



The Importance of Maintaining Navigation Channels and the Impact of Closures

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Waterways are a Safe Industry



- Incidences and fatalities
- Delay and lost productivity
- Hazmat rates
- Simulations, training
- Channel markets, ATONS
- Technology - VTS

Navigation Safety



- Federal
 - Corps of Engineers
 - NOAA
 - USCG
- Private Sector
 - Vessel operators
 - Pilots
- State and City Entities
- Navigation Associations

What is a Closure



- Two different types (failures)
 - Locks and Dams (Institutional)
 - Navigation incidents (Human)
- Who Bears these Costs?
 - Users
 - Carriers
 - Public Sector

What Responses May Occur after a Public Sector Infrastructure Event?

Sector	Short-Term	Medium Term	Long Term
Users	Prepare, Respond, Ignore	Prepare, Ignore	Move, relocate
Emergency Responders	Respond	Training, New equipment, etc., Table Top Exercises	Move, relocate
Vessel Operators	Prepare, Respond, Ignore	Offer different services	Offer different services, align infrastructure
Public Infrastructure	Respond Operationally	Improve Operational Response	Retrofit or repair, engineering standards, etc.
Public Planning Response	<i>Forensic Studies</i>	<i>Recommendations</i>	<i>Policy/Planning Guidance, Ordinances</i>

After the Fact - Forensic Economics

- Costs to Users
 - Delay, lost productivity – plant closures
 - Inventory disruptions – lost output, supply chains
 - Survey instruments – modeling behavior
- Infrastructure damage assessments
 - Damages to roadway, tracks, etc.
 - Inspection time – costs
- Non Transportation Infrastructure Affects
 - Services Disruption, Power-Power
 - Recreational Losses
 - Environmental Derogation
- A lot of this information would not necessarily be in initial planning consideration

What Does an Event Cost?

NETS (IWR-USACE)

- Greenup 2003 Closure (52 days)- \$42 Million
- Hannibal Locks 2005 Closure (5 days)-\$5 Million
- Lock 27 Closures
 - (August 2007)-\$3.9 Million
 - (Oct 2005-Feb 2006)- \$2.7 Million
- McAlpine (August 2004)-\$6.3 million
- 2008 Flooding in Upper Miss?

GLOBAL Insight – Upper Miss 90 Day Closure

- \$118.6 million for Waterway freight
- \$482.8 million by rail
- \$1.50 billion by truck

Other Recent Studies Crossing Non-Traditional Boundaries

- Black Warrior Tenn-Tom Waterway System
- Minnesota Bridge Collapse
- Business Realignment Estimates - FHWA
- (NCHRP) Report 586: Rail Freight Solutions to Roadway Congestion
- Lock and Dam Closures
 - Chickamauga Locks
 - Emsworth, Dashields, and Montgomery
- Marine Highway Program

Who benefits from transportation improvements?

- Carriers
- Ports
- Governments and other local industries
- Shippers
- Economic Development Agencies
- Who does not benefit?



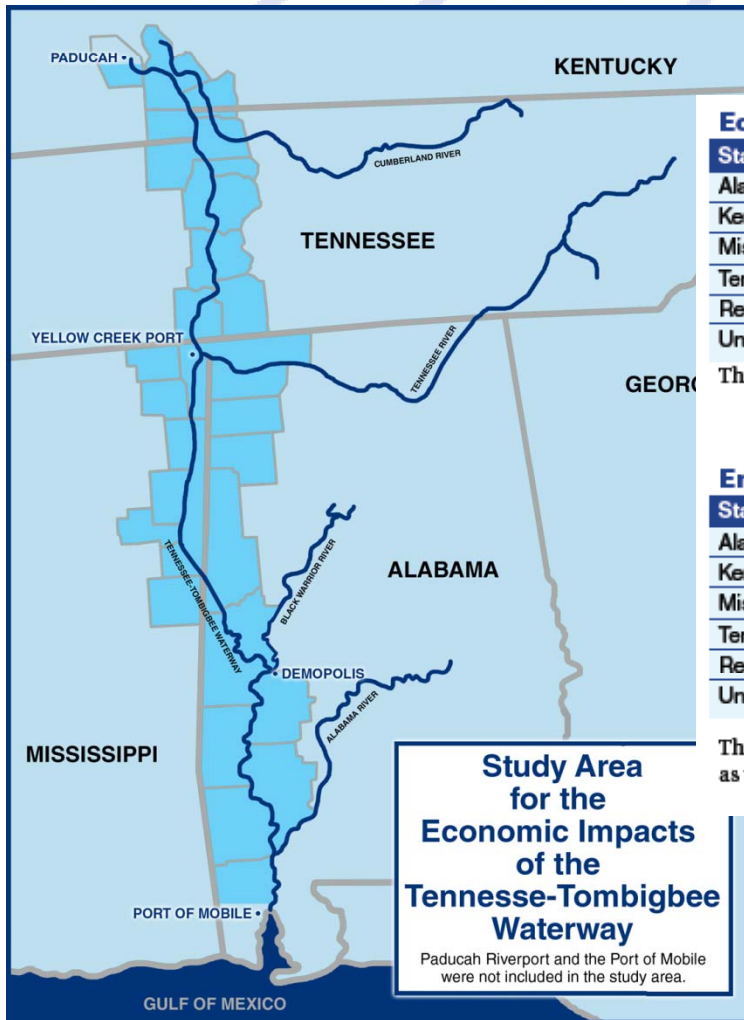
System Planning Limited by Traditional Public Sector Planning Frameworks

- 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
 - Reduce emissions, environmental restoration, health risks and exposure, risk management/ mitigation, etc., Job creation.
 - Externalities – limited consideration
 - First Order effects – Improved Operations
 - Second and Third Order Effects – changing capacity and routings
- Forecasting and Scenario profiles
 - Desired certainty of answers often exceed analytical capacity
 - Network effects not included
 - No pre – post study analysis done on routine basis

Are Waterways Important? Two Challenges

- First, we have to get people to think the waterways even matter.
 - Number of Studies from Corps, Marad, AASHTO, Trade Associations, etc., stating importance of Waterways
- Second, we need people to understand waterway transportation is more than products

Tenn-Tom Waterways Economic Benefit



Economic Impact 1996-2008 (in Millions)

State	Direct	Indirect	Induced	Total
Alabama	\$15,217.1	\$550.3	\$718.8	\$16,486.2
Kentucky	\$887.2	\$163.1	\$559.1	\$1,609.4
Mississippi	\$6,854.7	\$1,333.0	\$1,276.6	\$9,464.3
Tennessee	\$2,361.6	\$38.1	\$47.1	\$2,446.8
Regional	\$25,320.5	\$2,093.3	\$2,641.1	\$30,054.9
United States	\$25,320.5	\$5,822.6	\$11,380.6	\$42,523.7

This table shows the impact from private investment and ports operating in the Tenn-Tom Waterway region.

Employment Impact 1996-2008

State	Direct	Indirect	Induced	Total
Alabama	8,384	3,879	7,567	19,830
Kentucky	8,046	1,201	5,850	15,097
Mississippi	12,145	7,858	13,440	33,443
Tennessee	507	271	493	1,271
Regional	29,191	13,292	27,806	70,289
United States	29,191	29,001	79,471	137,663

This table indicates the number of jobs that were directly and indirectly created based on industry-to-industry transactions, as well as the number of jobs that were created based on employee spending in the local economy.

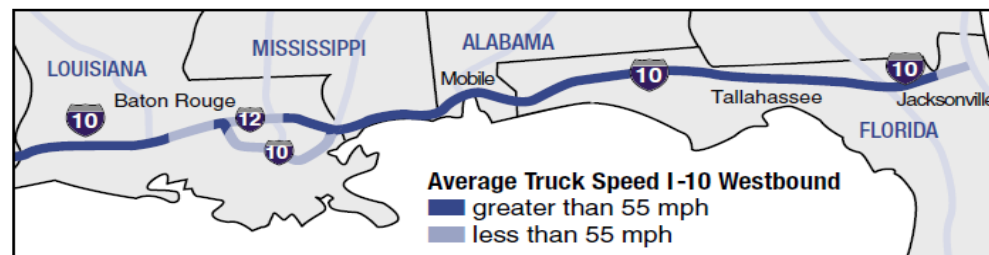
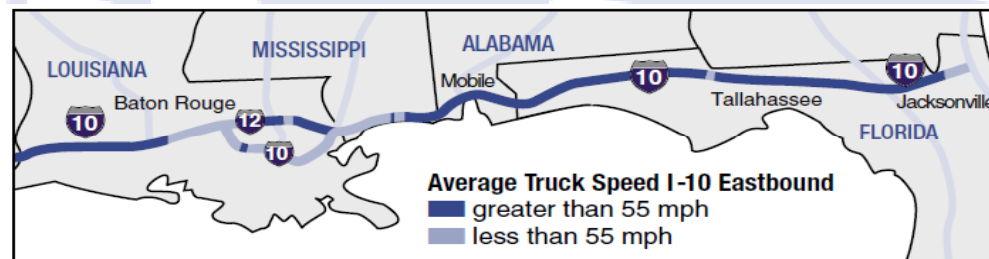
Technology to Improve Navigation

A light blue background graphic featuring a globe with latitude and longitude lines. Overlaid on the globe is a stylized compass rose with four main directional points and a central circular element.

- Compared to other regions, US has top tier navigation aids, charts, etc.
- Can improve work around locks
- VTS deployment for safety
- Smartrivers conference

Technology Can Help Promote the Waterway Industry

- Demonstrate Economic Importance
- Demonstrate Waterways Reliability
- Improve Safety and Emergency Response
- Use Better Information to Manage and Gauge System effects of closures



Summary



- Mitigating risks is everyone's responsibility
- Need systematic process to review economic impact of events as part of ongoing operations
- Should consider ways to improve reliability that enhances industry's competitive position in securing support (and funding)
- Understanding linkages to other systems and users will be critical in this approach