BENEFIT COST ANALYSIS – TOOLS FOR COMPARISONS

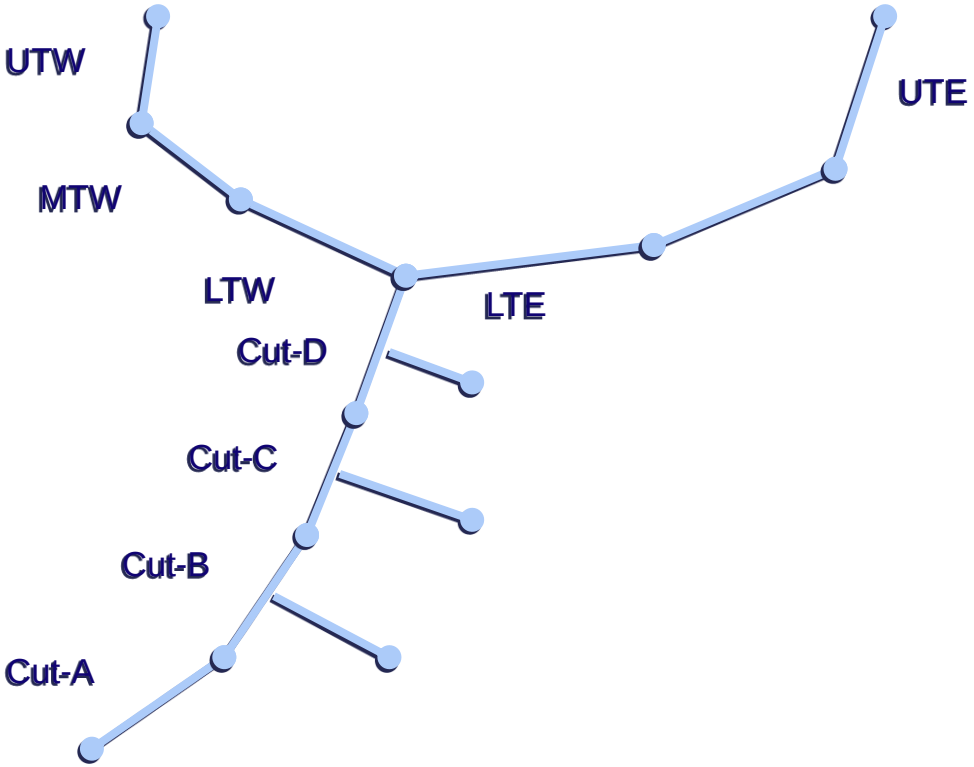
Outline

- 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?



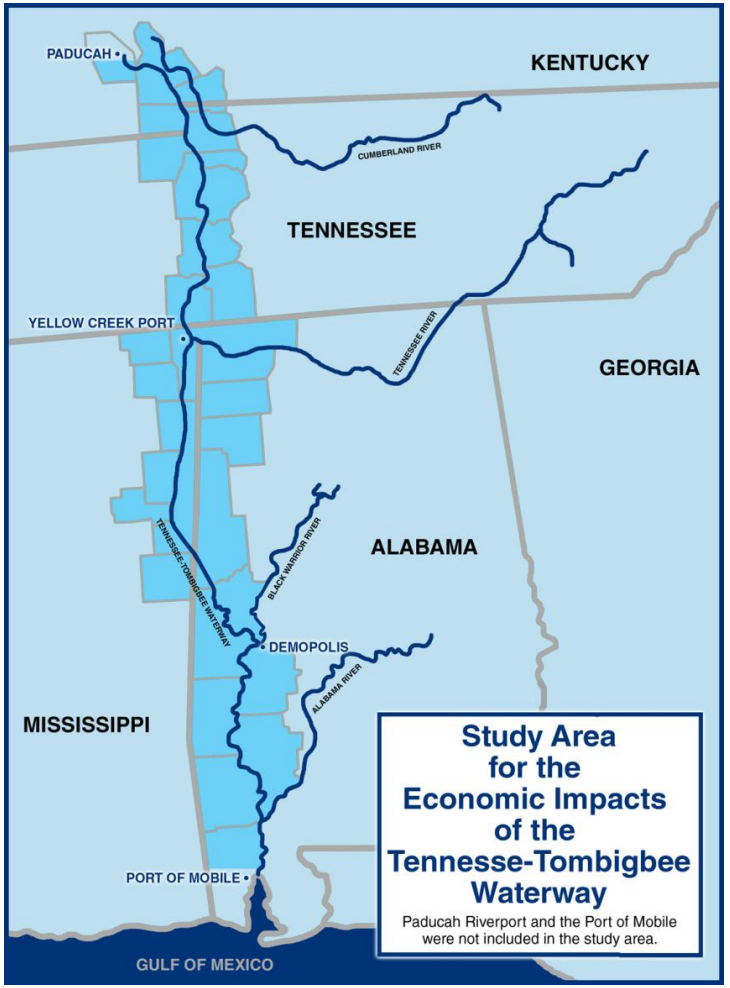
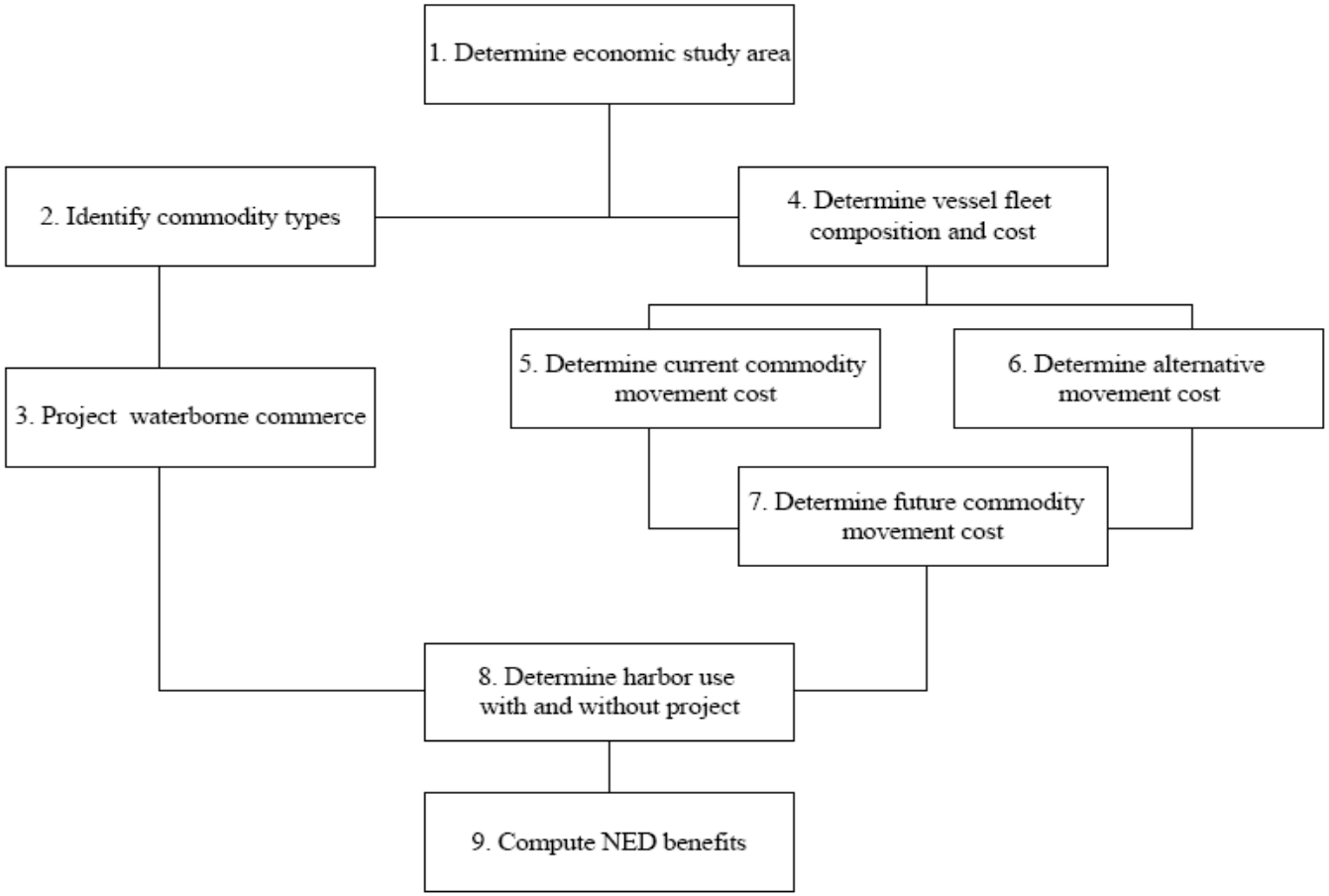


Figure 2.7.4 - Flow Chart of Deep Draft - Navigation Benefit Evaluation Procedures



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?

	Alternative A	Alternative B	Alternative C
Benefits	$500,000	$750,000	$1,000,000
Costs	$125,000	$500,000	$500,000
Net Benefits	$375,000	$250,000	$500,000
BCR	4.0	1.5	2.0

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

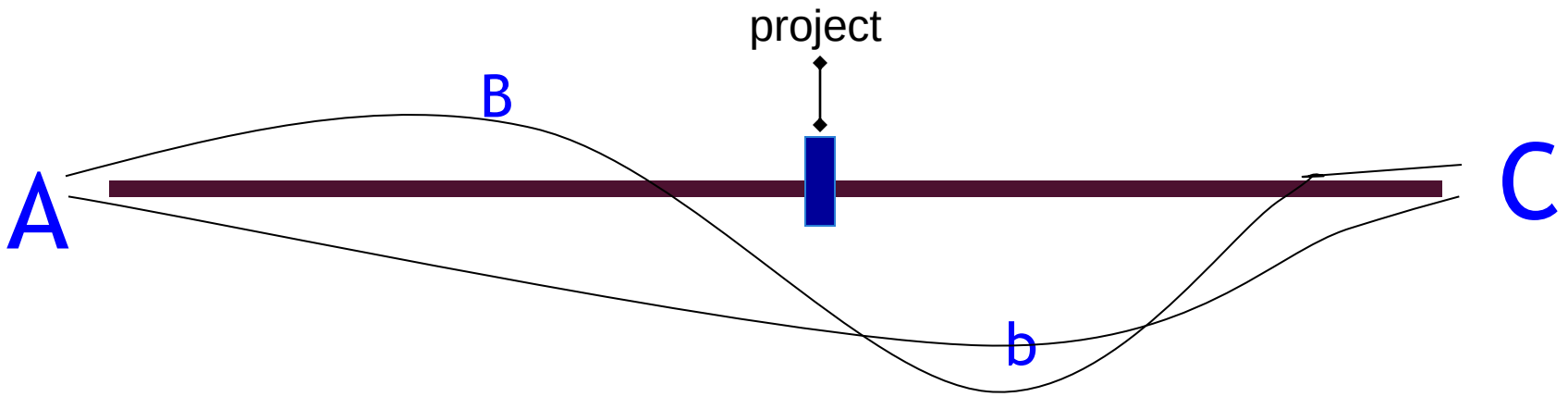
Everyone is surrounded by reports, studies, models, but…

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