Proposed Enhancements to the REF Model

Presentation to the CTB Rail Subcommittee

July 15, 2015

What is BCA?

- Widely used tool to assess economic benefits of a transportation investment
- Requires considering all benefits or costs borne by society as a whole – consumers and producers
- Benefits and costs monetized in dollars
- Typically accounts for entire life-cycle (design life) of investments but can be modified to address programmatic needs;

Generalized Benefit Categories

- Economic Competitiveness;
  - Travel Time Savings
  - Operating Cost Savings
- Livability;
  - Land Use Changes that Reduce VMT
  - Increased Accessibility
  - Property Value Increases
- State of Good Repair:
  - Deferral of Complete Replacement
  - Maintenance & Repair Savings
  - Reduced VMT or congestion through good maintenance
- Environmental Sustainability:
  - Environmental Benefits from Reduced Emissions or Impacts
- Safety
  - Prevented Accidents (Property Damage), Injuries, and Fatalities
- Wider Economic Benefits

Not all benefits are applicable to all projects

Economic Competitiveness

BCA Category		Comments
Travel Time Savings	Enhancement: Incorporate the shipping cost reduction due to switching freight mode • 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 • 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 • Vehicles: American Automobile Association (AAA) • Trucks: ATRI	New Measure

Livability

BCA Category		Comments
Congestion Reduction	Enhancement: Develop localized values for congestion reduction • Freight Analysis Framework • VDOT Volume Delay Functions consistent with HB2 • FHWA	Consistent with HB2
Noise	Enhancement: Parameter Update to the most recent year • FHWA	Consistent with NEPA

State of Good Repair

BCA Category		Comments
Pavement Maintenance	Enhancement: Parameter Update • 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 • Significant literature review on underway	Potentially significant measure. Consistent with HB2 potentially difficult to measure.

Environmental Sustainability

BCA Category		Comments
Environmental Sustainability	Enhancement: Parameter Update • US Environmental Protection Agency (EPA)	Consistent with NEPA

Safety

BCA Category		Comments
Prevented Crashes	Enhancement: Improve accuracy of safety improvements metrics • 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 • Statistical Values of Life: VDOT • Crash Costs: VDOT	Best Practice
	Enhancement: Railroad safety improvements • Significant literature review on underway	Potentially significant measure. Potentially difficult to measure.

Wider Economic Benefits

BCA Category		Comments
Wider Economic Benefits	Freight • Currently under literature review Passenger • Currently under literature review	Potentially significant addition (a challenging metric)