

2016

FRA Rail Program Delivery

Meeting

Benefit-Cost Analysis Guidance

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Introduction

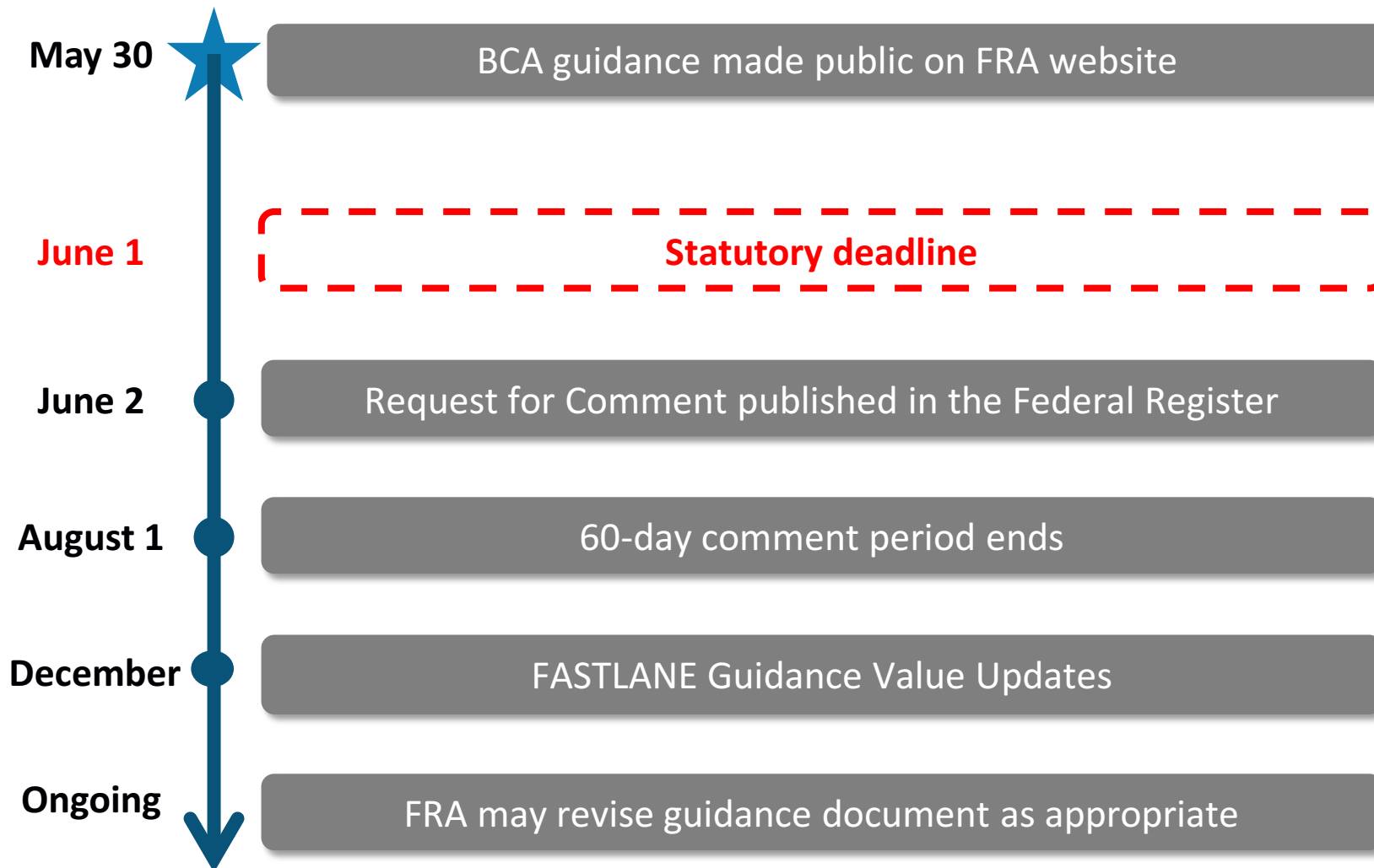
Benefit-Cost Analysis (BCA) Guidance for Rail Projects

Issued May 2016

Objectives

- ▶ Provide consistent approach for rail project BCAs
- ▶ Identify reference data sources and values
- ▶ Standardize methodology for common categories of benefits and costs
- ▶ Provide focus on rail-specific issues in a BCA context

Timeline



Applicability

FAST Act discretionary FRA programs

- ▶ Consolidated Rail Infrastructure and Safety Improvements (Sec. 11301)
- ▶ Federal-State Partnership for State of Good Repair (Sec. 11302)

Other Departmental programs

- ▶ Transportation Investment Generating Economic Recovery (TIGER)
- ▶ Fostering Advancements in Shipping and Transportation for the Long-Term Achievement of National Efficiencies (FASTLANE)

Consistency and Compliance

Consistent with...

- ▶ U.S. DOT benefit-cost guidance (TIGER and FASTLANE)
- ▶ OMB Circulars A-94 and A-4

Complies with FAST Act Sec. 11313:

[FRA] shall enhance the usefulness of assessments of benefits and costs for...rail projects by:

- (1) Providing ongoing guidance and training*
- (2) Providing more direct and consistent requirements*
- (3) Requiring...applicants to clearly communicate methodology*
- (4) Ensuring clear and consistent guidance on values for key assumptions*

Submission Guidelines

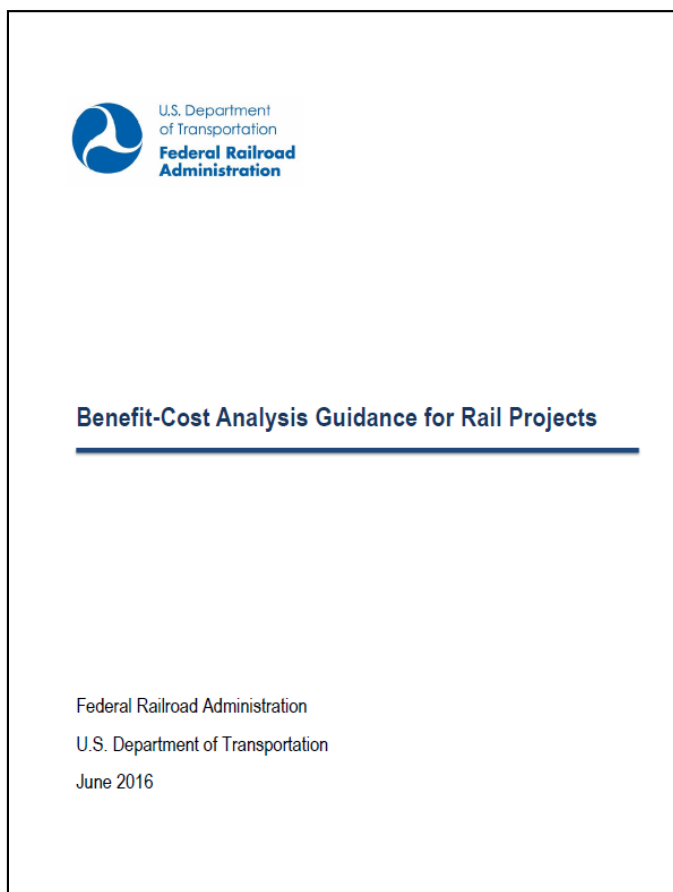
- **Minimum requirements** provided in BCA guidance document (Section 4)
- Specific Notice of Funding Opportunity (NOFO) instructions **may supersede** these requirements

1. Executive Summary
 1. Project Description
 2. Major Assumptions
 3. Summarized Benefits
 4. Summarized Costs
 5. Net Benefits
 6. Qualitative Analysis
2. Project Benefits
 1. Monetized Benefits
 2. Qualitative Benefits
 3. Uncertainty Analysis
3. Project Costs
 1. Monetized Costs
 2. Cost Uncertainties
4. Net Benefits

Table 1. Example Net Present Value Of Costs, Benefits and Net Benefits/Ratio (2014 \$ Millions)

Benefits	
Travel Time Savings	\$1.2
Reliability	Qualitative
Safety	\$10.3
Environmental Benefits	\$1.3
State of Good Repair	N/A
Total Benefits	\$18.6
Costs	
Capital Expenditures	\$10.1
O&M Costs	\$2.0
Renewal/Replacement Costs	NA
Value of Remaining Assets	-\$1.2
Total Costs	\$10.9
Net Benefits/Ratio	
Net Benefits	\$7.7
Benefit Cost Ratio	1.7

Availability



Available at:
www.fra.dot.gov/Page/P0940

Guidance Features

Approach

Benefit categories

Cost categories

Approach – Guiding Principles

- ▶ Set of BCA analysis principles
- ▶ Guidelines to establishing basic parameters of BCA
- ▶ Largely independent of data or project specifics
- ▶ Ensures transparency and reproducibility of results

Approach – Guiding Principles #2

- Discounting
 - Complies with FAST
- Nominal v. real dollars
- Analysis period
- BCA v. EIA
- Baseline & alternatives
- Transparency & reproducibility
- Uncertainty & sensitivity analysis

Transparency and Reproducibility

- ▶ Clear discussion of all assumptions
- ▶ Documentation of all sources
- ▶ Explanation of estimates and formulations
- ▶ Documentation of valuations
- ▶ Unlocked Excel Spreadsheet

Approach – Benefit & Cost Categories

- ▶ Definition of the category
- ▶ Recommended data values
- ▶ Illustrative rail-specific example of benefit/cost
- ▶ Example calculation

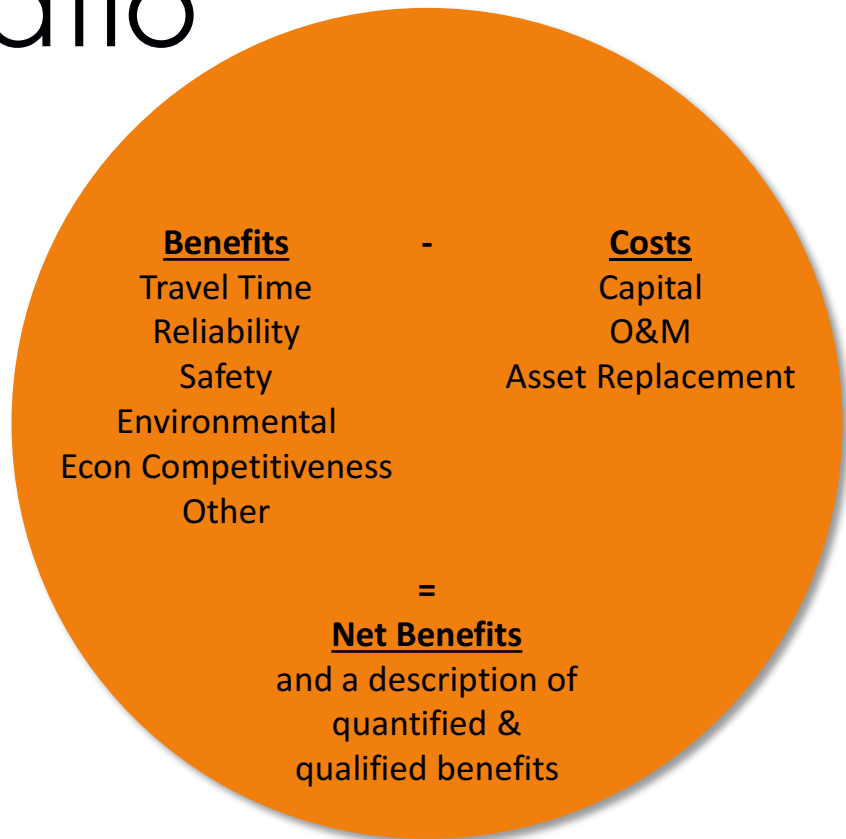
Benefits

- Direct user benefits
 - Value of time
 - Value of reliability
- Safety
 - Crashes/fatalities avoided
- Environmental: 5 pollutants including carbon
- Other
 - Agglomeration & productivity
 - Resilience
 - Noise pollution
 - Ladders of opportunity

Costs

- Capital expenditures
- Operating & maintenance costs
- Asset replacement costs
- Remaining asset life

Net Benefits & Benefit Cost Ratio



$$\text{Benefit-Cost Ratio} = \frac{\sum(\text{Discounted Benefits})}{\sum(\text{Discounted Costs})}$$

Final Thoughts

- ▶ BCAs provide a useful benchmark to evaluate and compare transportation investments
- ▶ Increasingly a prerequisite to receive financial assistance under Federal programs (ex- FAST 11301 & 11302, TIGER, FASTLANE)
- ▶ Additional guidance on minimum BCA requirements in program NOFO

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Thank you!

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