

Benefit Cost Analysis Review

- BCA converts project benefits to dollar values and compares to project cost
- Original BCA model nearly ten years old, generally covered five “best practice” categories of public benefits
 - Data and metrics in all five categories need updates and improvements, including better data sources and regionalized freight and passenger values
 - New measures added for operating cost savings, system reliability, and rail safety
- New BCA model adds a sixth “best practice” category of Wider Economic Benefits (e.g., transit-oriented development or inland logistic parks)

Economic Competitiveness		Comments
Travel Time Savings	Enhancement: Incorporate the shipping cost reduction due to switching freight mode <ul style="list-style-type: none"> •Truck Costs: American Transportation Research Institute (ATRI) •Rail Costs: Uniform Rail Costing System (URCS), Surface Transportation Board (STB) 	Best practices
	Enhancement: Develop detailed & localized estimates for value of time (VOT) for freight and passengers <ul style="list-style-type: none"> •Freight: Freight Analysis Framework (FAF), FHWA publications on congestion costing; •Passenger: County wages and census data on household income from the Census and the American Community Survey 	Freight impact will vary by the corridor and passenger impact will vary by the region
Operating Cost Savings	Enhancement: Cars and Trucks <ul style="list-style-type: none"> •Vehicles: American Automobile Association (AAA) •Trucks: ATRI 	New Measure
Livability		Comments
Congestion Reduction	Enhancement: Develop localized values for congestion reduction <ul style="list-style-type: none"> •Freight Analysis Framework •VDOT Volume Delay Functions consistent with HB2 •FHWA 	Consistent with HB2
Noise	Enhancement: Parameter Update to the most recent year <ul style="list-style-type: none"> •FHWA 	Consistent with NEPA
State of Good Repair		Comments
Pavement Maintenance	Enhancement: Parameter Update <ul style="list-style-type: none"> •FHWA •VDOT 	Significant for freight project. Bridges and structures are site specific.
System Reliability	Enhancement: Expand BCA model to allow for the evaluation of state-of-good repair (SOGR) project <ul style="list-style-type: none"> •Significant literature review on underway 	Potentially significant measure. Consistent with HB2 potentially difficult to measure.
Safety		Comments
Prevented Crashes	Enhancement: Improve accuracy of safety improvements metrics <ul style="list-style-type: none"> •Freight: Crash data from FRA Office of Safety & VDOT •Passengers: Crash data from VDOT and the DMV 	Best Practice and consistent with HB2
	Enhancement: Parameter Update	

Prevented Crashes	<ul style="list-style-type: none"> •Statistical Values of Life: VDOT •Crash Costs: VDOT 	Best Practice
	Enhancement: Railroad safety improvements <ul style="list-style-type: none"> •Significant literature review on underway 	Potentially significant measure. Potentially difficult to measure.
Environmental Sustainability		Comments
Environmental Sustainability	Enhancement: Parameter Update <ul style="list-style-type: none"> •US Environmental Protection Agency (EPA) 	Consistent with NEPA
Wider Economic Benefits		Comments
Wider Economic Benefits	Freight <ul style="list-style-type: none"> •Currently under literature review Passenger <ul style="list-style-type: none"> •Currently under literature review 	Potentially significant addition (a challenging metric)