Outline

• Corps Approach to BCA
• Tools for Analysis
• Thoughts on Application to Multimodal Studies
Corps and BCA

- Engaged in estimating BCA in early 1900s
- Clarification of Principles and Guidelines
- Focus is on National and not Regional Analysis
What is a Navigation Project?
Figure 2.7.4 - Flow Chart of Deep Draft Navigation Benefit Evaluation Procedures

1. Determine economic study area

2. Identify commodity types

3. Project waterborne commerce

4. Determine vessel fleet composition and cost

5. Determine current commodity movement cost

6. Determine alternative movement cost

7. Determine future commodity movement cost

8. Determine harbor use with and without project

9. Compute NED benefits

Source: Principles and Guidelines
Data Requirements - Vessel or Fleet Physical Characteristics

- a.) Vessel Type and Mode of Service (Bulk Carrier; Tanker, etc.)
- b.) Deadweight (DWT)\GRT\NRT Class
- c.) Dimensions (LOA, LBP, Breadth, Max. SLLD, Speed, etc.)
- d.) Relative Capacities (Volumetric vs. Weight, Immersion etc.)
- e.) Parameters for Management & Operation (Costs, Logistics & scheduling, Underkeel Clearance, etc.)
Data Requirements - Vessel Cargo & Transit Information

- a.) Type & Mode of Cargo Transport
- b.) Port & Facility/Terminal(s) Served
- c.) Vessel Cargo Onload/Discharge (Tonnage, TEUs, etc.)
- d.) Origin-Destination/Itinerary, Waterborne Transit Distances & Time at Sea or In-Transit; Time In-Port
- e.) Parameters for Management & Operation (Costs, Logistics & Scheduling, Underkeel Clearance, etc.)
Which would you choose?

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Ohio River Navigation Infrastructure Model (ORNIM)

- Focus is on Waterway and Navigation project conditions
- Main Models:
  - Lock Risk Module, the Waterway Supply and Demand Module, and the Optimal Investment Module
Existing Available Simulation Models

- HarborSym
  - Vessel movements in a port
- BeachFx
  - Shoreline and structures response to storms
- HydroPower Repair
  - Evaluation of rehabilitation for hydropower plants
- Navigation Simulation
  - Movement of vessels on inland waterways with navigation locks (currently being revised)
Guidance

• Corps BC Ratios are more about guidance than models
  • Tools, Training, data available
• Oftentimes need to supplement
• Each treated as standalone projects
• Follow the rules
Everyone is surrounded by reports, studies, models, but…

We Want People To Make Better Decisions
Traditional B/C Ratio Formula

- Shaped by demands to compare projects within a given budget (mode) or geography
- Differ by agency regarding what can be considered
  - Public Benefits and Costs
  - Externalities – treated and calculated
- Forecasting and Scenario profiles
  - Project justification/review are coming under criticism
  - Certainty of answers often exceed analytical capacity
  - Network effects not included
  - No pre – post study analysis done on routine basis
Example - Investment In Corridor A-C

Choice - Mode, Route, Operational Patterns, Risk, System Preservation, Pricing, Safety, Environment, Security, National Defense, ...
Challenges

• No analytical framework to do cross modal comparisons with existing traffic models
  • Modal diversion
  • Stepwise facility increases, etc.

• No clear federal role regarding freight
  • What are first principles?
  • Institutional and Legal Inflexibility

• State and local role fragmented
  • Staffing, funding constraints, legislative directions
Some thoughts to broadly improve Transportation BC Approaches

- Clear Federal Standard for benefits/efficiency gains
- Methods not bounded by transportation user costs
- Analytical tools that recognize cost of no action
- Reconcile differences in discount rates, planning horizons, etc.
- Commitment to data resources