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Freight Data for State Transportation Agencies

A Peer Exchange

July 11, 2005
Boston, Massachusetts

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A Peer Exchange

**July 11, 2005
Boston, Massachusetts**

James P. Hall, *editor*

Transportation Research Board
Statewide Transportation Data and
Information Systems Committee

November 2005

**Transportation Research Board
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Executive Summary

The acquisition, access, and utilization of freight data are increasingly important functions to state transportation agencies and data providers. The Transportation Research Board (TRB) Committee on Statewide Data and Information Systems (ABJ20) hosted a peer exchange to discuss state transportation agency collection and use of freight data and to identify ongoing issues and trends.

Before to the peer exchange, state agency participants completed an extensive questionnaire on freight data practices and attended TRB's Commodity Flow Survey (CFS) Conference. Results of the completed questionnaires from 14 states provided insights into current practices and uses of freight data.

In their responses, state agencies universally recognized the increasing need and importance of freight data access and analysis in their agencies. Major concerns were on data collection and access, data quality, and a lack of necessary resources and staffing. Responses also portrayed the varied and complex uses of freight data including modal program development, air quality analysis, safety investigations, hazardous materials monitoring, domestic and international trade, corridor analysis, supply chain analysis, and transportation modeling.

The participation of local planning agencies and the acquisition of freight data at a local level were significant trends. State responders also recognized the necessity of national support for freight data collection and distribution, training, and communicating best practices.

At the peer exchange, participants identified the major challenges and issues relating to freight data. Areas included the determination of data and information needs, logistics and supply chain analysis, freight data framework models, definition of the role of state department of transportation, data management personnel, and understanding of the universe of data sources and available data. Future research was proposed to determine best practices for establishing a state freight data framework by documenting best state practices in linking freight data sources and customer needs to support agency decision making efforts.

Background

The acquisition, access and utilization of freight data are increasingly important functions to state transportation agencies and data providers. The TRB Committee on Statewide Data and Information Systems (ABJ60) hosted a peer exchange to discuss state transportation agency collection and use of freight data and to identify ongoing issues and trends.

Before the peer exchange, state participants completed an extensive questionnaire on freight data practices and attended the TRB’s Commodity Flow Survey Conference. Results of the completed questionnaires from fourteen states and subsequent peer exchange discussions provided insights into current practices and uses of freight data in state transportation agencies. Peer exchange participants subsequently identified major issues in managing the freight data resource and discussed methods to enable freight transportation data management practices to meet agency and customer needs.

The peer exchange was organized by TRB’s Statewide Transportation Data and Information Systems Committee (ABJ20), with support from the Bureau of Transportation Statistics (BTS) of the United States Department of Transportation (USDOT).

Invitations were extended to members of the TRB Committee on Statewide Transportation Data and Information Systems and other participants involved with the management and use of freight information. The following is a listing of peer exchange participants and responders to the questionnaire (**Table 1**):

TABLE 1 Peer Exchange Participants

Name	Organization
Tim Baker	Colorado Department of Transportation
Rob Bostrom	Kentucky Transportation Cabinet
Jim Brogan	Cambridge Systematics, Inc.
Robert Copp	California Department of Transportation
Scott Drumm	Port of Portland, Oregon
Susie Forde	Wisconsin Department of Transportation
Glenda Fuller	Idaho Department of Transportation
James Golden	Florida Department of Transportation
James Hall	University of Illinois at Springfield
Barbara Ivanov	Washington State Department of Transportation
Deborah Johnson	Bureau of Transportation Statistics
Barna Juhasz	Federal Highway Administration
Jonette Kreideweis	Minnesota Department of Transportation
Jim McQuirt	Ohio Department of Transportation
Tom Palmerlee	Transportation Research Board
Leo Penne	American Association of State Highway and Transportation Officials
Joy Sharp	Bureau of Transportation Statistics
Rolf Schmitt	Federal Highway Administration
Jane Smith	Georgia Department of Transportation
Jack Stickel	Alaska Department of Transportation
Tom TenEyck	Pennsylvania Department of Transportation
Ron Tweedie	Consultant
Anita Vandervalk	Cambridge Systematics, Inc.
Todd Westhuis	New York Department of Transportation

STATE QUESTIONNAIRES

Before the peer exchange, each state DOT representative answered eight questions to summarize their state's activities in freight data. The questions were developed to investigate the overall breadth of freight data usage. The responders generally queried the diverse entities within their agency involved with freight data in formulating their responses.

The eight questions were

1. List the types of policy questions, planning studies, project plans and designs, or other activities for which your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type of policy question, planning study, or other issue requiring information about freight, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

2. What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data (within your DOT, from other state agencies, from local governments, from the federal government, from consultants)?

3. Who performs the analyses of the questions and issues in Question 1? freight specialists in your Office of the Secretary or other departmentwide office? planners or other generalists in your Office of the Secretary or other departmentwide office? freight specialists in a modal administration? planners or other generalists in a modal administration? freight specialists or generalists from other state agencies? national consulting firms? local consulting firms? local universities?

4. How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

5. What do you do to improve the quality of freight data and analytical tools in your state?

6. Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

7. How much does your state spend on freight data, analytical tools, training, and assistance in using freight data? What do you think the appropriate expenditure level should be?

8. Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

INTRODUCTORY REMARKS AND PEER EXCHANGE STRUCTURE

Anita Vandervalk, facilitator of the peer exchange and chair of TRB ABJ20 Statewide Transportation Data and Information Systems Committee, welcomed the participants. She reiterated the purpose of the peer exchange to investigate state transportation agency collection and use of freight data and to identify ongoing issues and trends.

The peer exchange started with presentations by representatives from USDOT and AASHTO on national freight issues. Subsequently, representatives from state DOTs presented their top issues and challenges in managing and using freight data. After discussion, peer exchange participants identified major issues with freight data and areas of future research.

National Freight Issues

ROLF SCHMITT

Federal Highway Administration

LEO PENNE

American Association of State Highway and Transportation Officials

U.S. DEPARTMENT OF TRANSPORTATION PERSPECTIVE

Rolf Schmitt discussed current freight issues from a national perspective.

Freight is expected to increase 70% between 1998 and 2020. The growth in volume and increasing emphasis on timely and reliable delivery are exceeding the capacity of the highway and rail networks.

The highway reauthorization legislation places an increased emphasis on freight and increases the need for accurate and relevant freight data. A TRB conference in late 2005 will discuss the data implications of the reauthorization legislation.

Freight movement is different from passenger travel in many respects. Freight movement is more heterogeneous and changes more dramatically in short periods of time. In most localities, the majority of freight activity involves external movements rather than internal movements.

National data programs include the CFS and mode-specific data for shipments by rail and water. These programs help states and localities understand how they fit within national patterns of freight movement, but do not provide adequate detail for local freight movement. States and localities must supplement the national picture with local information to have an effective understanding for state and local planning and the design of individual projects. TRB will hold a major conference in 2006 as part of the Freight Model Improvement Program to improve the state of the art and state of practice of local data collection and forecasting.

AASHTO PERSPECTIVE

Leo Penne discussed the current environment of freight data in transportation agencies. The participants at an April 2005 AASHTO Conference on Freight in Columbus, Ohio, were in unanimity in expressing a great need for freight data. State agencies are strong advocates for freight data. Approximately 6 to 10 state DOTs have operational freight offices.

Freight data collection and evaluation is not yet a mainstream function in most state DOTs. Freight analysis efforts tend to be by mode. Typically, freight is minimally included in state transportation planning activities. AASHTO and state agencies are promoting a greater emphasis on freight data. Guidance materials provided for state DOT executives included information on freight data needs.

Cambridge Systematics is in a data-gathering phase in a current NCHRP project on freight data gathering. One of the areas of investigation is public-private partnerships.

Alaska Department of Transportation and Public Facilities Perspective

JACK STICKEL

Alaska Department of Transportation and Public Facilities

INTRODUCTION

The Alaska Department of Transportation and Public Facilities (ADOT&PF) mission is to provide for the movement of people and goods and the delivery of state services. The Department's Division of Measurement Standards and Commercial Vehicle Enforcement (MSCVE) focuses on freight mobility, truck safety, and size and weight restrictions. MSCVE's strategic objective is to foster efficient freight flows for economic development. Regional planning staffs collect truck weights and classification data while the program development division provides real-time analysis tools.

Alaska's freight movement is multimodal oriented. Alaska's size, geography, environment, and major infrastructure deployment limits transportation options. Barge lines bring most of the freight into Alaska, where the commodities are transferred to trucks, air cargo, or railroad. The FHWA's Office of Freight Management and Operations Freight Transportation Profiles for Alaska describe the freight movement (origin or destination in Alaska) for all modes (1), for land routes (2), and for water routes (3).

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities for which your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

Table 2 identifies the types of policy questions, planning studies, project plans and designs, and other activities for which ADOT&PF needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, and other aspects of freight shipping. Response times vary according to agency requirements.

The Municipality of Anchorage (MOA) is a major hub for multimodal freight movement. Ted Stevens Anchorage International Airport (AIA) has the largest freight movement in the United States and the fourth largest in the world. The Port of Anchorage and the Alaska Railroad tie directly into AIA, serving interior Alaska. Significant National Highway System (NHS) routes terminate in Anchorage. Coordination between ADOT&PF and MOA is vital to successful freight mobility planning.

MOA developed a Freight Mobility Study as part of their metropolitan planning organization (MPO) long-range transportation plan (LRTP) (4). This study focuses on the multimodal aspects of freight movement: water, rail, air, and truck. The Anchorage Metropolitan

TABLE 2 Freight Data Needs

Freight Data Areas	Projects
Airports	Anchorage and Fairbanks international traffic, rural airports
Air quality	Carbon monoxide, particulate matter (PM) 10
Commercial trucking	Highway and bridge design, routing, weight/size restrictions
Corridor management	North Slope Haul Road, Anchorage to population centers
Hazardous material tracking	Chemicals, explosives, munitions, incident response
Homeland security	Oil pipeline, northern borders, infrastructure, terrorism
Intermodal connectors	Ports, airports, railroad, air cargo, trucking
Military bases	Munitions, supplies, convoys
Natural resource exports	Fishing, mining, timber, fishing, oil, natural gas
Oil and gas	Supplies, Valdez terminal, module moves, new gas pipeline
Regional transportation plans	Transportation hubs, freight forecasts (aviation, mail, barges)
Resource development	Airport expansion, new roads, marine terminals
Roadway maintenance	Overweight/oversize, seasonal weight restrictions
Tourism	Multimodal connections, buses, cruise lines

Transportation Solutions (AMATS) Policy Committee acts on all matters relating to the comprehensive transportation planning process. The ADOT&PF Commissioner chairs the committee. The AMATS Technical Advisory Committee (TAC) provides recommendations to AMATS on freight movement, air quality, and transportation projects. The ADOT&PF Central Region Chief of Planning and Pre-Construction Engineer serve on the TAC.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

Freight data originate from a number of sources. **Table 3** identifies some of the sources for freight data. However, in many cases, freight data has not been baselined or sources identified, thus restricting the potential uses.

The MSCVE is a major source of freight data and analysis. Transportation planners also perform freight studies when developing regional transportation plans. **Table 4** lists some of the department's transportation plans. Much of the freight data for these plans is compiled by contractors. The Port of Anchorage, the Alaska Railroad, the University of Alaska, and the state-maintained airports also collect freight data.

Who performs the analyses of the questions and issues in Question 1?

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

While some freight statistics and analytical tools do exist, a strong freight baseline study has not been accomplished. Other key limitations include

TABLE 3 Sources of Freight Data

ADOT&PF: Anchorage International Airport
ADOT&PF: Alaska Marine Highway System
ADOT&PF: MSCVE
ADOT&PF: Scale House and Weigh-in-Motion Program
ADOT&PF: Traffic Data Collection Program
Alaska Department of Labor: Alaska Economic Trends (http://almis.labor.state.ak.us/)
Alaska Railroad
Alaska Trucking Association
Bureau of the Census
BTS
CFS
FHWA, Office of Freight Management and Operations
Highway Performance Monitoring System
Local government
Municipality of Anchorage
Port of Anchorage

TABLE 4 Transportation Plans Requiring Freight Data and Analysis

Transportation Plans Requiring Freight Data and Analysis
ADOT&PF: Access Roads (www.dot.state.ak.us/stwdplng/projectinfo/index.shtml)
ADOT&PF: Alaska Industrial Roads (www.dot.state.ak.us/stwdplng/industrialroads/index.shtml)
ADOT&PF: Airport master plans (www.dot.state.ak.us/stwdav/Documents.shtml)
ADOT&PF: Rural Airport Development Plan (www.dot.state.ak.us/stwdav/Documents.shtml)
ADOT&PF: Statewide Transportation Improvement Program and Needs List (www.dot.state.ak.us/stwdplng/cip_stip/index.shtml)
Northwest Alaska Transportation Plan (www.dot.state.ak.us/stwdplng/areaplans/nwplan.shtml)
Prince William Sound Transportation Plan (www.dot.state.ak.us/stwdplng/areaplans/pwsplan.shtml)
Southeast Alaska Transportation Plan (www.dot.state.ak.us/stwdplng/projectinfo/ser/newwave/SATP_FINAL/index.shtml)
Southwest Alaska Transportation Plan (www.dot.state.ak.us/stwdplng/areaplans/swplan.shtml)
Yukon–Kuskokwim Delta Transportation Plan (www.dot.state.ak.us/stwdplng/areaplans/ykplan.shtml)
ADOT&PF Vision 2020: Statewide Transportation Policy Plan (www.dot.state.ak.us/stwdplng/areaplans/v2020.shtml)
Anchorage 2020 (www.muni.org/iceimages/transplan/goals_obj_rev5.pdf)
Anchorage Freight Mobility Study (www.muni.org/iceimages/transplan/ACF2ED2.pdf)
Anchorage LRTP 2004 (www.muni.org/transplan/LRTPProjDocuments.cfm)
Alaska Railroad (www.alaskarailroad.com/PROJECTS/studies.htm)

- Lack automated classification counters,
- Limited patrol and enforcement capabilities,
- Limited weight-measuring locations,
- Shipper confidentiality,
- Seasonal weight restrictions—85% of max load severely impacts trucking, and
- Unpermitted equipment moves—major source of overweight trucks.

ADOT&PF would like the following improvements in freight data and analytical tools:

- Air quality data as it relates to trucking;
- Automated citations—potential use of traffic and criminal software (TraCS);
- Hazardous material (chemical/radiological/munitions) shipment tracking;
- Increased real-time operational data;
- Homeland security, particularly northern borders;
- More scale house and weigh-in-motion locations; and
- Training (chemical, biological, hazardous materials, scale house).

The TraCS application offers the potential to automate much of the commercial truck citation process. In particular, TraCS software allows agencies to design their own forms, validation edits, database tables, and process flows. Alaska has a TraCS license and is seriously considering deployment.

What do you do to improve the quality of freight data and analytical tools in your state?

Commercial vehicle operations have been incorporated into the department's intelligent transportation system (ITS) regional architecture, *Alaska Iways Architecture* (5). Current work in commercial vehicles includes electronic screening, credential administration, and the Commercial Vehicle Information and Systems Network (CVISN) safety information exchange. Potential projects include an advanced CVO security plan for the state.

ADOT&PF, in conjunction with the University of Alaska, developed a feasibility study (PAYLOAD, June 2001), to evaluate the potential of providing a seamless, intermodal freight tracking and transfer system (6). If a positive feasibility is determined and private partners found, PAYLOAD will ultimately define a physical infrastructure, operating practices, and business processes for fully intermodal freight activities. The University of Anchorage started one PAYLOAD initiative: CargoTech Alaska. Only limited work has been done on the remaining PAYLOAD initiatives.

The University of Alaska Anchorage, in conjunction with other partners, started CargoTech Alaska: "*An ITS Intermodal Freight Technology Demonstration Project*" (January 2002). CargoTech Alaska builds on the previous PAYLOAD intermodal ITS research effort. The first phase of the initiative proposed designing, developing, and testing an ITS freight processing center prototype that could potentially improve cargo processing and service at AIA. The project team worked closely with all sectors of the freight industry including air cargo, trucking, economic development agencies, and public sector transportation planners. The initiative is waiting funding and commercial support.

The Federal Motor Carrier Safety Administration (FMCSA) will conduct an Alaska operational field test for satellite-based mobile communications tracking systems to monitor hazardous materials and high-value cargo shipments. The fall 2005 project will field test improved communications and tracking. The changes have the potential to enhance security, safety, and efficiency of commercial vehicles, trailers, and freight shipments. Real-time tracking can reduce the threat of theft or hijacking of freight, particularly hazardous materials or munitions. The project is summarized at the end of Alaska's section.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

ADOT&PF generally lacks personnel and staff expertise to manage large freight data sets and perform analysis. Much of this work in this area is contracted as part of studies, area plans, and construction projects. There are several areas where ADOT&PF would like to increase expertise through training:

- Chemical, biological, and other hazardous materials tracking;
- Homeland security;
- Northern borders (tracking, size, weight, security);
- Roving enforcement patrols; and
- Scale house and weigh-in-motion.

How much does your state spend on freight data, analytical tools, training, and assistance in using freight data? What do you think the appropriate expenditure level should be?

The ADOT&PF MSCVE budget for commercial vehicle enforcement, which includes data management and analysis, is \$4.7 million. It is difficult to determine other funding for freight data or how much should be spent on that effort.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

The primary expansion of freight data collection is to monitor commercial trucks through weight, size, vehicle counts, and vehicle classification. ADOT&PF has a weight plan that deals with scale house and weigh-in-motion deployment. There is also strong interest in getting more freight data from the Dalton Highway, both for North Slope oil development and for the proposed Alaska pipeline. Other transportation modes may require additional freight data collection. Resource development could potentially impact marine and railroad traffic. Here is a 25 April 2005 press release from Governor Murkowski on the proposed Alaska–Canada Railroad:

On Monday, I signed a memorandum of understanding with Yukon Premier Fentie for a feasibility study on a proposed Alaska–Canada Rail corridor connection. A rail corridor to link with the rest of the North American continent will mean jobs for Alaskans and access to Canada and the Lower 48. Premier Fentie and I agreed to create an Alaska–Canada Rail Advisory

Committee, made up of an equal number of Alaskans and Yukon Territory representatives, to oversee the study. A Management Working Group will study the feasibility of a rail corridor between Alaska and Canada. We have pledged to share the costs of a feasibility study on an equal basis, and Alaska will use about \$2.5 million in federal funds appropriated specifically for rail corridor work.

Freight data collection and analysis initiatives are funded through the department's State Transportation Improvement Program (STIP) and the annual work programs. Some initial projects were funded through ITS earmarks.

ADOT&PF is developing a Data Business Plan that documents the department's business processes for collecting, analyzing, archiving, and distributing transportation data. The Concept of Operations will include freight data and identify other potential data collection and analysis opportunities.

SUMMARY

Freight shipments and freight data in Alaska have a strong multimodal component. Freight distribution from Alaskan major terminal hubs to in-state destinations use trucking, ocean, and river transportation, commercial airlines, air charters, and the railroad. Freight data analysis is tied closely to other disciplines, including hazardous material shipments, air quality, vehicle size and weight restrictions, regional transportation plans, resource development, tourism, and the military.

Freight data in Alaska are available from a number of sources. However, there is a deficiency in rural areas, particularly the northern border areas and the North Slope Haul Road. Freight movement has not been adequately baselined on key transportation corridors nor has all sources of freight data been identified. ADOT&PF and the MOA have several programs in place to improve freight data. Other programs are waiting on project champions and funding.

SATELLITE-BASED MOBILE COMMUNICATIONS TRACKING SYSTEM PROJECT

Expanded Satellite-Based Mobile Communication Tracking System

Federal Motor Carrier Safety Administration

April 2005

FMCSA will conduct an Alaska operational field test for satellite-based mobile communications tracking systems to monitor hazardous materials and high-value cargo shipments. This fall of 2005 project will test improved communications and tracking that have the potential to enhance the security, safety, and efficiency of commercial freight movements. Alaska's major concerns are

- Hazardous materials shipments along the Dalton Highway from Prudhoe Bay to Anchorage and other cities in the south;
- Vulnerability of the Alaska pipeline to terrorists; and
- Limited services and communication systems making vehicle breakdowns and other emergencies life threatening.

This project is a FMCSA follow-up to two earlier vehicle and cargo tracking system field tests: Hazardous Materials Safety and Security Field Operational Test and Untethered Trailer Tracking and Control Security Project (7–9).

FMCSA completed an Alaska drive test using the satellite-based mobile communications equipment from these earlier two projects. The test verified that a different satellite and modifications to the mobile communications equipment were required. The 2005 operational field test will deploy new equipment and procedures learned from the Alaska test drive. The Expanded Satellite-Based Mobile Communication Tracking System project has six key components:

- Messaging—provide the ability to send and receive test messages and macros between dispatch and the tractors;
- Location and mapping—provide mapping of tractor locations; specifically, location and mapping of tethered trailers—provide for trailer location updates from tractor positions when tethered to a satellite-equipped tractor;
- Location and mapping of untethered trailers—provide for trailer location updates, status changes for door and tether sensors, and panic operation for theft recovery of the presence of a tractor;
- Accurate times of trailer connect and disconnect activities—provide time-tagged and position-tagged event messages for connect and disconnect events through satellite-equipped tractors and trailers; and
- Panic button alerts—provide a panic button that when pressed will automatically send out a panic message displaying time, date, and location to the dispatchers.

The Alaska field test will consider a wide range of risk assessment:

- Quantity, frequency, operation type, routing, and loading and transfer points;
- Vulnerabilities, e.g., hijacking, terrorism, environmental incidents;
- Motor carriers, shippers, receivers, and federal, state, and local government; and
- Different industry segments and commodities (bulk fuel, LTL, explosives, bulk chemical, ammo).

The Alaska field test

- Employs 100 tractors and five trailers, mainly out of Fairbanks and Anchorage;
- Provides real-time satellite tracking and satellite phone;
- Focuses on trailer and tractor decoupling, driver panic button when leaving rig;
- Uses high-value loads: dry freight, consumer durables, electronics; and
- Includes hazardous material loads: munitions, explosives, fuel, hot oil, and sulfuric acid.

Satellite tracking offers the following potential benefits to freight mobility and eventually better freight data:

- Carriers locating vehicles in near real-time;

- Dispatchers and drivers communicating on a near real-time basis;
- Carriers keeping shippers and consignees apprised of status of loads;
- Carriers monitoring driver and vehicle performance;
- Reducing detention events that cost carriers lost productivity;
- Sending a panic alert in the event of an emergency;
- Copying data automatically to shippers, carriers, and authorized third parties;
- Automatically integrating dispatch and back-end office data with position location;
- Maximizing use of assets, e.g., reducing empty backhaul miles.;
- Maximizing driver and vehicle time by re-routing trucks in transit;
- Monitoring temperature-sensitive loads such as food products;
- Providing electronic hours of service application;
- Using security devices to minimize theft, e.g., cargo and door locks; and
- Responding to accidents or other emergency incidents (terrorism, hazardous spills).

REFERENCES

1. http://ops.fhwa.dot.gov/freight/freight_analysis/state_info/alaska/ak2.pdf. Accessed May 1, 2005.
2. http://ops.fhwa.dot.gov/freight/freight_analysis/state_info/alaska/truckflow_ak.htm. Accessed May 1, 2005
3. http://ops.fhwa.dot.gov/freight/freight_analysis/state_info/alaska/waterflow_ak.htm. Accessed May 1, 2005
4. <http://www.muni.org/iceimages/transplan/ACF2ED2.pdf>. Accessed May 1, 2005.
5. <http://iways.alaska.gov/iways/architecture.shtml>. Accessed May 1, 2005.
6. <http://www.engr.uaa.alaska.edu/espm/Payload/>. Accessed May 1, 2005.
7. <http://www.fmcsa.dot.gov/documents/hazmat/fot/HMFOT-Final-Report.pdf>. Accessed May 1, 2005.
8. <http://www.fmcsa.dot.gov/safety-security/hazmat/fot/finalrpt/execsum.htm>. Accessed May 1, 2005.
9. <http://www.safehazmat.com/>. Accessed May 1, 2005.

California Department of Transportation Perspective

ROBERT COPP

California Department of Transportation

QUESTIONS

How would you summarize the key issues involved in freight data acquisition, management, and use?

California Department of Transportation (Caltrans) has completed a Transportation Management System master plan that proposes a concept of system management that gets the most out of the existing system before considering system expansion. The foundation of system management is system monitoring and evaluation. The master plan recommendations have become part of the California Transportation Plan. The data foundation of the master plan is as important for freight movement as it is for transportation operations. Without data, projects are selected more often based on political support or seat of the pants analysis. The increasing number of earmarks in the federal reauthorization act is testament to the lack of data to make effective decisions.

While Caltrans is clear on what data is needed to support system operations, the state (or even national) experience with commodity flows is limited. Decades of research have been completed on passenger trips and trip purposes. At this point, some basic questions need to be answered. Why are the data needed? Exactly what data are needed? At what level of detail and quality is the data needed? How can data be used to better model and forecast truck travel on the highway system? What is the usefulness of the data? Are forecasts reliable? Can system needs be assessed with the level of data collected now? What does it mean to the supplier of the data? Are the data useful to their needs?

It is critical that government's role be defined so that data are not collected to support or broaden this role. Government has a role in long-range planning. This would include forecasting truck volumes so that their impact on pavement deterioration and highway congestion can be better predicted. In the short-term, industry will adjust quickly to any situation before government can react. However, government can make some short-term operational changes such as correcting curves that limit the access of legal trucks to truck terminals. Economic impact—taxation is a role for government. Is the impact of taxing and regulations on the industry fully understood? Air quality issues are another role for government.

What is the role of government in collecting and using the data? Working closely with the goods movement industry will be critical to the success of getting the data and information needed to make good transportation decisions. Neither the states nor industry is interested in federal mandates. However, a national effort to provide an efficient and cooperative goods movement data support system would be helpful.

A holistic nationwide plan for providing freight data is needed. Without this effort, continued duplicative studies will be collected and waste precious taxpayer dollars. Each city and its port or airport will be completed to improve their capabilities to take business away from each other. This competitive effort will lead to winners and losers rather than overall national improvements in the flow of goods. The industry must be included and their issues addressed.

For example, what are their biggest transportation problems? What could government provide to the industry in exchange for industry data?

How is your DOT organized to acquire, manage, and use freight data?

Caltrans is an organization of more than 20,000 employees broken into 12 district offices and 14 major program areas. The Division of Transportation Planning (DOTP) is responsible for overall coordination of goods movement issues with the exception of truck volumes data collection and reporting and extralegal load permitting which are located in the Division of Traffic Operations. While the Divisions of Aeronautics, Rail, and Transportation System Information (TSI) have some limited roles in goods movement, DOTP provides the leadership in collecting and organizing statewide freight data for planning purposes. Goods movement policies and major activities are mentioned in the California Aviation System Plan and the California State Rail Plan. A new executive manager will soon be appointed to implement a new administration policy on goods movement.

What are the types of policy questions, planning studies, project plans and designs, or other activities for which your DOT needs to analyze data on movement of commodities? For each type of policy question, who raises it and how quickly is the response needed?

In general, as congestion and goods movement has increased on the roadways, trucks have become a more noticeable portion of traffic. Through a range of weigh-in-motion, classification, and count stations, Caltrans can provide reasonable estimates of existing truck flows. The challenge lies in forecasting future flows and disaggregating these flows and assigning them to the state transportation network. The data would be extremely valuable in answering questions concerning the impact of freight on the road infrastructure, strategies to improve freight mobility, forecasting transportation system performance, mitigating the impact of truck traffic on general mobility, and improving the safety performance of the road network. Policy makers request the economic impact of freight movement separately from transportation system impacts.

Caltrans, regional transportation agencies, and researchers have completed a wide variety of reports, and studies while answering myriad questions about freight movement. Examples of reports and studies include: a multicounty goods movement action plan for Southern California, Los Angeles Metropolitan Transportation Authority freight survey, various truck models, transportation corridor studies, airport ground access study, air cargo studies, mainline rail and port modal elasticity study, port trip reduction strategies, national Interstate 10 freight corridor study, Southern California truck and rail study, railroad advanced planning study, empty ocean container logistics study, highway design for both new construction and rehabilitation, congestion management, performance measures, origin–destination surveys for regional models, Alameda County freight corridor improvement plan, port master plans, truck cost allocation study, truck lane feasibility study, impact of Los Angeles–Long Beach port capacity overload (2004), heavy-duty truck model, state transportation model, and high-speed rail study.

The breadth and depth of goods movement questions have increased with the governor's recently announced goods movement policy and action plan. These questions have required responses in days rather than weeks or months. A full draft plan was delivered in less than a month using a wide variety of data sources. The plan is a joint effort of Caltrans, the California

Highway Patrol, and the Air Resources Board. Implementation of this policy and the action plan will generate the need for additional freight data.

What kinds of freight data do you use when responding to the questions and issues listed above? Where and from whom do you get the data?

The freight data used when responding to questions can be summarized as follows:

- Freight transportation facilities—where, mode, usage by time;
- Freight movement, Truck trip generators—location, modes, usage by time;
- Truck fleet, truck traffic, truck travel forecasts*—usage at locations by time; and
- Truck-involved accidents.

(*TSI provides trend, current, and forecasted truck travel estimates by body type, fuel type, county, and road system type.)

Caltrans has continued to develop the Intermodal Transportation Management System (ITMS) even though it is no longer required by federal regulations. Caltrans has found that much has been learned about the complexity of goods movement data and the value it could provide if it was available. The ITMS currently uses data from a Caltrans-sponsored 1996 survey of major airports, ports, truck terminals and rail terminals. While the data were fairly complete at the time, they are now significantly out of date. A previous empty truck survey has not been updated since 1976, though a study in Southern California will provide more current data. Caltrans has completed other localized truck surveys and uses a variety of federal reports and studies to provide broad data or to help validate model results.

The major data source for the ITMS is the TRANSEARCH Intermodal Visual Database prepared by Reebie and Associates and Port Import Export Reporting Service (PIERS). TRANSEARCH includes data collected from a variety of government and industry sources. The strength of the TRANSEARCH data set is the inclusion of industry data that is not required by any government law or regulation and the weakness is the inability to audit the data because of Reebie and Associates secrecy pledge to their clients.

The Division of Aeronautics collects passenger service, air cargo, and operations activity reports monthly from all commercial service airports to track regional distribution of passenger and air cargo activities.

Who performs the analysis of the questions and issues listed above?

Regional agencies or researchers perform most of the local or regional studies in cooperation with Caltrans districts. The Caltrans' DOTP in cooperation with other divisions and district office staff prepares statewide goods movement analysis and studies.

How satisfied is your DOT with data and analytical tools for answering questions and issues listed above?

Although truck travel trends and forecast estimates are updated annually from socioeconomic, population, and economic projections from the Department of Finance, the University California at Los Angeles Anderson Forecast, and other reliable sources, statewide freight data are out-of-

date or unreliable. The last surveys completed for the ITMS are nearly 10 years old. While the major components of the ITMS are essentially complete, the ITMS3 freight module is not completed because of lack of accurate data.

Because of the trucking industry's concern about protecting the privacy of goods movement data, it is difficult, if not impossible to validate the data quality of the TRANSEARCH databases. When the TRANSEARCH national estimated tonnage data was compared with California estimated tonnage, substantial discrepancies were found for various commodities. In the Freight Analysis Framework (FAF), developed by Batelle from TRANSEARCH data, truck counts were found to be plus or minus 50% of Caltrans actual counts.

While a rail waybill sampling law has been in place for sometime, a truck waybill sample is not required. A national 10% sample would provide data for the following data elements of each shipment:

- Origin (state, county, and zip code),
- Destination (state, county, and zip code),
- Weight of shipment,
- Commodity type (e.g., 2-digit Standard Transportation Commodity Groups), and
- Value (define how value applies to transportation projects investment/return on investment).

It is not clear if even a truck waybill sample would provide all needed data. For example, tracking linked trips is difficult. Some containers have 26 owners from beginning of their movement to the final delivery. Also, while a waybill would provide current information, it would not provide forecast information.

Even if a truck waybill sample could be initiated and even if the problems with the data could be conquered, trucking companies would likely oppose providing the data because of

- Lack of trust in government's purpose for data,
 - Protecting privacy of their operations in competition with other trucking companies,
- and
- Trucking companies may want to sell their data.

Consultants may also oppose collection of the data if government provides data that they get paid to provide to trucking companies

The complexity and broad nature of national data sources do not provide Caltrans or the regional agencies sufficient data for goods movement analysis. For example, the CFS is completed as part of the economic census without the necessary breadth of commodity types and detailed data needed for freight models. A wide variety of studies are completed to enhance the data. Other federal agencies collect other pieces of freight data and then consultants and researchers work to combine it. The CFS forms are complex, not completed by a person with the same knowledge in each company surveyed, and it is not clear if the overall results are accurate for transportation purposes.

A statewide transportation model was developed by Caltrans to provide flows of vehicles and goods between regions as input to the regional transportation models and to support interregional travel analysis. The statewide model incorporates statewide networks for roads, rail,

bus, and air travel. The model was developed to forecast interregional passenger trips, and to provide long-distance travel estimates. The distribution of truck travel forecast portion of the model is not yet completed.

Most truck data required to manage the transportation system can be met through truck count, classification, and weigh-in-motion data collection. This information allows for studying congestion, truck routing, roadway design, access issues, etc. The commodity data would be needed for economic analysis (i.e., the benefits of the goods moved) and for distribution of truck travel forecast estimates. A successful freight model can be developed if a method can be found to translate economic commodity data into tons of commodity and where it flows.

The cargo flying into and out of commercial service airports from cargo planes, increasing “just-in-time delivery” of overnight package delivery services, as well as increasing belly cargo in passenger aircraft is expected to triple in 20 years. The key piece of data is missing: How many trucks are needed to move all the cargo out of the airport and where do they go? Currently, only airports moving 500 tons annually are reported by the FAA, some airports do not report belly cargo, no information is available on the type of cargo, and only two categories are reported (freight or mail). The BTS tracks value of air cargo. However, value criteria are not clear. The air cargo value is inversely proportional to landing weight since smaller, lighter cargo tends to have increased value.

Air-truck data are only as good as the day it is collected since air cargo is the fastest growing freight transportation mode. Private business can relocate to another airport; therefore, the distribution of this growth is not under the control of the airport or the state. Since airports cannot easily spend FAA funds outside the airport boundary, accurate data is even more important to justify such expenditures.

What do you do to improve the quality of freight data and analytical tools in your state?

The ITMS Freight Data Quality Improvement Team brought together other organizations within California that needed accurate freight data. The team relied on local and regional data that went to the zip code level and made limited use for national data. Statewide commodity sources were located that were left out of national databases. The team’s efforts were never fully implemented.

The TMS loop detectors, with traffic census detectors, classification sites, and weigh-in-motion stations, have been installed to provide improved truck flow data throughout the state. A need still exists to expand this network. However, as stated earlier, this system will not provide commodity flows.

The statewide transportation model requires specialized staff to run and carefully interpret the results. Improvements to make the model user-friendly are being considered.

Does your agency have staff expertise for answering the questions and issues listed above? What are the most important skills and training you would like your staff to have?

Yes, Caltrans has the skills and training though not in wide supply. To this end, Caltrans has developed a training course to provide more planning staff with knowledge of goods movement issue. The major components of this goods movement overview are

- Supply chain (supply and logistics by mode),
- Trends (economic, world trade, technological, operational, and security),

- Stakeholders from port of origin to port of entry (steamship lines, airfreight carrier, marine terminal operator, airport, and labor),
- Stakeholders from point of entry to final destination (truckers, rail, intermodal facilities, shippers–retailers, and community groups), roles of Caltrans and its partner agencies in planning, investment, and infrastructure (short-term, long-term, FHWA, border reps, regional and local agencies, and private sector),
- Fund sources, and
- Congestion Mitigation and Air Quality (CMAQ), surface transportation program (STP), Transportation Congestion Relief Program (TCRP) best practices (success stories—enforcement, infrastructure, public–private partnerships, port hours of operation, entry points, and inland ports).

How much does your state spend on freight data, analytical tools, training and assistance in using freight data? What do you think the appropriate expenditure level should be?

While an accurate assessment cannot be made, a few costs are generally known and give an idea of the magnitude of the need. DOTP has spent \$1.1 million on contracts since 1998 to update the ITMS. The estimated cost to “do it right” would be 4 times as high. This does not count the wide variety of studies completed across the state funded by other Caltrans districts or divisions and regional and other local agencies. These additional studies over the past few years likely cost in excess of \$10 million. Caltrans-funded training and studies related to goods movement inside and outside the ITMS cost more than \$3 million over the past few years, including \$100,000 for truck trend and forecasted travel data.

Does your state or local jurisdictions plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

No resources are available for expanded freight data or improved freight data quality. However, plans are being made to refocus on freight data collection in the next fiscal year. A statewide air cargo study has been proposed for next year contingent on funding availability.

Colorado Department of Transportation Perspective

TIM BAKER

Colorado Department of Transportation

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state dot, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

The types of questions and studies that need to analyze data are as follows:

- Provide information for corridor studies,
- Perform modal diversion analysis,
- Calibrate model with truck count and origin and destination (O-D) data,
- Truck value of time,
- Rail value of time,
- Transportation spending by industry,
- Indirect benefits of freight transportation,
- Safety improvement,
- Truck travel time reliability, and
- Pavement deterioration information.

These types of studies emanate from all sources and government and private-sector levels with responses needed in various time frames depending on the nature and criticality of the request or requestor. As a general rule, the higher in government-level origination of a request, the quicker the need for response except for major policy studies. The needs for freight information are very significant, but the general availability of data, especially on the state and local level, is limited and uncoordinated. Data are usually collected for project- or issue-specific reasons, and there is little coordination for an overall data repository or warehouse.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

The Colorado DOT (CDOT) bases most of its responses on truck traffic and weight in motion (WIM) data that the department collects. While we have used other national and state sources, we do not have the staffing or training to become confident in the use of these data sources. While other state data are available, it is not in the format that makes its use easy for most of the questions asked of the department. CDOT is currently completing a freight data assessment which we will use to direct data improvement efforts.

Who performs the analyses of the questions and issues in Question 1?

Freight analysis duties are dispersed within CDOT. The Information Management Branch handles general freight analysis. Within this branch, analysis is conducted by planners and a professional engineer. The branch also will utilize the services of state and national consulting firms for in-depth special studies. Other analysis may be done on a subject-specific issue outside the Information Management Branch, but they are limited in nature. The state does not currently have a dedicated freight planner. Those duties fall to planners who have mobility as their overall responsibility.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

The truck traffic data that we collect are adequate for general planning, but we need to improve truck data collected in urban areas. The CDOT would like to add additional freight data to our inventory including economic and O-D data.

We would like to see more training in the use of national databases, so that we can better utilize what is available.

What do you do to improve the quality of freight data and analytical tools in your state?

The CDOT is currently conducting a freight data assessment that will be completed in May 2005. As part of the document, there will be a recommended 5-year plan to improve freight data collected, stored, and disseminated by the CDOT. Pending budget and policy issues, the CDOT will initiate this program with the goal of providing better data to our customers and ourselves.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

Various members of the CDOT have differing skill sets, usually related to programmatic expertise. Freight responsibilities are diffused within the department and tend not to result in an overall freight expert. Staff members are utilized on the basis of specific skills and questions to be responded to. We need training on understanding and use of nationally maintained data such as the FAF, CFS, and GeoFreight.

In addition, to facilitate communication the CDOT has an internal Freight Rail Team which meets monthly to discuss issues and encourage information interchange, project coordination, and departmental awareness.

How much does your state spend on freight data, analytical tools, training and assistance in using freight data? What do you think the appropriate expenditure level should be?

The annual expenditure for on-going freight data collection and analysis activities is \$325,000 for truck data collection and analysis.

The state has recently been involved in the following special studies:

- Eastern Colorado Mobility Study: \$1,000,000;
- Ports-to-Plains: \$1,800,000;
- Freight Data Assessment: \$60,000;
- Freight Infrastructure Study: \$100,000;
- Railroad Relocation Cost–Benefit Study: \$500,000;
- Railroad Relocation Next Phase: \$2,000,000; and
- Freight Data Improvement: \$150,000 (estimated) or FY 06.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

Both state and local agencies understand the need to increase their collection of freight data. The CDOT is currently completing a freight data assessment that will be used by the state and MPOs to help define additional data needs and help prioritize the collection and storage of the data. Recently both state and local agencies have tried to expand their data collection efforts. This has been precipitated by the needs for travel demand models (TDMs), pavement improvement, and economic analysis.

The expertise used in the collection varies from in-house staff within agencies to the use of consultants and university research organizations. Funding varies from organization to organization. For the CDOT, funds come from the Highway Users Tax Fund and federal funding. Local agencies depend on pass through funds and locally available funding sources.

Florida Department of Transportation Perspective

JAMES GOLDEN

Florida Department of Transportation

BACKGROUND

The Florida DOT (FDOT) is a decentralized agency, consisting of a central office and eight district offices. Freight planning efforts and the use of freight-related data has occurred both in the central office and throughout the district offices. District freight planning activities focus only within the geographic boundaries of the districts and activities vary on the basis needs of the particular area. The central office is responsible for the statewide perspective and the statewide coordination of the district efforts.

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

Historically, freight planning efforts and the use of freight-related data have not occurred in a comprehensive manner, but have been accomplished by individual offices within FDOT to address specific needs. Planning, design, and maintenance offices are involved in the collection or use of freight data to accomplish their routine activities. The planning activities have focused on the following.

- The TranStat Office routinely collects truck traffic data and provides a percent truck traffic and truck annual average daily traffic (AADT) for use by other planning and design offices. TranStat also currently collects truck weight data and utilizes state-of-the art WIM technology.
- The Systems Planning Office has developed a statewide freight model to help in the identification of the types of infrastructure needed to handle traffic based on the flow of products. The model utilizes commodity flow data and then forecasts truck trips on the basis of this information.
- The Office of Policy Planning has utilized freight data and trend information collected by other entities, such as the Florida Ports Council, to update the Florida Transportation Plan (FTP). The FTP sets the goals and overall direction for the department in its delivery of transportation for the state.

The Public Transportation Office (PTO), which includes the modal offices of seaports, rail, aviation, and transit, is also involved in the use of freight data. These modal offices, working

in conjunction with outside partners, utilize freight data from various sources to plan for the intermodal movement of freight and goods.

The Seaport Office is currently in the process of conducting a multiphased freight planning effort to develop the Florida Statewide Freight and Goods Mobility Plan. As part of this study, the TRANSEARCH database from Reebie and Associates was recently purchased. This data will be used to assess the cross modal commodity flow throughout the state with Florida data. In addition, the data will be used in the update of system planning's freight model. One of the goals of this effort is to provide centralized and comprehensive statewide freight planning that will encompass and coordinate all of the statewide efforts.

Another significant product of the freight goods and mobility plan is the development of a central repository, or clearinghouse for all of the available freight related data. This clearinghouse will be regularly updated and will include data to support the state and regional freight planning efforts. The development of the clearinghouse will be based on the identification of the modal data needs for the planning and analysis of freight movement. The Seaport Office will work closely with TranStat and the Office of Information Systems to design, construct and maintain this freight data-information clearinghouse.

Perhaps the most significant transportation planning effort by FDOT is the designation of the Strategic Intermodal System (SIS). This multimodal, statewide planning effort is being developed in close coordination with external partners across the state and will provide a comprehensive, multimodal transportation plan and program, targeting transportation investments to those projects that provide the highest level of public benefit. The freight planning effort currently underway will support the freight element for the SIS.

There have been other freight-related studies, both internal and external to FDOT, that have included the assessment and analysis of freight-related data and the impacts of freight and commodity movement on the transportation system. The Florida Freight Stakeholders Task Force was formed as a result of the Governor's Intermodal Transportation Summit held in 1998. The goal of the task force was to address the needs of Florida's intermodal freight transportation. The objectives of the task force were to identify and prioritize freight-specific projects for fast-track funding and to develop recommendations for the development of the freight network.

The Florida Seaport Transportation and Economic Development Council produce the 5-year plan master plan for accomplishing the mission of Florida's 14 deepwater seaports. To achieve the mission of enhancing the economic vitality of the state through the growth of domestic and foreign waterborne commerce, the seaports' dependence on all of the components of the state's transportation system emphasizes the need for an integrated program that can efficiently move goods to and from markets. Included in the master plan are individual port and overall system information and statistics, as well as recommendation for intermodal projects to improve the efficiency of freight and goods movement.

The Systems Planning Office recently completed a study identifying the corridors of opportunity; this statewide corridor plan focused on those facilities that were most utilized by heavy trucks moving freight and goods, and identified and prioritized corridors for further study. This study utilized the readily available information concerning truck movements currently provided by TranStat.

Information for all of these various studies and efforts are gathered as part of the study process and are needed within weeks. Occasionally, short-term requests made of the offices in planning by the state legislature or governor's office require an immediate response.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

Various freight data, collected both internally and externally to FDOT, are utilized in the myriad of freight planning activities. The in-house data collected includes the truck traffic, truck percentage, and truck weight information. Other data used are found in external sources. The CFS, produced by BTS, is a primary source. Information from BTS that is also used includes data related to rail freight terminals and airports. The FAA collects information on passenger and freight volumes specific to airports. The TRANSEARCH database used in the freight model was mentioned above. Other data sources include information compiled by the Bureau of Business and Economic Research (BEBR) housed at the University of Florida. Systems and Policy Planning and the FDOT modal offices in the production of comprehensive transportation and freight specific studies, plans, and programs use these data sources.

The FDOT district offices and the MPOs also are involved in various freight planning efforts. These efforts include comprehensive, regional freight studies, and mode-specific studies that focus on freight movement. The data sources used for the studies are basically the same as those used in the statewide efforts.

Who performs the analyses of the questions and issues in Question 1?

FDOT does not have a specific freight office or planners dedicated specifically to freight analysis either in the central office or in the district offices. Freight planning activities have been accomplished by the internal modal offices or have been included in the overall planning activities by systems and policy planning. However, with the implementation of the SIS and the completion of the freight and goods mobility plan forming the freight component of the SIS, the freight planning activities will become a coordinated and comprehensive effort. These FDOT activities are accomplished by in-house planning staff, supported and assisted by outside consultant expertise.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

FDOT recognizes the needs for a data-supported, comprehensive approach to freight planning. The data for this type of effort must come from the various sources because no single freight data source provides all of the information needed. The single, most needed element, which is not readily available because of the intensive work effort and cost involved, is accurate freight O-D data. This information is a critical element in freight planning activities, but is available only at a more aggregate level, rather than a specific level.

What do you do to improve the quality of freight data and analytical tools in your state?

The freight plan effort will be analyzing the 2003 TRANSEARCH data to develop an accurate view of current freight movement in the state. This, in conjunction with the updated freight model, will give a much more accurate and current picture of freight movement.

Tools are under development for the SIS process that will allow the prioritization of SIS projects based on empirical data. This project prioritization will include those at SIS freight facilities, such as seaports, airports, and railroads.

Future corridor planning efforts for SIS will also include data collection and analysis. This will provide the ability to address corridor needs that include the examination of freight movement and any associated needs.

Consultants working with FDOT must have an understanding of and expertise in, freight movement. This expertise and understanding extends to all modes of transportation and does not focus only on truck movements on highways.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

FDOT staff includes modal experts within the modal offices, as well as general planners and policy specialists in the various planning offices. This staff is supported by consultant expertise in their freight planning efforts. Currently, freight planning courses available to FDOT staffs are taught by consultant experts. Some of the most important skills are the ability to analyze freight and commodity flow data, the ability to utilize the freight model, and the understanding of the economic impacts of freight and goods mobility.

How much does your state spend on freight data, analytical tools, training and assistance in using freight data? What do you think the appropriate expenditure level should be?

FDOT is engaged in several different efforts dealing with freight data, tools and training. The freight plan effort will include the funding of an analysis of the TRANSEARCH database, which will provide an overall cross-modal commodity flow using Florida data. The Systems Planning Office developed a freight model and updates for that model, which will also use the TRANSEARCH data. In addition, Systems Planning provides training in freight forecasting. Another product of the freight planning effort is the development of a proposed freight data clearinghouse. The cost of the proposed clearinghouse is also unknown at this time. The appropriate level of expenditure needs to be sufficient to ensure that freight and goods can be moved throughout the state in the most efficient manner.

The use of freight data, analytical tools, and training has not been centralized, so the determination of expenditures is not possible. These expenditures were largely on an ad hoc basis in the past, related to specific studies or planning efforts under way at the time.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

The Systems Planning Office explored the possibility of collecting freight O-D data. This effort was to be funded from the general planning contract and was expected to be a week-long effort using a combination of in-house and consultant staff. The study was expected to cost more than \$100,000 and was deemed too expensive at the time; the effort was postponed until after the new fiscal year and may not become a reality. Any effort will include consultant support. The district and MPO efforts have included the use of traditional and readily available data resources. Some

MPO efforts have utilized limited surveys to gather data. The freight plan will include the development of data needed to support the SIS, as well as the development of the data clearinghouse. Future data and analysis from the freight plan will focus on the economic return to the state from seaports and freight facilities and the effects from global trade on Florida and ultimately the state's transportation system.

Georgia Department of Transportation Perspective

Jane Smith

Georgia Department of Transportation

Please note that all of the responses below represent the experiences of the Georgia DOT (GDOT) Office of Planning only.

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

STP (federally required, data responses needed in weeks), Interstate System Plan (requested from within state DOT, data responses needed in weeks), metropolitan transportation organizations' LRTPs (federally required, data responses needed in weeks), and assorted corridor and countywide transportation plans (requested from local governments, data responses needed in days and months).

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

We use GDOT-collected data and data from other state agencies, the federal government, and consultants.

Who performs the analyses of the questions and issues in Question 1?

Analysis is performed by planners in the GDOT Office of Planning or local or national consulting firms.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

The existing data and tools suffice. Additional datasets, tools, and training on freight planning from the federal transportation agencies would be appreciated.

What do you do to improve the quality of freight data and analytical tools in your state?

We are working with MPOs by providing a hands-on freight planning manual for their use in collecting and identifying their local-level freight data and freight transportation planning activities.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

Staff expertise is minimal to basic. Additional training in the existing available datasets, methodologies, and tools for freight transportation planning would be appreciated.

How much does your state spend on freight data, analytical tools, training, and assistance in using freight data? What do you think the appropriate expenditure level should be?

Costs that can be tracked would be components on a project-by-project basis, so this figure varies.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

As mentioned previously, GDOT Office of Planning has developed a freight planning manual that was distributed to MPOs in the state for their use in collecting data that would supplement state-level datasets typically available.

Idaho Transportation Department Perspective

GLEND A FULLER

Idaho Transportation Department

INTRODUCTION

The Idaho Transportation Department (ITD) has done limited freight planning and data gathering over the years except for rail planning. Idaho is a sparsely populated state and a bridge state for commodities destined to and from the major ports and population centers in the neighboring states of Washington and Oregon. Primary freight originations are agricultural and forest products. Freight issues such as congestion and safety have not been a big problem in Idaho.

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

Currently, we do not have any policy questions, planning studies, or other activities for which we need to analyze data on the movement of commodities for truck travel. In the past, we have been asked about the flow of hazardous material loads on highways in the state. We track these only at the macro level, meaning we know only the numbers of hazardous material endorsements that have been issued by the state to motor carriers. We have no information about the routes traveled, specific commodities transported, or freight volumes.

For those carriers not registered in Idaho, we issue temporary permits for registration. From our trip permits we capture information about dates of issuance, origin, destination, routes traveled, declared weights, vehicle base state, and registered owners. We also have information about whether this was a single vehicle or a combination of vehicles. In the past we have asked for the commodity transported, but this field was dropped to streamline the form.

ITD gathers commercial traffic volumes, truck weight, classification, and length data for travel on the state highway system by using permanent and portable traffic recording devices. The data are used, among other things, in highway and bridge project plans and designs. These are primarily used within ITD or by consultants under contract to ITD. The data are also used in developing long-range corridor plans on state and local highway corridors. The data are usually needed in approximately 1 to 4 months. ITD has also conducted a few limited O-D studies that included truck traffic.

ITD formerly gathered extensive data on rail traffic volumes, condition of track, shipper usage, etc., as part of the rail planning process under the federal Local Rail Freight Assistance Program (LRFA). The data were used in developing state rail plans and rail track rehabilitation projects. The data were usually needed in approximately 6 months or longer. The LRFA program has been discontinued at the federal level. A state program to replace LRFA was enacted in 2001 but has not been funded to date.

Who performs the analyses of the questions and issues in Question 1?

Planners, engineers and other generalists within ITD usually performed the analyses. National consultants were retained for some rail planning tasks.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

What do you do to improve the quality of freight data and analytical tools in your state?

As mentioned in the introduction, ITD has not been that involved in extensive freight planning issues.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

ITD has not developed staff expertise in many of the areas listed in Question 1. As mentioned previously, freight movements have not caused major problems in Idaho to date, but that could change over time.

How much does your state spend on freight data, analytical tools, training, and assistance in using freight data? What do you think the appropriate expenditure level should be?

ITD is spending little on freight planning and data gathering beyond traditional DOT truck counting and weighing. If ITD gets more involved in this area, the estimated expenditure might be \$200,000 to \$300,000 for a consultant contract approximately every 5 years.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

ITD may in fact begin to do more freight data collection and planning in the future depending on the language and funding provisions in the next transportation reauthorization bill. Initially, ITD would hire consultants, with state planning and research funding or STP funding.

Kentucky Transportation Cabinet Perspective

ROB BOSTROM

Kentucky Transportation Cabinet

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

Highway issues and questions have involved the following:

- Coal movement (and other natural resources) and overweight permitting of coal trucks,
- Location of weigh stations (optimization),
- Number of parking spaces at weigh stations and rest areas for trucks,
- Virtual weigh station research,
- Use of transponders for weigh station pre-clearance,
- Truck movement and capacity on Interstate highways,
- Large truck safety on Interstate highways,
- Analysis of intermodal connectors and prioritization of needed highway improvements,

and

- Truck mileage and weight in Kentucky for weight distance tax assessment.

Rail issues and questions follow:

- Cost-benefits (B/C) of diverting truck traffic to rail and
- Private and regulatory issues of freight conversion.

Riverport issues and questions follow:

- Capacities and economics of expanding usages,
- Transportation issues of mode change, and
- Riverport issues with changes.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

Highways

The main sources of data are

- Vehicle classification counts for truck flow,
- Reebie TRANSEARCH data for truck O-Ds,
- Coal haul database for basic tonnage on roads with coal hauling,
- Statewide crash database, and
- Weigh station data.

Rail

The main sources are

- Waybill data,
- Reebie TRANSEARCH data, and
- 2002 Kentucky Statewide Rail Plan.

Riverports

The main source is the Kentucky Water Transportation Corridors, Public Riverport Development and Intermodal Access Study (1999).

Who performs the analyses of the questions and issues in Question 1?

Highway

A wide mix of people perform these. Safety work is addressed by the Kentucky Transportation Center (research arm of the Cabinet), by the Division of Traffic Operations and by the Division of Planning, and by consultants. Capacity-related work is addressed primarily by the Division of Planning and by consultants (primarily national firms with local offices). There are no freight specialists in the Kentucky Transportation Cabinet (KYTC).

Rail

Consultants (national) perform statewide rail study. Other issues such as safety of rail crossings and rail abandonments are handled by KYTC.

Riverports

Consultants (national) have done most of this work.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

Highway

The state would like to have more information on the movement of trucks, now and in the future. It would be nice to have O-D information and select link information for all major highways.

This will be available in the Kentucky statewide TDM, but much of the source data is synthesized rather than based on actual data.

What do you do to improve the quality of freight data and analytical tools in your state?

For highways there is a need to make truck data more of a priority. Perhaps more money and staff time should be spent on it.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

Highways

In-house staff can do most of the analysis referred to in Question 1.

Rail

Staff does not have expertise to do extensive rail analysis and data collection.

Riverports

Staff does not have expertise to do extensive riverport analysis and data collection.

How much does your state spend on freight data, analytical tools, training, and assistance in using freight data? What do you think the appropriate expenditure level should be?

We spent approximately \$45,000 on Reebie data, and an estimated \$70,000 of the Kentucky Statewide TDM work was on freight modeling. We also spend some money on training, which has increased in recent years. The amount spent now will probably increase fairly soon. We spend approximately \$65,000 annually (in-house staff time) on our annual coal inventory. Funds are not spent on a regular basis for rail and riverports planning.

Crash data analysis is not broken down into truck and non-truck expenses but should be accounted for.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

Our major MPOs are considering doing freight travel demand modeling and other freight analysis. Funding will likely be with federal planning monies.

Minnesota Department of Transportation Perspective

JONETTE KREIDEWEIS

Minnesota Department of Transportation

BACKGROUND

Freight considerations are an important component in transportation policy, planning, investment and project design decisions at the Minnesota DOT (MnDOT). The following summarizes several of the efforts under way to integrate and address freight issues and opportunities in Minnesota.

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

Minnesota Freight Advisory Committee

To assist the department in thinking about freight policy, a Minnesota Freight Advisory Committee was established several years ago. The committee meets quarterly to discuss and recommend solutions for addressing freight policy issues and opportunities. The committee includes private business, shipper, carrier, regional government, state government, and academic members.

Freight Policy Questions

Minnesota's geographic location and the need to consider economic competitiveness have raised a number of policy questions relative to the movement of freight.

In respect to water transportation, freight policy questions have tended to focus on channel depths and the need for lock, dam, and harbor improvements.

In rural Minnesota, the loss of rail service in rural areas resulted in the establishment of state programs to assist regional rail authorities. Rail crossing delays and safety are also growing policy questions.

On the highway side, trucks size and weight issues are growing policy questions.

As surrounding states have raised weight limits, there is growing pressure for Minnesota to provide greater access on state and local roads and bridges for heavier and bigger trucks. In recent years, the number of bills before the Minnesota legislature requesting specific commodity exemptions to weight laws has grown substantially.

Desires to be economically competitive and reduce shipping costs are being balanced against the significant costs of upgrading state roadways, especially local roads and bridges. In addition, there are concerns about the capacity of current resources for enforcement if more bridges and roadways require posting of weight restrictions.

MnDOT will be conducting a major truck size and weight policy study in 2005 to look at how the state can move forward in addressing infrastructure, enforcement and economic needs. Results of the study will be presented to the 2006 state legislature.

In addition, Minnesota counties are investigating the costs and implications of upgrading their systems and establishing a statewide local road “10-ton” network [10-tons per axle or 80,000 pounds gross vehicle weight (GVW) on five-axle semis].

Planning Studies

Freight considerations have been considered in MnDOT strategic, statewide, district, and modal planning activities. For example,

- Strategic planning. MnDOT’s strategic plan includes three strategic objectives to safeguard what exists, make the network operate better (for people and freight) and make MnDOT work better.
- Statewide planning. MnDOT completed its first performance-based STP in 2003. The plan includes 10 policy statements for which performance measures and targets have been identified. Although virtually all of the policies have some relationship to freight, Policies 3 through 7 specifically address freight considerations.
 - Policy 3 commits the department to manage the operation of existing transportation systems effectively to provide maximum service to customers. Under this policy, one of the performance measures is snow and ice clearance time.
 - Policy 4 focuses on providing cost-effective transportation options for people and freight. This policy includes nine performance measures for increasing competitive transportation choices for both people and freight.
 - Policy 5 emphasizes enhancing mobility in interregional transportation corridors linking regional trade centers. Here measures are included to ensure that important interregional corridors meet department speed targets to preserve the mobility of people and freight.
 - Policy 6 focuses on enhancing mobility within major retail trade centers and commits the department to reducing the rate of growth in congestion levels that impact both passenger and freight movements in the state’s larger retail trade centers.
 - Policy 7 is designed to increase the safety and security of transportation systems and users. This policy includes specific performance targets for reducing the number of overall crashes and the number of crashes between cars and trains at railroad crossings.
- Modal plans. In Spring 2005, MnDOT completed its first draft Minnesota Statewide Freight Plan. The plan includes a wealth of information on freight facilities, freight flows, and expected growth rates in freight shipments. It identifies issues and challenges for freight. In addition, it presents a framework of recommended policies, strategies, and performance measures to address freight system trends, issues and needs. A number of data gaps and challenges were identified as action steps for further work. The plan is on schedule to be

completed in June 2005. The executive summary and the complete Minnesota Statewide Freight Plan can be viewed at www.dot.state.mn.us/ofrw/statewide_plan.htm.

- District plans. MnDOT district offices recently completed an update of their long-range plans. Updates were designed to incorporate performance-based planning concepts and focus on identifying priority needs based on the performance objectives and targets in the department's STP. Next steps call for the development of district freight plans. These plans will complement and move forward the recommendations and objectives outlined in the Minnesota Statewide Freight Plan.

- Statewide enforcement plan. MnDOT's Office of Freight and Commercial Vehicle Operations has initiated efforts to develop a long-range plan for enhancing vehicle enforcement. The plan has not yet been completed, but it will likely include strategies for implementing statewide virtual enforcement and over-size, over-weight vehicle detection.

Investment Decisions and the Distribution of Funding

In the early 1990s, MnDOT adopted a new decentralized project programming process. Area Transportation Partnerships (ATPs) made up of county, city, MPO, tribal, MnDOT, and transit representatives are responsible for recommending projects for the department's Statewide Transportation Investment Program (STIP). Each ATP is given a target level of funding from which they can recommend investment priorities based on the department's strategic, statewide, and district long-range transportation plans. Targeted funds are distributed on the basis of a formula, which does include consideration of heavy commercial vehicle miles of travel.

Travel Demand Modeling and Traffic Forecasting

The Metropolitan Council in the Minneapolis–St. Paul metropolitan area is responsible for the regional TDM for forecasting future movements on the highway network. Within the past year, the Metropolitan Council initiated a project to implement the FHWA quick response freight model. Objectives were to improve new regional TDMs, better reflect the impacts of trucks on traffic flow, lay the groundwork for multimodal freight analysis and modeling, and provide data that can be connected to the Minnesota Statewide Freight Plan.

As part of the project, a number of calibration issues were identified, including

- Data availability challenges:
 - Vehicle classification,
 - Internal O-D,
 - Trip length distribution,
 - External station data, and
 - Commodity data;
- Concurrent regional model calibration; and
- Regional scope.

The project recommended further improvements such as a commercial vehicle tracking survey, an external truck intercept survey, expanded vehicle classification data, and the need for a broader national and/or multistate commodity flow model.

Traffic Monitoring

MnDOT has increased efforts to collect better data on truck volumes and weights. The department is in the process of converting all of its 80 automatic traffic recorder sites to continuous vehicle classification sites. The short count program has been enhanced so that many of the counts now taken include double tubes for picking up classification and speed data. In addition, two new nonintrusive portable infrared vehicle classification systems have been purchased to enhance understanding of vehicle classifications in urbanized areas. The department is also strengthening its WIM program. New quartz piezo sensors have been installed at five locations. Another five to seven sites are proposed for installation over the next 3 to 4 years.

Project Plans and Designs

Forecast freight volumes and estimated loads are critical elements in project design and pavement selection. Traffic monitoring personnel work closely with project managers and pavement engineers to bring the best data available to the decision process. Efforts are also underway to provide Minnesota truck data to supplement default values in the mechanistic design models. In addition, forecasting methods and vehicle classification traffic counting equipment are being made available to county and city engineers so that they can better incorporate truck traffic considerations into local project plans and designs.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

Sources of Freight Data

National Data In the draft Minnesota Freight Plan, much of the freight flow data were derived from the commercial 2001 TRANSEARCH freight database from Reebie and Associates. Forecasts of freight flows to 2020 were based on the state-to-state forecasts developed for the FHWA's FAF project. Consultants for the department have done much of the work with national and privately handled data sets.

Freight Generators and Facilities Data MnDOT's Office of Freight and Commercial Vehicle Operations has established a database that includes an inventory of freight generators and freight facilities. The database is linked to other geographic information system- (GIS) related databases in the department. The database has been useful in analyzing freight access and transportation improvement needs.

Railroad Carload Waybill Sample MnDOT is a subscriber to the Railroad Carload Waybill Sample, which is purchased on an annual basis from the Surface Transportation Board. These data are used to research rail movements in, to, from, through, and within the state.

Research Studies on the Impacts of Weight Restrictions Several MnDOT-supported university research projects have been conducted in recent years on the benefits and costs of weight restrictions and overweight vehicles on Minnesota's highway system. These studies

utilize available MnDOT pavement management system data and traffic data. Various business and economic data are obtained from other governmental sources.

Regional Studies Minnesota Regional Development Commissions, MPOs, and district offices have conducted freight studies and collected data on freight movements.

Who performs the analyses of the questions and issues in Question 1?

Roles and Responsibilities for Freight Analyses

MnDOT's Office of Freight and Commercial Vehicle Operations This office is responsible for leading statewide freight planning activities. In addition, the office serves as the focal point for coordinating MnDOT's response to truck policy issues and questions and for coordinating, with the Minnesota State Patrol, enforcement-related activities that are part of the Minnesota Department of Public Safety. The office includes separate freight, rail, and water sections responsible for managing activities that impact multimodal freight movements, and the use of private rail systems for passenger service in Minnesota. These programs include activities that impact freight rail service and safety, commercial navigation and environmental impacts, truck size and weight policy, as well as data and analysis to support multimodal freight planning.

These sections administer a variety of programs and activities to support the safe, efficient movement of goods in Minnesota, including the Minnesota Rail Service Improvement Program, the Port Development Program, the Railroad–Highway Grade Crossing Safety Improvement Program, and the Minnesota Freight Advisory Committee. These sections are also responsible for a variety of planning activities, such as the development of rail and waterway plans and freight movement studies.

Personnel in the Office of Freight and Commercial Vehicle Operations include managers, civil engineers, transportation planners, research analysts, and other professionals. Work activities are conducted by in-house personnel and contracted out to consultants for technical assistance.

Other MnDOT Offices With Freight Related Responsibilities MnDOT's Office of Transportation Data and Analysis is responsible for monitoring and reporting on vehicle traffic trends. MnDOT's Office of Materials and Road Research maintains pavement management data and estimates the impacts of truck movements on pavement service life. MnDOT's Bridge Office maintains data on bridge restrictions and incorporates truck needs in bridge design projects. MnDOT's Office of Traffic, Security, and Operations maintains crash data and integrates freight into the development of strategies for the state's Comprehensive Highway Safety Plan.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your dot would like to see made to freight data and analytical tools?

Satisfaction with Freight Data and Analytical Tools

The notion that more data are better in many cases applies to freight. MnDOT research analysts and transportation planners worry that funding for national datasets such as the CFS will not be

sufficient to ensure that sampling sizes can be sustained to permit representative intrastate and interstate analyses of freight flows. In addition, there is a critical need to understand better what is included and how national datasets such as TRANSEARCH are derived.

Further understanding is also needed to validate freight modeling results better with ground counts to determine how well predicted and actual trends track over time.

Satisfaction with traditional traffic monitoring program data varies. As was noted earlier, additional information on truck traffic movements is needed to drive stronger urban travel demand modeling. The draft Minnesota Freight Plan identified a number of areas where data are not available to do performance measurement and target setting. In addition, there appear to be many areas where data are generally available, but no work has been done to compile the data or analyze results.

What do you do to improve the quality of freight data and analytical tools in your state?

Improvements to Freight Data and Analytical Tools

The department is working hard to improve the data and analytical tools available for understanding current truck traffic volumes.

Statewide Travel Demand Modeling As noted earlier, efforts have also been undertaken to improve the analytical tools and models available for forecasting future truck and freight flows. For example, freight has been integrated into the regional model for the Minneapolis–St. Paul metropolitan area. However, Minnesota currently does not have a statewide traffic forecasting model or statewide freight flow model. There is growing interest in assessing the pros and cons of these tools in aiding policy, planning, project, and investment decisions.

Location Data Manager Project MnDOT is in the final stages of completing the first phase of an information technology project that will create stable linear datum for locating attributes on the state’s multimodal transportation system. Completion of this project will enhance the GIS mapping tools available for freight data analysis.

Electronic Routing of Overdimension Vehicles A “RouteBuilder” application is under development to provide shippers and carriers with the opportunity to apply and receive over-dimension permits online.

Suggested Improvements and Needs The draft Minnesota Freight Plan outlines a number of recommendations for improving freight data and analytical tools. Examples include

- Implement ITS and operational strategies to improve the movement of freight;
- Develop and implement a statewide heavy-truck safety program to reduce truck crashes;
- Develop and monitor key freight system performance measures and indicators; set targets, as appropriate;
- Strengthen freight consideration in project planning and investment decision making by planning organizations;

- Provide technical and other assistance to transportation planning organizations to improve freight planning; and
- Continue coordination with FHWA on strategies for improving freight transportation.

Maintain an effective program of research to identify industry issues and innovative solutions to freight problems.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

Staff Expertise, Skills, and Training

MnDOT, like many state transportation agencies, has faced increasing internal competition for staff and resources. In data and planning areas, there are fewer resources available. More and more work is being outsourced, particularly major planning studies. In addition, more and more partnerships are being established between local governments and academic institutions. Retirements and attrition are also affecting staff capabilities and expertise. As time goes on, there are fewer staff personnel available who have sound technical skills and experience in working with

- National datasets such as the CFS and Railroad Carload Waybill Sample,
- Urban TDMs,
- Truck size and weight policies and issues, and
- GIS and mapping applications.

To help address some of these challenges, MnDOT sponsored the FHWA Urban Travel Demand Modeling course in 2004. In 2005, the FHWA course on freight modeling will be offered. The department also purchased updated TDM software and conducted training for department employees, MPO staff, and consultants who prepare traffic forecasts for MnDOT projects.

How much does your state spend on freight data, analytical tools, training, and assistance in using freight data? What do you think the appropriate expenditure level should be?

Resources

It is difficult to estimate how much Minnesota spends on freight data, analytical tools, training, and assistance. The department has supported strong freight, rail, and waterway sections for many years. Significant funds have been made available for special consultant studies and projects, such as the Minnesota Freight Plan and the upcoming study of truck size and weights. The department purchases freight data. In addition, investments have been made in freight related database applications, new technologies, tools, and training.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

Future Plans for Expanding Freight Data

Future plans propose expansion of freight data collection activities. The draft Minnesota Freight Plan references the need for additional indicator data on

- Mode share (tonnage and value): amount of freight carried by each freight mode, by major commodity groups and
- Geographic market share: tonnage and value of shipments to/from the state, by major commodity groups to major trading partners.

In addition, the plan includes a number of proposed freight measures, for which data are either not available (–) or are generally available, but will require additional definition, data compilation, and data analysis (+). These include

- Benefit of truck weight enforcement on pavement service life,
- + Percentage of rail track miles with track speeds >25 mph,
- + Percentage of rail track miles with 286,000-lb railcar capacity ratings,
- + Percentage of intermodal facilities whose infrastructure condition is adequate,
- + Average delay time at river docks,
- + Availability of international air cargo freighter service,
- + Availability of container-handling capability and bulk transfer capability,
- + Percentage of major generators with appropriate roadway access to interregional corridors and major highways,
- + Percentage of major generators with appropriate rail access,
- + Percentage of air cargo facilities with appropriate roadway and rail access,
- Peak period travel time reliability on interregional corridors and other high-use truck roadways,
- Peak period travel time reliability on metro area highways, and
- Percentage of at-grade crossings meeting grade-separation guidelines.

It is anticipated that the final version of the Minnesota Freight Plan will discuss the details for whom, how and when these data collection activities will be managed down the road.

CONCLUSION

Interest in freight is growing in Minnesota. Economic, safety, and congestion policy questions are bringing greater awareness of freight opportunities, issues and trends. At the same time the available data, applications, skills, and expertise to do robust freight planning and analysis are improving. Data and analysis gaps remain and further work is needed. However, plans and frameworks are moving into place to ensure that freight considerations become an integral part of the transportation decision making process.

New York Department of Transportation Perspective

TODD WESTHUIS

New York State Department of Transportation

INTRODUCTION

It is the mission of the New York State DOT (NYSDOT) to ensure that its customers—those who live, work, and travel in New York State—have a safe, efficient, balanced, and environmentally sound transportation system.

To attain its mission, the responsibilities, functions and duties of NYSDOT include

- Coordinating and developing comprehensive transportation policy for the state; coordinating and assisting in the development and operation of transportation facilities and services for highways, railroads, mass transit systems, ports, waterways, and aviation facilities; and formulating and keeping current a long-range, comprehensive statewide master plan for the balanced development of public and private commuter and general transportation facilities; and
- Administering a public safety program for railroads and motor carriers engaged in intrastate commerce; directing state regulation of such carriers in matters of rates and service; and providing oversight in matters relative to the safe operation of bus lines, commuter railroads, and subway systems that are publicly subsidized through the Public Transportation Safety Board (PTSB).

In support of this mission, the primary entity at NYSDOT involved with freight data acquisition, management and usage is the Data Analysis and Research Bureau in the Statewide Transportation Policy and Strategy Division. The responses to the questions posed have been compiled with input from this bureau.

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation.

- Truck tonnage, vehicle, value of goods as assignments to a highway network.
- Competitive market rate analyses.
- Economic development.
- Corridor economics.
- Definition of trade corridors, Journey to Work (JTW) corridors, tourism corridors.
- Intermodal tradeoffs (rail versus highway).
- Airport or port freight penetration inland.
- Asset management for infrastructure project selection or optimization relative to freight flow and corridors management.

- Major trading partners (intrastate, interstate, international).
- Import and export assessment.
- Container movements.
- Evaluation of logistic supply chains.
- Commodity moves within corridors.
- Industry concentration based on commodity flows.
- Evaluation of distribution center location.
- Route choice for trucks, toll versus non-toll roads.
- Temporal variation of truck flow relative to passenger car flow, time of day, day of week, and seasonally.
- Truck movements versus congestion.

For each type of policy question, planning study, or other issue requiring information about freight, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents.

Yes to all of the above.

Also indicate whether responses are needed within days, weeks, or months.

Yes to all of the above.

What kinds of freight data do you use when responding to the questions and issues in Question 1?

Reebie and Associates' TRANSEARCH, PIERS, Waybill Sample (nonpublic release), NATRI, Global Insight, CFS, and Vehicle Inventory and Use Survey (VIUS).

Where do you get the data (within your dot, from other state agencies, from local governments, from the federal government, from consultants)?

Private vendors in part, because Census products such as CFS/VIUS are residential state-based and nonresident moves need to be identified

Who performs the analyses of the questions and issues in Question 1? freight specialists in your office of the secretary or other department wide office? planners or other generalists in your office of the secretary or other department wide office? freight specialists in a modal administration? planners or other generalists in a modal administration? freight specialists or generalists from other state agencies? national consulting firms? local consulting firms? local universities?

Yes to all of the above.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1?

Data and tools fall short; analytical methods are complex and take time and effort especially given the complexity and difficulty addressing the questions that are posed.

Often federal efforts are not useful at substate levels and while they may measure and satisfy congressional mandates for metrics, they do not provide enough information for states to make decisions. The academic community, while capable at developing models and tools that can perhaps address some of the data deficiencies, often has a disconnect when application in practice is the requirement. Good research is important; its application to practice is more important and that practice needs to reflect state and local problems and how to derive solutions to those problems or recommend appropriate policies to be implemented.

What are the most important improvements your DOT would like to see made to freight data and analytical tools?

- State and substate detail.
- Actual routings versus simulation model estimation.
- Actual cost to deliver versus value of shipment.
- Possible modal trade-offs considered.
- Because shipper-based surveys are origin oriented, perhaps receiver-based surveys that identify where cargo comes from.
 - Seasonal variations by commodity type.
 - Shipping information and needs based on industry.
 - Establish how much congestion plays into modal trade-offs.
 - Are the shipments time dependent, or do they have scheduled delivery windows?
 - National network based on state networks so that all ground count and classification data are attributes such that constrained regional, corridor, and state analyses can be undertaken.
 - Ability to separate the truck flow from the passenger flow by time of day to see where flow interactions are impacted by congestion.
- Actual travel times by time of day for freight movements by segment.
- Understanding the less than truckload (LTL) and local delivery component of freight flow.
 - Cost differences between truckload shipments and local delivery.
 - Micro data, not pre-established tables.
 - Integration of VIUS data with CFS and county business patterns to understand better the industry, commodity shipment to market modal trade-offs.
 - Understand what constitutes the operation zone of truck movements at the substate level.
 - Establish how logistic supply management addresses congestion and adapt to non-recurring delays.
 - Establish how routings are determined if two of three truckload moves must be profitable.

- Any data collected by national surveys need to be state and substate detailed from both a shipper and receiver perspective that is multimodal, including domestic and international moves.
- Establish how containers move in and out of ports and how far they penetrate into a region from that port.

What do you do to improve the quality of freight data and analytical tools in your state?

Keep trying so that ocular regression due to the paucity of data is not the rule of the day and that federal data initiatives go beyond simple state relationships.

Does your agency have staff expertise for answering the questions and issues in Question 1?

Yes.

What are the most important skills and training you would like to have for your staff?

Staff needs to be broadly skilled in a variety of model and analytical tools, programming languages as well have a broad understanding of freight and goods movements, economics and economic development issues, data, surveys, etc. Training staff so they have skills that can be applied to specific problems is not what most training courses such as those sponsored by National Highway Institute (NHI) really do.

How much does your state spend on freight data, analytical tools, training, and assistance in using freight data?

In the near past, \$150,000 to \$250,000 every 2 to 3 years was spent on TRANSEARCH or PIERS data acquisition, little on analytical tools beyond TDMs. However, an analysis term agreement exists with the Transportation Center at Oak Ridge Labs, and the department regularly funds research work through Urban Transportation Research Center (UTRC). Many of the more complex freight issues are usually addressed in the major investment study (MIS) or other corridor or significant projects by the consultants for those projects if the issues are addressable at all.

What do you think the appropriate expenditure level should be?

Much higher levels if and only if detailed state and substate [not necessarily a metropolitan statistical area (MSA)] O-D, commodity, mode, and industry data can be procured and if actual segmented routing information can be obtained (to provide a detailed flow for O-D table creation) as opposed to being simulated. Absent specific data that can actually be used to understand the freight implications of projects; there is no value in acquiring data that cannot be applied. Additionally if freight flow data are to be simulated, then can accurate seasonally adjusted truck volume information exist at the link level within the state and adjacent states to undertake a constrained assignment that yields validated and meaningful results? Issues regarding contents, the cost to ship, and the value and the weight of the vehicle during each of its legs relate to economic development and corridor operation and competitiveness for

infrastructure rehabilitation given other competing priorities. Last, all of the data sources are synthesized and retrospective. The changing dynamic of economic geography and the influence in logistic decision making are hard to understand from traffic counts, volume to capacity ratios and nationally derived state based flows. If freight flow responds immediately to nonrecurring delays then how can that type of alternative decision making be identified? What is an appropriate operational and infrastructure response?

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

Yes and to be determined over time.

Ohio Department of Transportation Perspective

JAMES MCQUIRT

Ohio Department of Transportation

INTRODUCTION

Ohio is blessed with one of the world's largest transportation systems, and the Ohio DOT (ODOT) is focused on managing and maintaining the 10th largest road system and has the third greatest value of truck freight in the nation. This large system reflects Ohio's key strategic location in the Midwest, midway between the East Coast and Chicago, Illinois. Ohio is a crossroads for manufacturing shipments, automotive production, agricultural commodities, and international trade. In its own right, Ohio is the world's 20th largest economy and the eighth greatest producer of exports. Ohio is a key logistical center and central crossroads of trade. As international trade and just-in-time logistics continue to grow in importance, Ohio's transportation network will be further stressed.

BACKGROUND

Organizationally ODOT has many areas that are involved with freight-related issues; however, the three key areas that focus on freight-related issues are the Office of Urban and Corridor Planning (U&CP), the Office of Technical Services (OTS), and the Ohio Rail Development Commission (ORDC), all under the governance of the Division of Planning.

- U&CP coordinates regional, district, and statewide transportation planning activities, including planning and corridor studies, many of which are freight related. This office coordinated the development of ACCESS OHIO 2004–2030, Ohio's STP that establishes ODOT's framework for the investment in Ohio's transportation system through 2030.
- OTS collects, analyzes, and reports transportation data and information for the department's planning activities. Two of the office's sections coordinate all traffic monitoring data and develop and provide multimodal modeling and forecasting for ODOT.
- The ORDC was created by the Ohio General Assembly as an independent commission within ODOT, and its mission is to plan, promote, and implement movement of goods and people faster and safer on a rail transportation network connecting Ohio to the nation and the world.

Data analysis and management by data is a part of ODOT's expectation for the way it does business and is documented in its business plan. In the mission, values, and goals section of department's fiscal year 2006–2007 business plan, one of the values—data-based decision making—clearly states that the department's decisions will be based on objective measurement, analysis of our system conditions, customer needs, and organizational performance. “We will manage by fact.”

Analyzing data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspects of freight transportation is required to address freight issues associated with four of the five departmental goal areas in the business plan. They are

- Transportation safety;
- Economic development and quality of life;
- Efficient, reliable traffic flow; and
- System preservation.

QUESTIONS

List the types of policy questions, planning studies, project plans, and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight, and shipping, safety, or other aspect of freight transportation. For each type of policy question, planning study, or other issue requiring information about freight, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also indicate whether responses are needed within days, weeks, or months.

Policy questions that require freight-related data and analysis vary greatly in scope and time from statewide issues (statewide modeling, toll diversion, truck weight enforcement, freight analysis, etc.) to regional and local issues (coal routes, corridor studies, bypass studies, project design, etc.) as well as specific projects, such as truck relocations and restrictions.

Following are examples of some of the types of policy questions, planning studies, project plans and designs, or other activities for which ODOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, or other aspects of freight transportation.

Northern Ohio Freight Study

In response to truck traffic and safety concerns in the northern region of the state, where billions of dollars of freight move into, out of, and through the region, Governor Taft asked the ODOT, the Ohio Turnpike Commission (OTC), and the Ohio State Highway Patrol (OSHP) to investigate strategies to move more trucks on the Ohio Turnpike. From the time the request came from the governor's office, a strategy plan needed to be developed in less than 2 months. It included initial data analysis, policy alternatives and recommendations, and a monitoring and evaluation plan. The study is to be conducted in 12 months.

Ohio Freight Mobility and Safety Study

Freight truck traffic in Ohio is forecast to grow 58% over the next 20 years and exacerbate roadway congestion to where it threatens to erode freight productivity, drive up transportation costs, and, in turn, begin to diminish the logistical position Ohio's businesses and industries currently hold in the marketplace. Adding capacity to relieve congestion through large-scale general-purpose roadway widening is fiscally infeasible, yet localized general purpose capacity

improvements become congested again with local traffic within a few years of completion and do little to improve the flow of freight through Ohio. An alternative is for ODOT to evaluate the effectiveness and feasibility of localized truck-only roadway capacity improvements, such as truck-only lanes, truck passing lanes, and truck by-pass ramps to improve freight reliability, mobility access, and safety throughout Ohio. The study was initiated to address concerns that have potential to impact statewide freight strategies, is 24 months in length, and began in February 2004.

Rail Statewide Bottleneck Study

It is estimated that approximately 263 million tons, or 28%, of the total tons per year of freight to, from, or through Ohio, travel on rail, and rail freight is expected to grow by 60% in ton-miles by 2020. Rail transportation, particularly rail freight, is hampered by difficulties at intermodal transfer points and at other obstacles, such as bridges that cannot accommodate heavier cars, low ceiling tunnels that prevent double stacking, the need to share track, and coordination of signals with passenger service, single-line track, and at-grade rail crossings. To address some of the above issues, a consultant study is being initiated to identify impediments and make recommendations, including the elimination of bottlenecks. The study scope and desired products includes

- A statewide prioritized ranking of Ohio's 25 to 35 worst railroad bottlenecks;
- A statewide strategic plan, including the type of solutions, costs, and phasing recommendations for addressing the prioritized bottlenecks; and
- An explanation of how each improvement will provide a public benefit to Ohio's citizens and its multimodal transportation system.

The area of need was originally identified as a recommendation strategy in Ohio's LRTP, and it is being conducted at the request of executive management. The study is to be completed in 12 to 18 months.

Corridor Studies

With truck traffic doubling since the 1990s, transportation solutions were being sought for several corridors (US-24–Fort to Port and US-30 as examples) in northern Ohio to address capacity and safety issues. These routes and corridors were identified in Ohio's LRTP as "macro corridors." Completion of Ohio's Macro Highway Corridor system was originally recommended in 1993 Access Ohio, recently recommended by Governor's Taft's 2003 Jobs and Progress Plan and again recommended by Access Ohio 2004–2030. Completion of the corridor segments address safety, operational and design standards, and will be advanced in the next 5 to 10 years.

Bypass Studies (Kenton Transportation Planning Study)

Bypass studies are often conducted to address transportation concerns by local officials, and truck traffic and freight is normally at the center of the concerns. The Kenton Transportation Planning Study was conducted to evaluate further a proposed bypass in response to concerns by local officials. The primary concern was with trucks coming through town that needed to turn

downtown where there was little room to do so. In addition, there was a feeling that trucks were bypassing town on county roads and also a concern with trucks carrying hazardous materials. The study included an analysis of existing conditions as well as an analysis of preliminary alternatives. Results of this study and other bypass-related studies are normally desired in less than 6 months; however, because of the size and complexity, the studies can range from 3 months to 1 year. Data collection can also affect the time frame, since data collection is often seasonal and collected only from late spring to early fall.

Certified Traffic for Design Purposes

Requests for the development or certification of design traffic on specific projects normally come from district offices and originate from state and local governments as well as private consultants, developers, and other companies. The completion standards for providing certified traffic is 60 days or less; however, depending on the complexity and data analysis required, more time may be needed.

Special Studies, Projects, Etc.

Numerous special studies and projects requiring freight data and analysis are conducted. The scopes, time frames, data requirements, and customers are quite varied, but often requests are initiated by executive management and legislature with short time frames. An example was a request by the ODOT Facilities Management Office and OSHP to evaluate peaking of truck parking requirements at rest areas statewide to help address safety concerns on the entrance and exit ramps. The desired time frame was 1 to 2 months. Another study was requested by executive management as a result of concerns voiced by a private company through local and state officials that statewide weight limits were unfairly prohibitive for coal truck hauling operations on rural two-lane state roads in southeast Ohio. Local class and weight data had to be collected by portable WIM sensors to determine existing conditions, pavement impact analysis, and recommendations on the feasibility of locally modifying the legal weight limits. These studies needed to be completed by OTS and the Pavement Engineering Office, respectively, within a 4 to 6 weeks' time frame.

Research Project

Research projects can often require truck freight data with requests by universities and colleges with a 1- to 2-year time frame; sponsors of the projects range from federal and state agencies to private industry. The FHWA-sponsored project Traffic Monitoring Using Satellite and Ground Data required vehicle monitoring and a 1-year time frame.

What kinds of freight data do you use when responding to the questions and issues identified for Question 1? Where do you get the data (within your DOT, from other state agencies, from local governments, from the federal government, or from consultants)?

Data used for responding to questions on freight issues and analyzing the movement of commodities, truck travel, rail freight and shipping, safety, and other aspects of freight transportation vary greatly in both type and source. In addition to basic freight data (numbers and

types of freight carriers, weight of carriers, time and type commodity, tonnage transported, etc.), data to support modeling and forecasting (land use, O-D, interview surveys, employment information, etc.) are also necessary for analyzing and responding to questions on freight issues. Data sources range from public (DOT, local governments, other state and federal agencies, universities, etc.) to private (consultants, freight companies, other transportation organizations, etc.).

Following are specific examples of the kinds of data used to respond to the issues and questions presented in response to Question 1.

Northern Ohio Freight Study

The Northern Ohio Freight study required a wide range of data for determining base conditions and estimating, monitoring, and evaluating impacts of policy alternatives and recommendations. Initial analysis areas included truck volume, congestion, safety, pavement and bridge needs, overweight vehicles, WIM, OSHP enforcement effort, speed limit review, traffic modeling, and toll sensitivity. Policy options included increase truck speed limit, increase truck weight enforcement efforts on parallel routes to the OTP, electronic toll collection, ban trucks from parallel routes, expand volume discount and 25% truck toll reduction. Truck volume data includes classification and WIM and is collected by ODOT and OTC and safety data and pavement and bridge data all come from ODOT's management systems. The modeling and toll sensitivity data and analysis is generated from ODOT's statewide model, which includes road network information from inventory databases, traffic counts from ODOT databases, roadside O-D surveys, population and employment databases, and speed studies.

Ohio Freight Mobility and Safety Study

Two sets of analyses were conducted: (a) The methodology developed for the American Highway Users and FHWA National Bottleneck Studies, as refined, was used to develop total delay, emissions, and fuel consumption estimates for the study segments. Specific traffic and geometric characteristics at each location were used to develop estimates of capacity for each direction and for each turning and merge movement. (b) Using the TRANSEARCH freight data, we analyzed the freight usage of the selected bottleneck locations in Ohio to help understand the volumes and value of various commodities being moved, industries impacted, and the geographic economic region being served by the segment. The next steps to be completed will be to select two to four locations for further analysis and assess truck-oriented improvements and estimate performance improvement; and to conduct economic analysis including a benefit-cost analysis and a region-state economic analysis with REMI data.

Rail Statewide Bottleneck Study

A proprietary model and rail data provided by a consultant and observations and input from MPOs will be used to identify and analyze bottlenecks. Rail data will include operational information (train volumes, speeds, schedules, etc.), payload (numbers of passengers, commodity, and tonnage), and infrastructure (condition, inadequacies, etc.) for both passenger and rail.

Corridor Studies

Monitoring data on vehicle type, speed, and density are collected by ODOT and consultants, and crash rate and crash density information is obtained from the Department of Public Safety and is analyzed by ODOT to identify hot spots. Mobility delays due to congestion, roadway geometrics (curvatures and grades), and reduced speed zones are normally obtained from ODOT. Additional infrastructure data (pavement condition, roadway characteristics such as number of lanes, lane and shoulder widths) are collected by ODOT. In addition to obtaining data on existing conditions, a statewide model is used for forecasting future conditions, including growth rates.

Bypass Studies (Kenton Transportation Planning Study)

Data used for this study included O-D survey with hazardous material identifiers added to the survey, machine and manual counts (classification and turning), floating car travel time runs and inventory of impediments to traffic. All data for the study were collected by ODOT. All data collected for this particular study were done by ODOT. Counts and O-D data are often collected by consultants or MPOs.

Certified Traffic for Design Purposes

Modeling results from ODOT's statewide model (or smaller QRS model as required) are used if requests are in rural areas and from MPO models if in urban areas. Data also used include, but are not limited to, classification counts, peaking characteristics, land use, and vehicle operation truck generation. Data are collected or provided by ODOT, locals, consultants, and private businesses.

Special Studies

Data required for special studies depend on the type of study and will be collected by the appropriate agency. Agencies include ODOT, local governments, consultants, universities or other public agencies. In the two examples, ODOT collected the traffic monitoring data and truck interviews at rest areas

Research Projects

Traffic monitoring data (volume, classification, density, etc.) are collected for the example project by ODOT. Other transportation data, including freight, are required, depending on the objectives of the research, and can be acquired through a variety of sources (state and federal agencies, local governments, MPOs, consultants, etc.)

Who performs the analyses of the questions and issues identified in Question 1?

The level of analysis needed varies tremendously in scope and complexity, and, as a result, those responsible for the work vary greatly. ODOT personnel (engineers, planners, forecasting specialists), freight specialists, local and national consulting firms, and universities perform the analyses to address freight issues as documented in the following examples.

Northern Ohio Freight Study

Analysis is performed by modeling and forecasting section in the OTS in ODOT. Staff primarily consists of engineers and planners.

Ohio Freight Mobility Study

The work is being done by a nationally recognized consulting company with an extensive background in transportation and planning.

Rail Statewide Bottleneck Study

The work is being done by a nationally recognized consulting company with an extensive background and experience in rail and freight transportation.

Corridor Studies

Most of the work done is by ODOT's Office of Safety and Mobility and OTC. However, local and national consultants are also used in planning studies. Both ODOT's and consultants' employees are planners, engineers, and statisticians.

Bypass Studies (Kenton Transportation Planning Study)

Most of the analysis is accomplished by ODOT's OTS; however, local consultants have occasionally been used.

Certified Traffic for Design Purposes

Traffic for design purposes is developed by ODOT, MPOs, and local and national consultants; however, all traffic is analyzed and certified by the OTS. Staff primarily consists of engineers and planners.

Special Studies

Who conducts the analyses on special studies depends on the type and scope of the study. Personnel could range from ODOT personnel (engineers, planners, forecasting specialists), to freight specialists to local and national consulting firms and universities.

Research Project

Analyses on research projects are normally performed by professors and students in the appropriate area of transportation. Occasionally consultants or private companies will perform the analyses.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1?

With data, there is never enough. Analytical tools are continuing to improve at a fast rate and make it difficult to keep up; however, they still leave much to be desired. As they get more complex (e.g., Columbus MPO MORPC model), they are more sensitive to changes, in particular, transportation modes, but are so complex and time consuming to run that they sometimes become too costly or cannot turn around answers fast enough.

MORPC is involved with the air quality (AQ) truck and freight inventory emissions project but still cannot get good estimates of how much vehicle miles traveled (VMT) occurs on different classes of roadway in the mid-Ohio region.

When a truck model was developed for another Cincinnati–Dayton MPO model (OKI/MVRPC), there were not enough good count data to do a thorough validation and calibration. Some of the data existed, but not in the form or coverage needed.

There is still concern about not using certified traffic forecasts for planning studies for fear of numbers coming out so different that decisions made during the planning phase are invalidated by the certified forecasts.

The freight component of most TDMs is still sketchy. The urban and corridor section is having newer analytical tools developed by study contracts with Reebie and Associates, but OTS has not seen them yet. The Reebie-based tools we have seen so far are useful for looking at freight at a statewide or national level but are limited at the MPO model area level. Part of the problem is that when some of the model work is done, what questions to be asked are unknown or vague, and the end product may not be designed to answer the questions eventually asked. OTS polled the administrators, executive management, other customers, etc., at the beginning of the statewide model development process to attempt to get a handle on questions that would be needed to be answered once model completed. Even so, some needed data are impractical and maybe impossible to get; so often we do the best we can with what we can afford to get.

Simulation tools, and the marriage between TDM tools and simulation tools, are improved and continue to improve.

What are the most important improvements your dot would like to see made to freight data and analytical tools?

Specific detailed O-D information related to commodities shipped is guarded so that competitors do not gain an advantage. However, ODOT and state government need this information to make better forecasts and decisions regarding transportation investments in a global economy to make the best investments to make our businesses and products more competitive.

Pollution and AQ models are improving, but there is still a gap between transportation models and emissions software. MOVES is a step in the right direction but falls short. There needs to be a tighter coupling of emissions software, TDM software, and microsimulation software.

Better count technologies that provide good continuous flow data on every segment of highway are needed to assist DOT in answering questions specific to freight. More comprehensive and timely count data are needed to be responsive to requests.

Better truck forecasts need to be developed for projects.

What do you do to improve the quality of freight data and analytical tools in your state?

The modeling and forecasting section have signed confidentiality agreements to get rail data and employment data and conducted O-D surveys targeting freight several years ago as part of the Cordon line survey for the development of the statewide model.

Communicate and demonstrate the need for WIM data to evaluate vehicle mix assumptions used for AQ analysis which was provided and processed.

Purchased TRANSEARCH Freight Database for Ohio to augment our information and hired a consultant to develop a statewide model that includes a freight component. The data includes air, truck, and water freight flows by weight and commodity, and is specific as to O-D by each Ohio county and the counties in a 50-mi radius of Ohio. Information for the remaining U.S. O-Ds and North American Free Trade Agreement trade with Canada and Mexico are sorted by region. Task order contracts were initiated to assist the MPO in updating their models including developing fully functioning base year truck and commercial vehicle models for 6 of the 17 MPOs.

Efforts to finalize ODOT's statewide model continue and improvements to the interim model are ongoing. Ramps have been added to the network and other network features such as signal locations have been identified and incorporated to improve model results.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

ODOT has a good group of modelers and technicians working on and developing travel demand statewide model and urban models as well as applying them. While ODOT has not had a lot of experience with addressing freight specific issues in the past, major gains have been made in recent years, in part because of the emphasis being placed on freight from a national level.

Most important skills required are in the areas of computer and math (statistics, data processing, database, spreadsheet, GIS, TDM, simulation modeling, simple computer programming, etc.). Some writing and presentation skills are also valuable.

How much does your state spend on freight data, analytical tools, training, and assistance in using freight data? What do you think the appropriate expenditure level should be?

It is difficult to summarize the amount of funding spent on freight data, analytical tools, and training to address freight issues, since many of the expenditures provide benefit to other program areas. Following are examples of some of the major expenditures that have contributed to providing assistance in analyzing freight issues:

- Reebie and Associates (TRANSEARCH Freight) database for Ohio \$175,000
- Truck and commercial vehicle models for 6 MPOs \$50,000
- Statewide model development \$5 to 7 million
 - General establishment surveys
 - O-D surveys
 - ES 202 data
 - Socioeconomic data
 - Rail waybill data

- Opinion surveys of shipping managers
- Training \$75,000
- Consultants and research
 - Rail Statewide Bottleneck Study \$200,000
 - Ohio Freight Mobility Study
 - Upper Midwest Freight Corridor Study \$370,000

Again it is difficult to specify what an appropriate expenditure level should be, since it clearly depends on the types and complexities of freight issues that need to be supported and what data and analysis tools are currently available. For Ohio, once the statewide model is implemented, it is probably reasonable to assume that expenditures will be in the \$300,000 to \$500,000 range for freight-related data and studies, with the current emphasis being placed on freight from the local and national levels. These expenditures would not include data that are available from ODOT's existing traffic monitoring program, MPO work programs, or other existing sources from public and private organizations.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

Once Ohio's statewide model is implemented, many of the data acquisition costs needed to develop the model will be greatly reduced to more of a maintenance level therefore at reduced funding levels. It is anticipated that other data collection activities for freight will stabilize at current levels and will continue to utilize consultants and Statewide Planning and Research (SPR) funding.

Ohio's MPOs are starting to discuss freight transportation issues, looking to identify freight transportation problems in their area, and recommend strategies to address the problems. These studies are conducted by MPO staff and consultants and are often funded utilizing state planning and research funds.

Pennsylvania Department of Transportation Perspective

TOM TENEYCK

Pennsylvania Department of Transportation

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

Example Questions

1. What can be done to address growing congestion on highways?
2. How can we reduce accidents and fatalities? How can we reduce accidents and fatalities involving trucks? How can we reduce accidents and fatalities at grade crossings?
3. Are we approaching a capacity crisis across all modes?
4. How can we deal with bigger and heavier trucks?
5. What is the role and impact of freight transportation in supporting economic development, or sound land use decision making?
6. Do federal aid programs give us adequate flexibility in managing freight transportation projects? What about new legislation?
7. Should bridges be raised on the Keystone Corridor to allow double-stacked trains?

Most of the freight questions that are posed to Pennsylvania Department of Transportation (PennDOT) involve trucks and highway and bridge questions, congestion, accidents, detours, bridge posting, economic impact, etc. Most of the questions specifically concerning freight also involve highways; they are usually about specific projects. Rail access to ports, rail access to highways, getting trucks off of highways, and truck access to airports are other types of questions we address. A unique question we now deal with is the double stack issue on the Keystone Corridor (Number 7 above).

Studies, Plans, and Designs

- Mobility plans.
- Project plans/project designs.
- MPO long-range plans.
- PENNPLAN.

The source of questions is the DOT and the state legislature. Questions need to be answered in days or weeks; studies, plans, and designs are needed in months.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

Freight data come from highway statistics (truck classification), rail freight waybill data, O-D surveys, economic data, BTS data, and accident statistics. Truck data are available in the department. Economic and demographic data are available from other state agencies. Modal-specific data are available from national modal associations such as FRA, U.S. Maritime Administration (MARAD), U.S. Coast Guard, U.S. Customs Automated Commercial Environment (ACE), U.S. Department of Agriculture (USDA), BTS, and FHWA's Office of Freight Management and Operations. Consultant information is also available from Reebie/Global Insight, Inc.

Who performs the analyses of the questions and issues in Question 1?

There is limited in-house freight planning and analysis capability—mainly a freight specialist and a planner. Support is secured from consulting firms and universities.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

Better freight data on a regional and state basis are needed. However, given the proprietary nature of the information, perhaps the largest need would be in tools to evaluate and use the data that are available.

What do you do to improve the quality of freight data and analytical tools in your state?

There has been no specific spending on freight data as a stand-alone procurement. Reebie data and other freight information including the Surface Transportation Board (STB) Freight Waybill Sample have been part of some specific local and statewide freight study efforts. PennDOT does not have a unique freight planning program; no freight data purchase item is included in budget requests. This seems to be an appropriate approach.

PennDOT and the State Transportation Advisory Committee have initiated several consultant efforts to identify data sources and for tools to improve use of freight data. The Economic Impact of Railroads and the Pennsylvania Mobility Plan now underway are two examples. PennDOT also supports and participates in several freight task forces and special studies at the MPO level.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

No, we do not have all the expertise we need. We rely on consultants and universities to help. We have developed an intermodal training course to expand the understanding of freight issues within the department. The most important skills we need are the understanding of what data are available and the training in tools or methodologies that other states have used to make the data meaningful for decision making. This is critical for MPO planners as well.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

Our freight information is expanded as part of state or local project studies. Expertise comes from consultants for the most part. SPR funding is used whenever possible since there is usually an eligible surface transportation issue.

Port of Portland, Oregon, Perspective

SCOTT DRUMM

Port of Portland, Oregon

BACKGROUND

The Port of Portland, Oregon, is a port district separate from both state and local government. Because we interact frequently with the freight transportation community as part of our daily business and because accessing our maritime and aviation facilities is critical for our success, we have become involved in freight issues. The port has taken the lead on freight data collection projects and its Research and Market Information Department manages regionwide projects on behalf of the bistate region.

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities for which your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

- Evaluating benefits of investing in one mode versus others.
- Modeling (TLUMIP).
- Identifying chokepoints.
- Conducting economic analyses of problems (i.e., congestion) or projects (improvements).
 - Assessing capacity (i.e., the rail system).
 - Evaluating investments and prioritizing projects.
 - Understanding logistics and supply chains and the key decision points; interlinkages between modes.
- Bistate analyses and coordination (i.e., I-5 Trade and Transportation Partnership).
- Understanding market conditions.
- Developing ITS projects.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

- CFS (BTS, Census).
- Commodity Flow Forecast
 - Statewide: ODOT and

– Portland metro area: Port of Portland, Metro, ODOT, RTC, Port of Vancouver (Note: both use fused data sources such as PIERS, Army Corps Waterborne Commerce data, Reebie and Associates TRANSEARCH, etc.).

- State of Origin International Trade data (MISER).
- Customs district data (commerce).
- Other international trade data (International Trade Administration).
- Truck counts (ODOT, Port of Portland, City of Portland, other jurisdictions).
- FAF (FHWA).

Who performs the analyses of the questions and issues in Question 1?

- ODOT: planners (generalists), modelers, freight specialists (a recent addition)
- Metro: planners (generalists), modelers, freight specialists (a recent addition)
- City of Portland: planners (generalists)
- Port of Portland: planners (generalists), research analysts (with modal specialties)
- Universities: academicians and students (planning, engineering)
- Local and national consultants: modelers, planners, and economists

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

Somewhat unsatisfied.

Improvements:

- Domestic freight flow data available.
- Data on domestic legs of international trade.
- More detailed O-D data.
- Better transportation and land use models.
- Document linkages and data between freight movement and the economy.
- Develop models and data sources for on-going updates as opposed to periodic grand projects that are costly and difficult to manage.
 - Make more data publicly available (both private data and suppressed data).
 - Make data available at a market level regardless of state or other political boundaries.
 - Sharing of knowledge, tools, and data, perhaps with the TRB serving as a clearinghouse.

What do you do to improve the quality of freight data and analytical tools in your state?

- Build own models.
- Conduct surveys.
- Participate in regional, multi-agency data collection projects.
- Established Freight Mobility section and Oregon Freight Advisory Committee.
- Increase agency recognition of freight's importance.

- Allocating SPR funds for freight research projects.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

Generally, no. There is some expertise, but not enough. Modelers could likely figure most of this out if there were sufficient data. There is a lack of understanding of logistics patterns and practices and a need to build more working relationships with the private sector.

How much does your state spend on freight data, analytical tools, training and assistance in using freight data? What do you think the appropriate expenditure level should be?

There are too many areas in ODOT that involve freight in one way or another to get a handle on a dollar amount.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

ODOT, Metro, Port of Portland, Washington State Department of Transportation (WSDOT), Regional Transportation Council (RTC), and Multnomah County are about to undertake a \$700,000 O-D and truck count data collection project. ODOT, Metro, Port of Portland, WSDOT, RTC, and Port of Vancouver conducted a joint project completed in 2002 to forecast the flow of commodities by mode to, from, through, and within the region. This was a \$170,000 project. These projects are completed through the hiring of consultants to serve as project staff to the agency project team members. ODOT recently completed a similar project to acquire statewide commodity flow data.

In addition, ODOT is currently utilizing WIM data and looking into ways to do so more effectively.

Washington State Department of Transportation Perspective

BARBARA IVANOV

Washington State Department of Transportation

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

Information is needed to understand and allocate scarce resources to improve the efficiency and effectiveness of supply chains flowing through freight systems that support Washington State shippers, distributors and carriers, and cargo flowing through the state.

WSDOT's task is to identify the most productive investments that Washington State can make in the freight system to generate economic prosperity and wealth for citizens of the state. Data deadlines depend on Washington Transportation Commission (WTC), legislative, and local timetables.

The Washington Transportation Plan (WTP) Freight Report at www.wsdot.wa.gov/freight/images/WTP%20Exec%20Summary.pdf and www.wsdot.wa.gov/freight/images/WTP_FreightUpdate.pdf provides examples of specific policy questions and data analysis under way.

This information provides decision makers with a data-based rationale for strategic investment in Washington State's freight system. Before recommending capital or operational improvements in the state's freight system, we must know

- Who are the customers of the state's freight system;
- Why freight customers matter in terms of jobs and contribution to gross state revenues;
- What performance the customers expect from the freight system;
- Where key performance gaps are located; and
- How to make the most productive, strategic investments in Washington State's freight system.

Data are also used to support structured problem solving at WSDOT's Freight Office. Within this process we

- Identify key performance drivers,
- Gather baseline data about the problem,
- Freight problems require supply chain analysis,
- Analyze the data to determine patterns,

- Use graphical tools to display results,
- Ask customers and process operators for insights,
- Gather additional data as suggested, and
- Determine root causes of gaps.

Decision makers need to be able to measure the impact of proposed transportation investments on regional, state, and national economies and a rational method to prioritize freight investment proposals. Staff needs to provide an economic analysis of the impacts of proposed transportation investments on freight-dependent industry sectors, including manufacturing, agribusiness, timber and lumber, construction, distribution and international trade.

The state DOT is the primary data investigator, in partnership with MPO/RTPOs and other agencies.

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

To guide strategic investment, we are beginning to analyze supply chains to determine and influence performance drivers. Measuring data that does not align with customers' requirements and terminology leads to confusion and dissatisfaction; therefore we try to collect data to evaluate supply chain performance the same way the customer (e.g., shipper, carrier) does.

Operational improvements require multiple data points at short-time intervals to adjust freight systems.

The WSDOT Freight Office WTP methodology included

- 200 one-on-one interviews with high-volume shippers and freight carriers;
- Focus groups with key public and private partners;
- Voice surveys of another 350 statewide customers;
- Literature reviews of freight-dependent industries' requirements;
- Truck surveys: O-D data on major statewide corridors;
- Volume counts: truck trips, rail volumes, etc.; and
- Additional existing regional research.

Who performs the analyses of the questions and issues in Question 1?

The freight office at WSDOT in partnership with ports, local governments and agencies, industry experts, and universities.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

The WSDOT Freight Office has learned that the right freight data are hard to find. Existing freight data are a patchwork of uncoordinated data collection efforts done by diverse entities. Most were not designed for freight transportation analyses.

Some information is not collected by anyone. For example, modeling suggests that up to 80% of all urban truck trips are made by smaller and medium-sized trucks in the local

distribution system—but WSDOT and Washington cities do not have a mechanism to count smaller, light truck moves—only medium and heavy trucks.

To improve the national freight database, we concur with the findings from the Data Needs in the Changing World of Logistics and Freight Transportation Conference held in New York in 2001:

- Must capture shipment O-D; volume shipped; commodity characteristics, weight, and value; modes of shipment; routing and time of day; and vehicle or vessel type and configuration.
- No source, public or private, currently provides reliable data on these items. Only the CFS and related TRANSEARCH (Reebie and Associates) database even recognize the need to provide complete description of freight flows in the United States, and both have important deficiencies.
 - Get real data—as opposed to imputed or synthesized—when possible.
 - Get continuous feedback from users to refine database.
 - Consider underlying reasons for freight movements.
 - Make data sets compatible by geography and function.
 - Get regular and timely data updates.
 - Make it a joint effort between public and private sectors.
 - Use information technology to track shipments and vehicle movements—necessary but not sufficient.
- The combination of data from different sources known as “data fusion” raises concerns about quality and comparability of the resulting data.

What do you do to improve the quality of freight data and analytical tools in your state?

I have worked for WSDOT for 1½ years; we are a new office and continually improving our data collection methods and exploring new analytical tools.

WSDOT recently funded a research project to create a blueprint to collect timely freight data and maximize efficiency of the state’s freight system. It will identify missing pieces of the Washington State freight data system, and propose tools that may be used to fill in data gaps. Steps include assessing current data availability to address information needs, determining if methods are available to collect data where gaps exist, and developing analysis tools that help map and program freight infrastructure and operational approaches. The study will address truck, rail, water and airfreight modes.

We are beginning an analysis of manufacturing supply chains. Supply chain analysis provides a view of the freight transportation system as a set of consecutive transactions to determine which links in the supply chain are underperforming or in greatest need of improvement. Unlike planning processes focused on needs within a particular mode, supply-chain analysis focuses actions toward those projects that will have the greatest net benefit, regardless of the mode, to the state’s freight transportation network.

We are currently considering a pilot using one of several analytic tools, including REMI, for a more sophisticated economic analysis of proposed investments.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

I have an MBA, and my colleague has a business degree; both are useful in understanding the business needs of the freight system.

Freight industry performance is achieved through efficient and effective logistics; therefore DOTs need to understand logistics and acquire a skill base. Additional supply chain management and analysis and logistics training would be helpful.

How much does your state spend on freight data, analytical tools, training and assistance in using freight data? What do you think the appropriate expenditure level should be?

The freight office budget was \$640,000 in the 2003–2005 biennium. The agency also funded \$110,000 in freight research projects.

I cannot answer the second question at this time.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

WSDOT is just beginning to collect freight data comprehensively.

Wisconsin Department of Transportation Perspective

SUSIE FORDE

Wisconsin Department of Transportation

The Wisconsin Department of Transportation's (WisDOT) Economic Development and Planning Section provides funding, technical assistance and conducts research for its customers to facilitate transportation planning and economic growth better. The section performs economic and freight analysis for economic and transportation projects.

External customers include businesses, economic development organizations, local planners, municipalities, the legislature, and other state agencies.

Internal customers include WisDOT colleagues with a special emphasis on district coordination of planning and overlapping programming areas. The section also administers the department's Rustic and Scenic Byways Programs.

QUESTIONS

List the types of policy questions, planning studies, project plans and designs, or other activities your DOT needs to analyze data on the movement of commodities, truck travel, rail freight and shipping, safety, or other aspect of freight transportation. For each type, indicate whether the questions, studies, or issues are raised by offices within your state DOT, other executive agencies, your state legislature, local governments, or constituents. Also, indicate whether responses are needed within days, weeks, or months.

- Required for statewide transportation planning: freight planning component is required by FHWA as part of the long-range modal and multimodal transportation plans; multimodal approach is recommended to cover air, water, rail, and highway modes of freight transportation (months).
- Required component of the MPO planning: commodity flow data such as tonnage, O-D, and types of commodities handled are provided to the MPOs for the development of their transportation plans; the plans are mandated by FHWA (months).
- As a supplement component for regional planning commission plans: although RPCs are not mandated to conduct freight flow analysis in their plans, WisDOT provides this information as requested by the planning commissions (months).
- As a supplement component for regional analysis for economic development planning and specific economic development projects: transportation districts, state representatives and economic development organizations have requested freight analysis for their regions of the state; data is used for planning and site locations for industrial parks, commercial, and retail centers (weeks).
- As a supplement component for the economic impact of transportation projects: freight commodity flow analysis is conducted for WisDOT transportation project planners as an input into the development of transportation projects such as new interchanges, capacity improvements, bridge relocations, new rail spurs, port and airport facilities (weeks).

- As a supplement to various transportation studies: collaboration with university-based transportation departments to analyze strategies to preserve rail service, identify major freight corridors, and identify infrastructure improvements needed to handle future freight movements in the state (months).

What kinds of freight data do you use when responding to the questions and issues in Question 1? Where do you get the data?

WisDOT has all of the following models and databases used for freight analysis:

- Economic forecasts models (REMI and IMPLAN),
- Commodity flow database (provided by Global Insight),
- Commodity flow software [Commodity Information Management System (CIMS) provided by Global Insight], and
- Business directories (to locate various types of businesses along the transportation corridors).

Who performs the analyses of the questions and issues in Question 1?

All of the analysis is performed in the Department's Economic Development and Planning Section comprised of

- GIS specialists,
- Economists,
- Planners, and
- Freight data specialists.

How satisfied is your DOT with data and analytical tools for answering the questions and issues in Question 1? What are the most important improvements your DOT would like to see made to freight data and analytical tools?

Since all of the analysis work and studies are conducted in-house, the satisfaction level expressed from WisDOT customers has been positive. What is needed is a software package that combines economic forecasting with freight commodity flow analysis. The department is considering a new product offered by either REMI or Regional Dynamics.

What do you do to improve the quality of freight data and analytical tools in your state?

The baseline information containing the freight database is often 3 to 5 years old. Some of the previous forecast information has proved to be inaccurate in predicting the growth of freight in the state. Without having to call the individual airports in the state, air freight information has been difficult to obtain.

Does your agency have staff expertise for answering the questions and issues in Question 1? What are the most important skills and training you would like to have for your staff?

Yes, staff has the expertise conducting both economic and freight analysis. Hands-on training in using the commodity information management system (CIMS) has been invaluable as well as dealing with businesses and business associations in getting the needed information to perform the analysis.

How much does your state spend on freight data, analytical tools, training and assistance in using freight data? What do you think the appropriate expenditure level should be?

\$50,000 to \$75,000 on average per year for data and software needs.

Does your state or the local jurisdictions in your state plan to begin or expand collection of freight data? If yes, what kind of expertise are you using, and how are you funding the effort?

The department recently reorganized for a greater emphasis on economic development and freight analysis. Four staff members are assigned to freight and four members are assigned to economic impact analysis. Budget for the section is about \$850,000 to \$950,000 per year.

Summary of State Responses

James P. Hall

University of Illinois at Springfield

James P. Hall presented a summary of the state responses to the eight questions. The summary indicates the diversity of sources, applications, and issues of freight data by state and local agencies.

QUESTIONS

List the types of questions, studies, plan, etc., which require freight data analysis. What are the sources of these questions and what is the immediacy of response?

State responses exhibited a wide variety of uses of freight data across transportation modes and functions. The answers also reflected the increasing use of freight data at an executive level to deal with program management and intermodal policy issues. The Question 1 responses are summarized by mode and types of studies, plans and designs.

Highways

- Truck corridor, O-D.
- Truck size and weight issues, enforcement.
- Truck cost allocation.
- Toll versus nontoll facilities.
- Temporal variation.
- Certified traffic for design.
- Congestion travel time.
- Pavement deterioration.

Rail

- High speed rail.
- Rail valuation.
- Truck and rail issues.
- Rail bottleneck analysis.
- Double stack trains.

Air

- Airports and air cargo.
- Air freight penetration.

Water

- Port master plans.
- Ocean container studies.
- Channel depths—locks and dams.

Multimodal

- Corridor studies and analysis.
- Statewide transportation freight models.
- SIS (Florida).
- Intermodal connectors.
- RTCs.
- Container movements, import and export assessment.
- Supply chain, industry, commodity flow, distribution center analysis.
- Capacity, congestion, and chokepoint analysis.
- Performance gaps.
- Freight customer and stakeholder analysis.
- Strategic analysis, program allocation.
- Competitive modal choice.

Types of Freight Data Analysis

- Safety.
- Hazardous materials.
- Large trucks issues.
- Freight mobility and safety studies.
- Crash and fatality reduction.
- Rail crossing crash reduction.

Studies, Plans, and Design

- MPO regional planning studies and transportation plans.
- District freight plans.
- Project plans and designs.
- Mobility plans.
- Economic development planning.
- Special studies for executive management and legislature.
- Project prioritization.
- Multistate analysis and coordination.
- Interstate system plan.
- ITS projects.

What kind of freight data do you use? Where do you get the data?

State responses included not only traditional freight data sources but also innovative methods, especially at a local level. The acquisition of current and accurate freight data is time intensive and costly. Data sources included internal and external, state, federal, private, and local sources.

Types of Data

- Truck and rail volume counts, classification, weight.
- Commodity, tonnage.
- O-D.
- Waybill.
- Crashes and fatalities.
- Hazardous material identifiers.
- Economic, land use, employment.
- Modal inventories.
- Congestion, travel time.

State DOT Data Sources

- Truck and rail traffic volume and classification counts.
- Crashes and fatalities database.
- Weigh station data.
- Commodity, tonnage.
- O-D surveys.
- State modal offices.
- Interviews with freight shippers, carriers, and customers.
- Business directories.

Other State Sources of Data

- Airports.
- Marine highways.
- State Department of Labor.
- State rail and trucking associations.
- State universities—business and economic research.

Federal Sources of Data

- CFS.
- VIUS.
- Railroad carload waybill sample.
- BTS.
- FHWA Office of Freight Management and Operations.
- MARAD.

- U.S. Coast Guard.
- ACE.
- USDA.

Private Sources of Data

- TRANSEARCH Intermodal (Reebie and Associates/Global Insight).
- Economic analysis (REMI, IMPLAN).
- Commodity flow (Global Insight).
- Others.

Local Sources of Data

- MPOs.
- Regional planning and development commissions.
- District offices.
- Local governments.
- Water transportation corridors.

Who performs these analyses?

State responses indicated that these analyses of freight data occur across the enterprise and externally for multiple decision support functions.

Organizational Area for Internal Analyses

- State transportation offices.
- Secretary.
- Planning—various modes.
- Intermodal.
- Freight and commercial vehicle.
- Information systems and GIS.
- Operations.
- Safety.
- Materials and road research.
- Bridge.
- Districts.

External Entities

- Railroads.
- Ports.
- Airports.
- Universities.
- Regional agencies.

- Industry experts.
- National and local consulting firms.

How satisfied is your DOT with the analytical tools for answering these questions and issues? What are the most important improvements needed?

States were almost universal in voicing their lack of satisfaction with the adequacy of existing freight data and information analysis tools. There were also significant concerns of the future loss of freight data due to privacy issues. The most important improvements centered not only on the need for more complete and accurate data but also on the adequacy of analysis tools to meet specific needs such as intermodal analysis.

Problems

- Limited freight baseline study.
- Limited automated classification, counters, and WIM.
- Freight data out-of-date.
- Concerned with loss of national datasets—need more publicly available data.
- Shipper confidentiality issues.
- TDM not sufficiently calibrated.
- Unavailability of data—e.g., mid-size truck trips, local travel patterns.
- Limited capabilities of analytical tools.
- Disconnect between academic community and practical application of model development.
 - Increased model complexity slows process.

Most Important Improvements

Data Issues

- More data always needed.
- Shipment O-D.
- Volume shipped.
- Commodity characteristics, weight, value.
- Modes of shipment.
- Vehicle and vessel type and configuration.
- Routing and time of day.
- Real-time operational data.
- Data on domestic versus international shipments within state.
- Data to calibrate models, performance measurement.

Issues Other Than Data

- AQ analysis.
- Hazardous material tracking.

- Homeland security issues.
- More classification and WIM sites.
- Separate freight flow by passenger flow.
- More detailed O-D.
- Intermodal trade-offs and analysis.
- More training in use of national databases.
- Better modeling, forecasting, and analysis tools—linkage between economic forecasting and commodity flow analysis.
 - Share knowledge, tools, and data.

What do you do to improve the quality of freight data and analytical tools in your state?

State agencies indicated the need for a wide variety of improvements including additional organizational staffing and resources for information analysis, emphasis on freight data at a national level, and the need for technical assistance.

- Improving data and tools.
- Formal organizational structures.
- Improving models—internally and externally.
- Consultant support—general and specific studies, vendor data.
- Formal intermodal systems.
- Research projects to review needs, process, improve data collection and analysis tools, supply chain analysis.
 - More classification and WIM sites.
 - Freight tracking technologies across modes, use of ITS.
 - Accessing local and industry data (task orders, confidentiality agreements).
 - Formal freight data assessments.
 - Promote federal data initiatives.
 - Conduct surveys (shippers, modal links, etc.).
 - Provide technical assistance (training, manuals) to locals.

Does your agency have staff expertise to answer freight related questions? What are the most important skills and training you would like to have for your staff?

Staff Expertise

- Modal experts in modal offices.
- Training in use of models, analytical tools, data.
- Some states—limited expertise.
- More work outsourced—consultants, universities.
- Concerns with staff reductions.
- Courses—e.g., Caltrans—goods movement overview course—supply chain, economic and social trends, stakeholders, agency roles, available sources of funding, best practices.

Most Important Skills and Training

- Understand data and data availability.
- Training in decision support tools and methodologies (demand models, GIS, statistics, simulation modeling, presentation).
- Understand underlying business needs, logistics, and supply chain analysis.
- Most training and NHI courses don't supply skills needed for particular problems.

How much does your state spend on freight data, analytical tools, training and assistance in using freight data? What do you think the appropriate expenditure level should be?

States had difficulty in responding to this question given the diversity of organizational elements that dealt with the collection, storage, dissemination, and analysis of freight data. The following provides examples.

State Expenditures on Freight Data and Analysis

- Difficult to quantify—many parameters, regional efforts.
- Washington—freight office—\$750,000.
- Ohio—\$5 to \$7 million for statewide model development, additional for regional/corridor studies.
- Caltrans—\$1.1 million for ITMS, >\$10 million for regional studies, >\$1 million for training.
- Alaska—commercial vehicle enforcement (\$4.7 million).
- Colorado—\$325,000 truck freight data collection.
- Various states—up to \$250,000 on vendor data acquisition.

Does Your State Plan to Begin/Expand Collection of Freight Data? What Kind of Expertise Are You Using? How Are You Funding?

Freight Data Expansion Plans

- Increase truck count, classification, and WIM efforts.
- Modal shares, geographic market shares.
- Air cargo study.
- Freight O-D studies.
- More detailed data—intermodal facilities and access, rail capacity and speed, port delay time, peak travel time reliability.
- Expanding district and MPO efforts—surveys.
- Several states just beginning.

Funding Sources

- Operating budgets.
- SPR.

- STP.
- MPOs and local agencies—pass through funds and local funds.

SUMMARY

States universally recognized the increasing need and importance of freight data access and analysis in their agencies from a national, state and local level. Major concerns were on data collection and access, data quality, and the lack of necessary resources and staffing.

Responses also portrayed the varied and complex uses of freight data including modal program development, AQ analysis, safety, hazardous materials monitoring, domestic and international trade, corridor analysis, supply chain analysis and transportation modeling. intermodal analysis and modeling were also viewed as increasing in importance.

The participation of local planning agencies and the acquisition of freight data at a local level were significant trends. Questions remained on how to capture and distribute this data.

State responders also recognized the necessity of national support for freight data collection and distribution, training, and communicating best practices.

Identification of Major Issues and Future Research

Results of the completed questionnaires from 14 states and subsequent peer exchange discussions provided insights into current practices and uses of freight data in state transportation agencies. Particularly relevant were the identification of major issues in managing the freight data resource and insights into improving freight transportation data management practices to meet agency and customer needs.

MAJOR ISSUES

Each state representative presented a perspective of the major challenges and issues relating to freight. In the peer exchange, the following major issues were identified (not a priority ranking).

Logistics and Supply Chain

Logistics and supply chain analysis are growing in importance to public and private stakeholders for decision making and policy analysis. States are increasingly performing corridor analyses, demonstrating a regional perspective and an emphasis on supply chain identification.

Industries are concerned with assessing the adequacy and bottlenecks in the transportation network that affects the bottom line. As an example, fuel delivery is multimodal in nature but is not really assessed as a total travel problem. Another example is the throughput of ocean containers across the country. What are the impacts on state and local transportation systems?

Data and Information Needs

There is an increasing need for data on regional and metropolitan freight delivery and mechanisms to understand the data.

Data needs relate not only to the transportation infrastructure (vehicle movements, weights, etc.), but also to industry concerns over supply chains and commodity flows. There is a need to develop an information management plan to include these subject areas.

Shippers and state DOTs are asking similar questions on how to handle freight movements. How can the freight information infrastructure be developed to address these needs?

Freight Data Framework or Architecture

There is a need at a national, state and local level to develop a framework of freight data needs, sources, and delivery mechanisms. A framework should enable the ability to access freight data at multiple levels of detail to meet transportation agency decision making needs.

Some state DOTs were actively pursuing improvements in their capabilities to acquire, access, and disseminate freight data. The identification of best practices would provide knowledge on existing methods to acquire and use data.

Role of State DOT Data Personnel

Freight data management capabilities vary greatly by organization. The information management role is complex and involves freight data collection, warehousing, and distribution. Management of the freight data resource would include access from national sources and internal sources, and establishing relationships to gather local data. Transportation agencies are struggling with these issues with decreasing resources.

State personnel currently use the best available data to address state executive questions and concerns and for trend analysis and forecasting.

Available Data

There is a need for understanding what the universe includes in the area of freight. For example, what national and state data are available from federal agencies involved with agriculture, mining, and the environment? States indicated the need for identifying best practices on how to draw relevant information from existing sources.

FUTURE RESEARCH

The peer exchange survey results and subsequent peer exchange discussions highlighted the increasing importance of freight information for planning studies and modal analysis. State agencies indicated that there were major deficiencies in freight data accessibility, quality, and usability. However, several agencies revealed creative approaches to acquiring and providing freight data to meet customer needs.

As a result, participants identified a need for future research to determine best practices for establishing a state freight data framework. This research would document best state practices in linking freight data sources and customer needs to support statewide transportation planning in four areas:

1. Identify high-priority freight information needs of transportation planners and customers (stakeholders) including industry.
2. Identify major national, state, and local data sources.
3. Identify processes used to integrate data from these sources to meet decision making needs. This would include the reasoning process and resultant benefits.
4. Describe an underlying framework that could be used by other state DOTs in incorporating freight data for planning and analysis.

This research would build on NCHRP Projects 8-36(33), Best Practices in Statewide Freight Planning; 8-47, Guidelines on Freight Policy, Planning, and Programming in Small and Medium-Size Metropolitan Areas; and 8-53, Incorporating Freight into Transportation Planning and Project Selection Process; and it could also provide a starting point in identifying customer needs and data gaps.

APPENDIX A

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APPENDIX B

List of Acronyms

AADT	annual average daily traffic
ACE	U.S. Customs Automated Commercial Environment
ADOT&PF	Alaska Department of Transportation and Public Facilities
AIA	Ted Stevens Anchorage International Airport
AMATS	Anchorage Metropolitan Transportation Solutions
AQ	air quality
ATPs	Area Transportation Partnerships
BEBR	Bureau of Business and Economic Research
BTS	Bureau of Transportation Statistics
Caltrans	California Department of Transportation
CFS	Commodity Flow Survey
CIMS	Commodity Information Management System
CMAQ	Congestion Mitigation and Air Quality
CVISN	Commercial Vehicle Information and Systems Network
DOT	department of transportation
DOTP	Division of Transportation Planning
FAF	Freight Analysis Framework
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
GIS	geographic information system
ITD	Idaho Transportation Department
ITMS	Intermodal Transportation Management System
ITS	intelligent transportation system
JTW	Journey to Work
KYTC	Kentucky Transportation Cabinet
LRFA	Local Rail Freight Assistance Program
LRTP	long-range transportation plan
LTL	less than truckload
MARAD	U.S. Maritime Administration
MIS	major investment study
MnDOT	Minnesota Department of Transportation
MOA	Municipality of Anchorage
MPO	metropolitan planning organization
MSA	metropolitan statistical area
MSCVE	Measurement Standards and Commercial Vehicle Enforcement
NHI	National Highway Institute
NHS	National Highway System
O-D	origin and destination
ORDC	Ohio Rail Development Commission
OSHP	Ohio State Highway Patrol
OTC	Ohio Turnpike Commission

OTS	Office of Technical Services
PIERS	Port Import Export Reporting Service
PM	particulate matter
PTO	Public Transportation Office
RTC	Regional Transportation Council
SIS	Strategic Intermodal System
SPR	Statewide Planning and Research
STB	Surface Transportation Board
STIP	Statewide Transportation Investment Program
STP	surface transportation program
TAC	Technical Advisory Committee
TCRP	Transportation Congestion Relief Program
TDM	travel demand model
TraCS	traffic and criminal software
U&CP	Office of Urban and Corridor Planning
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
UTRC	Urban Transportation Research Center
VIUS	Vehicle Inventory and Use Survey
VMT	vehicle miles traveled
WIM	weight in motion
WisDOT	Wisconsin Department of Transportation
WSDOT	Washington State Department of Transportation
WTP	Washington Transportation Plan

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