

# **NCFRP 04: Identifying and Using Low-Cost and Quickly Implementable Ways to Address Freight System Mobility Constraints**

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# Presentation Overview

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- Project Purpose and Objectives
- Definition and Types of Constraints
  - How do we define "Freight Mobility Constraints?"
  - Types of Constraints
- Definitions and Types of Improvements
  - What is "low-cost" and "quickly implementable"
  - Modal Criteria
- Analysis Tool
- Questions?

# Project Objectives

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- Standardized description of the dimensions of the freight transportation system
  - Physical infrastructures, capacity, performance
  - Modal characteristics, vehicles commodities
  - Freight mobility constraints
- Methodology to identify, categorize, and evaluate quickly implementable, low-cost capital, operational, and public policy actions

# Definition of Freight Mobility Constraint

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- *“A physical or infrastructure deficiency, regulatory requirement (federal, state, or local), or operational action that impedes or restricts the free flow of freight either at the network level or at a specific location.”*
- Mobility constraints increase costs, contribute to system inefficiencies, and delay on-time freight delivery.

# Types of Constraints

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- Physical Constraints—inadequate physical capacity of the transportation system geometric restrictions or limitations affecting efficient mobility
  - interchanges, intersection, port terminals, rail sidings
- Operational Constraints—practices, events or occurrences that constrain legal operating speeds and throughput;
  - poor signal phasing; terminal switching inefficiency; restricted terminal gate operating hours; inadequate traveler information.
- Regulatory Constraints—safety and security requirements, land use controls that restrict facility expansion;
  - DHS requirements; truck restrictions; air quality requirements; labor contractual limitations

# Criteria for Low-Cost Improvements

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- An action that modifies existing geometry and/or operational features of the freight transportation system and that can be implemented within **a short period of time without extended disruption to traffic flow.**
- May be physical, operational, or regulatory, as long as it enables greater throughput from existing facilities.
- May be spot (location-specific) improvements or may be limited to short sections of the physical infrastructure.
- May be specific to a given supply chain process point, regulation, or mode; they may also be multi-modal.
- Do not involve massive reconstruction of infrastructure that usually takes many years to complete.

# Summary of Criteria by Mode

Mode	Characteristics of Low-Cost Actions	Time to Implement
Deep water ports Inland waterways	<ul style="list-style-type: none"> <li>• Less than \$1million</li> <li>• Economic-incentive schemes</li> <li>• Technology deployments</li> <li>• Physical improvements on highway and rail projects connectors to port terminals</li> </ul>	Less than 2 years
Highway	<ul style="list-style-type: none"> <li>• Less than \$1 million</li> <li>• Spot or location-specific improvements</li> <li>• No right-of-way acquisition</li> <li>• Implementation at district level</li> <li>• No minimal environmental clearances necessary</li> </ul>	Less than 1 year
Rail	<ul style="list-style-type: none"> <li>• Class I railroad – \$1 million to \$10 million</li> </ul>	Less than 2 years
	<ul style="list-style-type: none"> <li>• Regional railroad less than \$2 million</li> </ul>	Less than 1 year
	<ul style="list-style-type: none"> <li>• Short line railroad – less than \$500,000</li> </ul>	Less than 6 months

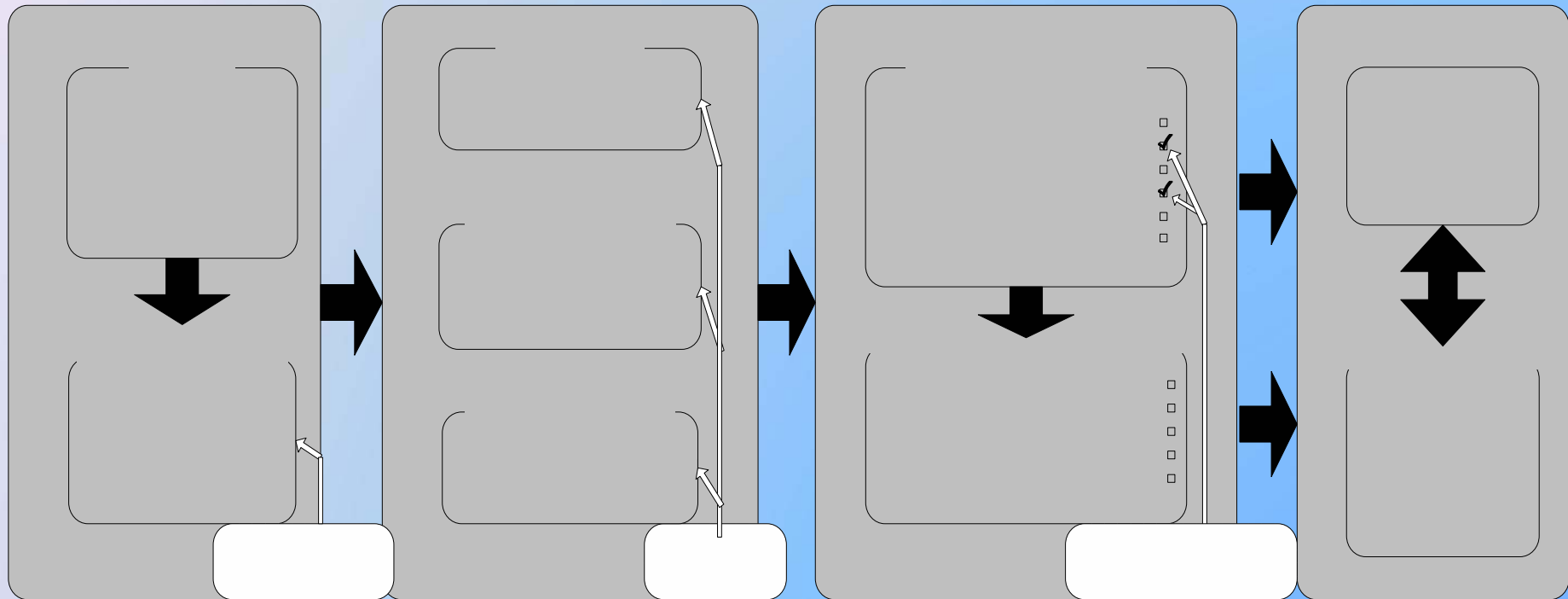
# Overview of Methodology

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- Structured user friendly tool for identifying and selecting low-cost improvements
- Backed by comprehensive database of proven low-cost projects
- One-stop shop for low-cost improvements to address freight mobility constraints
- Linked to sources of further information



# Framework of Methodology



# Deepwater Ports and Inland Waterways – Top Ranked Constraints

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- Inadequate terminal capacity/ inefficient terminal gate operations
- Physical barriers to rail operations
- Empty container storage and movement
- Inadequate capacity on local street and highway access from terminal
- Inefficient terminal layout
- Loss of communication on inland waterways in rural areas

# Low-cost and Quickly Implementable Improvements - Deepwater Ports

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- **Constraint**
  - Inadequate capacity of terminal yard/gates
- **Improvement Actions**
  - Terminal reconfiguration to add capacity
  - Maximize infrastructure utilization through cooperative competitor arrangements e.g., Rail Yard Cargo Shift
  - Locate secured inspection areas outside major traffic areas

# Low-cost and Quickly Implementable Improvements - Deepwater Ports

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- **Constraint**
  - Inefficiencies of terminal yard/gate operations; congestion at the gates
- **Improvement Actions**
  - Expand gate operating hours
  - Implement congestion pricing to discourage truck activity during peak periods (e.g., PierPASS)
  - Incentive-based program to shift freight from trucks to rail e.g., ExpressRail
  - Implement trucking appointment system
  - Utilize joint inspection facilities

# Low-cost and Quickly Implementable Improvements – Rail

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- **Constraint**
  - Switching conflicts/ inefficient switching
- **Improvement Actions**
  - Upgrade or reconfigure interlocking
  - Implement remote switching
  - Coordinate Class I operations with short line/regional railroad operations to optimize joint operations and expedite switching traffic at interchanges.

# Low-cost and Quickly Implementable Improvements – Highway

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- **Constraint**
  - Poor traffic system management
- **Improvement Actions**
  - Upgrade existing traffic signal to accommodate traffic demand
  - Install new traffic signal system
  - Modify signal phasing taking traffic volume in account
  - Synchronize closely placed traffic signals for traffic to receive right of way simultaneously during one more intervals

# Questions?

## Project Contact

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