Purpose of Today’s Workshop

Engaged discussion of potential alternatives

- A forum for open, general discussion of alternatives that may be considered in the Cross Harbor Freight Program
- Review methods and approaches for defining and evaluating Alternatives, and how these fit into the overall project process
- Address questions, concerns, or critical issues

Two main goals:

- To ensure the process is understandable and transparent
- To ensure we have your input
Key Questions

- How will the information from the previous Major Investment Study (MIS) and DEIS be utilized?
- How should we proceed to ensure the project leads to the best possible transportation investment choices?
- What are our freight markets?
- What kinds of alternatives are on the table?
- How will alternatives be evaluated?
Agenda

- Introduction
- Markets and Alternatives
- Alternatives Evaluation
- Break (10 Minutes)
- Potential Alternatives
- Issues #1 and #2
- Summary and Next Steps

Working Assumptions

Market Opportunities

Four main “families” of market demand for Cross Harbor freight:

1. Grow direct rail service to/from customers East of Hudson, focusing on proven rail commodities
2. For rail traffic terminating West of Hudson and then trucked East of Hudson, move the rail trip end to East of Hudson
3. Shift the ‘middle’ segment of long-haul East of Hudson truck trips to rail, and terminate the rail trip East of Hudson
4. For shorter-haul “in region” truck trips, provide an alternative to existing bridge and tunnel crossings
**Working Assumptions**  
*54-County Data Analysis Region*

**Counties in NJ, NY, PA, and CT**

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**3.3 – Freight Flow Modeling**

Opportunity #1, Grow Existing Rail Markets

**Rail Tonnage, NY and NJ Study Region Counties, 2007**

<table>
<thead>
<tr>
<th>Direction</th>
<th>Carload Units</th>
<th>Intermodal Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inbound</td>
<td>821,819</td>
<td>518,720</td>
</tr>
<tr>
<td>Outbound</td>
<td>602,852</td>
<td>523,668</td>
</tr>
<tr>
<td>Intra-regional</td>
<td>7,304</td>
<td>80</td>
</tr>
<tr>
<td>Through</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Total</td>
<td>1,431,975</td>
<td>1,042,468</td>
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</table>

Source: Surface Transportation Board Carload Waybill Sample, 2007
Working Assumptions
Opportunity #1, Grow Existing Rail Markets

Rail Tonnage for Selected East of Hudson Counties, 2007
(Bronx, Kings, Nassau, Queens, Suffolk, and Westchester)

<table>
<thead>
<tr>
<th>Direction</th>
<th>Carload Units</th>
<th>Intermodal Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inbound</td>
<td>24,208</td>
<td>0</td>
</tr>
<tr>
<td>Outbound</td>
<td>19,912</td>
<td>0</td>
</tr>
<tr>
<td>Intra-regional</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Through</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>44,120</td>
<td>0</td>
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</tbody>
</table>

Source: Surface Transportation Board Carload Waybill Sample, 2007

Working Assumptions
Opportunity #2, Move Rail Trip Ends

Terminating Intermodal Tonnage, NY and NJ Study Area Counties, 2007

Why none East of Hudson? Three reasons are cited:
1) Lack of suitable rail terminals and connections
2) Limited demand for full box shipments by East of Hudson receivers
3) Lack of warehouse/distribution space to make/break box loads
Working Assumptions
Opportunity #2, Move Rail Trip Ends

Truck Counts, Six Non-Consecutive Days During Three-Month Periods

<table>
<thead>
<tr>
<th>NS Croxton</th>
<th>Total Gate Units</th>
<th>George Washington</th>
</tr>
</thead>
<tbody>
<tr>
<td>October - December 2001</td>
<td>2,419</td>
<td>296 (12%)</td>
</tr>
<tr>
<td>January - March 2002</td>
<td>2,356</td>
<td>294 (12%)</td>
</tr>
<tr>
<td>July - September 2002</td>
<td>2,422</td>
<td>402 (17%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CSX Kearny/Little Ferry/North Bergen</th>
<th>Total Gate Units</th>
<th>George Washington</th>
</tr>
</thead>
<tbody>
<tr>
<td>September - November 2001</td>
<td>3,261</td>
<td>386 (12%)</td>
</tr>
<tr>
<td>January - March 2002</td>
<td>2,913</td>
<td>345 (12%)</td>
</tr>
<tr>
<td>April - June 2002</td>
<td>3,135</td>
<td>322 (10%)</td>
</tr>
<tr>
<td>July - September 2002</td>
<td>2,423</td>
<td>432 (18%)</td>
</tr>
</tbody>
</table>

In 2001-2002, between 82% and 90% of trucks moving to and from West of Hudson intermodal rail yards did not cross the GWB.

Source: Surface Transportation Board electronic filings

Working Assumptions
Opportunity #3, Divert Long-Haul Trucks

<table>
<thead>
<tr>
<th>Transearch Data</th>
<th>2007 (Tons)</th>
<th>2035 (Tons)</th>
<th>Growth</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Truck Tonnage</td>
<td>1,097,721,109</td>
<td>1,535,076,042</td>
<td>40%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Long Haul Inbound to Study Area</td>
<td>160,246,704</td>
<td>277,021,275</td>
<td>73%</td>
<td>2.0%</td>
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<tr>
<td>Long Haul Outbound from Study Area</td>
<td>48,224,764</td>
<td>75,617,511</td>
<td>57%</td>
<td>1.6%</td>
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<tr>
<td>Long Haul Inbound from WOH to Study Area EOH</td>
<td>78,881,196</td>
<td>141,883,429</td>
<td>80%</td>
<td>2.1%</td>
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<tr>
<td>Long Haul Outbound to WOH from Study Area EOH</td>
<td>14,142,654</td>
<td>19,712,049</td>
<td>39%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

Long-haul trips are 500 miles or more, on average.
This diversion opportunity represents around 10% of all truck tonnage.
### Working Assumptions
#### Opportunity #3, Divert Long-Haul Trucks

- Long haul trucks to EOH are mostly originating in Ohio, North Carolina, Indiana, Florida, Illinois, and Texas.
- Long haul trucks from EOH are terminating in a variety of states.

#### Working Assumptions
#### Opportunity #3, Divert Long-Haul Trucks

- Long haul trucks to EOH carry mostly chemicals and food.
- Long haul trucks from EOH mostly carry secondary traffic, food, fuel, and other products.
Working Assumptions
Opportunity #4, Address Shorter-Haul Trucks

- Short-haul trips are defined as trips within the 54-county study area.
- Mid-haul trips are other trips of less than 500 miles, on average.
- This diversion opportunity represents around 17% of all truck tonnage.

<table>
<thead>
<tr>
<th>Transearch Data</th>
<th>2007</th>
<th>2035</th>
<th>Growth</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Truck Tonnage</td>
<td>1,097,721,109</td>
<td>1,535,076,042</td>
<td>40%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Mid-Haul Inbound from WOH to Study Area EOH</td>
<td>63,401,213</td>
<td>84,107,844</td>
<td>33%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Mid-Haul Outbound to WOH from Study Area EOH</td>
<td>21,264,196</td>
<td>25,146,309</td>
<td>18%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Short-Haul Inbound from Study Area WOH to Study Area EOH</td>
<td>80,567,857</td>
<td>108,026,772</td>
<td>34%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Short-Haul Outbound to Study Area WOH from Study Area EOH</td>
<td>30,684,996</td>
<td>38,179,755</td>
<td>24%</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

Working Assumptions
Families of Potential Alternatives

General classes of alternatives:

1. No Action
2. Transportation System Management (TSM)
3. Transportation Demand Management (TDM)
4. Float and Ferry
5. Rail Tunnel
6. Multimodal Tunnel

We will address each after the break
### Working Assumptions

*Alternatives Have to Match Market Opportunities*

<table>
<thead>
<tr>
<th></th>
<th>TSM/TDM</th>
<th>Float/Ferry</th>
<th>Tunnel</th>
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<td></td>
<td></td>
<td></td>
<td>Rail</td>
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<td>Proven Rail Markets</td>
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<td>⭕</td>
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<td>Relocate Rail Trip Ends</td>
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<td></td>
<td>⭕</td>
</tr>
<tr>
<td>Intermodal</td>
<td>⭕</td>
<td>⭕</td>
<td>⭕</td>
</tr>
<tr>
<td>Other</td>
<td>⭕</td>
<td>⭕</td>
<td>⭕</td>
</tr>
<tr>
<td>Divert Long Haul Trucks</td>
<td>⭕</td>
<td>⭕</td>
<td>⭕</td>
</tr>
<tr>
<td>Divert Other Trucks</td>
<td>⭕</td>
<td>⭕</td>
<td>⭕</td>
</tr>
</tbody>
</table>

### Questions?
Alternatives Evaluation

- Scoping
- Fatal Flaw Analysis
- Screening
- Detailed Evaluation
- Tier I EIS

TAC and Stakeholder Input

Scoping
Goals and Objectives

- Develop project goals and objectives with stakeholders
- Proposed goals
  - Reduce congestion on major freight corridors within NY/NJ/CT metropolitan area
  - Improve performance of Cross Harbor freight transportation system for freight shippers, receivers, and carriers
  - Provide flexibility and reliability in regional freight movement
  - Improve safety and security on regional transportation network
  - Improve regional environmental quality
Scoping Methodologies

- Agree upon methodologies to be used in the project
- Development of EIS methodology, comprised of:
  - Alternatives Evaluation
  - Conceptual Engineering and Cost Estimating
  - Market Demand Forecasting
  - Highway and Rail Network Analysis
  - Environmental Assessment
  - Economic Analysis

Scoping Long List of Project Alternatives

- 1999 MIS and 2004 DEIS
- Understanding of freight markets and the kinds of services necessary to serve them
- Meetings held with PANYNJ, NJTPA, NYMTC, NJDOT, NJ Transit, LIRR, NJ Turnpike Authority to identify no-action projects for 2035
- Inventory of potential TSM/TDM strategies
- Inventory of potential float/ferry and railyard sites
- Awareness of innovative technologies and services
**Fatal Flaw Analysis**

- Eliminates clearly infeasible alternatives based on:
  - Relationship to goals
  - Engineering and technological feasibility
  - Institutional feasibility
  - Public and agency input from scoping process

- Level of expected demand is not part of the fatal flaw analysis

- **Outcome:** A range of potentially feasible alternatives that can be advanced to screening

**Screening Analysis**

*Logistics and Market Demand*

- Screening based on logistics and market demand
  - Does the alternative meet shipper/receiver needs?
  - How much demand would it generate?

- Estimate demand for every alternative based on:
  1. Its specific performance criteria
  2. Factor weights from the Mode Choice Model, and
  3. Underlying freight volumes (current and future) by commodity class and origin-destination pair
Screening Analysis
Highway and Rail Network Analysis

Estimate high-level highway and rail effects
- Number of truck trips added/subtracted
- Number of trains added/subtracted

Comprehensive network modeling occurs in Detailed Evaluation

Screening Analysis
Economic and Financial Performance

- Likelihood of generating public benefit
- Likelihood of generating private benefit
  - Shipper/receiver cost savings
  - Carrier benefits
Screening Analysis
Threshold Criteria

- Previous steps provide key metrics for each alternative based on logistics and market demand, highway and rail network performance, and economic and financial effects
- Need to set threshold criteria, representing the minimum level of performance for an alternative to be carried forward into detailed evaluation
- Need to see results of screening analyses
- Need to work iteratively with study partners to develop these criteria

Detailed Evaluation
Highway and Rail Network Analysis

- Highway network -- travel time and congestion
  - Based on NJRTM-E and NYMTC BPM, with crossing trips matched and new truck trip tables
  - Can model alternatives by (a) changing highway links, and/or (b) changing truck trip tables
- Rail network – capacity and chokepoints
  - New planning level model of the freight rail network in 54 counties, with national flows included
  - Determine current and future line-level capacity (trains per day) and volumes (freight and pax)
  - Estimate “V/C” (analogous to highways), and change links and/or volumes to test alternatives
Detailed Evaluation
Economic Impact Analysis

- Detailed analysis of public benefit
  - Highway network model outputs (changes in VMT, delay, emissions) can be monetized
  - Jobs, taxes from increased freight movement, intermediate handling, and business attraction

- Detailed analysis of private benefit
  - Shipper/receiver cost savings
  - Carrier benefits (must be a profit incentive for truckers, railroaders and others in the logistics chain to actually use the alternative)

Detailed Evaluation
Engineering and Environment

- Conceptual engineering and operational analysis
  - Infrastructure requirements
  - Yard locations and dimensions
  - Capital and O&M cost estimating

- Environmental analysis
  - Indirect effects
  - Direct effects
Detailed Evaluation
Refinement of Alternatives

- Iterative refinement of alternatives
  - Fine-tuning of locations and routes, service characteristics and pricing
  - Sensitivity Analysis
  - Maximize market capture and economic benefit, minimize highway and rail network impacts
  - Benefit/cost

Tier I Environmental Impact Statement

Documentation of the Assessment Results

**Preliminary Draft EIS**
Review and comment by co-lead and cooperating agencies

**Draft EIS**
- Public review and comment period
- Public hearings

**Final EIS**
- Response to comments
- Record of Decision
Questions?

Development of Potential Alternatives

- 1999 MIS and 2004 DEIS
- Comments generated in response to the 2004 DEIS
- New agency inputs
- Understanding of freight markets and service
- Inventory of potential float/ferry and railyard sites
- Awareness of innovative technologies and services
- Outreach to Agencies and Stakeholders will continue
Potential Alternatives

- **Build Alternatives**
  - Float
  - Ferry
  - Rail Tunnel
  - Multimodal Tunnel
- **Transportation System Management Alternative**
- **Transportation Demand Management Alternative**
- **No Action Alternative**

All alternatives include the required supporting landside facilities.
Float and Ferry Options
Potential Build Alternatives

A. Expanded Rail Car Float System
B. Container Float
C. Truck Float System
D. Truck Ferry

Expanded Rail Car Float System
Potential Build Alternatives

Greenville

Turkey

65th Street Yard

China
Expanded Rail Car Float System
Potential Build Alternatives

Potential Float Routes

Other Float and Ferry Options
Potential Build Alternatives

Container Floats
- Kenya
- Antwerp, Belgium

Truck Float
- Detroit-Windsor, Michigan

Truck Ferry
- Greece
- Sydney Harbor
Other Float and Ferry Options
Potential Build Alternatives

- Container Float
- Truck Float System
- Truck Ferry

Rail Tunnel Options
Potential Build Alternatives

Single-track versus Double-track
Rail Tunnel Options
Potential Build Alternatives

Single Stack

Double Stack

And the difference is

Conventional rail car service (intermodal, bulk unit train) versus “Open Technology” (e.g. truck bodies on rail flatcars)
Chunnel Shuttle
Potential Build Alternatives

Traditional Long-Haul Service versus Non-Traditional Shorter-Haul “Shuttle Rail” Services

Potential Build Alternatives
Rail Tunnel Options
### Multimodal Tunnel Options

**Potential Build Alternatives**

A. Emergency Access for Vehicles  
B. Scheduled Truck Access  
C. Roll-On/Roll-Off Vehicle Trains  
D. Automated-Guided-Vehicle Service

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### Dual-Use Tunnel

**Potential Build Alternatives**

[Image of tunnel entrance and vehicles]  
[Image of tunnel interior]

Alaska Anton Anderson Memorial Tunnel
Automated Guided Vehicles
Potential Build Alternatives

Multimodal Tunnel Options
Potential Build Alternatives

- Emergency Access for All Vehicles
  - Highway
  - EA Ramp
  - River
  - EA Ramp
  - Highway
  - Freight Rail

- Scheduled Truck Access
  - Truck Ramp
  - Staging Area
  - River
  - Staging Area
  - Truck Ramp
  - Freight Rail
Multimodal Tunnel Options
Potential Build Alternatives

- Roll-On/Roll-Off Vehicle Trains
- Automated-Guided-Vehicle (AGV) Service

Supporting Freight Facilities (Draft)
Potential Build Alternatives

Single yard or multiple yards
With or without warehouse/distribution
Potential TSM Alternative

- Transportation System Management (TSM) – maximize utilization and efficiency of existing transportation network with relatively low-cost projects to improve its functional capacity
- Provide additional freight movement capacity beyond those committed projects included in No Action Alternative
**TDM Alternative**

- Aims to reduce, redistribute or “better fit” the amount of demand to the available capacity.
- Includes measures such as:
  - Truck congestion pricing incentives
  - Passenger vehicle congestion pricing incentives
  - Other fees, regulations or policies similarly affecting transportation behavior and choices

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**No Action Alternative**

Projects currently programmed, planned, or reasonably expected for the study area by 2035, independent of the Cross Harbor Freight Program.

- **Highway and Bridge Improvements**
  - “Existing and committed” build scenarios from NYMTC and NJTPA highway models
  - Sources: NYMTC, NYSDOT, NJTPA, NJDOT, or other agencies.

- **Railroad Improvements**
  - Remaining PANYNJ East and West of Hudson rail program not yet constructed
  - Other “independent utility” projects being advanced by PANYNJ, particularly at Greenville Yard
  - Programmed or planned rail improvements of NJDOT or NYSDOT
  - Region’s freight and passenger railroads.

- **Port and Airport Projects**
No Action Alternative
Railroad Improvements (Draft)

Questions?
**Issue #1**
Feedback on Goals

**Proposed Goals**
- Reduce congestion on major freight corridors within NY/NJ/CT metropolitan area
- Improve performance of Cross Harbor freight transportation system for freight shippers, receivers, and carriers
- Provide flexibility and reliability in regional freight movement
- Improve safety and security on regional transportation network
- Improve regional environmental quality and sustainability

*Will the proposed goals serve the project purpose and meet the need of the region?*

*What objectives could help to achieve each of these goals?*

---

**Issue #2**
Feedback on Preliminary “Long List” Alternatives

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Service/Strategy</th>
<th>Route / Alignment</th>
<th>Supporting Terminals and Facilities</th>
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<tbody>
<tr>
<td>TSM</td>
<td>......</td>
<td>......</td>
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</tr>
<tr>
<td>TDM</td>
<td>......</td>
<td>......</td>
<td>......</td>
</tr>
<tr>
<td>Ferry/Float</td>
<td>Railcar Floats</td>
<td>Greenville to</td>
<td>New Jersey</td>
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<td>Container Floats</td>
<td>Port Newark</td>
<td>Brooklyn</td>
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<td>Haveland Hook</td>
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<td></td>
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<td>SBJ7/51 St/SW55 St</td>
<td>Bronx</td>
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<td></td>
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<td>Greenpoint/Hunters Point</td>
<td>Others</td>
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<td>Others</td>
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<tr>
<td>Rail Tunnel</td>
<td>Single Stack</td>
<td>Greenville to 65th St.</td>
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<td>and Service</td>
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<td>Others</td>
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</tbody>
</table>
**EIS Schedule**

- **Purpose & Need**
- **Notice of Intent**
- **Methodology Reports**
- **Public Involvement**
- **Market Analysis**
- **Alternatives**
- **PDEIS and DEIS**
- **DEIS Public Hearings**
- **FEIS and ROD**

**Summary and Next Steps**

**Keywords to take home**
- Working Assumptions
- Alternatives Methodology
- Potential Alternatives

**We will seek your input**
- In Scoping Process
- In Alternatives Screening
- In Detailed Evaluation
- In Tier I EIS