Climate Change Policy Implications on Ports and Terminals

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Why Do Freight Carbon Emissions Matter?

- 80% reductions in GHG are needed – huge!
- 19% of US transportation GHG is from freight trucks
- Freight GHG is rising much faster than other sources
- Freight will have to contribute to 80% GHG reduction targets
- Reducing freight GHG will be much harder than for utilities, LDVs and other sources
- The supply chain wants to be part of the solution, not the problem
What is Transportation’s Share of U.S. GHG?
How can Freight GHG be Reduced?

- Improve freight engine efficiency (Federal rulemaking pending)
- Use low-carbon fuels for freight modes (many options)
- Improve logistics on existing infrastructure (more efficient distribution networks, fewer empty back-hauls, modal options, etc.)
- Improve infrastructure for more efficient freight (accommodate double-stack trains; eliminate freight and truck bottlenecks; add truck only lanes, etc.)
What Freight GHG Planning Work is Needed?

- Understanding of the supply chain routing criteria
- New models to analyze freight GHG based on supply chains
- New models to analyze freight GHG impacts from infrastructure and policy improvements
- Based on the above, a need for Federal freight strategy
- What role should Ports and terminals play?
Different Views of GHG Emission Producers

- Supply Chain (e.g. Shippers)
- Transportation Modes (e.g. Carriers)
- Regions (e.g. MPO’s, Ports, Terminals and State DOT’s)
- Global
From a Shipper’s (BCO) Perspective

What does a shipper look for in a supply chain?
- Reliability
- Efficiency of costs
- Density and balanced cargo flow
- Redundancy and contingency
- Social responsibility
Supply Chains

Why Focus on Supply Chains?
- It is how economies and businesses work
- How decision making is influenced
- Global with multiple jurisdictions

Issues:
- Complex Life cycles of Production-Transportation-Consumption
- Global
- Dynamic sourcing and distribution
- $$$$ and reliability

Legislative
- Cap & Trade
- AQ Attainment
- What next???
Supply Chain/Transportation Networks

Global Supply Chains

Transportation Networks

Legislative/Planning Issues
Supply Chains – Global, Integrated Systems

No such thing as acting locally

- Apparel
- Footwear
- Toys
- Electronics
- Frozen fish fillets
Supply Chains – Dynamic Sourcing

US Apparel Import Value - Market Share

- China
- Vietnam
- Indonesia
- Mexico
- Bangladesh
- India
- Honduras
- Cambodia

0% 5% 10% 15% 20% 25% 30% 35% 40%
Supply Chains – Dynamic Distribution

The “Big Shipper” Effect

Houston Share of US Imports from Northeast Asia Container Value

- 2003 to 2010
- Furniture (light green)
- Apparel (purple)

Graph showing the share of US imports from Northeast Asia for furniture and apparel from 2003 to 2010.
Changing Transportation Networks

Panama Canal Expansion 2014
Changing Transportation Networks

Eastern Rail Corridors
Factors Affecting Shipper’s Decision Criteria

- **Costs**
  - Transportation Costs
  - Total Delivered Costs (vs. Landed Costs)
  - Sourcing and manufacturing
  - Inventory costs
  - Environmental costs

- **Reliability**
  - Speed
  - On time performance
  - Security and Safety
  - Lane & asset capacity

- **Density**
  - Balanced flow
  - Volume

- **Uniform applicability and enforcement of policies**
Alternative Routing Shanghai to Dallas

- 5,700 Miles, 16 Days
- 1,800 Miles, 4 Days
- 10,000 Miles, 24 Days
The Mega-region Perspective
Mega-Regions Freight Impacts

- 66% US International trade concentrated in mega-regions
- 77% of Domestic trade moved by truck into/out of mega-region
- Mega-regions experience heavier freight traffic on highways (within a mega-region)
  - 60% by Truck
  - 4-5% by rail
  - 13% of rail usage in non mega-region areas
Mega-Region Impacts

- Requires Freight Movement Policy for mega-regions & metropolitan areas
- International trade for mega-regions by 2035
  - 134% increase in export goods; 85% internal to mega-regions
  - 124% increase in import goods; 76% internal to mega-regions
- No national policy or standards on GHG emissions (from a shippers perspective)
Federal Climate Policies May Take Many Forms

Legislation
- Cap and trade bill
- Energy bill
- Transportation authorization

Regulations
- EPA regulations under Clean Air Act
- Transportation planning regulations
- NEPA regulations

Guidance
- CEQ guidance on NEPA/climate change
- USDOT guidance on transportation planning and climate change roles and standards
U.S. Cap and Trade Legislation

**U.S. Cap-and-trade legislation would likely:**
- stimulate energy efficiency by consumers and businesses
- stimulate investment in low-carbon technologies
- reduce GHG emissions
- raise energy prices
- raise gas prices
- generate billions in annual revenue – which could be used for many different purposes
- create “winners” and “losers” among states and among industries

**U.S. Cap-and-trade legislation could:**
- Generate revenue for transportation infrastructure needs

**Point source vs. supply chain**
- Key to supply chain participants!!!
Funding: Tiger Grants 2010 ($600M)

- Projects with demonstrable freight component received $316 million (53% of total $$)
- Freight Specific projects received $214.5M (36%)
- 3 of top 5 and 5 of top 10 projects awarded were freight based
- 42 capital grants- 14 were freight specific and additional 8 had freight component

Source: Coalition for America’s Gateways and Trade Corridors
Proposed Federal Planning Requirements

Similar provisions are in many different bills:

- **TARGETS AND STRATEGIES**: States and large MPOs must develop GHG reduction targets and strategies, as part of transportation plans.

- **PROGRESS**: States and large MPOs must “demonstrate progress in stabilizing and reducing” GHG emissions.

- **METHODOLOGIES**: EPA must issue regulations on transportation GHG goals, standardized models, methodologies, and data collection.

- **CERTIFICATION**: US DOT shall not certify state or MPO plans that fail to “develop, submit or publish emission reduction targets and strategies”.

- **PERFORMANCE REQUIREMENTS**: US DOT must establish requirements, including performance measures, “to ensure that transportation plans... sufficiently meet the requirements... including achieving progress towards national transportation-related GHG emissions reduction goals.”
Transportation Planning – Many Issues and Challenges

- GHG planning impacted by both state and federal policies
- State DOTs and MPOs will be affected
- Inventories of transportation GHG required
- GHG reduction targets required
- Ability to predict GHG for different plans and strategies will be needed
- Clean Air Act planning issues will carry over into GHG planning
- Modeling and metrics need to be standardized
Dynamic Modeling
State Climate Plans (33 States)

- Focused on major sectors: Electricity, Buildings, Agriculture, Industry, Transportation
- Based on very ambitious GHG targets
- Conducted in limited time frames
- Often relied on “cookbook” analysis
- Transportation stakeholders often excluded or had limited role
- Transportation strategies are highly “aspirational”
- Cost estimates are often weak or lacking altogether
- Some plans have been “officially” adopted, others are just reports
Canada’s Asia Pacific Gateway Strategy

- Canada’s National Strategy for Goods Movement tied to Asia
- “a framework for policies, investments and initiatives that seek to make Canada the most competitive exit and entry point in North America”
- Identical strategy for Europe-North American gateway
What Role for Ports and Terminals?

- Port of LA/LB Truck Licensing program
- Green terminal initiatives
- Alternative technologies for moving containers
  - POLB Maglev
  - NCHRP 34
- National, state and regional policy leaders
- In many cases, ports represent freight to MPO’s/State DOT’s
Bottom Line

- Freight is significant driver in regional, state and national economy
- Manufacture’s and shippers are changing their sourcing criterion
- Supply chains are dynamic
- Greening of the supply chain is paramount
- Direct economic and operational benefits to the shipper must be realized
- Screaming need for national freight policy that addresses GHG emission standards
- Ports & Terminals are on the front line