Best Practices in Applying for Discretionary Grants, w/ a Focus on Completing Benefit-Cost Analysis for State of Good Repair Projects

Presenters from FRA’s Office of Railroad Policy and Development:
Frances Bourne, Policy Lead
Bryan Rodda, Lead Community Planner
Nate Vomocil, Economist
Overview of Select FY17 – FY19 USDOT Rail Funding

FRA currently administers three competitive discretionary grant programs, as per the FAST Act, focused on improving the nation’s rail safety, infrastructure, and services.

- **Federal-State Partnership for State of Good Repair**
  - FY17: $25 M
  - FY18: $250 M
  - FY19: $400 M

- **Consolidated Rail Infrastructure & Safety Improvements**
  - FY17: $5 M
  - FY18: $20 M
  - FY19: $5 M

- **RRIF / TIFIA**
  - FY17: $68 M
  - FY18: $592.5 M*
  - FY19: $255 M

- **INFRA**
  - FY17: $787 M
  - FY18: $825.3 M
  - FY19: $856 M

- **TIGER / BUILD**
  - FY17: $500 M
  - FY18: $1,500 M
  - FY19: $900 M

*(PTC set-aside: $250 M)

FY19 CRISI
Program Overview
**FY19 CRISI – Program Overview**

**Grant Purpose**

- To fund projects that improve the safety, efficiency, and/or reliability of intercity passenger and freight rail systems

**CRISI – Recent & Upcoming Funding Opportunities**

<table>
<thead>
<tr>
<th>Year</th>
<th>Available Funding (M)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY16</td>
<td>$98</td>
<td></td>
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<tr>
<td>FY17</td>
<td>$190</td>
<td>Announced awards February 2019</td>
</tr>
<tr>
<td>FY18</td>
<td>$230</td>
<td>Announced awards August and December 2018</td>
</tr>
<tr>
<td>FY19</td>
<td>$255</td>
<td>Announced awards June 2019</td>
</tr>
<tr>
<td>FY20</td>
<td>$330</td>
<td>Announced awards June 2019</td>
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</tbody>
</table>

**Authorization & Appropriations (M)**

<table>
<thead>
<tr>
<th>Year</th>
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<th>Appropriation</th>
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<td>$230</td>
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<tr>
<td>FY19</td>
<td>$255</td>
<td>$255</td>
</tr>
<tr>
<td>FY20</td>
<td>$330</td>
<td>TBD</td>
</tr>
</tbody>
</table>

**Status of Funding Opportunities**
Eligible Applicants

- State entities
- Public agencies or publicly chartered authorities
- Local governments
- Amtrak or other intercity passenger rail carrier
- Class II or III railroads
- Any rail carrier or equipment manufacturer in partnership with at least one state entity, public agency, and/or local government
- The Transportation Research Board (TRB)
- A university transportation center engaged in rail-related research
- A non-profit labor organization
Eligible Project Criteria

• Wide Range of Rail Capital Projects
  • Congestion mitigation
  • Ridership growth facilitation
  • Enhancements to multimodal connections
  • Improvements to short-line or regional railroad infrastructure

• Railroad Safety Technology
• Track, Station, and Equipment Improvements for Intercity Passenger Rail
• Grade Crossing Improvements
• Rail Line Relocation and Improvement
• Regional, State, Corridor Planning and Environmental Analyses
• Safety Programs and Institutes
• Research, Workforce Development, and Training

At least 25% of funds reserved for rural projects
Non-Federal Match Requirements

- Federal share of total costs shall not exceed 80 percent
- First 20 percent of non-Federal match is limited to cash contributions
- In-kind contributions will be accepted beyond the first 20 percent

Average matching percent of selected projects in FY18 round was 57%

Selection Preferences for Matching Funds

- 50 percent or greater non-Federal match
- Non-Federal shares consisting of funding from multiple sources, demonstrating broad participation and cost sharing from affected stakeholders
FY19 CRISI – Program Overview

Evaluation Criteria

- **Technical Merit**: Readiness, private sector participation, consistency with planning documents
- **Project Benefits**: Effects on system performance, safety, integration with other modes, ability to meet demand

Selection Criteria

- **Preference** for higher matching funds from multiple sources, maximized net benefits, and private sector participation
- **Key Departmental Objectives**:
  - Supporting Economic Vitality
  - Leveraging Federal Funding
  - Preparing for Future Operations/Maintenance Costs
  - Innovative Approaches to Safety and Project Delivery
  - Accountability
Federal-State Partnership for State of Good Repair Program Overview
Partnership Program Overview

Grant Purpose

- To fund capital projects to **repair, replace, or rehabilitate** publicly or Amtrak-owned or controlled **infrastructure, equipment, and facilities** used in intercity passenger rail service to reduce the state of good repair backlog and improve intercity passenger rail performance.

Recent & Upcoming Funding Opportunities

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<thead>
<tr>
<th>Year</th>
<th>Available Funding (M)</th>
<th>Status</th>
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<tbody>
<tr>
<td>FY17 &amp; FY18</td>
<td>$272M</td>
<td>✔ Announced awards August 2019</td>
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<tr>
<td>FY19</td>
<td>$400M</td>
<td>□ NOFO to be issued (date TBD)</td>
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</tbody>
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<td>FY18</td>
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<tr>
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<td>$300</td>
<td>$400</td>
</tr>
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<td>FY20</td>
<td>$300</td>
<td>TBD</td>
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Authorization & Appropriations (M)

Status of Funding Opportunities
Partnership Program Overview

Eligible Applicants

- States *(including the District of Columbia)*
- Groups of States
- Interstate Compacts
- Public Agencies or Publicly Chartered Authorities established by one or more States
- Political Subdivisions of States
- Amtrak
- Any combination of the above

*Selection preference for applications submitted by multiple eligible applicants

*Ineligible entities may be included as a partner on an application submitted by one or more eligible applicants*
Partnership Program Overview

Eligible Project Criteria

**Capital Projects** that repair, replace, or rehabilitate assets and/or improve intercity passenger rail performance. Includes projects that:

- Replace assets in-kind, or with assets that increase capacity or provide a higher level of service
- Ensure that service can be maintained while existing assets are brought to a state of good repair
- Bring assets into a state of good repair

Qualified railroad assets include **infrastructure, equipment, or facility assets** that are:

- Used in intercity passenger rail service
- Owned or controlled by Amtrak or public entity
- Meet planning and policy requirements
- Not in a state of good repair
Partnership Program Overview

Non-Federal Match Requirements

• Federal share of total costs **shall not exceed 80 percent**
• First 20 percent of non-Federal match is **limited to cash contributions**
• In-kind contributions will be accepted beyond the first 20 percent
• If Amtrak is an applicant, its ticket and other non-Federal revenues generated from its business operations may be used as matching funds

Selection Preferences for Matching Funds

• **50 percent or greater non-Federal match**
• **Non-Federal shares consisting of funding from multiple sources, demonstrating broad participation and cost sharing from affected stakeholders**

Overall matching percent of selected projects in FY17-FY18 round was 39%
Partnership Program Overview

Evaluation Criteria

- **Technical Merit:** Readiness, private sector participation, consistency with planning documents
- **Project Benefits:** Effects on system performance, safety, integration with other modes, ability to meet demand

Selection Criteria

- **Preference** where Amtrak is not sole applicant, joint applications, 50 percent or greater non-Federal match from multiple sources (including private sector)
- **Key Departmental Objectives:**
  - Supporting Economic Vitality
  - Leveraging Federal Funding
  - Preparing for Future Operations/Maintenance Costs
  - Innovative Approaches to Safety and Project Delivery
  - Accountability
Best Practices
• Read the Notice of Funding Opportunity (NOFO) completely and carefully to understand the criteria for eligibility and selection, and what information each application must include.

• FRA has identified three primary areas where applications not selected for funding typically demonstrate deficiencies:
  • Project Narrative
  • Statement of Work (SOW)
  • Benefit-Cost Analysis (BCA)
Best Practices – Project Narrative
Best Practices – Project Narrative

PROJECT NARRATIVE OUTLINE

I. Cover Page
II. Project Summary
III. Project Funding
IV. Applicant Eligibility
V. Project Eligibility
VI. Detailed Project Description
VII. Project Location
VIII. Evaluation & Selection Criteria
IX. Project Implementation & Management
X. Environmental Readiness

☑ Structure your project narrative in accordance with the outline specified in the NOFO
☑ Include all elements identified in the outline
☑ Follow the instructions for each element
☑ Adhere to 25-page limit
Best Practices – Project Narrative

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☑ Indicate if an application for the project has been submitted previously to another Federal grant program – include the program and year
Best Practices – Project Narrative

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☑️ Briefly describe the project in 4 to 6 sentences, its anticipated benefits, and the transportation challenges the project will address

☑️ Think of this section of the application as your elevator pitch for the project to the DOT Secretary and FRA Administrator
Best Practices – Project Narrative

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☑ Only include eligible costs
☑ Specify each source of non-Federal match
☑ Provide details about in-kind match
☑ Indicate public- vs. private-sector match
☑ Describe the non-Federal funding arrangements
☑ Attach funding commitment letters
☑ Identify if the proposed match will not be available until a certain date or if funds must be spent by a deadline
## Best Practices – Project Narrative

### PROJECT NARRATIVE OUTLINE

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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<tbody>
<tr>
<td>I. Cover Page</td>
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<tr>
<td>VI. Detailed Project Description</td>
<td>- Thoroughly discuss the transportation challenges and benefits</td>
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<td>- Include data to support project benefits</td>
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<td>- Describe how project components are related and will be sequenced</td>
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<td>- Include photographs or diagrams</td>
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<td>- Identify all host railroads, operators, and beneficiaries</td>
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<td>VII. Project Location</td>
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<tr>
<td>VIII. Evaluation &amp; Selection Criteria</td>
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<tr>
<td>IX. Project Implementation &amp; Management</td>
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- Identify cities, counties, and states where project is located
- Include a map of the project
- Identify railroad mileposts
- For grade crossing projects, include the U.S. DOT National Highway-Rail Crossing Inventory number
Best Practices – Project Narrative

## PROJECT NARRATIVE OUTLINE

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<td>X.</td>
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</table>

- Include a separate section in the project narrative focused on how the project meets each of the evaluation and selection criteria.

- **DO NOT** rely solely on the contents of the “detailed project description” section to satisfy this requirement — it is OK to repeat key points in this section.

- Quantify benefits whenever possible.
Best Practices – Project Narrative

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- Highlight applicant’s past experiences managing and overseeing similar projects, including FRA- or DOT-funded projects
- Describe expected arrangements for project contracting, contract oversight, change-order management, risk management, and conformance with Federal requirements for progress reporting
Best Practices – Project Narrative

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☑️ Document environmental work, either initiated or completed
Best Practices – Statement of Work
Best Practices – Statement of Work (SOW)

- Utilize FRA’s Standard Cost Categories as a way to organize the scope of work and budget
- Ensure consistency among the project narrative, statement of work, benefit-cost analysis, and other application materials

![Image of FRA Main Worksheet](FRA_Main_Worksheet.png)
Organize the scope of work into discrete and logically sequenced tasks.

Provide appropriate timing for tasks.

Identify the deliverables required to communicate progress and completion of tasks to FRA.

Check the budget to ensure numbers are consistent with cost information submitted in forms and other areas of the application.
Best Practices – Benefit-Cost Cost Analysis
Why Do Benefit Cost Analyses?

• It is required by law.
  o 49 U.S.C §24407(e)(1)(B) stipulates that the results of the BCA of each project shall be considered as a selection criteria.
  o TIGER/BUILD and FASTLANE/INFRA have similar provisions.

• They require applicants to rationalize their project scope and intended project outcomes.

• BCA’s are the most unbiased way of comparing projects across diverse categories and different magnitudes.
BCA – Overview of Steps

1. Specify your project’s **base case**, **alternate case**, and **timeline**;

2. SHOW how your **alternate case** will result in specific effects (i.e., **project benefits**);

3. Break down benefits and costs into the smallest sub-elements possible;

4. Assign monetary values to sub-elements using USDOT’s **BCA Guidance**;

5. Calculate results and **discount to base year**.
BCA – Scope of Analysis

• The base case reflects the status quo — i.e., the world as it exists today
• The alternate case (i.e., “build scenario”) is the proposed project
  • An analysis for construction should present a single project
  • One application can contain multiple projects
  • Multiple projects need multiple analyses
  • Avoided costs of alternatives not taken are NOT benefits
• The timeline must be appropriate for the proposed project
  • Match the useful life of the project, but not longer than 30 years
  • Projects with useful life beyond 30 years will have residual value (stations in particular) → Use GAAP straight line depreciation
BCA – Scope of Analysis

• Examine ONLY the differences between the base case and alternate case (i.e. the marginal effects).

• Planned future projects are irrelevant.

• These differences should reflect realistic projections.

Examples:
• Intercity passengers will likely change modes if their station is unavailable, while commuters are more likely to divert to another nearby station.
• Host railroads will impose speed and weight restrictions before shutting down completely.
• Growth rates will not suddenly double unless a fundamental change occurs.
• The marginal effects of the alternate case are the project benefits.
• Marginal effects are sometimes undesirable, shown as negative dollar amounts.
• The total cost of constructing the project as well as O&M for the full lifetime are the project costs.
  • O&M costs for NEW equipment and infrastructure are costs.
  • Changes to EXISTING O&M costs are included with project benefits, even if negative.
  • Residual value for remaining useful life is a benefit, NOT subtracted from costs.
BCA – Development

• Break down marginal effects into the smallest possible sub-elements.
  • This is where 90% of your “thought work” occurs.
  • Provide documentation for inputs and growth rates.

Example: Replacing a bridge might result in…

• Removal of slow orders, improving through speed (travel time savings)
• Reduced wait time at the approaches (travel time savings and emissions)
• Decreased delays at nearby sidings along the corridor (travel time savings and emissions)
• Reduced O&M costs
BCA – Modal Diversion

- **Modal diversion** is a marginal choice; *ONLY* count marginal effects
- New users value the project less than existing users (Follow the 50% rule in USDOT’S *BCA Guidance*).
- Lost revenue from passengers changing to other modes is a *transfer*, **NOT a benefit** (Follow USDOT’S *BCA Guidance*).
- Example: Avoided rail-to-truck diversion could result in…
  - Increased pavement damage
  - Increased harmful emissions
  - Increased congestion on highways
  - Decreased safety
**BCA – Do’s & Don’ts**

**BAD X**

**Insufficient level of detail**
- We’re considering doing intermodal?

**Unidentified Data Sources**
- Here are some numbers we found online somewhere.

**Calculations Excluded**
- You can probably guess at what we’re doing here.

**GOOD ✓**

**Sufficient level of detail**
- 28 railroad switches replaced, and upgrading to concrete crossties

**Identified Data Sources**
- Values from Table A-3 in Appendix A of USDOT’s BCA Guidance

**Calculations Clearly Presented**
- We’ve included cell references to save you time and show our methodology.
**BAD X**

**Build vs No Build Implausible**
- Constructing a wye to improve efficiency of switching operations will cause significant truck-to-rail diversion.
- Industrial park does not currently exist, and no provisional leases are in place, but we are confident that tenants will come.

**Bad/Absent Underlying Forecasts**
- Fastest growing city in state, growth will cause uncontrollable congestion.
  
  2014 Pop.: ~650 → 2017 Pop.: ~6000

**GOOD ✓**

**Build vs No Build Credible**
- We predict a 25x increase of traffic over this Gx, because of a nearby auto-finishing plant currently being constructed nearby.
- Current high-value anchor tenants of industrial park will benefit from rail access, and ~50% of total land is available for attracting new tenants.

**Solid Underlying Forecasts**
- Here is our year-over-year historical growth rate, and we expect similar results in the future.
Scope of Project vs Scope of Benefits Mismatched
• This grade separation will allow railroads to operate at higher speeds over the current at-grade crossing.

Double Counting Benefits
• We constructed a reduced “Class 1 Hourly Operating Cost” benefit; we also included reduced “Hourly Labor Costs” benefits separately.

Scope of Project vs Scope of Benefits Aligned
• Upgrading to a Quiet Zone will result in a one-time increase in property values.

Avoid Double Counting Benefits
• We separated our improved fuel efficiency benefits from our reduced emissions benefits so that both can be properly accounted for.
**BCA – Do’s & Don’ts**

**BAD X**

**Improper Modal Shift Impacts**
- 100% of rail shipments over 500 miles will shift to truck for the entire shipment distance if this single interlocking is not improved.

**Nominal Dollars & Inflation**
- We added a 3% annual compound growth rate to benefit values to account for inflation.

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**GOOD ✓**

**Reasonable Modal Shift Impacts**
- 10% of traffic currently served by rail will switch to truck because of bridge-failure reliability issues.

**Real Dollars & Real Discount Rate**
- We read and followed the USDOT BCA guidance.
BCA – Do’s & Don’ts

BAD X

Unreasonable Time Horizons
• The replacement cycle for this project is 20 years, so our timeline is 75 years, with no additional costs.

Mismatch in Costs & Benefits
• The new transit system has many benefits; do not worry about how much it costs to build or operate.

Omitted / Understated costs
• Maintenance costs for heavily-used Class 3 track will be $1,000 per year per mile.

GOOD ✔

Reasonable Time Horizons
• Bridge will last 75 years, so we included a residual value for remaining useful life after 30 years.

Aligned Costs & Benefits
• 286k track and upgraded ties will improve our ability to earn revenue and cover maintenance costs.

Accurate Costs
• Based on our provided historical data, our yearly maintenance will be ~$10,000 per year per mile.
**BCA – Do’s & Don’ts**

**BAD X**

Transfers

- 9,600 jobs will be created as a result of this project.
- Will result in 20,000 less labor hours each year.
- Will reduce shipping costs by eliminating trucks.
- Wharfage fees charged at dock will increase revenues.

**GOOD ✔**

Transfers

- Transfers are bad.
- Don’t include them.
BCA – Final Advice

- Document your assumptions in as much detail as possible.

- If your application contains multiple projects, analyze benefits and costs of each project separately.

- If your BCA includes modal diversion, include YOUR freight and/or passenger traffic counts.

- Include the specific AADT for each grade crossing project. State DOTs often fail to send updates.

- You must include an unlocked Excel spreadsheet that clearly shows your calculations and discounting.
Technical Assistance

• For rail-specific examples on how to apply the BCA Guidance, refer to FRA’s BCA FAQ available at: https://www.fra.dot.gov/eLib/Details/L19367
The FRA website has several resources to educate grantees on aspects of rail program delivery and the electronic grant application process.

### On-demand Training

The FRA Rail Program Delivery Video Series provides grantees and loan recipients with guidance on key aspects of rail program delivery, including topics such as:

- Grant programs and application requirements
- How to prepare benefit-cost analyses
- Environmental streamlining
- Understanding the grant closeout process

FRA also offers webinars to educate potential grantees, as new grant program NOFOs and appropriations occur.

To access these and many more videos, please visit the Training and Guidance webpage at: [https://www.fra.dot.gov/Page/P0707](https://www.fra.dot.gov/Page/P0707)

If you would like to be added to our mailing list to learn about future trainings and events, please contact us at [FRARailProgramDelivery@dot.gov](mailto:FRARailProgramDelivery@dot.gov)