



***FASTLANE* Grants - 2016**

Preparing a Benefit-Cost Analysis

Office of the Assistant Secretary for
Transportation Policy

United States Department of Transportation





Executive Summary

- The Fixing America's Surface Transportation Act (FAST Act) established the Nationally Significant Freight and Highway Projects (NSFHP) program to provide Federal financial assistance to projects of national or regional significance.
 - DOT will refer to NSFHP grants as Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) grants
- For projects forwarded to senior review team, US DOT economic experts review the applicant's benefit-cost analysis (BCA) and attempt to determine the likelihood that the benefits exceed costs (i.e. not the applicant's self-determination)
 - BCA Assessment
 - Benefits > Costs
 - Uncertain, but Probably Benefits > Costs
 - Uncertain, but Probably Benefits < Costs
 - Benefits < Costs

Executive Summary

- Complete description of projects, costs & benefits, project matrix & summary spreadsheet – if separate sub-projects have separate matrix/summary for each one

Current Status/Baseline & problem to be Addressed	Change to Baseline / Alternatives	Type of Impacts	Affected Population	Economic Benefit	Summary of Results	Page Reference in BCA
Container Terminal Pier in State of Disrepair and inadequate for current volumes	New Pier / Rehabilitate & Extend pier	↓ Maintenance costs ↑ throughput and reduced delays for trucks	Terminal and shippers	SOGR, reduced congestion (↑ times and ↓ operating costs & emissions)	\$ value on ↓ operating costs & emissions \$ value from SOGR ↑ Discussion on value of ↑ freight movement	pp. 15-18 and p.20

Executive Summary

Calendar Year	Project Year	Affected Drivers	Travel Time Saved ¹	Value of Time Saved (\$2014) ²	Initial Costs (\$2014) ³	Operations & Maintenance Costs (\$2014)	Undiscounted Net Benefits	Discounted at 7%
2016	1				\$ 38,500,000	\$ 6,000,000	\$ (44,500,000)	\$ (41,588,785)
2017	2	80,000	1,040,000	\$ 20,300,800		\$ 700,000	\$ 19,600,800	\$ 17,120,098
2018	3	95,000	1,235,000	\$ 24,107,200		\$ 700,000	\$ 23,407,200	\$ 19,107,248
2019	4	100,000	1,300,000	\$ 25,376,000		\$ 700,000	\$ 24,676,000	\$ 18,825,202
2020	5	102,000	1,326,000	\$ 25,883,520		\$ 700,000	\$ 25,183,520	\$ 17,955,502
2021	6	109,000	1,417,000	\$ 27,659,840		\$ 700,000	\$ 26,959,840	\$ 17,964,480
NPV								\$ 49,383,744
1. Number of drivers times 3 minutes per day (3/60 hours) over 260 workdays								
2. Hours at \$19.52 per hour for All Purpose intercity travel (\$2014)								
3. Includes costs from delays during construction								



Baselines

- Applicants should measure costs and benefits of a proposed project against a baseline (“base” or “no build”)
- As a starting point, reasonable to forecast that that baseline resembles the present state
 - factor in any projected changes (e.g., baseline economic growth, increased traffic volumes, or completion of already planned and funded projects) that would occur even in the absence of the requested project
 - Factor in continued maintenance, etc. (sound asset management)
- Project must have independent utility
- Limit analysis to FASTLANE funded project only!



Baselines – Common Mistakes

- Using projected traffic levels in future (e.g. 2030) for baseline traffic to generate benefits – inflates benefits
- Not considering positive impact from other planned projects
- Unrealistic traffic assumptions on diverted traffic
 - e.g. claiming diversion of thousands of miles from a short freight rail spur project
- Grouping unrelated projects to justify negative net benefit projects
- Claiming benefits from an entire project but only costs from the FASTLANE funded part



Alternatives & Affected Population

- Applicants need to present & consider reasonable alternatives
 - e.g. If replacing pier compare to rehabilitating current pier
- Correctly identifying affected population is linked to baselines
 - Match impacts to corresponding population affected by it
 - Matching travel time savings to correct population group and correct time period
 - Reduced shipping costs from diversion (e.g. truck to rail) need to be linked to a realistic justification to baseline growth & forecast traffic
 - NOW LETS TALK RIDERSHIP



Ridership

- Most benefits depend on ridership (“user-ship”) estimates
- Provide forecast estimates
 - Basic underlying assumptions
 - Data sources
 - Methodology
- Provide forecasts for intermediate years
 - Not just single forecast year
- Assess reliability of forecasts
- Remember, if DOT Econ Team has issues with basis for ridership forecasts it will lower the project’s net benefit rating!



BCA vs. EIA

- Economic Impact Analysis (EIA) focuses on local benefits
 - Static analysis that ignores negative impact of transfer of activity from one location to another
 - Ignores costs to other localities
 - Includes transfer payments as “impacts”
- BCA focuses on national benefits (including local)
 - Dynamic analysis that nets out benefits & costs across areas
- DOT Econ team will not count transfers as benefits
 - Payrolls, tax revenues, real estate improvements, etc.
 - Focusing your analysis on transfers will lower the project’s net benefit rating!

Transparent & Reproducible Analysis

- BCA's must provide enough information so a reviewer can follow the logic & reproduce the results
 - Not doing so can lower the project's net benefit rating!
- Don't just provide a link to a spreadsheet or a large document
 - Provide a verbal description to walk reviewer through calculations
 - Provide Good Documentation
 - Cite outside data sources (page number, cell in spreadsheet, etc.)
- If a BCA uses a “pre-packaged” model, applicants must provide detailed explanations of model assumptions & inputs, as well annual benefit & cost streams by type

Long-Term Outcome	Types of Societal Benefits
Quality of Life	Land Use Changes that Reduce VMT Increased Accessibility Property Value Increases
Economic Competiveness	Travel Time Savings Operating Cost Savings
Safety	Prevented Accidents (Property Damage), Injuries, and Fatalities
State of Good Repair	Deferral of Complete Replacement Maintenance & Repair Savings Reduced VMT from Not Closing Bridges.
Environmental Sustainability	Environmental Benefits from Reduced Emissions

Benefits – Economic Competitiveness

- Savings to passengers, carriers, and shippers
 - Lower operating costs
 - Travel time savings
- Applicants must demonstrate how benefits are experienced by affected population
- Don't double count operating cost savings (e.g. to shippers and then again to consumers)
- If you are counting operating cost savings that include fuel costs (e.g. cost of driving per mile) don't include fuel costs separately
- Not easily quantified benefits (↑ freight reliability & ↑ shipping time for freight) will be considered by DOT Reviewer in their rating
- Non-Transportation benefits (e.g. improved water quality)
 - DOT Reviewers will not attempt to validate & reproduce



Benefits – Safety

- Safety benefits are typically associated with reducing fatalities, injuries, crash costs, and hazmat releases
- Benefits should be based on good crash data and valid analysis of cause (crash causation factors)
- When only a few cases are involved, applicant should provide a linkage to how the proposed project would have eliminated those cases
- Available crash data may need to be converted from KABCO to MAIS (see BCA Resource Guide)
- Recommended values for Value of Statistical Life (VSL), injuries, property damage are available in BCA Resource Guide
- If modal diversion the basis for safety benefits, applicant must provide a clear analysis on how the diversion will take place



Benefits – State of Good Repair

- State of Good Repair benefits can include:
 - Reducing long-term maintenance and repair costs (life-cycle costs)
 - Travel time savings (from preventing closures of facilities, lack of speed and weight restrictions)
 - Other user benefits from better pavement, improved safety
- Need to consider benefits and costs of alternatives
 - Replacement vs. rehabilitation
- Risk analysis

Benefits – Environmental Sustainability

- Environmental sustainability benefits are typically from reduced emissions
 - Greenhouse gases (e.g., CO₂)
 - SO_x
 - NO_x
 - Particulate matter (PM)
 - Volatile organic compounds (VOC)
- Recommended values are available in BCA Resource Guide



Costs

- Provide costs from all sources (local, State, other Federal grants, private)
- Direct capital costs: construction, design, land acquisition
- Beyond capital costs
 - O&M, rehabilitation, life-cycle costs
 - External costs: noise, congestion, pollutants
 - Cost to users during project construction: increased delay, vehicle operating costs
- Costs of whole project should be compared with benefits of whole project (no “leveraging”)
 - Can’t just compare FASTLANE costs to whole-project benefits
 - Can compare benefits and costs of just one phase if it has independent utility



Concluding Remarks

- We don't rank projects by B/C Ratio
- Always document and provide reliable sources for data and calculations
- Be realistic in assumptions and estimates
- Qualitative discussion of benefits helps supplement understanding for difficult-to-measure benefits
- Consider the viewpoint of objective reviewers
 - Are estimates plausible and reasonable?



BCA Resources

- FASTLANE Website: www.transportation.gov/FASTLANEgrants
 - March 2, 2016 Federal Register NOFA
 - BCA Guidance & Resource Guide
 - BCA Examples
- The Value of Statistical Life (VSL) and Value of Time (VOT) guidance will be updated and posted on www.transportation.gov/FASTLANEgrants soon.
- USDOT offers technical assistance to help applicants through the application process
- General inquiries to FASTLANEGrants@dot.gov about BCA before April 14, 2016



Must have submitted Applications by April 14, 2016 by 8:00 p.m. EDT via www.grants.gov.

Question and Answer Session

