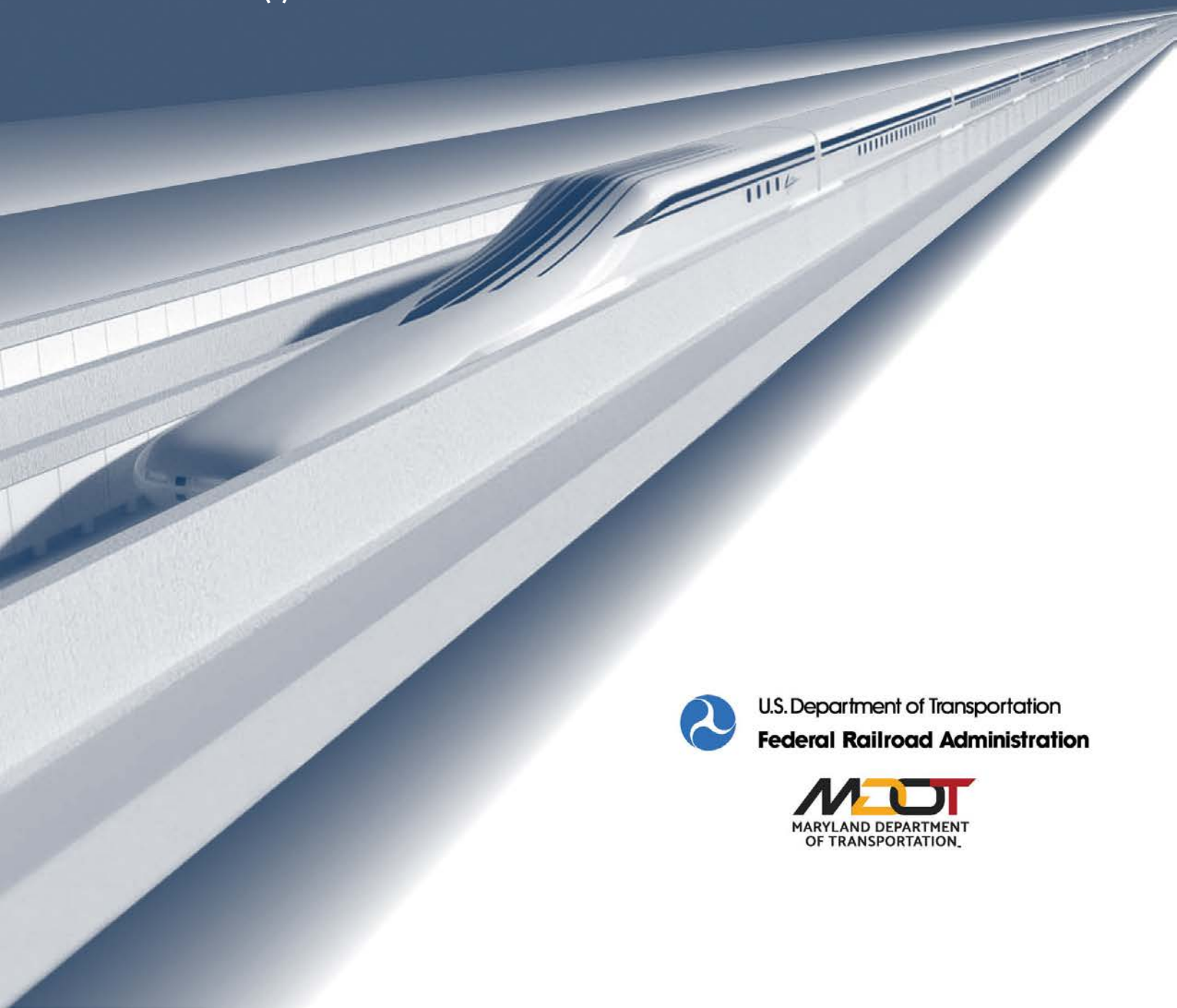
Section 4.16

Air Quality

BALTIMORE-WASHINGTON SUPERCONDUCTING MAGLEV PROJECT

DRAFT ENVIRONMENTAL IMPACT STATEMENT AND SECTION 4(f) EVALUATION



U.S. Department of Transportation
Federal Railroad Administration

MARYLAND DEPARTMENT OF TRANSPORTATION

4.16 Air Quality

4.16.1 Introduction

This section describes the existing air quality conditions and the potential for the Superconducting Magnetic Levitation Project (SCMAGLEV Project) to impact existing air quality and discusses General Conformity under the Clean Air Act (CAA) (42 USC § 7401 *et seq.*). The Federal Railroad Administration (FRA) also evaluates greenhouse gas (GHG) emissions and potential climate change impacts.

4.16.2 Regulatory Context and Methodology

4.16.2.1 Regulatory Context

In accordance with the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 et seq., the Council on Environmental Quality (CEQ) regulations, 40 C.F.R. Parts 1500 - 1508, and the Federal Rail Administration's (FRA) Procedures for Considering Environmental Impacts, 64 Fed. Reg. 28545 (May 26, 1999), FRA assessed the consistency of the alternatives with Federal and state plans for the attainment and maintenance of air quality standards.

National Ambient Air Quality Standards (NAAQS)

Humans affect ambient air quality through the emission of air pollutants, including emissions by mobile and stationary sources. The concentration levels of specific pollutants in ambient air may affect health and welfare of the general public. In order to protect the public from the adverse effects associated with pollutants in the ambient air, as required under the CAA, the United States Environmental Protection Agency (USEPA) has established the NAAQS for six contaminants, referred to as criteria pollutants (40 C.F.R. Part 50). The criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter with diameters up to 10 µm (PM_{10}), particulate matter with diameters up to 2.5 µm ($PM_{2.5}$), lead (Pb), and sulfur dioxide (SO_2).

Attainment of the NAAQS

For each criteria pollutant, USEPA classifies geographic areas based on the concentration of the criteria pollutant in the ambient air. Areas are classified as:

- **Attainment** – Areas where no exceedance of NAAQS for a specific criteria pollutant occurred.
- **Nonattainment** – Areas where exceedance of NAAQS for a specific criteria pollutant occurred. The nonattainment designations for certain pollutants include degrees of classifications. For example, for ozone (O_3), the classification could be extreme, severe, serious, moderate, or marginal nonattainment, which indicates the severity of the air quality problem.

- **Maintenance Area** – Areas that had previously been designated as a nonattainment area but are now consistently meeting the NAAQS. These areas generally have a maintenance plan to ensure compliance with NAAQS.

If an area is designated as nonattainment for a criteria pollutant, the appropriate state government must develop and implement control plans to reduce the emission level of that pollutant. This is referred to as a State Implementation Plan (SIP). For a maintenance area, state governments must develop maintenance plans to ensure and demonstrate compliance with NAAQS for 20 years.

The Maryland Department of Environment (MDE) and Metropolitan Washington Air Quality Committee (MWAQC) are responsible for developing a SIP for Maryland (including Baltimore City) and Washington, D.C. metropolitan nonattainment areas, respectively.

In addition to the criteria pollutants, the CAA also lists 187 air toxins, known as hazardous air pollutants (HAPs). Toxic air pollutants include several substances that are known or suspected to cause cancer or other health effects in humans when they are exposed to certain levels. The CAA authorizes the USEPA to characterize and control emissions of these pollutants. However, unlike the criteria pollutants, the majority of air toxins do not have ambient air quality standards. Of the 187 HAPs, 93 have been identified as mobile source air toxics (MSAT) and nine MSAT are priority MSAT.[1] FRA identified these priority MSATs and associated health effects in Appendix D.9.

Greenhouse Gases (GHG)

GHG emissions are emissions that trap heat in the atmosphere. CEQ published *Draft National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions* (84 FR 30097, June 26, 2019). The dominant GHG emissions emitted by manmade sources is CO_2, mostly from fossil fuel combustion and is the pollutant most relevant to the SCMAGLEV Project. Therefore, FRA only considered CO_2 emissions in the DEIS. FRA estimated the GHG emissions within the mesoscale subarea along the corridor quantitatively to compare the SCMAGLEV Project Alternatives and has qualitatively addressed potential effects to climate change.

Clean Air Act Conformity

The CAA requires Federal agencies to ensure that their actions on a project-level conform to the SIP in nonattainment areas for purposes of reducing the severity and number of violations of the NAAQS. FRA actions are subject to the Federal General Conformity (GCR) rule. Transportation conformity applies to Federal highway and transit projects, while general conformity applies to all other Federal actions. However, certain

[1] EPA priority MSATs are those with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA).

transportation projects can involve Federal actions that necessitate the evaluation of both transportation conformity and general conformity requirements.

FRA assessed the levels of criteria pollutants within SCMAGLEV Project Affected Environment at the local level at hot spots within the areas immediately surrounding the new stations and/or maintenance facilities for which the detailed roadway traffic forecasts were developed, described in Section 4.2 Transportation. Additionally, FRA assessed the levels at a mesoscale level emissions burden within the most affected subarea extending quarter miles on both sides of the corridor that was established for detailed roadway traffic forecasts.

Within the mesoscale subarea along the corridor, as the operation of SCMAGLEV trains will not generate any emissions associated with burning fossil fuels, the criteria pollutants related to the SCMAGLEV Project are on-road vehicle- and/or construction equipment-related CO, PM_{10} and $PM_{2.5}$, and O_3 precursors [nitrogen oxides (NO_x) and volatile organic compounds (VOCs)]. In addition to these pollutants, FRA also considered SO_2 because the SCMAGLEV Project would be constructed and operated within areas of Baltimore and Anne Arundel Counties, both of which are in nonattainment for SO_2 NAAQS. Lead emissions from gasoline-fueled vehicles have been virtually eliminated through the use of unleaded gasoline and are not of concern for this analysis. Details regarding the criteria pollutants and NAAQS are provided in Appendix D.9.

4.16.2.2 Methodology

For the counties within the study area, FRA identified the attainment status for criteria pollutants. FRA evaluated potential air quality impacts at the local level (i.e., localized impacts at congested intersections around each new station), mesoscale (i.e., changes in traffic patterns within the corridor subarea) and, construction period emissions impacts.

In addition, FRA evaluated the potential impacts to determine for project-level CAA general conformity for applicable nonattainment areas, based on the applicable SIP. In the analysis, FRA demonstrated compliance with CAA general conformity requirements, using the methodologies and procedures established by Federal Highway Administration (FHWA) for assessing potential mobile source impacts from changes in traffic patterns for a transportation project.

The SCMAGLEV Project will use grid power to operate trains, stations and other facilities and is not expected to require new power generating facilities. FRA did not quantify the powerplant emissions required for train operations and facilities, as emissions from powerplants will be regulated through the applicable CAA permits and SIP.

Localized Impact Analyses

The SCMAGLEV train will not emit criteria pollutants during operation, as the system runs entirely on electricity. Therefore, the localized impact analysis focuses on the

potential for negative impacts as a result of the change in roadway traffic patterns around the three new stations by following available USEPA and FHWA guidelines established for addressing roadway traffic related air quality impacts described below.

FRA's analysis predicted concentrations of localized criteria pollutants and compared those concentrations to the NAAQS using the FHWA hot spot analysis guidance. FRA assessed whether localized emissions from the SCMAGLEV project would result in an exceedance of the NAAQS.

To calculate localized emissions, FRA computed vehicular exhaust emission factors for future 2027 build year and 2045 design year using the USEPA mobile source emissions factor model, Motor Vehicle Emission Simulator (MOVES) (Version 2014b – MOVES2014b), incorporating basic input parameters provided by the Metropolitan Planning Organizations (MPOs), Metropolitan Washington Council of Governments (MWCOG) and Baltimore Metropolitan Council (BMC), for their respective controlled regions. FRA predicted the optimum concentrations resulting from vehicle emissions at the selected worst-case intersections around each new station using USEPA's CAL3QHC dispersion model to evaluate potential localized mobile source impacts because of change in traffic patterns as a result of the SCMAGLEV Project.

For localized impacts of CO and PM, FRA used the traffic study analyses, which analyzed 65 intersections, considering the sensitive land uses immediately adjacent to the roadways. FRA identified and selected three worst-case intersections, as depicted in Appendix D.9, for hot-spot concentration modeling analyses for CO considering traffic inputs within a 1000-foot radius surrounding each worst-case intersection. Consistent with USEPA hot spot analysis guidance[2] for PM, FRA also evaluated forecasted traffic conditions around the proposed stations to assess potential air quality concerns. Any Build Alternative deemed to have a potential air quality concern would require hot spot concentration modeling analysis for $PM_{2.5}$ and PM_{10}. Since the diesel vehicle component within the affected roadway network along the corridor and the three new station areas will essentially remain the same under the Build Alternatives as compared to the No Build Alternative, PM concentration modeling is not warranted per USEPA guidelines.

To address potential traffic impacts within a local roadway network from a project, FHWA defines three analysis categories for MSATs, depending on specific project circumstances (i.e., no analysis, qualitative, or quantitative).[3] For localized MSAT impacts, the SCMAGLEV Project does not have higher potential MSAT effects because the Annual Average Daily Traffic (AADT) at each affected roadway around the corridor and stations will be less than 140,000. Therefore, a quantitative MSAT analysis is not required, and a qualitative discussion is sufficient.

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[2] USEPA Transportation Conformity Guidance for Quantitative Hot-spot Analysis in PM2.5 and PM10 Nonattainment and Maintenance Areas. November 2015. www.epa.gov/state-and-local-transportation/project-level-conformity-and-hot-spot-analyses#pmguidance

[3] Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. October 18, 2016. http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat

Mesoscale Impact Analyses

As compared to a localized microscale impact analysis at specific congested traffic or site location, the purpose of conducting a mesoscale emission analysis is to provide a comparison of pollutant emission levels within the affected roadway network immediately adjacent to the corridor (i.e., roadways within a quarter mile buffer along the corridor alignment and around new stations) for each Build Alternative and the No Build Alternative. This analysis provides the criteria pollutant emission burden on a mesoscale or corridor level. The defined mesoscale boundary is illustrated in Appendix D.9. Since GHG emissions affect climate change on a global scale, FRA evaluated GHG emissions on a mesoscale level for the purpose of this analysis.

FRA utilized the MOVES2014b model to estimate emission factor for criteria pollutants and GHGs at the mesoscale level based on MPOs-provided county-specific parameters for their respective regions for applicable road types and speed bins. The average daily vehicle miles travelled (VMT) predicted within the affected roadway network along the corridor using MWCOG- and BMC-developed regional transportation models were multiplied by MOVES2014b-predicted emission factors to predict daily emission levels for each applicable Build Alternative and the No Build Alternative. Since the subarea (mesoscale) traffic network along the corridor will remain essentially unchanged for the majority of the Build Alternatives, FRA evaluated two scenarios based on the new station selection in the Baltimore area, which includes either the Cherry Hill or Camden Yards Station scenario. FRA conducted mesoscale emissions analysis for the two station scenarios, respectively.

Construction Period Impact

In contrast to operational activities, construction activities are relatively short-term conditions with the potential to produce temporary air quality effects. However, the impacts of construction vehicle and equipment emissions from large-scale construction activities occurring over many years (typically over five years) at a specific local site could cause adverse air quality effects and may need to be quantitatively addressed.

Based on the Project Sponsor’s construction schedule, described in the Construction Planning Memorandum (BWRR, May 14, 2020), no site-specific construction element or section will last more than five years with the exceptions of overall construction schedule for stations and trainset maintenance facilities (TMF) lasting six years. However, according to the Construction Planning Memorandum (BWRR, May 14, 2020), given the number of stations to be constructed, at a specific station, the construction will not last more than five years. For each TMF option, the entire facility will have a standardized size of 170 acres involving many phases and moving elements anticipated to occur over the entire TMF facility area. Construction activities will likely not last more than five years with measurable continuing negative impacts to a specific neighborhood around the TMF site. The negative impacts would be limited and of short duration. Therefore, since construction activities at these sites are considered temporary, FRA did not conduct a quantitative hot spot analysis.

General Conformity Rule (GCR) Analysis

FRA conducted an applicability analysis to determine whether the SCMAGLEV Project would require a conformity determination under the General Conformity Rule (GCR). FRA estimated annual emission for direct and indirect nonattainment or maintenance criteria pollutants emissions, as applicable, from construction and operational activities associated with SCMAGLEV Project on a corridor mesoscale level. FRA-estimated emissions were then compared to the applicable *de minimis* threshold.

FRA estimated construction manpower and equipment including truck activities for each construction element such as viaduct, above ground activities associated with tunnel construction, shaft, portal, substation, station, TMF, MOW, etc. using RSMeans data. FRA performed MOVES14b modeling to predict construction nonroad equipment and on-road truck and commuter vehicle emissions factors and multiplied them with manpower and equipment activity data to determine total emissions from each project construction component such as viaduct, TMF, station, etc. Based on the construction schedule for each construction component, FRA evenly distributed total emissions for each component over the corresponding duration for that component and then determined the overall annual emissions for the project by combining overlapping emissions from each component on an annual basis over the entire construction duration. For the tunnel boring, it is anticipated that standby generators will be installed and operated under power outage conditions. However, the actual emissions from these generators cannot be reasonably estimated and therefore they are not considered in the analysis.

After completion of the SCMAGLEV Project construction, potential long-term emissions from affected power plants providing grid power to various project facilities and trains could have potential negative regional air quality impacts.

Based on the power energy consumption levels estimated for the SCMAGLEV Project and the available existing capacity within the grid power pool in the region, the existing power facilities from Potomac Electric Power Company (PEPCO) and Baltimore Gas and Electric (BGE) to be used for providing grid power have the capacities under their current air permit conditions with permitted air emissions already accounted for in the SIP emissions budget.

For indirect operational emissions from on-road mobile source operations, FRA included the estimated corridor mesoscale emissions in the GCR analysis. Therefore, FRA performed GCR analysis for applicable nonattainment or maintenance pollutants by estimating annual emissions from mobile source operations on a mesoscale along the corridor and vehicle and equipment operations during the construction period. FRA compared these estimated annual emissions with the applicable *de minimis* threshold.

4.16.3 SCMAGLEV Project Affected Environment

FRA identified the existing, localized air quality conditions surrounding three identified intersections that were determined in the traffic studies to be affected by the SCMAGLEV Project. FRA also identified the existing air quality conditions at the mesoscale level along the corridor, including the subarea roadway networks

surrounding new stations under Cherry Hill and/or Camden Yards options and within a quarter mile buffer along the entire corridor. These conditions are reflected through the current status of NAAQS attainment and the recent ambient air monitoring data collected and published by Washington, D.C. Department of Energy and Environment (DOEE) and MDE.

The current air quality designations for the cities and counties and Washington, D.C. through which the SCMAGLEV Project is located, are summarized in **Table 4.16-1**.

Table 4.16-1: Nonattainment and Maintenance Status

County/City	Nonattainment		Maintenance	
	O_3	SO_2	$PM_{2.5}$[1]	CO
Washington, D.C.	X (Marginal)	n/a	X	X
Prince George's	X (Marginal)	n/a	X	X
Montgomery	X (Marginal)	n/a	X	X
Anne Arundel	X (Marginal)	X	X	n/a
Baltimore	X (Marginal)	X	X	n/a
Baltimore City	X (Marginal)	n/a	X	X

Note: An X designates this location as nonattainment or maintenance for the identified pollutants. All areas are in attainment for all other criteria pollutants.

[1] Related to the revoked 1997 standard with a maintenance plan still in place.

Source: https://www.epa.gov/green-book

The most recent measured ambient air concentrations within metropolitan areas in Baltimore and in Washington, D.C., illustrated in Appendix D.9, present a picture of the recent actual ambient air quality conditions within SCMAGLEV Project Affected Environment in addition to the attainment designation status summarized in **Table 4.16.1**. These measurements are mostly consistent with the above attainment designations.

4.16.4 Environmental Consequences

FRA evaluated potential air quality impacts within the SCMAGLEV Project Affected Environment under the SCMAGLEV Project through localized CO concentration modeling at the worst-case congested intersections and PM and MSATs qualitative assessment, corridor mesoscale emissions quantification for Cherry Hill and Camden Yards Station options for all concerned criteria pollutants and GHG, and GCR applicability analysis based on estimated construction and operation annual emissions for applicable pollutants.

4.16.4.1 No Build Alternative

Under the No Build Alternative, the SCMAGLEV Project will not be built and, therefore, no impacts related to the construction or operation of a SCMAGLEV system will occur. However, other planned and funded transportation projects will be implemented in the area and could result in impacts to air quality. Although the overall traffic increase is shown in the mesoscale subarea network primarily as a result of economic and population growth in the region under the No Build Alternative as compared to the baseline existing condition, continuing emission control programs, such as improving engine combustion efficiency, inspection, and maintenance programs, implemented on both Federal and state levels typically offset or reduce the overall vehicular pollutant emissions from traffic increase in general.

FRA estimated the criteria pollutant and GHG emissions within the mesoscale network for purposes of providing a comparison with the Build Alternatives discussed below.

4.16.4.2 Build Alternatives

Localized (Microscale) Impact

FRA conducted a screening analysis at a total of 65 intersections for which 2027 (i.e., estimated time of completion year) and 2045 (i.e., design year reflecting traffic growth over future years) traffic level-of-service (LOS) and volume forecasts were estimated for the roadway network surrounding each of the three stations (Refer to Section 4.2). FRA ranked the worst-case intersections showing a LOS of level D or worse (Refer to Section 4.2.8.4). Based on the approach volumes at each ranked intersection, FRA considered the intersection(s) with the highest levels and land use sensitivity, such as the presence of sidewalks, vacant land, etc., around each ranked congested intersection and then selected one overall worst-case primary signalized intersection within each of the three station areas, in Washington, D.C. and Baltimore. These selected worst-case intersections are summarized in **Table 4.16-2**; each was further analyzed for CO microscale (localized) concentration modeling. Intersections are also illustrated on SCMAGLEV Project mapping in Appendix D.9.

According to the traffic forecasts, traffic patterns on a local level around stations and maintenance facilities would not be meaningfully different among Build Alternatives. The predicted highest CO concentrations are well below the NAAQS for CO as illustrated in **Table 4.16-2**. As the studies were conducted at the worst-case intersections identified, FRA anticipates that CO concentration levels at other intersections in the vicinity of the SCMAGLEV Project will be lower than or will remain the same as these modeled intersections and will also be well below the NAAQS for CO. Consequently, FRA concluded that potential air quality impacts on a local level will not be considered negative under each Build Alternative.

Table 4.16-2: Worst-Case CO Intersections and Predicted CO Concentrations

Intersection	CO Concentration (ppm)			
	2027		2045	
	1-hour	8-hour	1-hour	8-hour
New York Ave. NW @ 7th St. NW/ Massachusetts Ave. NW @ 7th St. NW Combined	4.6	3.4	3.0	2.2
Howard Street @ Conway Street	4.5	3.3	3.8	2.8
Annapolis Road @ Patapsco	4.6	3.3	3.8	2.8
NAAQS	*35*	*9*	*35*	*9*

Source: AECOM July 2020

The Build Alternatives would not increase diesel vehicle traffic on roadways with 140,000 or greater AADT within the SCMAGLEV Project Affected Environment, therefore potential localized impacts from $PM_{2.5}$ and MSAT would likely not be significant. Additional information is presented in Appendix D.9.

Corridor Mesoscale Impact

FRA predicted project-level mesoscale emissions for criteria pollutants and GHG emissions in terms of CO_2 for both No Build and Build Alternatives under Cherry Hill and Camden Yards Station options and provided a comparison of mesoscale pollutant emission levels within the affected roadway network within the boundary defined for traffic impact analysis as depicted in Appendix D.9.

FRA utilized the MOVES2014b model with input parameters established by BMC and MWCOG that are applicable for their respective regional air conformity demonstration. These parameters were used to estimate emission factors for both criteria pollutants and GHG in terms of CO_2. The average daily VMT within this mesoscale roadway network along the corridor between Washington, D.C. and Baltimore were multiplied by MOVES2014b-predicted emission factors to predict daily mesoscale emission levels, thus providing a comparison of mesoscale pollutant emission levels to the No Build Alternative for both 2027 and 2045.

When compared to the No Build, the Build Alternatives would result in a slight emission increase summarized in **Tables 4.16-3 and 4.16-4** for each criteria pollutant within the mesoscale network, primarily as a result of new trips around the new stations within the roadway network immediately adjacent to the corridor. Both estimated daily emissions in tons per day (tpd) and annual emissions in tons per year (tpy) are shown in **Tables 4.16-3 and 4.16-4** for Build Alternatives under Cherry Hill and Camden Yards Station options, respectively.

Table 4.16-3: Cherry Hill Station Alternatives Mesoscale No-Build to Build Net Change in Daily and Annual Emissions

Pollutant	2027 Net Difference (tpd)	2027 Net Difference (tpy)	2027 Percent Change	2045 Net Difference (tpd)	2027 Net Difference (tpy)	2045 Percent Change
VOC	0.0049	1.79	0.66%	0.0087	3.18	1.69%
NOx	0.0509	18.58	0.76%	0.0802	29.27	1.52%
CO	0.1808	65.99	0.82%	0.2697	98.44	1.50%
$PM_{2.5}$	0.0018	0.66	0.89%	0.0025	0.91	1.77%
PM_{10}	0.0074	2.70	1.02%	0.0131	4.78	1.86%
SO_2	0.0002	0.07	0.90%	0.0003	0.11	1.59%
CO_2	59.4853	21,712.13	0.89%	103.1077	37,643.31	1.55%

Source: AECOM July 2020

Table 4.16-4: Camden Yards Station Alternatives Mesoscale No-Build to Build Net Change in Daily and Annual Emissions

Pollutant	2027 Net Difference (tpd)	2027 Net Difference (tpy)	2027 Percent Change	2045 Net Difference (tpd)	2045 Net Difference (tpy)	2045 Percent Change
VOC	0.0015	0.55	0.20%	0.0033	1.20	0.64%
NOx	0.0258	9.42	0.38%	0.0326	11.90	0.62%
CO	0.0982	35.84	0.44%	0.1069	39.02	0.59%
$PM_{2.5}$	0.0009	0.33	0.46%	0.0010	0.37	0.68%
PM_{10}	0.0039	1.42	0.53%	0.0050	1.83	0.71%
SO_2	0.0001	0.04	0.52%	0.0001	0.04	0.64%
CO_2	34.3013	12,519.97	0.51%	41.5163	15,153.45	0.62%

Source: AECOM July 2020

The predicted increases in mesoscale corridor emissions are primarily attributed to the increases in new trips or VMT around new stations particularly within the Baltimore area, according to the traffic forecasts, presented in Appendix D.9. Increases in emissions will occur within the same traffic impact analysis area that includes roadways within approximately quarter mile buffer areas along the corridor and does not reflect the change in emissions over all affected roadways in the region.

Based on the regional VMT forecasts provided in Ridership Data Request (BWRR, May 6, 2020), the SCMAGLEV Project will likely reduce overall regional VMT in a range of nine to 12 percent during 2027 and 2045 under Cherry Hill and Camden Yards Station

options. Therefore, the SCMAGLEV Project will likely result in an overall reduction in regional mobile source emissions, as a result of significant overall reduction of vehicle miles travelled over the entire regional affected environment while the corridor wide emissions within the selected mesoscale network will slightly increase around station areas. The mesoscale subarea emissions increase particularly around new stations would be expected to result in a benefit of reducing overall regional emissions substantially as more commuters shift from personal vehicle within the region to SCMAGLEV.

The potential effects of GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough to have appreciable effects on climate change. The reduction of overall regional VMT from the SCMAGLEV Project, as compared to the No Build Alternative, will likely result in GHG emission reductions on a regional scale.

The SCMAGLEV system will operate entirely on electricity, with the exception of certain maintenance vehicles. As a result, the SCMAGLEV train will not increase greenhouse gas emissions. However, as described in Section 4.19 Energy, the SCMAGLEV system will result in an increase in power consumption in the region. Therefore, an increase in greenhouse gas emissions from powerplants would likely occur.

General Conformity Rule Applicability

For those nonattainment or maintenance pollutants as listed in **Table 4.16-1**, only NOx, VOC and SO_2 are the pollutants considered as part of this general conformity applicability analysis. For maintenance pollutant CO, the 20-year maintenance periods ended on December 15, 2015 (Baltimore) and March 16, 2016 (Washington, D.C.). Since the SCMAGLEV Project would be implemented after the end of the maintenance period for CO, a conformity determination for CO is not required. For $PM_{2.5}$, EPA revoked the 1997 $PM_{2.5}$ NAAQS and the area is in attainment for the 2006 $PM_{2.5}$ NAAQS, therefore the GCR is not applicable for $PM_{2.5}$ emissions.

For NOx, VOC, and SO_2, FRA predicted mesoscale nonattainment pollutant operational emissions for 2027 and 2045 as summarized in **Table 4.16-5** for both Cherry Hill and Camron Yard Station Alternatives. The predicted annual operational emissions are below the applicable *de minimis* levels for each criteria pollutant.

Table 4.16-5: Mesoscale Operational Emissions (tons per Year

Pollutant	2027 Cherry Hill Alternatives	2027 Camden Yards Alternatives	2045 Cherry Hill Alternatives	2045 Camden Yards Alternatives	GCR *de minimis* Threshold	Exceed *de minimis* Threshold?
VOC	1.79	0.55	3.18	1.20	50	No
NOx	18.58	9.42	29.27	11.90	100	No
SO_2	0.07	0.04	0.11	0.04	100	No

Source: AECOM July 2020

Short-term Construction Effects

Emissions from on-site construction equipment and on-road construction-related vehicles have the potential to affect localized air quality that is typically assessed through a hot spot analysis. The proposed construction activities are not anticipated to occur at an individual local site over five years and, therefore, potential air quality impacts from construction activities are considered temporary and a quantitative air quality hot spot analysis is not warranted.

FRA predicted construction period nonattainment pollutant emissions associated with each project component and then evenly distributed them over the respective construction schedule on an annual basis. The breakdown of predicted tons per year for each applicable pollutant under the worst case condition amongst all 12 Build Alternatives are summarized in **Table 4.16-6** and further illustrated in detail in Appendix D.9 for each construction element and each Build Alternative defined based on different project element combinations as described in Chapter 3 Alternatives Considered. Since the build year is 2027, FRA further combined construction and operational emissions starting from 2027 and beyond as shown in **Table 4.16-7**. The predicted worst-case annual construction emissions are below the applicable *de minimis* levels for each respective pollutant during each construction year.

Table 4.16-6: Worst-case Construction Emissions for All Build Alternatives (tons per Year)

Year	VOC	NOx	SO_2
2022	2.2	18.9	0.05
2023	4.9	42.6	0.11
2024	4.8	41.0	0.10
2025	4.8	41.0	0.10
2026	2.6	22.5	0.01
2027	0.7	6.6	0.01
2028	0.6	5.6	0.01
GCR *de minimis* Threshold	50	100	100
Exceed *de minimis* Threshold	No	No	No

Source: AECOM July 2020

Table 4.16-7: Worst-case Combined Construction and Operational Emissions for All Build Alternatives (tons per Year)

Year	VOC	NOx	SO_2
2022	2.2	18.9	0.05
2023	4.9	42.6	0.11
2024	4.8	41.0	0.10
2025	4.8	41.0	0.10
2026	2.6	22.5	0.01
2027	2.5	25.2	0.08
2028	2.4	24.2	0.08
2045	3.2	29.3	0.1
GCR *de minimis* Threshold	50	100	100
Exceed *de minimis* Threshold	No	No	No

Source: AECOM July 2020

Since the Project would not result in operational or construction emissions that exceed the *de minimis* thresholds, a formal conformity determination is not required. Significant air quality impacts will not likely result from the implementation of each Build Alternative during construction period as well as the period when construction and operation activities would overlap.

4.16.5 Potential Mitigation Strategies

To mitigate the temporary air quality impacts during the construction period, to the extent practicable, the Project Sponsor would implement various control measures to avoid and/or minimize impacts associated emissions including the following:

- Dust Control - a dust control plan including a watering program would be required as part of contract specifications. The plan would include measures such as:
  - All trucks hauling loose material would be equipped with tight-fitting tailgates and their loads securely covered prior to leaving the construction site.
  - Water sprays would be used for all demolition, excavation, and transfer of soils to ensure that materials would be dampened as necessary to avoid the suspension of dust into the air.
- Idling Restriction - all stationary vehicles on roadways adjacent to the construction site would be prohibited from idling with the exception of vehicles that are using their engines to operate a loading, unloading, or processing device (e.g., concrete-mixing trucks) or otherwise required for the proper operation of the engine.

- Clean Fuel – ultra low sulfur diesel fuel would be used for diesel engines.
- Best Available Tailpipe (BAT) Reduction Technologies - nonroad diesel engines and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and pumping trucks would utilize the BAT for further reducing particulate emissions. Diesel particulate filters (DPFs) have been identified as being the tailpipe technology currently proven to have the highest reduction capability and could be installed by the original equipment manufacturer or retrofitted.