree at a 1:1 ratio.
	Water Resources and Water Quality
2	▪ DOEE permit for erosion and sediment control, dewatering, and post-construction storm water management.
3	▪ EPA National Pollutant Discharge Elimination System (NPDES) Construction General Permit ▪ Stormwater Pollution Prevention Plan (SWPP) submission to both DOEE and EPA Region 3 that is in compliance with the requirement of the NPDES permit. ▪ DC Water Temporary Discharge Authorization Permit.
	Solid Waste Disposal and Hazardous Materials
4	▪ Register underground storage tanks covered under 20 District of Columbia Municipal Regulations, Chapter 55
	Transportation
5	▪ DDOT permits governing the use of the public right-of-way and creation of roadway access permits, including: • Public Space Permit – Construction • Public Space Permit – Occupancy • Traffic Control Plan for both Construction and Occupancy permits. • Street and Alley Closure Procedures (Code of the District of Columbia, Title 9, Chapter 2) • Bikeshare location approval ▪ Permits to be obtained through the Transportation Online Permitting System, as applicable.
6	▪ Washington Metropolitan Area Transit Authority (WMATA) permits governing construction and service closure. ▪ Approvals for construction in the WMATA zone of influence in accordance with Joint Development and Adjacent Construction (JDAC).
	Air Quality
7	▪ As required by 20 DCMR, Section 200, obtain permit from DOEE before causing or allowing the construction of a new stationary source of emissions, the modification of an existing stationary source, or the installation or modification of any air pollution control device on a stationary source.

No.	Permit
	▪ Conduct early coordination with the DOEE's Air Quality Division to identify applicable requirements.
	Energy
8	▪ Compliance with 2006 Green Building Act; 2017 District of Columbia Building Codes; 2017 District of Columbia Green Construction Code; 2017 District of Columbia Energy Conservation Code; Green Area Ratio, as applicable. ▪ Green determination request to the District Department of Buildings (DOB) to determine the applicability of green and energy laws in the Green Building Design Process.
	Land Use, Land Planning, and Property
9	▪ DOB building permit.
10	▪ DDOT public space permit – construction and occupancy (see also #5).
11	▪ DDOT fences and retaining walls permit.
12	▪ DDOT sidewalk, curb, and gutter permit.
13	▪ Notification to Federal Aviation Administration of proposed alteration or construction potentially obstructing airspace (Part 77 Notice).
14	▪ Pre-design and programming, schematic design review and approval by the National Capital Planning Commission (NCPC).
15	▪ Concept design review and approval by the Commission of Fine Arts (CFA).
16	▪ Final design and site plan review and approval by NCPC and CFA.
	Aesthetics and Visual Quality
17	▪ Pre-design and programming, schematic design review and approval by NCPC.
18	▪ Concept design review (including perimeter and exterior security elements) and approval by CFA.
19	▪ Final design and site plan review and approval by NCPC, CFA, and the District of Columbia Historic Preservation Office (including perimeter and exterior security elements).
	Noise
20	▪ DOB permit for construction outside Monday-Saturday from 7 AM to 7PM.
	Cultural Resources
21	▪ Compliance with review and consultation requirements defined in the Section 106 PA.
22	▪ Archaeological Resources Protection Act (ARPA) permit if archaeological investigations are conducted.
23	▪ Compliance with the Native American Graves and Repatriation Act of 1990.
	Safety and Security
24	▪ Compliance with safety standards and railroad safety statute administered by FRA.
25	▪ Compliance with Amtrak Safety and Security Regulations, including Amtrak approval for measures addressing the safety of the railroad operations and station activity.

No.	Permit
26	▪ Compliance with Federal regulations concerning rail transportation administered by the Transportation Security Administration.
27	▪ Compliance with the applicable safety and security requirements of WMATA's Joint Development and Adjacent Construction process.
28	▪ District Public Space Committee review and approval of new road connections to the H Street Bridge as well as items in public right-of-way that do not fall within the regular permitting process such as over-height retaining walls; over-height fences; and security bollards.
Public Health, Safety, and Persons with Disabilities	
29	▪ Compliance with ADA requirements and U.S. Access Board's ADA Accessibility Guidelines adopted by the U.S. Department of Transportation in 2006.
30	▪ Compliance with the District of Columbia Building Code, which includes requirements for accessibility and indoor environmental quality, and is enforced through the building permitting process administered DOB.

8 Public Involvement and Agency Coordination

Agency and public involvement is an integral part of the National Environmental Policy Act (NEPA) process. Accordingly, the Federal Railroad Administration (FRA) provided numerous opportunities for open, collaborative, and meaningful participation for the Washington Union Station (WUS) Expansion Project (Project). This chapter summarizes the public and agency involvement activities for the Project's NEPA and Section 106 of the National Historic Preservation Act (NHPA) reviews.

8.1 Scoping

Scoping is an essential part of NEPA and begins when the Notice of Intent (NOI) is issued. The scoping process is an open way to determine the range of alternatives and resources analyzed in an Environmental Impact Statement (EIS). It provides agencies and the public with an early opportunity to comment on the Project. Although not required under NEPA, Federal agencies may choose to conduct pre-scoping to share and gather information with the public and agencies before the NOI is issued.

8.1.1 Pre-Scoping

On August 27, 2015, FRA convened an agency pre-scoping meeting to share and gather information on agency coordination for the Project. At the Pre-scoping Meeting, FRA provided background information on the Project, described the Project and FRA's responsibilities, and solicited comments on the future level of participation by each agency. Twelve agencies participated in this meeting:

- Commission of Fine Arts (CFA)
- Federal Transit Administration (FTA)
- General Services Administration (GSA)
- Government Publishing Office (GPO)
- National Capital Planning Commission (NCPC)
- National Park Service (NPS)
- District of Columbia Office of Planning (DCOP)
- District of Columbia State Historic Preservation Officer (SHPO)
- District Department of Transportation (DDOT)
- Maryland Transit Authority (MTA)/ Maryland Area Regional Commuter (MARC) Trains
- Virginia Department of Rail and Public Transportation (DRPT)
- Washington Metropolitan Area Transit Authority (WMATA)

8.1.2 Scoping

FRA published a NOI to prepare an EIS for the Project in the *Federal Register* on November 4, 2015 (Appendix A1, *Notice of Intent to Prepare an Environmental Impact Statement*, of the Draft Environmental Impact Statement [DEIS]).[518] The NOI announced the beginning of the environmental review and Scoping process for the Project. The NOI also provided the draft Purpose and Need for the Project; information about the Scoping process; methods to comment on the Project; and the public Project website address. The Scoping process ended on January 4, 2016.

8.1.2.1 Interagency Scoping Meeting

On November 17, 2015, from 1:00 PM to 4:00 PM at the WUS Columbus Club, FRA held an Interagency Scoping Meeting for Federal, state, and local agency representatives. Listed below are the invited agencies; an asterisk marks agencies that sent representatives to the meeting:

- Advisory Council on Historic Preservation (ACHP)
- Architect of the Capitol (AOC)*
- CFA*
- DCOP*
- DDOT*
- District Department of Energy and Environment (DOEE)
- District Department of For-Hire Vehicles (DDFHV)
- District of Columbia Bicycle Advisory Council (DCBAC)
- Federal Highway Administration (FHWA)*
- FTA*
- GPO*
- GSA*
- Maryland Department of Transportation (MDOT)
- Metropolitan Washington Council of Governments (MWCOG)*
- MTA
- NCPC*
- NPS*
- Securities and Exchange Commission
- SHPO*
- Transportation Security Administration (TSA)*
- DRPT
- Virginia Railway Express (VRE)*
- WMATA*

At the Agency Scoping meeting, FRA presented a Project overview, background information, and an outline of next steps in the NEPA process. FRA encouraged agency representatives to ask questions and participate in the discussion throughout the meeting. FRA asked agency representatives to submit written comments by January 4, 2016.

[518] Available at https://railroads.dot.gov/sites/fra.dot.gov/files/2020-06/Appendix%20A1_Notice%20of%20Intent_WUSDEIS-pdfa.pdf.

DEIS Appendix A2, *Washington Union Station Expansion Project Scoping Report* contains materials from the Agency Scoping Meeting, including the presentation.[519] Appendix D of the Scoping Report (DEIS Appendix A2) provides a complete list of the agency comments. FRA received Scoping comment letters from the following agencies: NPS, GPO, DDOT, NCPC, DCBAC, DCOP, and WMATA.

8.1.2.2 Public Scoping

FRA held a Public Scoping Meeting (Public Meeting #1) from 4:00 PM to 8:00 PM on December 7, 2015, in the Presidential Room at WUS. FRA's Project Website (www.wusstationexpansion.com) and local newspapers (*The Hill Rag*, *Washington Express*, *Washington City Paper*, and *Washington Informer*) advertised the meeting.

One hundred and eighty-five members of the public, representatives from local governments, and non-governmental organizations (NGOs) participated in the Public Scoping meeting. FRA provided a brief presentation about the Project at 4:30 PM and at 7:00 PM. Representatives of FRA, National Railroad Passenger Corporation (Amtrak), and Union Station Redevelopment Corporation (USRC) teams were available to discuss concerns or questions with the attendees. Information provided at the meeting included the Project's draft Purpose and Need statement, current WUS functions, and environmental considerations for the DEIS. Materials shared at the meeting included Project Area map displays, and handouts.

FRA invited the public to submit comments in person at the Scoping meeting, by mail to FRA, by email through the Project website (info@wusstationexpansion.com), or by using a comment form on the Project website. FRA received 99 comment forms, letters, and post-it note comments at the Public Scoping meeting. FRA also received 64 public comment letters and emails during the Scoping Period (comments are listed in Appendix D of DEIS Appendix A2, *Washington Union Station Project Scoping Report*). Most comments received were related to WUS design, particularly multimodal and pedestrian access and connectivity. FRA considered all public scoping comments in preparing the DEIS.

8.2 Cooperating and Participating Agencies

FRA invited agencies to participate in the Project's NEPA process as a Cooperating Agency or as an Interested Agency. Agencies were engaged during specific points of the Project to inform decision making throughout the NEPA process. Agency coordination included identification and engagement of agencies to maintain open communications, as well as informing permitting and resource agencies about the NEPA process, and regulations applicable to the Project. FRA considered agency comments received in preparing the DEIS, Supplemental DEIS (SDEIS) and Final EIS (FEIS).

[519] Available at https://railroads.dot.gov/sites/fra.dot.gov/files/2020-07/Appendix%20A2_Scoping%20Report_WUS%20DEIS_1.pdf.

8.2.1 Cooperating Agencies

Cooperating Agencies have particular expertise and jurisdiction with respect to any environmental issue, including agencies for which the Project would require NEPA action. In agreement with FRA through a Memorandum of Understanding, these agencies have specific roles and responsibilities regarding the NEPA process and review pre-publication drafts of the DEIS, SDEIS, and FEIS. The Cooperating Agencies provided input for defining the Project's Purpose and Need, the range of reasonable alternatives to be considered, and the methodologies and level of detail required in the alternatives analysis. They also identified issues that could substantially delay or prevent obtaining needed permits and approvals, participated in coordination meetings, and recommended mitigation measures.

At the initiation of the NEPA process for the Project, the Cooperating Agencies included FTA, NPS, DDOT, and NCPC. On January 24, 2023, NPS indicated that they would no longer serve as a Cooperating Agency due to the lack of Project impacts on lands under their jurisdiction. Information on the Cooperating Agencies is provided in **Section 1.8***, Introduction, Cooperating Agencies*.

8.2.2 Participating Agencies

NEPA regulations of the Council on Environmental Quality (CEQ) define participating agencies as a Federal, State, Tribal, or local agency participating in an environmental review or authorization of an action (40 CFR § 1508.1). Several Federal, state, and local agencies expressed interest in participating in the NEPA process and the Project due to special interest. These participating agencies and organizations include AOC, CFA, Office of Deputy Mayor for Planning and Economic Development (DMPED), DCOP, SHPO, FHWA, GPO, GSA, MDOT, MTA, MWCOG, TSA, VRE, DRPT, and WMATA.

8.3 Agency Coordination through DEIS Publication

8.3.1 Cooperating Agencies

During the Preparation of the DEIS, FRA held multiple meetings with the Cooperating Agencies. Key meetings are summarized in **Table 8-1**. In addition, during that time, FRA convened monthly regular meetings with DDOT to coordinate on the Project; as needed, these meetings included representatives of the H Street Bridge and DC Streetcar projects.

Table 8-1. Key Meetings with Cooperating Agencies Through DEIS Publication

Cooperating Agency Meeting Purpose	Date
Cooperating Agency Meeting #1: Discuss Cooperating Agency roles and needs, EIS and Section 106 process, design process, and environmental studies.	April 22, 2016
Cooperating Agency Meeting #2: Discuss Cooperating Agency memorandum of understanding, Purpose and Need, and concept screening criteria.	June 30, 2016

Cooperating Agency Meeting Purpose	Date
Cooperating Agency Meeting #3: Discuss Purpose and Need, No Action Alternative approach, and refinement of preliminary screening.	October 13, 2016
Cooperating Agency Meeting #4: Review of preliminary concepts, screening of preliminary concepts, retained concept refinement, preliminary alternatives.	May 10, 2017
Cooperating Agency Meeting #5: Combined Cooperating Agency and Interested Agency meeting. Alternatives refinement and preview of public meeting materials	March 12, 2018
Cooperating Agency Meetings #6: Review of Administrative DEIS (1/2)	February 3, 2020
Cooperating Agency Meetings #7: Review of Administrative DEIS (2/2)	February 14, 2020

8.3.2 Participating Agencies

During the preparation of the DEIS, FRA also invited participating agencies to attend coordination meetings at major Project milestones. FRA also met one-on-one with a participating agency (e.g., CFA) or with smaller groups of participating agencies to address agency-specific or technical issues (e.g., parking working groups). Key meetings with participating agencies are listed in **Table 8-2**.

Table 8-2. Key Meetings with Participating Agencies Through DEIS Publication

Participating Agency Meeting and Agenda	Date
Participating Agency Meeting #1: EIS Scoping (same meeting as public Scoping)	November 17, 2015
Participating Agency Meeting #2: Preview of March 30th public meeting materials	March 30, 2016
Participating Agency Meeting #3: Preliminary concepts and concept screening	October 19, 2016
DC Agency Meeting #1:[1] Project overview, constructability, zoning, Alternatives, parking, bus operations, multimodal planning, noise and vibration, H Street Bridge	February 13, 2018
DC Agency Meeting #2:[1] Project visual effects	February 26, 2018
Participating Agency Meeting #4: Combined Cooperating Agency and Interested Agency Meeting. Alternatives refinement	March 12, 2018
Meeting with SHPO and CFA: Further discussion of track alignment and platform plan and alternatives with regard to the train hall	April 18, 2018
Meeting with SHPO and CFA: Follow-on to the previous meeting	August 21, 2018
Information Presentation to CFA: Presentation of Alternative A-C to the Commission	November 21, 2019
Conceptual Review Submission to NCPC: Presentation of Alternative A-C to the Commission	January 9, 2020

Participating Agency Meeting and Agenda	Date
Parking Working Group Kick-off Meeting[2]: Initiation of discussion on parking program following NCPC Conceptual Review Hearing	February 7, 2020
Parking Working Group Meeting #1: Discussion of parking program	February 14, 2020
Parking Working Group Meeting #2: Discussion of parking program	February 28, 2020
Parking Working Group Meeting #3: Discussion of parking program	March 6, 2020

1. DC agency meetings include representatives of DCOP (including SHPO) and DDOT.
2. The Parking Working Group consisted of representatives of DDOT, DCOP, and NCPC along with FRA and the Project Proponents.

8.4 Public Involvement through DEIS Publication

There is public interest in the Project given its size and complexity and because residential and business neighborhoods and areas surround WUS. While preparing the DEIS, FRA and the Project Proponents encouraged meaningful participation of WUS users; nearby residents, businesses, and institutions; and other interested organizations. Flyers, fact sheets, brochures, press releases, electronic newsletters, e-blast notifications, paid advertisements, and website updates complemented public meetings.

8.4.1 Public Meetings

Several public meetings (informal open houses and presentations) were held at WUS during the preparation of the DEIS. The first public meeting was the Scoping meeting described **in Section 8.1.2**, *Public Scoping*, above. Other public meetings held prior to the publication of the DEIS are listed in **Table 8-3** and summarized below. Additionally, information on the Project, the Project Area, Project Purpose and Need, concept screening, public meetings, historic properties, frequently asked questions, and helpful links to coordinating organizations were provided on the Project's website (www.wusstationexpansion.com).

Table 8-3. Public Meetings Held Between Scoping and DEIS Publication

Public Meeting Purpose	Number of Attendees	Date
Public Meeting #2: Informational forum on the Project	224	March 30, 2016
Public Meeting #3: Presentation of preliminary Project concepts and screening	118	October 19, 2016
Public Meeting #4: Presentation of the Alternatives	68	March 22, 2018

8.4.1.1 Public Meeting #2, Public Forum

FRA hosted an informational forum on Wednesday, March 30, 2016, from 4:00 PM to 8:00 PM to inform the public about the Project. The forum was held in WUS's Presidential Room in an open house format to encourage discussion between the public and Project Team (FRA, USRC, and Amtrak). Topics of discussion included the Project design concepts, the historic station, concourse, tracks and platforms,

bus terminal, taxi, parking, and bicycle and pedestrian access. The forum was attended by 224 members of the public, including community representatives, interested stakeholders, and residents.

8.4.1.2 Public Meeting #3, Preliminary Project Concepts and Screening

FRA hosted the Project's third public meeting and open house on October 19, 2016, from 4:00 PM to 8:00 PM in WUS's Presidential Room. The Project Team was available for discussion of the Project and to answer questions. Formal presentations were given at 4:30 PM and 6:30 PM.

This meeting was an opportunity for the public to review and provide feedback on the preliminary Project concepts and screening. The preliminary concepts illustrated potential Project elements that shape the layout of the Project. The Project elements included realigned and improved tracks and platforms; new public concourses; a train hall; and new parking, bus, and taxi facilities. FRA sought public comments to help determine the Project concepts that should advance for further study in the DEIS.

8.4.1.3 Public Meeting #4, Presentation of Alternatives

FRA hosted the WUS Expansion Project's fourth Public Meeting and open house on March 22, 2018, from 4:00 PM to 8:00 PM in WUS's Presidential Room. The Project Team was available for discussion of the Project and to answer questions. Formal presentations were given at 4:30 PM and 6:30 PM.

At this meeting, FRA presented the DEIS Alternatives and requested public input to help inform the evaluation of Alternatives in the DEIS. FRA also shared information on the concept screening and refinement process, preliminary alternatives, and alternatives refinement process.

8.4.2 Key Constituents for the Engagement Process

During the preparation of the DEIS, the Project Proponents and FRA formed a Community Communications Committee (CCC) to be a representative cross-section of community constituencies near the Project with a recognized and established organizational structure for communicating with their members and a high-level interest in the Project because of potential impacts. The CCC was comprised of representatives from the following organizations:

- American Bus Association
- Amtrak
- Advisory Neighborhood Commission (ANC) 6
- Capitol Hill Business Improvement District (BID)
- Capitol Hill Restoration Society (CHRS)
- Consortium for Citizens with Disabilities
- DC Council Member Ward 6
- DDOT
- Destination DC
- Downton BID
- H Street Main Street
- MTA for MARC users
- National Association of Railroad Passengers
- NoMA BID
- Transportation for America (T4)
- USRC
- VRE users
- WMATA users

CCC meetings were convened prior to public meetings. The CCC previewed public meeting presentations, provided suggestions on clarity and comprehension, and provided advanced notice about questions and issues likely to be of highest interest at the public meetings. CCC members were also enlisted to share information about the public meetings with their constituents. CCC meetings were not designed for providing and receiving formal comments regarding the NEPA process. CCC meeting dates and purposes are listed in **Table 8-4**.

Table 8-4. CCC Meetings Through DEIS Publication

Public Meeting Purpose	Date
CCC Meeting #1: Initial meeting of the CCC	February 11, 2016
CCC Meeting #2: Review materials for Public Meeting #2	March 21, 2016
CCC Meeting #3: Review materials for Public Meeting #3	October 6, 2016
CCC Meeting #4: Review materials for Public Meeting #4	March 13, 2018

8.4.3 Additional Pre-DEIS Public and Stakeholder Engagement

In late 2018, FRA and the Project Proponents initiated a public and stakeholder engagement action plan to help ensure that the public and stakeholders remained aware of the Project and NEPA process. This effort was conducted through briefings or by participating in various events, as listed in **Table 8-5**. Depending on the event, representatives of FRA or the Project Proponents were available to talk about the Project or answer questions. Additionally, USRC arranged for an informational fact sheet about the Project to be deposited at various locations, including Gallaudet University, 27 District public libraries, and Georgetown Law School. USRC distributed the same fact sheet at the Capitol Hill and NoMA BID rest stops during Bike-to-Work Day (May 9, 2019).

Table 8-5. Additional Pre-DEIS Public and Stakeholder Engagement

Focused Public and Stakeholder Engagement Purpose	Date
Briefing with Mayor's Office and Ward 6 Council Staff: Project progress, opportunities, and challenges	August 2018
Briefing with Mayor's Office and Ward 6 Council Staff: Project progress, opportunities, and challenges	October 2018
Briefing with NoMa BID, Downtown BID, H Street Main Street (HSMS), and Gallaudet University: Project progress, opportunities, and challenges	August 2018
Briefing with NoMa BID, Downtown BID, HSMS, and Gallaudet University: Project progress, opportunities, and challenges	October 2018
Capitol Hill North and NoMa Office Hours: Opportunity for interested citizens to have detailed one-on-one conversations with FRA and Project proponents	October 2018
Walking Tours with Washington, DC Chapter of the Conference of Minority Transportation Officials	September 11, 2018
History of Union Station Tour	September 15, 2018 November 3, 2018 December 1, 2018

Focused Public and Stakeholder Engagement Purpose	Date
	June 15, 2019 July 20, 2019 October 26, 2019 November 23, 2019 February 15, 2020
Eastern Market: Opportunity for interested citizens to have detailed one-on-one conversations with FRA and Project proponents	September 16, 2018 October 7, 2018 November 3, 2018
Barracks Row Festival	September 29, 2018
HSMS Festival	October 13, 2018
NOMA BID PumpkinPalooza	October 24, 2018
Hill-o-Ween at Eastern Market	October 26, 2018
Women's Transportation Seminar Coffee	November 1, 2018
MARC PM Rush Push	November 7, 2018
International Tour	November 13, 2018
Union Station Holiday Extravaganza and Tree Lighting	November 29, 2018
Wunder Garten Winterfest Holiday Market	December 7, 2018
Winter Wonder in NoMa	December 13, 2018
Meeting with ANC 6C Transportation Committee	January 3, 2019
VRE Engagement	January 25, 2019
Capitol Hill Restoration Society Meeting	February 27, 2019
International Visitor Leadership Program Union Station Tour	March 19, 2019
Young Professionals in Transportation Union Station Tour	March 19, 2019
Earth Day event	April 22, 2019
Transportation Research Forum Union Station Tour	May 4, 2019
Eno Center for Transportation Future Leaders Development Conference Union Station Tours	June 4, 2019
Transportation Research Board Union Station Tour	July 16, 2019
MARC ridership event	July 18, 2019
DC Public Library Go Digital Fair	September 5, 2019
World Bank Transportation Tour	October 2, 2019
FEMA Underwriting Department Tour	November 20, 2019
Atlas Obscura Tour	December 1, 2019 January 12, 2020 February 9, 2020 March 8, 2020
University of Pennsylvania's Weitzman School of Design	February 10, 2020
Meeting with ANC 6C	March 5, 2020

8.5 DEIS Publication and Public Hearing

8.5.1 Notice of Availability and Commenting Period Extension

FRA released the DEIS for public review on June 4, 2020. The U.S. Environmental Protection Agency (EPA) published a Notice of Availability of the DEIS in the *Federal Register* on June 12, 2020, with a 45-day commenting period ending on July 27, 2020 (as required under 40 CFR § 1506.11). Prior to the expiration of the commenting period, FRA received requests for an extension by at least 60 days from multiple stakeholders, including Congresswoman Eleanor Holmes Norton; District Council Members Charles Allen (Ward 6) and Phil Mendelson (Chair); ANC 6C; DCOP and DDOT; and several non-governmental organizations. In response to these requests, FRA extended the commenting period through September 28, 2020, for a total of 116 days since public release. EPA published an amended notice to that effect in the *Federal Register* on July 2, 2020.

8.5.2 Distribution

FRA advertised the availability of the DEIS through the following methods:

- Printed advertisements in the *Washington Post*, *Hill Rag*, *El Tiempo*, and *Washington Informer*.
- Digital advertisements in the *Washington City Paper* and *Washington Informer*.
- Direct email to the Project mailing list (959 recipients, including organizations).
- Direct email to 33 Federal, District, and regional agencies.

Publication materials included a toll-free telephone number to call for information on how to view or obtain a copy of the DEIS. A limited number of individual copies were available upon request.

All notices included information on how to participate in the DEIS public hearing (see **Section 8.5.4**, *Public Hearing*, below). The email to agencies additionally contained an invitation to an interagency meeting (see **Section 8.5.3**, *Interagency Meeting*, below). A direct email announcing the commenting period extension and reminding recipients of the upcoming public hearing was sent to the Project mailing list on June 25, 2020, followed by a second public hearing reminder on July 13, 2020.

Publication materials also included information on ways to submit comments in addition to attending the public hearing. These included an email address and a mailing address.

8.5.3 Cooperating and Participating Agency Meeting

The emailed notice to cooperating and participating agencies included an invitation to an interagency meeting to present the findings of the DEIS, answer questions and provide clarifications to inform the agencies' comments.

The interagency meeting was held virtually on June 26, 2020, from 10:00 AM to 11:00 AM. Representatives of the following agencies attended:

- ACHP
- AOC
- CFA
- DCOP
- DDOT
- DOEE
- EPA
- FPS
- FTA
- GSA
- MTA
- NCPC
- NPS
- TSA
- VRE
- WMATA

Topics of discussion included the features of the Project; the format of the public hearing; and construction impacts.

8.5.4 Public Hearing on the DEIS

On July 14, 2020, FRA held a public hearing to receive comments on the DEIS from the public. Due to the coronavirus disease 2019 (COVID-19) public health emergency, and consistent with the Centers for Disease Control and Prevention's guidance regarding large events and mass gatherings, the hearing was held virtually in a telephone townhall format using a toll-free number. Two sessions were held: one from 11:00 AM to 1:00 PM; and another from 6:00 PM to 8:00 PM. In addition to commenting publicly, people could also leave a private voice-mail message.

Because the public hearing format did not allow for a formal presentation, FRA uploaded a pre-recorded presentation to the Project's website one week before the hearing. The presentation provided an overview of the Project and the DEIS findings.

A total of 23 people made comments at the hearing, either on their own behalf or as representatives of agencies or organizations.

8.6 Summary of Public and Agency Comments on the DEIS

8.6.1 DEIS Commenters

During the comment period for the DEIS (which extended from June 4 through September 28, 2020, for a total of 116 days),[520] FRA received a total of 144 comments on the DEIS, including 121 written comments and 23 verbal comments made during the July 14 public hearing.

[520] Note that the official comment period on the DEIS began with the issuance of the NOA on June 12, 2020 (see Section 8.5.1). However, the DEIS was made available to the public on June 4, 2020.

Sixteen elected bodies or officials and agencies, as well as 43 public and private organizations, submitted comments as shown in **Table 8-6** and **Table 8-7**, respectively. A total of 84 private individuals submitted comments as well.[521]

Table 8-6. Federal, District, State, and Regional Agencies that Commented on the DEIS

Federal Agencies	District Government	District, State, or Regional Agencies
■ ACHP ■ AOC ■ Department of the Interior ■ EPA ■ NCPC	■ DC Mayor ■ DC Council ■ Council Member Charles Allen ■ ANC 2A08 ■ ANC 6C	■ DCOP ■ DDOT ■ DOEE ■ DC Multimodal Accessibility and Advisory Council ■ SHPO ■ DRPT ■ WMATA

Table 8-7. Private and Public Organizations that Commented on the DEIS

Non-Profit Organizations and Advocacy Groups	Businesses and Interest Groups	Other
■ Adventure Cycling Association ■ Arm in Arm (DC) ■ Capital Trails Coalition ■ Capitol Hill Restoration Society ■ Coalition for Smarter Growth ■ Committee of 100 on the Federal City ■ DC Sustainable Transportation ■ Federal City Council ■ Greater Washington Partnership ■ National Railway Historical Society, Washington DC Chapter ■ National Trust for Historic Preservation	■ American Bus Association ■ Akridge ■ Arlington Chamber of Commerce ■ Baltimore-DC Metro Building Trades ■ The BWI Business Partnership, Inc. ■ Clark Enterprises ■ Coach USA/Megabus ■ Coalition for the Northeast Corridor ■ DC Trails ■ Economic Alliance of Greater Baltimore ■ Global Travel Alliance ■ Greyhound	■ Amtrak

[521] The number of commenters does not match exactly the number of comments, as some commenters submitted more than one comment and some comments were submitted collectively by several commenters.

Non-Profit Organizations and Advocacy Groups	Businesses and Interest Groups	Other
■ Rail Passengers Association ■ Rail Passengers Maryland ■ Safe Streets for Hill East and Near Northeast ■ Southern Environmental Law Center ■ Travelers Aid International at Washington Dulles International Airport ■ Virginia Bicycling Federation ■ Virginia Transit Association ■ Virginians for High Speed Rail ■ Washington Area Bicyclist Association	■ The Guild of Professional Tour Guides of Washington, DC ■ JBG SMITH ■ KGP Design Studio ■ Montgomery County Chamber of Commerce ■ Nations Classroom ■ NoMA BID ■ Northern Virginia Chamber of Commerce ■ Scholastica Travel Inc ■ Uber ■ WorldStrides	

8.6.2 Summary of Comments on the DEIS

The comments received on the DEIS addressed a moderately wide range of issues. This summary highlights and summarizes key themes that appear in multiple comments or are of special note. All comments are in **Appendix F3a**, *Comments on the DEIS*; itemized responses are provided in **Appendix F3c**, *Responses to Comments on the DEIS and SDEIS*. Some of the comments received specifically pertained to the Section 106 Draft Assessment of Effects included in the DEIS. FRA considered and addressed such comments in the context of the Section 106 consultation process.

8.6.2.1 Parking Capacity and Location

Multiple commenters, including the Council of the District of Columbia, DCOP, DDOT, NCPC, ANC 6C, ANC 2A, Amtrak, Federal City Council, the NoMA BID, and numerous private organizations and individuals requested reconsideration of the parking program. They commented that Alternative A-C provided excess parking capacity. They requested that FRA reconsider the Project's parking program to further reduce parking or eliminate it altogether. Most commenters advocating for a smaller parking program also opposed placing parking above ground or recommended placing it below ground.

8.6.2.2 Bus Facility Capacity and Location

Comments on the bus program were divided; some stakeholders requested more bus slips and others called for a smaller facility. Multiple comments from intercity bus operators (including Megabus, Greyhound Lines Inc., DC Trails, and the American Bus Association) as well as from tour guides and operators (including the Guild of Professional Tour Guides of Washington, DC and 45 professional tour

guides or tour operators) expressed dissatisfaction with the proposed reduction in the number of bus slips relative to the existing bus facility. They also opposed the proposed dynamic management approach and associated 30-minute dwelling time limit. [522]

Other commenters emphasized the need to "right-size" the facility, suggesting a smaller facility. These commenters included organizations such as Federal City Council, DC Sustainable Transportation, and the Coalition for Smarter Growth, among others. NCPC noted that several stakeholders questioned the size of the bus program and recommended that FRA further evaluate the facility's size. A few commenters suggested that the bus facility should be located below deck or underground.

Commenters such as DCOP and several bus operators noted that in Alternative A-C, buses exiting the proposed facility could not make a left turn onto H Street NE westbound. They asked that this limitation be reconsidered.

8.6.2.3 Pick-up and Drop-off

Several commenters (including, among others, ANC 6C, DCOP and NCPC) advocated for a centralized pick-up and drop-off facility in addition to the locations already provided in Alternative A-C. Many of these commenters recommended that this centralized facility be located underground.

8.6.2.4 Urban Design

Often in conjunction with requests to reduce or eliminate parking and relocate the proposed parking and bus facilities, many commenters indicated that Alternative A-C did not make the most of the urban design opportunities offered by the Project. For instance, DCOP commented that the Project should create a "great place" and found that the long-term vision proposed for WUS did not match the significant opportunity offered by such a critical location. NCPC emphasized the need for an overarching vision and high-quality urban design that would maximize accessibility; prioritize pedestrian and bicycle movements and effective pick-ups and drop-offs; and avoid conflicts with vehicles. NCPC also noted that placing parking below ground could address many of the Project's urban design challenges.

ANC 6C commented that the Project must have as one of its priorities the creation of active, inviting public spaces that enhance quality of life for those visiting the station and surrounding area and for those living there. The District Councilmember for Ward 6 pointed out that any design must create a station that is better integrated with the rest of the neighborhood and serves the place-making role that this national gateway to the District represents. Similarly, the Federal City Council and other organizations recommended planning for a vibrant urban place. Akridge, the owner of the private air rights above part of the rail terminal, proposed what it described as an "inspirational plan" and a "vision" to modify Alternative A-C.

[522] The 2020 DEIS referred to this approach as "active management". The currently preferred industry terminology is "dynamic management", which is the term used in this document.

8.6.2.5 Pedestrian and Bicycle Access

The Virginia Bicycle Federation, Adventure Cycling Association, and the Washington Area Bicyclist Association, among others, commented on pedestrian and bicycle access. Additionally, concerns about multimodal access, including pedestrian and bicycle access, were reflected in many parking-related comments, as commenters emphasized that better multimodal access would reduce the need for automobile parking. Concerns about pedestrian and bicycle access were also commonly associated with comments related to urban design. Commenters considered improved pedestrian and bicycle connectivity an important part of a successful design.

Specific recommendations included providing protected bike lanes or paths; secured and covered bike parking; secured lockers for storing valuables; and more Capital Bikeshare stations. Other commenters recommended the construction of a greenway on the First Street side of the station.

DCOP noted the importance of pedestrian-friendly connections between the H Street Bridge and the train hall. The agency also noted the importance of enhanced pedestrian and bicycle connections between the multiple entrances of the station and the surrounding neighborhood's sidewalk and bicycle networks. NCPC commented that the Project must maximize pedestrian and bicycle access in addition to promoting other transit access modes, including bus and rail.

8.6.2.6 Rail Operations

The Virginia Department of Rail and Public Transportation, the Committee of 100, and several NGOs and businesses commenting collectively stated that the Project should account for through operations not only for the MARC Penn Line, but for all VRE and MARC trains. The Committee of 100 stated that the Project did not adequately plan for future rail operations, including high-speed trains to the south of the District.

8.6.2.7 Technical Comments

Comments from several agencies focused on the contents of the DEIS pertaining to the agencies' areas of jurisdiction or expertise rather than on the Project elements. Such comments included line-by-line itemized comments that cannot be readily summarized. Some key themes are below:

- EPA commented on the relationship of the Project to the private air-rights development; the impacts from construction, including contaminated soils and dewatering; noise and vibration mitigation; environmental justice; and air quality. EPA also noted public concerns pertaining to parking, pick-up and drop-off, and the bus facility, and recommended that FRA continue to work closely with stakeholders and the public on project design and construction.
- DOI noted the lack of impacts on National Park Service properties.
- DDOT commented on the transportation impact analysis and proposed mitigations.
- DCOP's comments focused on the description of the Project in the DEIS and on issues pertaining to land use, zoning, cultural and visual resources, and socioeconomic conditions.

- DOEE commented on resilience, energy efficiency, greenhouse gas emissions, air quality, and stormwater management.
- WMATA commented on impacts to, and mitigation for, circulation within the Union Station Metro station; projected capacity exceedances; construction impacts on Red Line operations; and the need to account for Blue-Orange-Silver study in the Project's design.

Technical comments were incorporated in this FEIS, as appropriate. In response to the comments on the size and location of the various Project elements.

8.7 Coordination During Post-DEIS NEPA Pause

Following review of the agency and public comments received on the DEIS, FRA decided to pause the EIS process on October 5, 2020, to allow the Project Proponents to further coordinate with stakeholders regarding the Project elements. The Project Proponents developed Alternative F, a new Preferred Alternative, and engaged with agencies and stakeholders on elements of this alternative. This engagement included meetings with elected officials and agencies, including DMPED, DDOT; DCOP; SHPO; CFA; and NCPC. The Project Proponents also coordinated with the private air rights developer and the bus carriers that use the WUS bus facility. Key agency meetings are listed in **Table 8-8**.

Table 8-8. Agency Meetings and Presentations During the NEPA Pause

Meeting	Date
District Government Briefing: Discussed planning elements of the Preferred Alternative with DDOT and DCOP.	May 20, 2021
District Government Briefing: Discussed planning elements of the Preferred Alternative with DDOT, DCOP, and DMPED.	June 23, 2021
DDOT Ramps and Traffic Coordination: Discussed planning for below-ground access ramps and traffic circulation with DDOT.	June 25, 2021
DDOT Ramps and Pick-up/Drop-off Coordination: Discussed planning for below-ground access ramps and pick-up/drop-off approach with DDOT.	July 20, 2021
District Bus Coordination: Discussed bus planning issues with DDOT and DCOP.	July 21, 2021
District Transportation Coordination: Met regularly with DDOT to discuss bus, ramp, pick-up/drop-off, and other multimodal planning items.	October 2021 – January 2022
NCPC Staff Briefing: Updated NCPC staff on the Preferred Alternative and Project status.	February 9, 2022
SHPO Briefing: Updated SHPO on the Preferred Alternative and Project status.	February 14, 2022

Meeting	Date
CFA Staff Briefing: Updated CFA staff on the Preferred Alternative and Project status.	February 18, 2022
Cooperating Agency Meeting #8: Discuss restart of the NEPA process, SDEIS approach, and schedule ahead.	March 4, 2022
NCPC, CFA, and SHPO Staff Briefing: Shared advanced design elements of the Preferred Alternative for regulatory agency feedback.	May 10, 2022
CFA Information Hearing: Presented to Commission and received feedback from Commissioners regarding the Preferred Alternative.	June 16, 2022
NCPC Concept Review: Presented to Commission and received Concept Approval for the Preferred Alternative.	July 7, 2022

At the conclusion of this process, the Project Proponents presented the refinements made to the Project to both CFA and NCPC to advance the regulatory approvals associated with those agencies. These briefings are included in **Table 8-8**.

8.8 Coordination and Public Engagement During the Preparation of the SDEIS

8.8.1 Cooperating Agency Coordination

FRA identified a new Preferred Alternative (Alternative F) and resumed the NEPA process on July 11, 2022. FRA held meetings with the Cooperating Agencies during SDEIS development, as summarized in **Table 8-9**.

Table 8-9. Cooperating Agency Meetings During the Preparation of the SDEIS

Meeting	Date
DDOT Transportation Coordination: Discuss transportation impacts and mitigations in the SDEIS.	January-May 2023
FTA Pre-SDEIS Briefing: Provide update of Project status and process for FTA staff.	January 18, 2023
NCPC Pre-SDEIS Briefing: Provide overview of SDEIS findings in NCPC's areas of regulatory interest.	February 9, 2023

FRA provided an administrative draft of the SDEIS to the Cooperating Agencies on February 1, 2023, and requested comments by March 7, 2023. All three agencies provided comments. FRA incorporated the Cooperating Agencies' comments in the SDEIS, as appropriate.

8.8.2 Public Involvement During Preparation of the SDEIS

Preliminary traffic analysis for Alternative F indicated a concentration of adverse impacts on neighborhoods and communities west of WUS along the North Capitol Street corridor. FRA initiated a focused outreach effort to meaningfully engage these Environmental Justice (EJ) communities near WUS. The various steps taken as part of this outreach effort are summarized in the following sections.

8.8.2.1 Focused Community Communications Committee

On February 17, 2023, FRA sent a letter inviting the persons listed in **Table 8-10**, or a person of their choosing, to participate in CCC sessions focused on environmental justice issues and geographically centered on neighborhoods west of WUS. The role of the focused CCC members was to help share information on the Project with their respective constituencies and obtain meaningful feedback from the community. All invited organizations accepted.

Table 8-10. Members of the EJ-Focused CCC

Title/Role	Organization
Commissioner	ANC6E03
Commissioner	ANC6E04
Commissioner	ANC6E06
Commissioner	ANC6E09
Community Outreach and Relations Specialist Ward 6	Executive Office of the Mayor
Interim Director	District of Columbia Department of Housing and Community Development (DHCD)
Director of Operations	Mayor's Office of Community Relations and Services (MOCRS)
Community Outreach and Relations Specialist Ward 6	MOCRS
Church Liaison	Bible Way Church
Chief of Operations	Mount Carmel Baptist Church
Library Manager	Northwest One Library
Commuter Programs Manager	Gallaudet University

Interviews

In February 2023, members of the Project Team conducted initial interviews with CCC representatives from the following organizations: ANC6E04 and ANC6E09; DHCD; MOCRS; MOCRS; Northwest One Library; and Gallaudet University. The following themes emerged from these interviews:

- There is a large senior population in this area who will need more face-to-face interaction to reach them.

- There are populations that may be skeptical about the Project and whether their concerns will actually be taken into consideration.
- People they spoke to seemed enthusiastic about participating and helping to share project information.

February 28, 2023, CCC Meeting

The February 17, 2023, letter invited EJ-focused CCC members to attend a meeting on February 28, 2023, at USRC offices. The purpose of this meeting was to update the CCC members on the Project and the SDEIS process and to provide more information on the EJ outreach plan and the CCC's role. The meeting consisted of a presentation that summarized the history of the Project; described the Preferred Alternative; and identified traffic impacts as impacts of EJ concern. There was a question-and-answer session after the presentation.

CCC representatives from the following organizations attended: ANC6E09; DHCD; and MOCRS. A representative of USRC also attended.[523] Topics raised during the post-presentation discussion included bicycle and pedestrian safety; noise pollution; and visual impacts. Participants were invited to identify opportunities to reach their respective constituents.

March 28, 2023, CCC Meeting

On March 28, 2023, members of the Project Team held a meeting of the EJ-focused CCC online. CCC representatives from the following organizations attended: ANC6E04; Bible Way Church; ANC6E09; DHCD; Northwest One Library; Executive Office of the Mayor; ANC6E03; MOCRS; and MOCRS.

The meeting started with a presentation that provided an overview of the methodology and initial findings of the EJ analysis conducted for the SDEIS. The presentation was followed by a discussion during which the following topics were raised: impacts from construction dust; impacts on traffic congestion of roads with reduced capacity because of bicycle lanes and road diets; and need for regularly providing the community with information on the Project.

March 14, 2023, ANC6E Meeting

Members of the Project Team presented an abridged version of the February 28 presentation at the regular meeting of ANC6E on March 14, 2023. The abridged presentation focused on the history of the Project to date; the Preferred Alternative; potential EJ impacts; and next steps in the outreach effort. There was a question-and-answer session after the presentation. The questions included whether the Project has a residential component; how much parking, if any, would be provided; whether bicycle parking would be provided; and whether provisions were being made to have sufficient seating areas in the new train hall.

[523] The limited attendance was attributable to several CCC members being sick combined with last-minute competing events in the District. To mitigate this risk, in consultation with CCC members, the next meeting was conducted in virtual format.

April 25, 2023, CCC Meeting

On April 25, 2023, members of the Project Team held a meeting of the EJ-focused CCC online. CCC representatives from the following organizations attended: ANC6E09 and Northwest One Library.

The meeting agenda focused on the upcoming publication of the SDEIS, with an overview of the SDEIS contents and information on the means through which comments could be submitted. Attendees were asked to circulate this information among their community contacts. Attendees provided suggestions for circulating information on the publication of the SDEIS, including reaching out to the managers of apartment buildings.

May 16, 2023, CCC Meeting

On May 16, 2023, members of the Project Team held a meeting of the EJ-focused CCC online. Representatives from the following organizations attended: Bible Way Church, ANC6E09, and MOCRS. The meeting agenda was similar to the agenda of the April 25 meeting.

8.8.3 Pop-up Events

Table 8-11 lists the pop-up events conducted during the preparation of the SDEIS. The pop-up events consisted of a table and graphic displays staffed by Project Team members. Their purpose was to provide information on the Project and receive feedback on community concerns and address questions about the Project and how it could impact the daily lives and commutes of local residents.

Table 8-11. Summary of Pop-up Events

Date	Location	Key Topics Raised
February 25, 2023	Northwest One Library	• What would happen to the parking garage and rental cars • The benefits of redevelopment • Adding more retail at WUS • Creating more jobs in the area • Concerns about effect of traffic on commutes • Cost of transit
March 18, 2023	Ward 6 Community Clean up Event	• Awareness of the Project • Interest in learning more about the Project • Concerns about road closures and impacts to pedestrian routes
March 23, 2023	Northwest One Library	• Concern about need to reroute traffic • Job opportunities • Use of solar panels in the new parts of the station • Energy friendliness of the expanded station • Elevators and accessibility • Avoiding construction during rush hour

Date	Location	Key Topics Raised
		• Minimizing construction duration • Sharing information with the community
March 25, 2023	Union Station in Bloom Event at WUS	• Impacts of the Project on WUS visitors • Project duration and cost • Impacts to bicycle and pedestrian circulation, and disruption of train service during construction • Construction noise and dust • Need for public seating at WUS • Cost of parking • Preservation of the historic building • Need for new access to WUS at H Street and improved access at the front of the station • Importance of sharing information • Traffic congestion around WUS
March 31, 2023	2M Apartments (2M Street NE)	• Car circulation, especially in front of WUS • Retail and entertainment at the expanded station • Construction traffic and vehicular access during construction • Need to advertise any detours during construction • Loss of street parking • Bicycle safety • Increased rents • Impacts on cultural resources
April 2, 2023	NoMA in Bloom Event (Alethia Tanner Park)	• Safety aspects of the Project • Impacts on transit bus routes • Timely notification of changing schedules, Metrorail delays, and road closures • Desire for indoor secure bicycle parking in WUS • Impact on Metrorail • Concern about street closures • Question on type of retail and green space activities and community programming that will be available • Need for information on neighborhood benefits, including additional housing • Question on what will happen to bicycle lanes and pedestrian walkways during and after construction • Impact on the Metropolitan Branch Trail • Need to share route changes information to nearby housing areas and apartments

Date	Location	Key Topics Raised
		• Need to create protected walk and bicycle alternative routes during construction • Need to avoid impacts on transit bus routes and Metrorail • Need to reduce speed through the construction area • Creating better traffic patterns around New York Avenue and Florida Avenue intersection • Making sure detour wayfinding is easy • Concern that parking access is decreasing • Need for more retail stores in WUS • Maintaining ADA accessibility during construction • Concern about long wait times during peak hours while trains or Metrorail service are impacted • Minimizing internal space for private car parking and maximizing public access • Request for more seating in and around WUS • Need to maintain access to Kaiser Permanente Medical Building
April 12, 2023	Hayes Senior Wellness Center	• Long-term benefits • Access to Streetcar during construction • Length and phasing of construction • Access to nearby transportation and services such as Metrorail and the Post Office • Impacts to transit buses
April 20, 2023	Northwest One Library	• Local hiring for construction Project duration
April 22, 2023	Mount Vernon Triangle Farmers Market	• Safety aspects of the Project • Modernization of WUS • Awareness of the Project • Project Public Meetings
April 28, 2023	Plaza West Apartments (307 K St NW)	• Length and phasing of construction • Retail and entertainment at the expanded station
May 3, 2023	Rise at Temple Courts (2 L St NW)	• Project duration and cost • Awareness of the Project
May 10, 2023	Hayes Senior Wellness Center	• Project Public Meetings • Concerns about effect on traffic • Project duration

Date	Location	Key Topics Raised
June 3, 2023	Community Engagement Resource and Safety Event with Commissioner Blackson	• Modernization of WUS • Local hiring for construction • Project Public Meetings

8.9 SDEIS Publication and Public Hearing

8.9.1 Notice of Availability

FRA released the DEIS for public review on May 12, 2023. EPA published a Notice of Availability of the SDEIS in the *Federal Register* on May 19, 2023, with a 48-day comment period ending on July 6, 2023 (40 CFR § 1506.11 requires a 45-day minimum comment period), for a total comment period of 55 days.

8.9.2 Distribution

FRA provided the SDEIS for review via the Project's website on May 12, 2023. Printed copies were also available for review at the following public libraries (all in the District):

- Northwest One Neighborhood Library, 155 L Street NW
- Northeast Neighborhood Library, 330 7th Street NE
- Martin Luther King Jr. Memorial Library, 901 G Street NW

A limited number of individual copies were available upon request.

FRA advertised the availability of the SDEIS through the following methods:

- Printed advertisements in the *Washington Post*, *Hill Rag*, *El Tiempo*, and *Washington Informer*.
- Digital advertisements in the *Hill Rag*, *Washington City Paper*, and *Washington Informer*.
- Direct email to the Project mailing list (1,207 recipients, including organizations).

Additionally, on the recommendation of the EJ-focused CCC (See **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*), flyers advertising the SDEIS and the public hearings were placed at the following locations near WUS:

- 2M apartments, 2 M Street NE
- Rise at Temple Courts, 2 L Street NW
- Southern Baptist Church, 134 L Street NW
- Mt. Airy Baptist Church, 1100 North Capitol Street NW
- Northwest One Library, 155 L Street NW
- Bible Way Church, 1100 New Jersey Avenue NW

- Unique Rehabilitation & Health Center, 901 First Street NW
- Mt. Caramel Baptist Church, 901 3rd Street NW
- Judiciary House, 461 H Street NW
- Grace Fellowship Baptist Church, 319 T Street NE
- Trinidad Rec Center, 1310 Childress Street NE
- Gonzaga High School, 19 I Street NW
- Plaza west apartments, 307 K Street NW,
- Harry Thomas Recreation Center, 1743 Lincoln Road NE
- St Martins School, 62 T Street NE
- Joseph Cole Recreation Center, 1299 Neal Street NE

- Gallaudet University, 800 Florida Avenue NE
- Model Secondary School, 800 Florida Avenue NE
- Hayes Senior Wellness Center, 500 K Street NE
- Ebenezers Coffeehouse, 201 F Street NE
- Sherwood Recreation Center, 640 10th Street NE
- Little Free Library, 1010 8th Street NE
- Gallaudet University, Chapel Hall 102
- Kendall Elementary School, 800 Florida Avenue NE
- Little Free Library, 401 G Street NE
- Northeast Neighborhood Library, 330 7th Street NE
- Little Free Library, 702 7th Street NE
- New Life Early Learning Center, 814 L Street NE

All notices included information on how to participate in one of the SDEIS public hearings on June 27 and 28, 2023 (see **Section 8.9.3**, *Public Hearings*, below). A direct email with a reminder of the upcoming hearings was sent to the Project mailing list on June 14, 2023.

Publication materials also included information on ways to submit comments in addition to attending the public hearings. These included a toll-free number to leave a voicemail, an email address, and a mailing address.

8.9.3 Public Hearings on the SDEIS

8.9.3.1 In-Person Public Hearing

FRA held an in-person public hearing on Tuesday June 27, 2023, from 5:00 PM to 8:00 PM at Union Station (East Hall), in response to a recommendation of the EJ-focused CCC (See **Section 8.8.2**, *Public Involvement During Preparation of the SDEIS*) to facilitate participation by local residents.

The in-person hearing consisted of an open house (5:00 to 6:00 PM) during which FRA and members of the Project Team were available to informally share information and answer questions, followed by a presentation (6:00 PM to 6:30 PM) and oral comments (6:30 PM to 8:00 PM). Participants were also able to provide oral comments to a court reporter or leave a written comments using a comment form. An American Sign Language (ASL) interpreter provided interpretation of the presentation and comments for hearing impaired persons.

Thirty people attended the hearing. Seven people made public verbal comments; two left written comments.

8.9.3.2 Virtual Public Hearing

FRA also conducted a virtual public hearing on Wednesday June 28, 2023, from 5:00 PM to 7:00 PM. The virtual hearing consisted of the same presentation as given at the in-person hearing (5:00 PM to 5:30 PM) followed by verbal comments (5:30 PM to 7:00 PM). The virtual public hearing used the Zoom Webinar platform. Attendees could access the meeting from a computer or from a local phone number. Twenty-six members of the public attended the meeting. Three people provided comments.

8.10 Summary of Public and Agency Comments on the SDEIS

8.10.1 SDEIS Commenters

During the comment period for the SDEIS (from May 12 through July 6, 2023), FRA received a total of 53 comments, including 43 written comments and ten verbal comments made during the June 27 and June 28, 2023, public hearings.

Eleven elected bodies or officials and agencies, as well as 18 public and private organizations submitted comments on the SDEIS. They are shown in **Table 8-12** and **Table 8-13**, respectively. A total of 22 private individuals submitted comments as well.[524]

Table 8-12. Federal, District, State, and Regional Agencies that Commented on the SDEIS

Federal Agencies	District Government	District or State Agencies
■ Department of the Interior ■ Federal Transit Administration ■ U.S. Environmental Protection Agency ■ National Capital Planning Commission	■ Council Member Charles Allen ■ Advisory Neighborhood Commissioner 6C	■ District of Columbia Office of Planning ■ District Department of Transportation ■ Maryland Transit Administration ■ VRE ■ WMATA

Table 8-13. Private and Public Organizations that Commented on the SDEIS

Non-Profit Organizations and Advocacy Groups	Businesses and Interest Groups	Other
■ Committee of 100 on the Federal City ■ Capital Trails Coalition	■ American Bus Association ■ Akridge	■ Amtrak

[524] The number of commenters does not match exactly the number of comments, as some commenters submitted more than one comment and some comments were submitted collectively by several commenters.

Non-Profit Organizations and Advocacy Groups	Businesses and Interest Groups	Other
■ Capitol Hill Restoration Society ■ Coalition for Smarter Growth ■ Federal City Council ■ Greater Washington Partnership ■ National Railway Historical Society, Washington DC Chapter ■ Virginia Transit Association ■ Virginians for High Speed Rail ■ National Trust for Historic Preservation ■ Washington Area Bicyclist Association	■ Coach USA ■ Greyhound ■ NoMA BID ■ Washington Union Station Intercity Bus Coalition (Best Bus; Coash USA; Greyhound; Peter Pan Bus Lines, Washington Deluxe, Megabus.com, Flixbus)	

8.10.2 Summary of Comments on the SDEIS

The comments received on the SDEIS addressed a moderately wide range of issues. This summary highlights and summarizes key themes that appeared in multiple comments or were of special note. All comments are in **Appendix F3b**, *Comments on the SDEIS*; itemized responses are provided in **Appendix F3c**, *Responses to Comments on the DEIS and SDEIS*. Some of the comments specifically pertained to Section 106 matters and the Draft Programmatic Agreement (PA) included in the SDEIS. FRA considered and addressed such comments in the context of the Section 106 consultation process (the consultation process is described in **Section 8.11**, *National Historic Preservation Act Section 106 Consultation*).

8.10.2.1 Support/Non-Support for the Preferred Alternative

Many commenters expressed their support for the Preferred Alternative or noted their appreciation of the work FRA and the Project Proponents did to address the comments received on the Action Alternatives presented in the 2020 DEIS through the development of the Preferred Alternative. These commenters included NCPC, District Council Member Charles Allen, ANC 6C, the Maryland Transit Association, Amtrak, Capital Trails Coalition, Federal City Council, Greater Washington Partnership, and NoMA BID, among others. Commenters singled out the reduction of the parking program and the below-ground parking and pick-up/drop-off facility as particularly positive changes made relative to the 2020 DEIS Action Alternatives.

A few commenters were critical of the reduction in the number of parking spaces, and some commenters were critical of the Project as a whole, either because they deemed it unneeded or because they found it unworthy of the existing historic station building.

8.10.2.2 Bus Facility

Best Bus, Coach USA/Megabus, Greyhound, Peter Pan, Washington Deluxe, and Flix Bus) commenting under the umbrella of Washington Union Station Intercity Bus Coalition expressed qualified support for the bus facility included in the Preferred Alternative. The Bus Coalition noted their support was dependent on acceptable operational conditions being defined as part of future planning for the facility, such as the use of a zone approach to facility management and certain commitments regarding the availability of the 15 overflow spaces on the deck level.

The American Bus Association commented that in its view, the facility was not sufficient to meet the future growth of bus travel to the District. They requested that the current number of bus slips be maintained. They also noted that adequate accommodation of bus travel has significant environmental and equity benefits.

Other commenters expressed concerns about the use of the deck level pick-up and drop-off area for overflow bus loading and unloading, asking that it be as limited as possible.

8.10.2.3 Implementation and Future Coordination

Along with support for the Project and the Preferred Alternative, several commenters noted that the Project Sponsor (USRC) should be given the means to successively implement the Project and associated mitigation actions. Such commenters included Amtrak, District Council Member Charles Allen, the Coalition for Smarter Growth, NoMA BID, and Federal City Council. Some commenters also expressed concern about USRC's long-term revenue, given the reduction in the amount of parking at WUS included in the Preferred Alternative.

Rail and transit agencies such as VRE and MTA noted that while the Project adequately meets their future operational needs, it will be important for the Project Sponsor to continue coordinating with them to ensure that growing operations are appropriately accommodated throughout the construction period. WMATA also noted the need to coordinate with regard to the potential impacts of constructing the Project on its existing and future facilities at Union Station, including a potential future tunnel and station. Several commenters also noted that community outreach should continue through the future stages of the Project.

8.10.2.4 Construction Impacts

Commenters such as EPA, DDOT, ANC 6C recommended that removal of construction spoils by work train be given serious consideration to minimize construction-related impacts on air quality and traffic. The anticipated 13-year construction duration was also a concern of these and other commenters, including Akridge, with requests that effort be made to minimize it and its associated impacts.

8.10.2.5 Rail Operations

While commenters such as VRE and MTA found that the Project would adequately accommodate their future operational needs, other commenters questioned the soundness of the rail planning underlying

the project. These included the Committee of 100, which stated that the Project fails to plan for future development in rail travel, including high-speed trains south of the District. A commenter also questioned whether planning that predates the COVID-19 pandemic should still be considered a valid basis for the Project, given what they understand to be the long-term changes in travel and commuting patterns caused by the pandemic.

8.10.2.6 Air Rights Development

Several commenters stated that an integrated development of the private and Federal air rights above the rail terminal is essential, in their view, to successful urban design north of WUS. Such commenters include, in addition to Akridge, Council Member Charles Allen, ANC 6C, the Coalition Smarter Growth, and Federal City Council.

8.10.2.7 Pedestrian and Bicycle Access

Commenters such as DDOT, and the Washington Area Bicycle Association and the Capital Trails Coalition, provided recommendation on minimizing impacts on bicycle access during construction and facilitating access to WUS in the long term through specific physical and safety improvements or upgrades to existing bicycle routes and wayfinding, new bicycle lanes, and provision of bicycle parking at WUS.

8.10.2.8 NEPA Process

The Committee of 100 and the National Trust for Historic Preservation requested that FRA issue the FEIS separately from the Record of Decision, with a review period between the two documents to afford the public an opportunity to comment on the FEIS.

The Federal Transit Administration requested to adopt the Final Environmental Impact Statement (FEIS) pursuant to 23 U.S.C. § 139(c)(5) and to jointly issue the FEIS/ROD with FRA.

8.10.2.9 Technical Comments

Several commenters provided feedback on the contents of the SDEIS, including line-by-line itemized comments that cannot be readily summarized. Some key themes are below:

- EPA commented on the greenhouse gas impact analysis, environmental justice analysis, and proposed mitigation measures.
- DOI commented on the Supplemental Draft Section 4(f) Evaluation. The Department stated that it agrees that there is no feasible and prudent alternative to the “use” of land outlined in the Evaluation. DOI concurred with the findings of least harm analysis and determined that most of the unavoidable impacts will be mitigated the Section 106 PA.
- DDOT focused on transportation elements and impacts, with specific requests for further coordination on several proposed mitigation measures. DDOT also provided comments on the status of the H Street tunnel.

- DCOP commented on zoning and greenhouse gas impacts.
- The Committee of 100 questioned the soundness of the air quality impact analysis presented in the SDEIS and provided an alternative analysis.
- Akridge submitted factual corrections and recommendations for mitigation measures.

8.11 National Historic Preservation Act Section 106 Consultation

FRA initiated Section 106 consultation for the Project with SHPO in a letter dated November 23, 2015. FRA's letter provided information on the Project's background, and management of the Section 106 consultation process. FRA worked with SHPO to identify Consulting Parties. Consulting Parties have expertise, jurisdiction, or a demonstrated interest in the historic properties that the Project may affect.[525] Via letter, FRA invited the Consulting Parties to participate in the Section 106 consultation process and to attend the first Consulting Parties meeting on March 28, 2016. Invited Consulting Parties are listed below. Those with asterisks accepted the invitation.

- ACHP*
- Akridge*
- Amtrak*
- Advisory Neighborhood Commission 6C*
- AOC*
- Ashkenazy Acquisition Corporation
- Capitol Hill BID
- CFA*
- Capitol Hill Restoration Society*
- Committee of 100 on the Federal City*
- Council Member Charles Allen, Ward 6
- DC Preservation League*
- DDOT*
- Congresswoman Eleanor Holmes Norton
- Federal Highway Administration*
- Federal Transit Administration*
- Government Publishing Office*
- Greyhound*
- General Services Administration*
- Jones Lang LaSalle
- MARC*
- Maryland Department of Transportation
- Megabus*
- Maryland Transit Authority*
- Metropolitan Washington Council of Governments*
- NCPC*
- National Railway Historical Society, DC Chapter*
- National Park Service*
- National Trust for Historic Preservation*
- SHPO*
- USRC*
- Virginia Department of Historic Resources
- VRE*
- WMATA*

Key steps in the Section 106 consultation process are listed in **Table 8-14**. In addition to meeting with Consulting Parties, FRA provided information at all public meetings held throughout the NEPA process about the Section 106 process and the Project's potential to affect historic properties.

[525] Who may be a Section 106 Consulting Party is specified in 36 CFR § 800.2.

Table 8-14. Key Section 106 Consultation Steps

Section 106 Step	Action	Date
Initiate the Process	FRA initiated the Section 106 process with SHPO	Nov. 23, 2015
	FRA sent invitations to Consulting Parties	Mar 1, 2016
	Consulting Parties Meeting #1: Introduced the Project	Mar 28, 2016
Identify Historic Properties and Define the Area of Potential Effects (APE)	**Consulting Parties Meeting #2**: Discussed proposed Study Area	May 9, 2016
	Consulting Parties Meeting #3: Presented preliminary concepts, the proposed Study Area, and the proposed identification of historic properties	Oct 6, 2016
	FRA requested final comments on the proposed Study Area and identification of historic properties	Feb-Mar 2017
	FRA provided draft area of potential effects (APE) and Identification of Historic Properties Report for Consulting Party review; FRA made Concept Screening Report available for public review	Aug 2017
	Consulting Parties Meeting #4: Presented Preliminary Alternatives; discussed draft APE and Identification of Historic Properties Report	Sep. 7, 2017
	FRA received SHPO concurrence on APE and identification of historic properties	Sep 29, 2017
	FRA issued Final APE and Identification of Historic Properties Report to the Consulting Parties	Nov 6, 2017
Assess Effects	**Consulting Parties Meeting #5**: Shared Project Alternatives; reviewed methodology for assessing effects	Apr 24, 2018
	FRA shared Draft Assessment of Effects (AOE) Report with Consulting Parties	Mar 29, 2019
	Consulting Parties Meeting #6: Answered questions regarding findings of effect in AOE Report; solicited comments on Draft AOE	Apr 30, 2019
	Follow-on meeting with SHPO on Draft AOE	Aug 16, 2019
	Consulting Parties Meeting #7: Introduced Alternative A-C (Preferred Alternative) to the Consulting Parties and informed them of the addition of the First Street Tunnel column removal work to the Project.	Nov 19, 2019
	FRA issued a revised draft AOE Report to the Consulting Parties, concurrent with the release of the DEIS.	Jun 4, 2020
	Consulting Parties Meeting #8: Discussed the methodology to assess traffic impact in the DEIS and explained how the traffic analysis informed the assessment of effects.	Jun 30, 2020

Section 106 Step	Action	Date
	Consulting Parties Meeting #9: Reviewed the Draft AOE and determination of effect; requested comments on the effects of the Action Alternatives on historic properties	Sep 2, 2020
	Consulting Parties Meeting #10: Discussed measures to avoid and minimize adverse and potential adverse effects to historic properties	Sep 22, 2020
FRA paused the Section 106 process for the Project along with the NEPA process from October 5, 2020, through July 11, 2022		
Assess Effects (Resumed)	**Consulting Parties Meeting #11**: Briefed the Consulting Parties on the proposed new Preferred Alternative.	Mar 2, 2022
	Consulting Parties Meeting #12: Briefed the Consulting Parties on the newly identified Preferred Alternative, APE, and identification of historic properties.	Jul 14, 2022
	FRA provided the draft Supplemental AOE for the Preferred Alternative to the Consulting Parties for their review	Dec 22, 2022 -Feb 9, 2023
	Consulting Parties Meeting #13: Reviewed the Supplemental AOE and proposed mitigation measures	Jan 31, 2023
	SHPO concurred with FRA's determination of adverse effects.	Feb 9, 2023
	FRA sent letter to SHPO, copied to Consulting Parties, with Final Supplemental AOE and determination that the Preferred Alternative would have an adverse effect on historic properties.	Mar 10, 2023
	FRA notified ACHP of the adverse effects and invited the Council to participate in the consultation.	Mar 10, 2023
	ACHP accepted FRA's invitation to participate.	Mar 22, 2023
	FRA invited the following Federally recognized Indian tribes to participate in the Section 106 consultation process: Pamunkey Indian Tribe and the Cherokee Nation.	April 5, 2023
Resolve Adverse Effects	FRA provided PA Signatories[1] with an administrative draft PA for their review	Apr 5-20,2023
	Consulting Parties Meeting #14: Presented the Draft PA outline and discussed proposed minimization and mitigations measures.	Jun 29, 2023

Section 106 Step	Action	Date
	PA Signatories reviewed the Draft PA.	Sept-22-Oct 12, 2023
	Consulting Parties Meeting #15: Presented the Final PA.	Jan 29, 2024
	PA fully executed	Feb 26, 2024

[1] In accordance with 36 CFR § 800.6(c)(1), a signatory has the sole authority to execute, amend, or terminate the agreement. The PA signatories for the Project are FRA, SHPO, ACHP, NCPC, FTA, USRC, and Amtrak.

9 Distribution of the Final Environmental Impact Statement/Record of Decision

The Federal Railroad Administration (FRA) notified the following parties of the issuance of the Washington Union Station (WUS) Expansion Project (the Project) Final Environmental Impact Statement and Record of Decision (FEIS/ROD).

9.1 Stakeholder and General Public

FRA notified the public of the issuance of the FEIS/ROD through:

- Notice from the US Environmental Protection Agency in the *Federal Register*.
- Direct email to the Project mailing list (including persons who commented on the DEIS and SDEIS and provided contact information).

9.2 Project Sponsor

- Union Station Redevelopment Corporation

9.3 Elected Officials

9.3.1 Federal

- Congresswoman Eleanor Holmes Norton (District of Columbia)

9.3.2 District

- Mayor Muriel Bowser
- Chairman Phil Mendelson
- Councilmember Charles Allen, Ward 6
- Councilmember Anita Bonds, At-Large
- Councilmember Matthew Frumin, Ward 3

- Councilmember Vincent C. Gray, Ward 7
- Councilmember Christina Henderson, At-Large
- Councilmember Janeese Lewis George, Ward 4
- Councilmember Kenyan R. McDuffie, At-Large, Chair Pro Tempore
- Councilmember Brianne K. Nadeau, Ward 1
- Councilmember Zachary Parker, Ward 5
- Council Member Brooke Pinto, Ward 2
- Councilmember Robert C. White, Jr., At-Large
- Councilmember Trayon White, Sr., Ward 8
- Advisory Neighborhood Commission 6C
- Advisory Neighborhood Commission 6E

9.4 Native American Tribes

- Cherokee Nation
- Pamunkey Indian Tribe

9.5 Federal Agencies

- Advisory Council on Historic Preservation
- Architect of the Capitol
- Department of the Interior
- Federal Highway Administration
- Federal Emergency Management Agency
- Federal Protective Service
- Federal Transit Administration
- Government Publishing Office
- National Capital Planning Commission
- National Park Service – National Capital Region
- National Park Service – National Mall and Memorial Parks
- Transportation Security Administration

- United States Commission of Fine Arts
- United States Environmental Protection Agency
- United States Fish and Wildlife Service
- United States General Services Administration – National Capital Region

9.6 District and State Agencies

- District Department of Energy and Environment
- District Department of Transportation
- District of Columbia Office of Planning
- District of Columbia Office of the City Administrator
- District of Columbia State Historic Preservation Office
- District of Columbia Water
- District of Columbia Office of the Deputy Mayor for Planning and Economic Development
- District of Columbia Public Schools
- District of Columbia Public Works
- District Office of Zoning
- District of Columbia Department of Buildings
- Maryland Department of Transportation
- Maryland Transit Administration
- Virginia Department of Rail and Public Transportation
- Virginia Passenger Rail Authority

9.7 Regional Agencies

- Metropolitan Washington Council of Governments

9.8 Rail and Transit Operators

- National Railroad Passenger Corporation (Amtrak)
- CSX Transportation
- Greyhound

- Maryland Area Rail Commuter Train (MARC)
- Megabus
- Norfolk Southern
- Virginia Railway Express (VRE)
- Washington Metropolitan Area Transit Authority (WMATA)

9.9 Organizations and Other Interested Parties

- Adventure Cycling Association
- Akridge
- American Bus Association
- Arlington Chamber of Commerce
- Baltimore-DC Metro Building Trades
- Capital Trails Coalition
- Capitol Hill Business Improvement District
- Capitol Hill Restoration Society
- Coalition for Smarter Growth
- Coalition for the Northeast Corridor
- Committee of 100 on the Federal City
- Consortium for Citizens with Disabilities
- DC Preservation League
- DC Sustainable Transportation
- Downtown Business Improvement District
- Federal City Council
- Greater Washington Partnership
- Guild of Professional Tour Guides of Washington, DC
- H Street Main Street
- Montgomery County Chamber of Commerce
- Mount Vernon Triangle Community Improvement District
- Multimodal Accessibility Advisory Council

- National Association of Railroad Passengers
- National Federation of Tourist Guide Associations
- National Railway Historical Society, DC Chapter
- National Trust for Historic Preservation
- NoMA Business Improvement District
- Northern Virginia Chamber of Commerce
- Rail Passengers Association
- Southern Environmental Law Center
- The BWI Business Partnership, Inc.
- The Guild of Professional Tour Guides of Washington, DC
- Transportation for America
- Travelers Aid International at Washington Dulles International Airport
- Virginia Bicycling Federation
- Virginia Transit Association
- Virginians for High Speed Rail
- Washington Area Bicyclist Association
- Washington Union Station Intercity Bus Coalition

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y=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C91thru94%5CTxt%5C00000014%5C2000F7L2.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL. Accessed on August 16, 2023.

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11 Glossary

Accessibility: The ease with which a site or facility may be reached by passengers and others necessary to the facility's intended function. Also, the extent to which a facility is usable by persons with disabilities, including wheelchair users.

Acela: High-speed trains operated by National Railroad Passenger Corporation (Amtrak).

Action Alternative: An alternative that proposes some Federal action, in contrast to the No-Action Alternative. See also No-Action Alternative. Action Alternatives must be rigorously explored and objectively evaluated in an Environmental Impact Statement (EIS).

Adverse Effect: (1) National Environmental Policy Act of 1969 (NEPA)—An effect that may cause unfavorable or undesirable outcomes to the natural or human environment. In this sense, synonymous with "Adverse Impact." (2) National Historic Preservation Act of 1966—The diminishment of a historic property's integrity, with respect to its location, design, setting, materials, workmanship, feeling, or association. Federal agency officials apply the term, in consultation with the State (or Tribal) Historic Preservation Office, as part of the Section 106 process. See also Section 106 of the National Historic Preservation Act of 1966 and Historic Property.

Affected Environment: Existing environment, resource conditions, and trends that may be affected by the alternatives under consideration. Includes the physical, biological, social, and economic setting potentially affected by one or more of the alternatives.

Air Pollution: A general term that refers to one or more chemical substances that degrade the quality of the atmosphere.

Air Rights: Property interest in space above the ground surface.

Alignment: The horizontal and vertical route of a transportation corridor or path.

Americans with Disabilities Act of 1990: Federal regulation establishing legal requirements for accessibility for persons with disabilities. Codified at 42 United States Code (U.S.C.) § 12101 et seq.

Anthropogenic: Relating to, or resulting from the influence of, human beings on nature.

Aquifer: Subsurface geologic unit (rock or sediment) that contains and transmits groundwater.

Archeological Site: A place (or group of physical sites) in which physical remains of past human activity that are at least 50 years old are preserved, and which has been, or may be, investigated using the discipline of archaeology and represents a part of the archaeological record. The archaeological record consists of artifacts, features, and ecological evidence along with their preserved positions in or on the earth.

Area of Potential Effects (APE): In the context of the Section 106 process, the geographic area or areas within which a project may directly or indirectly cause alterations in the character or use of historic

properties, if any such properties exist. See also Section 106 of the National Historic Preservation Act of 1966 and Historic Property.

At-Grade: At ground surface level. Used to describe roadways, track alignments, and road-track intersections.

Attainment: An attainment area is a geographic area that meets the national ambient air quality standards defined by the United States Environmental Protection Agency under the Clean Air Act. See also maintenance and nonattainment.

A-Weighted Sound Level (dBA): A measure of sound intensity that is weighted to approximate the response of the human ear and describe the way sound will affect people near a noise source.

Baseline: Foundation or basis used for comparison purposes.

Beneficial Effect: Effects or impacts resulting in positive outcomes to the natural or human environment.

Best Management Practices (BMPs): Methods designed to minimize adverse effects to the environment. Examples of BMPs include watering for dust control, perimeter silt fences, rice straw bales, and sediment basins to minimize soil erosion during construction.

Carbon Dioxide (CO_2): A colorless, odorless gas that occurs naturally in the atmosphere, produced by burning carbon and organic compounds, and by respiration. Fossil fuel combustion emits significant quantities of CO_2.

Carbon Monoxide (CO): A colorless, odorless, toxic, and flammable gas formed by the incomplete combustion of carbon. CO gas generated in the urban environment is primarily due to the incomplete combustion of fossil fuels in motor vehicles.

Catenary: System of overhead wires supplying electricity to trains.

Census Block: The smallest geographic unit for which the United States Census Bureau tabulates 100-percent data (data collected from all houses, rather than sample houses). In urban areas, many census blocks correspond to individual city blocks bounded by streets.

Clean Air Act of 1970: Federal law that defines the United States Environmental Protection Agency's responsibilities for protecting and improving the nation's air quality and the stratospheric ozone layer. The Clean Air Act of 1970 protects the public from exposure to airborne contaminants that are known to be hazardous to human health and requires that the EPA rate Environmental Impact Statements (EISs). Codified at 42 U.S.C. § 7401 et seq.

Clean Water Act of 1972: Federal law protecting the quality of the nation's surface waters, including wetlands. The Clean Water Act of 1972 regulates discharges and spills of pollutants, including hazardous materials, to surface waters and groundwater. Codified at 33 U.S.C. § 1251 et seq. See also Waters of the United States.

Carbon Dioxide Equivalent (CO_2e): Unit representing how much a given amount of a particular greenhouse gas may contribute to global warming, expressed in terms of the equivalent amount of carbon dioxide. See also Greenhouse Gas.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980: Also known as Superfund, this Federal law provides for broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Codified at 42 U.S.C. § 9601 et seq.

Consist: In rail transport, a lineup of railroad cars and locomotives that form a train unit.

Consulting Party: Individual or organization with a role in the National Historic Preservation Act of 1966, Section 106, consultation process. Consulting Parties include the relevant State or Tribal Historic Preservation Officer(s); Native American tribes and Native Hawaiian organizations; representatives of local governments; applicants for Federal assistance, permits, licenses, and other approvals; and persons or groups with a demonstrated interest in the undertaking (project). Consulting Parties are invited to participate in the Section 106 process for a project by the lead Federal agency.

Cooperating Agency: In the context of the National Environmental Policy Act (NEPA), any Federal, state, or local agency, or Indian Tribe, that has jurisdiction by law or special expertise with respect to any environmental impacts involved in a proposed action and was invited by the lead Federal agency, and has agreed, to participate in the NEPA process.

Corridor: A geographic belt or band that contains the route of a linear transportation facility such as highway or railroad.

Criteria Pollutants: Pollutants for which Federal and state air quality standards have been established under the Clean Air Act: carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), ozone (O_3), particulate matter with a diameter of 10 micrometer or less (PM10), particulate matter with a diameter of 2.5 micrometer or less (PM2.5), and lead (Pb).

Cultural Resources: Sites, structures, buildings, districts, or objects associated with or representative of people, cultures, and specific human activities and events that are valued by a given community or contain information about the culture that produced them.

Cumulative Impact: In the context of the National Environmental Policy Act, impact on the environment that results from the incremental impact of an action when added to those of other past, present, and reasonably foreseeable future actions.

Decibel (dB): A logarithmic measurement of noise intensity.

De Minimis: In reference to impacts or effects, sufficiently small to be disregarded; lacking significance or importance.

Demographics: Quantifiable statistics of a given population such as race, age, sex, income, etc.

Direct Effect or Impact: In the context of the National Environmental Policy Act, a consequence to the environment caused by a proposed action that would occur at the same time and place as the action.

Disproportionately High and Adverse Effects: An Environmental Justice term used to describe the unequal treatment to low-income and minority populations because of a proposed project or action. Executive Order 12898 directs each Federal agency to identify and address disproportionately high and adverse human health or environmental effects of its projects and actions.

Disturbance: A discrete natural or human-induced event that causes a change in the condition of an ecological system.

Ecosystem: An interconnected network of living organisms, including people, and their local physical environment; often viewed as an ecological unit.

Effect: A change in the condition or function of an environmental resource or environmental value due to human activity. Synonym of Impact.

Environmental Impact Statement: Documentation required by the National Environmental Policy Act of 1969 for certain actions "significantly affecting the quality of the human environment." An Environmental Impact Statement is a decision-making tool that presents detailed analysis of a proposed action and alternatives to the proposed action. The Environmental Impact Statement presents the project's potential effects—both beneficial and adverse—and any mitigation measures to reduce adverse effects. See also National Environmental Policy Act of 1969.

Environmental Justice: The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental Site Assessment: An analysis that identifies potential or existing environmental contamination liabilities. Phase I and Phase II investigations assess whether identified historic on-site or off-site hazardous uses have impacted the soil or groundwater conditions beneath a property, as necessary.

Erosion: Process by which earth materials are worn down by the action of flowing water, ice, or wind.

Ethnicity: A grouping or categorization of people based on shared cultural traits such as ancestral origin, language, custom, or social attitude.

Federal Railroad Administration: An agency within the United States Department of Transportation that administers financial assistance programs and regulates the operation and safety of freight and passenger railroads throughout the United States. The Federal Railroad Administration is the owner of Washington Union Station.

Footprint: The area covered by a facility or affected by a given action or activity.

For-Hire Vehicles: Licensed taxicabs, livery cars, and transportation networking companies such as Uber and Lyft.

General Conformity Rule: The requirement that Federal, state, tribal, and local governments in air quality nonattainment or maintenance areas ensure that Federal actions conform to the initiatives established in the applicable state implementation plan or tribal implementation plan.

Geographic Information System: An information management system designed to store and analyze data referenced by spatial or geographic coordinates.

Grade Crossing: The intersection of a railroad and a highway at the same elevation (grade); an intersection of two or more highways; an intersection of two railroads.

Grade-Separated: At different elevations; on separate levels.

Greenhouse Gases: A class of air pollutants believed to contribute to the greenhouse global warming effect, including nitrogen oxides (NO_x), hydrocarbons (HC), and carbon dioxide (CO_2).

Ground-borne Noise: A low-frequency rumble that can radiate from the motion of room surfaces even when the motion itself cannot be felt.

Groundwater: Water contained and transmitted through open spaces within rock and sediment below the ground surface.

Groundwater Recharge: Hydrologic process where water moves downward from the ground surface into underlying groundwater by deep drainage or percolation.

Habitat: An environment where plants or animals naturally occur; an ecological setting used by animals for a particular purpose (for example, roosting habitat or breeding habitat).

Hazardous Materials: Any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety, or the environment, if released.

Hazardous Waste: A hazardous material that is no longer of use and will be disposed of. Hazardous waste is regulated by the United States Environmental Protection Agency under the Resource Conservation and Recovery Act of 1976. See also Resource Conservation and Recovery Act of 1976.

Headhouse: Entrance to a train station that provides access to tracks and platforms.

Headway: The time between buses, trains, or other transit vehicles at a given point (for example, a 15-minute headway means that one bus or train arrives every 15 minutes).

Historic Property: Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. See also National Register of Historic Places.

Hydrocarbons: Various organic compounds, including methane, emitted principally from the storage, handling, and combustion of fossil fuels.

Impact: A change in the condition or function of an environmental resource or environmental value due to human activity. Synonym of Effect.

Impervious Surface: Surface covered by impenetrable materials, such as parking lots and buildings that increases the potential for water runoff and reduces the potential for groundwater recharge.

Indirect Impact: Reasonably foreseeable indirect consequences to the environment caused by a project that would occur either in the future or near to, but not in the same location as, the direct impacts associated with a project. Synonym of Secondary Impact.

Induced Growth: An indirect impact of a project triggering community growth (increases in population, development, etc.) that is influenced and stimulated by a project.

Infrastructure: The facilities required for a societal function or service (such as transportation and utility infrastructure—roads, bridges, railroads, pipelines, power lines, etc.).

Interested Agency: Federal, state, local, and tribal agencies, as well as organizations with a special interest in a project.

Interlocking: An arrangement of train signal apparatus that prevents conflicting movements through an arrangement of tracks such as junctions or crossings.

Land Use: The activities that occur on land and in the structures that occupy it.

Lead (Pb): A stable element that can have toxic effects and that persists and accumulates in the environment, humans, or animals.

Lead Agency: The Federal agency that has the principal responsibility for carrying out or approving a project or action and is responsible for preparing environmental review documents in compliance with National Environmental Policy Act of 1969 and National Historic Preservation Act of 1966.

Ldn (Day-night average sound level): the average noise level over a 24-hour period.

Leq (energy-average level): A measure of the average noise level during a specified period of time.

Leq(h), dBA: Equivalent or average noise level for the noisiest hour, expressed in A-weighted decibels.

Level of Service: A rating use to characterize and compare operational conditions within a traffic stream as experienced by motorists or passengers.

Limits of Disturbance: The boundary within which a project's construction and associated physical activities (such as land clearing and excavation) would occur.

Logarithm: A number that shows how many times a base number (such as 10) is multiplied by itself to produce a third number (such as 100). The exponent that indicates the power to which a base number is raised to produce a given number (for example, the logarithm of 100 to the base 10 is 2).

Low-income population: A person whose median household income is at or below the Department of Health and Human Services poverty guidelines. A low-income population is any readily identifiable group or groups of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed or transient persons who will be similarly affected by a proposed Federal program, policy, or activity.

Maintenance: (1) The process of maintaining or preserving something to keep it in safe and operable condition; (2) under the Clean Air Act, an air basin that was formerly in nonattainment for a pollutant, but now meets the established standards for that pollutant. See also attainment and nonattainment.

Mesoscale: Describes an air quality analysis at the regional level.

Microscale: Describes an air quality analysis for a localized area such as an intersection.

Minimization: Measures developed during the planning and project development phase of a project to reduce potential impacts to a resource.

Minority Population: Readily identifiable group or groups of minority persons who live in geographic proximity and, if circumstances warrant, geographically dispersed or transient persons, such as migrant workers or Native Americans, who would be similarly affected by a proposed project. Minority population includes persons who are American Indian or Alaskan Native, Asian American, Native Hawaiian or Other Pacific Islander, African American (not of Hispanic Origin), and Hispanic or Latino.

Mitigation: Action or measure undertaken to minimize, reduce, eliminate, or rectify the adverse impacts of a project, practice, action, or activity.

Mobility: Movement of people across areas.

Multimodal: Transportation that involves more than one mode (for example, walking, biking, auto, transit, taxi, train, bus, and air) during a single journey.

National Ambient Air Quality Standards: Federal standards stipulating the allowable ambient concentrations of specific criteria pollutants.

National Environmental Policy Act of 1969: Federal law that establishes national policies and goals for the protection of the environment. The National Environmental Policy Act requires Federal agencies to consider the environmental impacts of major Federal projects or decisions; share information with the public; identify and assess reasonable alternatives; identify appropriate measures to mitigate potential impacts; and coordinate efforts with other planning and environmental reviews taking place. Codified at 42 U.S.C. § 4331 et seq.

National Historic Preservation Act of 1966: Federal law intended to preserve the nation's historic properties. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices. Codified at 54 U.S.C. § 300101 et seq. See also Section 106 of the NHPA, and National Register of Historic Places.

National Register of Historic Places: The official list of the Nation's historic places worthy of preservation, maintained and approved by the National Park Service. Codified at 54 U.S.C. § 302101 et seq. For a property to be eligible for listing in the National Register of Historic Places, it must meet the National Park Service's National Register Criteria for Evaluation. See also Historic Property.

Nitrogen Oxides (NO_x): A class of pollutant compounds that include nitrogen dioxide (NO_2) and nitric oxide (NO), both of which are emitted by motor vehicles. See also Criteria Pollutants.

No-Action Alternative: Refers to an alternative under which no Federal action would be taken (for example, no infrastructure would be built). Evaluation of a No-Action Alternative is required under the National Environmental Policy Act of 1969. This analysis provides a benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the Action Alternatives. It is also an alternative within the range of reasonable alternatives that must be analyzed.

Nonattainment: An air basin that exceeds Federal or state standards for a criteria pollutant. See also attainment and maintenance.

Nonpoint Source Pollution: Pollution that collects from a wide area and cannot be traced to a single source. Examples include pesticides or fertilizers that wash into rivers or percolate through the soil into groundwater.

Notice of Availability: Formal notice published in the Federal Register announcing the public availability of a draft or final Environmental Impact Statement.

Notice of Intent: Formal notice published in the Federal Register announcing that an Environmental Impact Statement will be prepared for a proposed project.

Official with Jurisdiction: The legal representative of the agency owning or administering a Section 4(f) resource, unless the agency has delegated or relinquished this authority via formal agreement. For historic properties, the Official with Jurisdiction is the State or Tribal Historic Preservation Office. Some Section 4(f) properties, such as a historic park, may have multiple Officials with Jurisdiction.

Ozone (O_3): A photochemical oxidant that is a major cause of lung and eye irritation in urban environments.

Particulate Pollution: Air pollution such as dust, soot, and smoke that is irritating but usually not poisonous. Particulate pollution also can include bits of highly toxic solid or liquid substances. Of particular concern are particulate matter smaller than, or equal to, 10 micrometers (PM10) or 2.5 micrometers (PM2.5) in size.

Point Source Pollution: Pollution that can be traced to a single source (for example, a smokestack at a factory).

Polychlorinated Biphenyls (PCBs): Chemicals used in electrical transformers, hydraulic equipment, capacitors, and similar equipment.

Poverty Level: The income at which a family or individual is considered poor.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics considering overall project purposes.

Preferred Alternative: The alternative identified as preferred by the lead agency or project proponent (the applicant's preferred alternative).

Programmatic Agreement: An agreement between agencies that specifies the terms of compliance with one or more Federal laws. A project-specific PA describes the actions that will be taken by the parties to meet their environmental compliance responsibilities for a specific project. A procedural PA establishes a process through which the parties will meet their compliance responsibilities for an agency program, a category of projects, or a particular type of resource.

Project Proponent: An entity that will advance the Washington Union Station Expansion Project through final design and construction, including compliance with mitigation measures.

Proposed Action: A proposal for a Federal agency to authorize, recommend, or implement an action that addresses a Purpose and Need. See Purpose and Need.

Public Easement: Any interest in land that is not possessory and that may be owned by another person. It is reserved by the department or granted to the state for use by or the benefit of the public, including an access easement, survey easement, and utility easement.

Publicly Owned: Property that is owned by a government authority via either fee simple ownership or permanent easement.

Public Transportation: Includes bus, trolley bus, streetcar or trolley car, trams or light rail, transit, passenger railroad, ferryboat, and for-hire vehicle.

Purpose and Need: The reason(s) why a project or action is undertaken and the need(s) it is intended to meet or fulfill. See also Proposed Action.

Rail Terminal: In this EIS, refers to the area occupied by railroad infrastructure between the Claytor Concourse and K Street NE.

Real Property: Land and any improvements thereto, including but not limited to, fee interests, easements, air or access rights, and the rights to control use, leasehold, and leased fee interests.

Reasonably Foreseeable Future Action: Those future actions that are likely to occur or probable, rather than those that are merely possible. Used in determining indirect and cumulative impacts for a Proposed Action.

Record of Decision: The final step in the Environmental Impact Statement process under the National Environmental Policy Act of 1969. The ROD explains the agency's decision, describes the alternatives the agency considered, and discusses the agency's plans for mitigation and monitoring, if necessary.

Resource Conservation and Recovery Act of 1976: Federal law that creates the framework for the proper management of hazardous and non-hazardous solid waste. The law describes the waste management program mandated by Congress that gave the United States Environmental Protection Agency authority to develop the Resource Conservation and Recovery Act program. Codified at 42 U.S.C. § 6901 et seq.

Ridership: The number of people who ride a transportation system.

Right-of-Way: A legal right of passage over a defined area of real property. In transit usage, the corridor along a roadway or railway that is controlled by a transit or transportation agency or authority.

Rolling Stock: Locomotives, carriages, wagons, or other vehicles used on a railroad.

Runoff: The draining away of water and substances carried in it from the surface of an area of land, a building, or structure.

Scoping: A process used under the National Environmental Policy Act of 1969 to determine the range of issues to be addressed and for identifying the significant issues related to the proposed action or project to be addressed in an Environmental Impact Statement.

Secant Piles: Individually drilled holes filled with concrete and steel, reinforced, and installed adjacent to one another to form a continuous wall.

Secondary Impact: Reasonably foreseeable indirect consequences to the environment caused by a project that would occur either in the future or near, but not the same location as, the direct impacts associated with a project. Synonym to Indirect Impact.

Section 4(f) of the United States Department of Transportation Act of 1966: Provisions codified in 49 462 U.S.C. Subtitle I, Section 303(c). Section 4(f) addresses the potential for conflicts between transportation needs and the protection of land for recreational use and resource conservation by providing protection for publicly owned parkland, recreation areas, and historic sites from use. Specifically, the provisions prohibit the Secretary of Transportation from approving any program or project that would require the use of any publicly owned land from a public park, recreation area, wildlife or waterfowl refuge, or land of an historic site of national significance as determined by the Official with Jurisdiction over these lands unless there are no feasible and prudent alternatives to the use of these lands.

Section 6(f) of the Land and Water Conservation Fund Act of 1964: Prohibits the conversion of property acquired or developed with funds granted through the act to a nonrecreational purpose without the approval of the National Park Service. Section 6(f) directs the United States Department of the Interior to ensure that replacement lands of equal value (monetary), location, and usefulness are provided as conditions to such conversions.

Section 106 of the National Historic Preservation Act of 1966: Section of the National Historic Preservation Act that requires Federal agencies to account for the effects of their undertakings on historic properties, and to provide the Advisory Council on Historic Preservation with a reasonable opportunity to comment. In addition, Federal agencies are required to consult on the Section 106 process with State Historic Preservation Officers, Tribal Historic Preservation Officers, Indian Tribes, and Native Hawaiian Organizations. The Section 106 process is defined in 36 Code of Federal Regulations (CFR) Part 800, *Protection of Historic Properties*.

Sensitive Receptors: Locations considered more sensitive to adverse effects from air pollution (for example, residences; preschools and kindergarten through grade 12 schools; daycare centers; health-care facilities such as hospitals, retirement homes, and nursing homes; and parks and playgrounds).

Sheet Piles: Steel sheet sections with intersecting edges that are installed in the ground to form a barrier.

Significant: In Council on Environmental Quality usage, describes an impact that is sufficiently adverse, intense, or prolonged to require mitigation. In National Environmental Policy Act of 1969 usage, to determine an impact is significant the context and intensity (the degree to which the effects on quality of human environment are controversial, whether the action threatens a violation of Federal, state, or local law, and others) of the action must be considered.

Sound Exposure Level: A time-integrated metric (that is, continuously summed over a time period) that quantifies the total energy in the A-weighted sound level measured during a transient noise event. Sound Exposure Level accounts for both the duration and the loudness of a noise event.

Spoil: Excavated rock and soil.

State Implementation Plan: Statewide plan for complying with the Clean Air Act of 1970. A State Implementation Plan consists of guidance, rules, and agreements that the state will use to clean up polluted areas.

Stormwater Pollution Prevention Plan: A plan that specifies site management activities to be implemented during site development, including construction stormwater best management practices, erosion and sedimentation controls, dewatering (nuisance water removal), runoff controls, and construction equipment maintenance.

Study Area: A defined area or distance that is established to determine potential effects associated with the proposed action. Study areas vary in size and distance depending on the type of effects being considered. The Local Study Area is generally proximate to the proposed action, while the Regional Study Area encompasses a larger area.

Substructure: The abutment, piers, and other support structures of the superstructure that transfer the structural load to the foundations.

Sulfur Oxides (SO_x): Sulfur-oxygen compounds that include the important criteria pollutants sulfur dioxide (SO_2) and sulfur trioxide (SO_3).

Support of Excavation: Temporary earth-retaining systems intended to provide a safe and efficient space for excavation and construction.

Surficial Aquifer: The surficial aquifer system includes any otherwise undefined aquifers that are present at land surface. The surficial aquifer is mainly used for domestic, commercial, or small municipal supplies.

Threat, Vulnerability, and Risk Assessment: An analysis conducted during Project Development to identify and analyze security risks associated with design alternatives and propose strategies to mitigate risk.

Transportation Networking Companies: Ride-sharing companies such as Uber and Lyft.

Underpinning: A process in which the existing structural support of a building or structure is stabilized or reinforced from below to permit construction underneath.

Undertaking: A project, activity, or program funded in whole or in part by a Federal agency, including those carried out by or on behalf of a Federal agency, those carried out with Federal financial assistance, and those requiring a Federal permit, license, or approval.

V/C Ratio: Volume to capacity ratio; describes the relationship between the amount of traffic a roadway was designed to carry and the amount of traffic it actually carries. Related to the Level of Service the roadway can provide.

Ventilation Shaft: Vertical shaft connected to a tunnel that serves as an emergency exit and air shaft between the tunnel and the surface.

Viewshed: The total area visible from a single observer position, or the total area visible from multiple observer positions. Viewsheds include scenes from highways, trails, campgrounds, towns, cities, or other viewer locations.

Visual Quality: The character or inherent features of a viewshed.

Visual Resources: The natural and artificial features of a landscape that characterize its form, line, texture, and color.

Volatile Organic Compounds: Colorless gaseous compounds originating, in part, from the evaporation and incomplete combustion of fuels. In the presence of sunlight Volatile Organic Compounds react to form ozone, a pollutant regulated by the Clean Air Act Amendments.

Waters of the United States: The Clean Water Act of 1972 defines waters of the United States as (1) all waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide; (2) all interstate waters including interstate wetlands; and (3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce (33 CFR § 328.3[a]). See also Clean Water Act of 1972.

Watershed: The area that contributes water to a drainage system or stream.

Wayfinding: information systems that guide people through a physical environment.

12 Preparers

The Federal Railroad Administration (FRA) prepared the Washington Union Station (WUS) Expansion Project (the Project) Final Environmental Impact Statement (FEIS) in accordance with the National Environmental Policy Act of 1969 (NEPA). FRA prepared the FEIS with the assistance of a team of consultants. The following personnel contributed to the FEIS.

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