

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 |
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| 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 | |

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| 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) |