U.S. Department of Transportation
Federal Highway Administration

Intermodal Freight and the Environment

Blue Skyways Annual Meeting

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What is Intermodal Freight Transportation?

- Intermodal freight transportation is the movement of freight using more than one mode of travel where all parts of the transportation network are effectively connected and coordinated.

- An intermodal system includes both origins and destinations (for example, ports railheads and warehouses), as well as the links between them (such as roads or rail).

What is Intermodalism?

- Intermodalism describes an approach to transportation planning, building, and operating the transportation system that emphasizes optimal use of transportation resources and connections between modes.

- In an intermodal transportation network, trains, trucks, ships, and aircraft are connected in a seamless system that is efficient and flexible, and meets the needs of the Nation's consumers, carriers, and shippers.

What are the Benefits of Intermodalism?

- New intermodal partnerships among rail, truck, and ocean carriers offer enhanced mobility by shifting traffic from congested highways to the private sector rail or marine shipping network, and environmental benefits by employing the cleanest possible technologies that improve air quality.

How Can CMAQ Funds Be Used in the Intermodal Freight Sector?

- Funding under CMAQ has been used to improve efficiency of truck, rail and marine operations, as well as intermodal freight facilities where air quality benefits can be shown.

- There are many challenges in developing an efficient intermodal transportation system. Solutions to issues like inadequate infrastructure or operational inefficiencies may be eligible for CMAQ funds.

How Can CMAQ Funds Be Used in the Intermodal Freight Sector?

- Capital improvements that increase the efficiency of freight movement between truck and rail, for example, as well as up to three years operating assistance for these types of projects, are appropriate for CMAQ funding if emission reductions can be demonstrated.

Types of Intermodal Projects

- Projects that address the problem of *inadequate infrastructure*, such as new, large, well-located intermodal terminals, better designed access roads; and bridge improvements to assure adequate clearances and weight capacities for truck and double-stack rail.

- Projects that address *congestion* issues, such as improvements to access routes, bridges, and tunnels serving intermodal rail and port terminals.

- At-grade road and rail crossings near port terminals can create congestion and emissions hot spots. Therefore, grade-separation projects may be eligible for CMAQ funding.

Types of Intermodal Projects

- Projects that alleviate freight *operational inefficiencies*, including the construction, or re-location of rail routes the extension of double-stack rail service, improved management of intermodal operations, and improved coordination among modes.

- Projects that reduce emissions from vehicles through treatment of tailpipe exhaust or application of advanced engine technologies, such as *diesel engine retrofits*, may qualify for CMAQ funding.

- Port and terminal operations can be pollution hot spots due to the operation of older diesel powered trucks and locomotives, and extensive idling. There are a growing number of active diesel retrofit programs around the country.

Examples of Successful Intermodal Projects

- Intermodal operations can increase transportation efficiency, reduce emissions, and improve energy efficiency. A train loaded with containers can carry the same load as dozens of heavy-duty diesel trucks.

- This, in turn, can contribute to reduced long-haul truck traffic on congested highways, reduced damage to highways from heavy trucks, and improved air quality.

Examples of Successful Intermodal Projects

Some intermodal projects supported by CMAQ include:

- **Bensenville Rail Yard Improvements, Chicago, IL:** Approximately $2.1 million in CMAQ funds were used to improve access in the west end of the yard.

- The project includes a new track, interlocking switches and signals to raise train speeds and reduce rail-roadway conflicts at grade crossings. The estimated emissions reductions were 54 kg/day VOC, and 48 kg/day NOx.

Examples of Successful Intermodal Projects

- **Columbia Slough Intermodal Expansion Bridge, Portland, OR:**

  This Bridge was constructed for railroads to directly access a deep-water port facility, eliminating truck trips. The total cost of the project was $6.1 million, comprised of $1 million in CMAQ funds, $2.1 million in demonstration funds, and $3 million in private funds.

- The estimated truck emissions reductions were 52 kg/day VOC, 241 kg/day CO, and 364 kg/day NOx.

Examples of Successful Intermodal Projects

- **Red Hook Container Barge, New York, NY:** CMAQ funds of $1.9 million were matched in a 50:50 ratio to purchase a barge to ship freight containers via the Hudson River rather than on the highways, removing 54,000 trucks trips from New York and New Jersey streets annually.

- The estimated emissions reductions were 12 kg/day VOC, 48 kg/day CO, and 53 kg/day NOx.

Examples of Successful Intermodal Projects

- **Third Rail Line, Cincinnati, OH:**

  A new rail line was constructed to reroute train traffic and relieve freight train congestion experienced by 85 percent of trains in the corridor. The project reduces congestion at truck/rail grade crossings and shifts truck freight to rail.

- The total cost of the project was $15 million, comprised of $5 million in CMAQ funds and $10 million in private funds. The estimated truck emissions reductions were 26 kg/day VOC, 130 kg/day CO, and 395 kg/day NOx.

Examples of Successful Intermodal Projects

- **Waterville Intermodal Facility, Waterville ME:**

  A transportation company constructed an intermodal truck-to-rail transfer facility, including storage areas, staging and other facilities. The transfer facility is located near an interstate highway, allowing trailers and containers of central-Maine products to move via rail, reducing heavy truck traffic and diesel emissions.

- The total project cost was $3 million, including $1.2 million in CMAQ funds. The estimated emissions reductions were 28 kg/day VOC, and 6.3 kg/day NOx.

Future Challenges

- Highway vehicles emitted 82% of all transportation carbon dioxide emissions in 2005.
- Transportation emitted 54% of the nation's pollution from carbon monoxide, 36% of nitrogen oxides, 22% of volatile organic compounds, and 1.4% of sulfur dioxide in 2006.
- All of these emissions have declined in the last decade despite a rise in vehicle-miles of travel.

Source: Bureau of Transportation Statistics, Transportation Statistics Annual Report (2007)

Environmental Stewardship

- Source: BTS Transportation Statistics Annual Report (2007)
- See on-line at: http://www.bts.gov/publications/transportation_statistics_annual_report/2007/pdf/entire.pdf

TABLE E-2 Carbon Dioxide Emissions by Mode: 1995–2005
Millions of short tons

	Passenger cars	Light-duty trucks	All other trucks	Buses	Aircraft	Ships and boats	Locomotives	Other	Total, all modes
1995	599.6	401.6	270.9	9.0	174.6	55.4	42.2	51.3	1,604.6
1996	604.6	414.1	279.8	9.3	183.0	53.0	43.0	51.6	1,638.4
1997	602.2	427.1	300.7	9.8	181.9	37.4	43.1	54.5	1,656.8
1998	621.3	437.7	310.1	10.0	184.3	30.6	43.5	49.0	1,686.4
1999	630.2	455.7	326.7	11.2	189.9	40.9	45.0	49.6	1,749.2
2000	632.0	459.2	343.2	11.0	196.4	63.8	45.1	49.1	1,799.9
2001	634.7	462.7	343.3	10.1	186.6	43.0	45.1	47.2	1,772.6
2002	649.6	476.6	358.1	9.7	178.0	60.6	44.9	49.2	1,826.7
2003	629.1	510.7	355.4	10.6	174.7	53.3	46.6	44.4	1,824.9
2004	628.7	533.6	368.5	14.9	179.7	61.1	49.2	43.5	1,879.1
2005	614.9	550.3	384.6	15.1	186.1	63.7	50.3	43.1	1,908.1

NOTES: Data may not add to total because of independant rounding. *Other* carbon dioxide emissions are from motorcycles, pipelines, and lubricants. *International bunker fuel* emissions (not included in the total) result from the combustion of fuels purchased in the United States but used for international aviation and maritime transportation. Thus, *aircraft* and *ships* and *boats* data included in U.S. total emissions involve only domestic activities of these modes as do all other data shown. *Aircraft* emissions consist of emissions from all jet fuel (less bunker fuels) and aviation gas consumption. Alternative-fuel vehicle emissions are allocated to the specific vehicle types in which they were classified (i.e., passenger cars, light-duty trucks, and other trucks and buses).

SOURCE: U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks* (Washington, DC: Annual Issues), table 2-17.

FHWA Office of Freight Management and Operations- Financing Freight Improvements

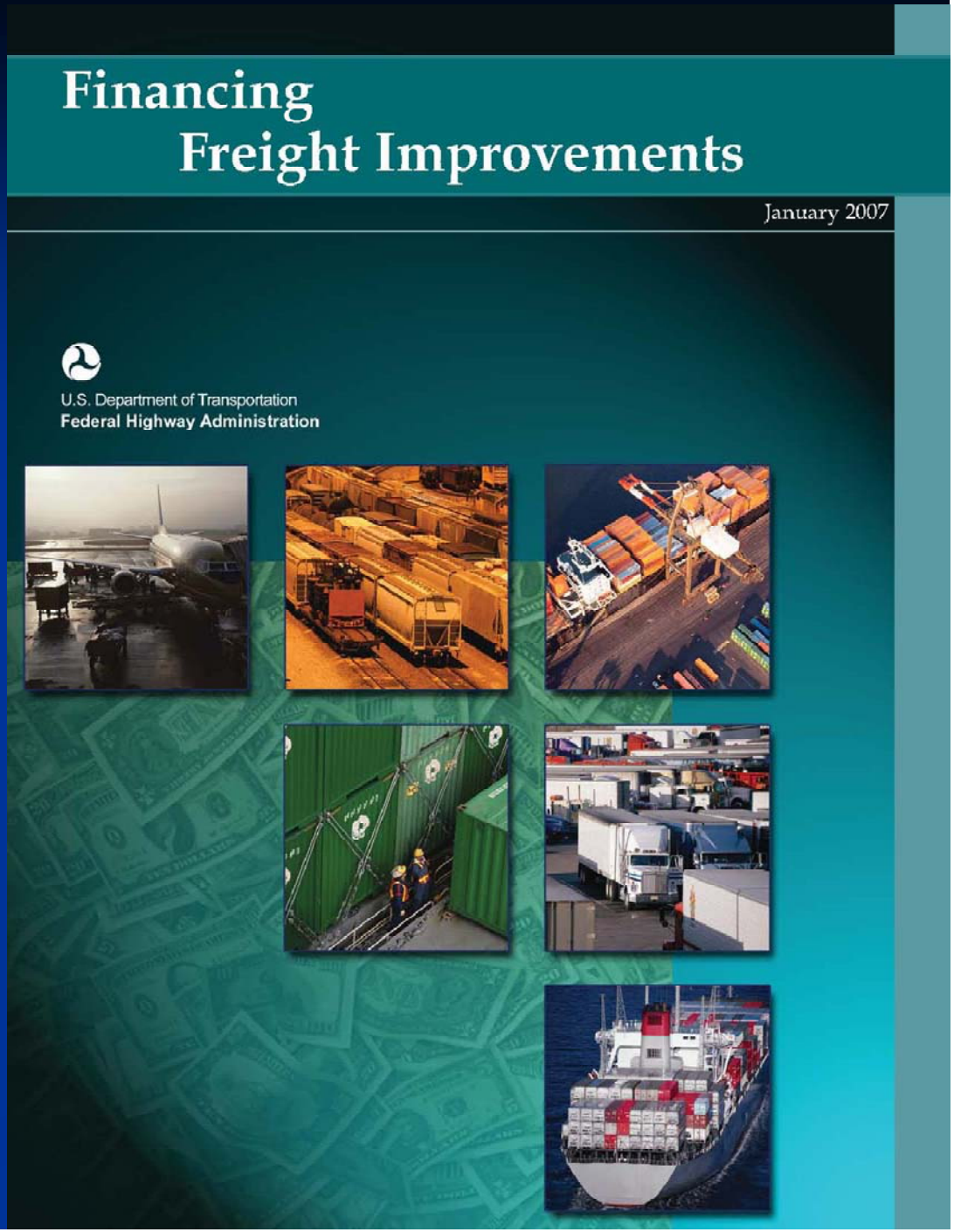
- Financing freight transportation improvements is one of the key challenges facing the freight industry. This effort is being led by the FHWA HQ's Office of Freight Management and Operations and other DOT intermodal offices.

- These collaborative efforts will serve to improve understanding of public and private sector approaches to financing freight projects thru training and outreach programs.

- See following website for additional information: http://ops.fhwa.dot.gov/freight/freight_analysis/financing.htm

Financing Freight Improvements

- Published in January 2007 by the FHWA (163 pp).
- Available via website at: http://ops.fhwa.dot.gov/freight/publications/freightfinancing/freightfinancing.pdf
- Instructor-led course currently under development by FHWA Resource Center.



NHI/FHWA Freight Professional Development Courses

FHWA HQ's Office of Freight Management and Operations has been working with the National Highway Institute (NHI) to develop several new areas of freight professional development training (both Internet web-based and instructor-led)

See available courses at the following NHI website:
http://www.nhi.fhwa.dot.gov/training/

FHWA website:
http://ops.fhwa.dot.gov/freight/fpd/Docs/training.htm

National Highway Institute : Course Description Page 1 of 2

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FREIGHT AND TRANSPORTATION LOGISTICS
COURSE NUMBER: FHWA-NHI-139006
COURSE TITLE: Integrating Freight in the Transportation Planning Process - WEB-BASED Standard Version

FISCAL YEAR	LENGTH	CEU	FEE
2009	6 Hours	0.6 Units	$0 Per Participant

TRAINING LEVEL: Beginner

CLASS SIZE: Minimum:1; Maximum:1

DESCRIPTION:
Freight transportation issues can be complex and involve many different stakeholders, all of whom have different perspectives on the freight transportation system. The challenge faced by many public-sector transportation planners is how to best incorporate these freight perspectives into the transportation planning process in a way that results in a safe and efficient transportation system for both people and goods. This Web-based training course will provide a greater understanding of freight trends, its stakeholders, and its issues, so that public-sector transportation planners are better able to incorporate freight into their respective transportation planning processes and programs.

This WBT course is an update of and replaces the instructor-led course FHWA-NHI-139001. If you are taking this course as a prerequisite for FHWA-NHI-139003 Advanced Freight Planning, you MUST provide your certificate of completion to the lead instructor on the first day of class. You will be able to print out your certificate after you complete your online exam. If you need help enrolling in this web-based training course, contact Lexi Buscaglia at (703) 235-0556.

In accordance with the Rehabilitation Act of 1973, as amended, this WBT is also available in an accessible 508 compliant version. See course number FHWA-NHI-139006A for more information.

OUTCOMES:
Upon completion of the course, participants will be able to:

- Upon completion of the course, participants will be able to:
- Identify the stakeholders involved in freight transportation
- Explain the role of different modes in freight transportation
- Describe some trends affecting freight transportation, and their impact on a State's transportation system and communities
- Discuss some of the common issues that prevent freight from being fully incorporated into the planning process
- Identify key resources to help guide statewide and metropolitan freight planning effort

TARGET AUDIENCE:
Transportation planners and freight transportation planners from State DOTs, MPOs, local governments, and Federal agencies

NHI TRAINING INFORMATION:
NHI Scheduler (703) 235-0534

SUBJECT MATTER EXPERT:

http://www.nhi.fhwa.dot.gov/training/course_detail.aspx?num=FHWA-NHI-139006&cat... 10/24/2008

FHWA Talking Freight Web Seminars Monthly- Every 3rd Wednesday (Free of Charge)

- **Date:** November 19, 2008
- **Topic:** Freight and Land Use
- **Time:** 12:00 – 1:30 pm CDT
- If you have any questions, please contact
  Ms. Jennifer Symoun, SAIC, 703-676-6849 or
  jennifer.e.symoun@saic.com
- Registration for the November 19 Talking Freight Seminar is now available at
  http://www.ops.fhwa.dot.gov/freight/fpd/talking_freight.htm.

Contact Information

Kirk D. Fauver
Statewide Planning Engineer
FHWA Texas Division
300 E. 8th Street (Room 826)
Austin, TX 78701

E-MAIL: kirk.fauver@fhwa.dot.gov
PH: (512) 536-5952