

# Report Summary

## Chapter I Freight, the Economy, and Transportation Planning

### Freight's Importance to the Economy

Freight plays a major role in moving the Oregon economy. Most freight moves by truck, rail, waterway, air, and pipeline, with trucks accounting for the greatest volume of freight moved nationally and in Oregon. Various estimates show that freight transportation accounts for between five and 15 percent of the national and state economy depending on the type of measure used. National-level forecasts show that shipments of freight by air and by rail intermodal will increase fastest in the future, while shipments by water and by pipeline will grow the slowest.

Among Oregon's leading freight-related businesses in terms of employment are Freightliner, Greenbrier (Gunderson), United Parcel Service, Consolidated Freightways, USF Reddaway, and the Union Pacific Railroad. Several airlines employ substantial numbers of people in Oregon, some of whom are involved with air freight shipments. Oregon is relatively more dependent than any other western state on wholesale trade and distribution activities. A number of large distribution facilities are located in Portland and elsewhere in the state, primarily in the I-5 corridor. NW Natural is Oregon's largest pipeline company in terms of employment, and is among the state's leading employers overall.

Oregon ranked 10<sup>th</sup> nationally and 4<sup>th</sup> in the western U.S. in value of exports per person in 1997. Air transportation accounted for a very small amount of Oregon's freight tonnage moved in international markets but for about one-third of the value of foreign trade. High technology equipment accounted for about half of Oregon's foreign trade by value in 1995, up from 30 percent in 1990. Crops and food products accounted for another 25 percent by value in 1995, down from about 28 percent in 1990, and 15 percent in 1995 was attributable to forestry and paper products, down from 26 percent in 1990.

Japan, Canada, South Korea, and Taiwan are Oregon's major trading partners, accounting for about 50 percent of the value of exports in 1997. Economic problems in Asia contributed to a slowing of Oregon's foreign trade in 1998. Continued slowing is expected in 1999, with longer-run expectations being more positive.

In part due to the North American Free Trade Agreement, Oregon's trade with Canada and Mexico is growing. Canada accounts for over 90 percent of Oregon's trade with the two NAFTA partners. Trucks move the vast majority of Oregon's freight to and from Canada and Mexico.

For each 100 jobs in freight-related transportation sectors of Oregon's economy, approximately 85 to 150 additional jobs are generated through multiplier effects. The multiplier effect is less for the wholesale trade sector than for the manufacturing and transportation, communications, and public utilities sectors. According to Port of Portland information, about 20 percent of all jobs in the Portland region are influenced by the port's marine and aviation activities. About 106,000 jobs are related to aviation activities and another 60,000 are related to marine activities. For port districts other than the Port of Portland, about 4,150 jobs are dependent on transportation. Over 60 percent of these jobs are associated with businesses in the port district for the Oregon International Port of Coos Bay.

## **Federal Freight Policy**

The federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 was the first federal transportation legislation to explicitly recognize the importance of freight mobility. ISTEA included a variety of funding, planning, and other provisions and requirements to support state and regional governments in freight transportation planning activities. Subsequent to ISTEA, federal lawmakers passed other legislation addressing freight transportation in a variety of ways. The legislation included the National Highway System Designation Act of 1995 and in 1998, the Transportation Equity Act for the 21<sup>st</sup> Century. Further encouraging freight considerations in planning and programming activities was the U.S. Department of Transportation's creation of a National Freight Transportation Policy Statement and guiding principles in 1997.

## **Oregon Freight Planning**

In Oregon, the *Oregon Transportation Plan* and associated modal and topic plans address freight transportation through a number of policies and actions. In general, the policies and actions support accessibility, connectivity/linkages, safety, mobility, balance, and capacity of the freight transportation system. The *Oregon Transportation Plan*, *Oregon Rail Freight Plan*, and *Oregon Highway Plan* are the three plans providing the most direction regarding statewide freight transportation policies and actions.

Transportation corridor plans, local transportation system plans, and regional transportation plans for metropolitan areas identify objectives, actions, projects, and programs to address freight mobility and other related issues. When completed, corridor plans and transportation system plans are intended to be the sources of projects and programs included in the Statewide Transportation Improvement Program. Port districts and other local jurisdictions may identify local freight transportation projects independently of the STIP process.

## **Freight Issues**

Concerns about accessibility, capacity, connectivity, environmental sensitivity, land use compatibility, reliability, and safety and other freight-related issues vary over time and location. Population and economic change, new legislation, improved technology, and different funding levels are among the factors influencing change in freight mobility and

similar issues. Successfully adjusting to changing circumstances is critical to efficiently moving freight.

## **Chapter II Oregon's Freight Transportation System**

Much of Oregon's highway, rail, waterway, and pipeline freight moves along the I-5 and I-84 corridors. The U.S. 97 corridor is the most important north-south corridor for freight movements east of the Cascade Mountains. The OR 58 corridor and southern part of the U.S. 97 corridor serve as important alternatives for freight moving between the Willamette Valley and northern California.

### **Highways**

In the Portland area, about 10,000 trucks daily cross the I-5 Interstate Bridge, and about 7,000 daily cross the Glenn Jackson (I-205) bridge. Depending on location, truck volumes on interstate highways in the Portland area range from about 5,000 to 15,000 daily. Truck volumes on I-5 range from 10,000 to 15,000 daily in the Salem and Eugene areas, and 5,000 to 6,000 daily in the Medford area.

Most truck freight moves on the National Highway System, which accounts for about 49 percent of Oregon's total highway mileage. The NHS also includes about 50 miles of connector roads and streets to intermodal transportation facilities. The State Highway Freight System includes about 28 percent of the state's total highway mileage.

### **Rail**

Two major railroads, 18 short-line railroads, and two terminal railroads operate on 2,500 miles of rail line in Oregon. The Union Pacific accounts for the most rail mileage, about 36 percent of the state's total. Short-line railroads account for about half of the total rail mileage. Among short-line railroads, the Central Oregon and Pacific operates the most mileage— about 370 miles.

### **Waterways**

Twenty-three port districts operate on the Pacific Coast and along the Columbia River. The majority of marine freight moves on the Columbia River below Portland and on the Willamette River in Portland. The Columbia-Snake River System is navigable by barge above Portland as far as Lewiston, Idaho, 465 miles from the Columbia's mouth. Much of the material moved by barge is transloaded to/from ships, primarily in Portland. Major ship terminals also are located in the Coos Bay-North Bend area.

## **Pipelines**

Oil pipelines extend from the Puget Sound area along I-5 to Portland and southward as far as Eugene, and from the Oregon-Idaho border near Ontario to the Oregon-Washington border near Umatilla. Short oil-products pipelines serve the Portland International Airport and the Union Pacific's Hinkle rail yard near Hermiston. Oil pipeline-truck terminals are located in Portland, Albany, and Eugene.

Natural gas transmission lines extend along the I-5 corridor from Portland to the Grants Pass area, along I-84 from the Oregon-Idaho border near Ontario to the Oregon-Washington border near Umatilla, and from the Oregon-Washington border near Umatilla to the Oregon-California border south of Klamath Falls. Gas distribution lines extend from the transmission lines to most of the state's larger communities.

## **Intermodal Facilities**

Intermodal freight facilities are located in at least 25 Oregon communities. Over half of the state's marine terminals are located in Portland, and about 20 percent are located in the Coos Bay/North Bend area. Deep-water freight terminals, which also are located in Newport, Astoria, and Columbia County, are important "staging for export" facilities. Shallow-water freight terminals are located along the Columbia at The Dalles, Biggs, Arlington, Boardman, and Umatilla.

Oregon's largest truck-rail intermodal yards are located in Portland. Most of the state's truck-rail reload facilities are in the Portland area and elsewhere in the Willamette Valley along the Union Pacific and the Burlington Northern and Santa Fe railroads. Grain is brought in by truck and shipped out by rail at seven large (over 500,000 bushels of capacity) elevators in northeastern Oregon, near Ontario and Klamath Falls, and in the Willamette Valley. Considerable grain also is shipped through marine terminals.

Each of Oregon's eight airports with regularly scheduled commercial service handles air freight. Several general aviation airports also handle small amounts of air freight, mostly small packages.

## **Other Freight Generators**

Distribution centers and warehouses are concentrated near major highways such as I-5, I-205, and I-84. The majority of Oregon's truck terminals are located in the Portland and Medford areas. Much of the state's international air cargo moves through truck reload facilities in Portland and is shipped by truck to airports in Washington, California, and British Columbia.

Manufacturing plants are major generators and receivers of freight. In general, high technology products are accounting for an increasing share of manufactured goods movement, while timber and food products are accounting for a decreasing share. Timber

and food products businesses are leading employers and shippers of freight in many parts of the state outside the Willamette Valley. The Portland area accounts for about 50 percent of Oregon's manufacturing employment. The Eugene-Springfield, Salem, and Medford areas account for another 20 percent. Benton, Douglas, and Linn Counties are the leading manufacturing centers outside Oregon's metropolitan areas.

Timber is harvested in all but two of Oregon's counties. Lane, Douglas, and Coos Counties lead in timber harvest, together accounting for about 30 percent of the state's total. A number of Oregon timber companies import logs from other states and occasionally from foreign countries such as Chile.

More than 200 types of agricultural commodities are grown in Oregon, second only to California. Greenhouse and nursery crops, hay, cattle and calves, grass seed, and wheat are the leading commodities, together accounting for about 50 percent of the value of production. Marion, Umatilla, Clackamas, Linn, and Washington are the leading counties in value of farm and ranch sales.

Sand, gravel, and crushed stone account for about 75 percent of Oregon's non-fuel mineral production by value. Most of the production occurs in the Willamette Valley where it is used in the construction industry. Much of the state's mineral production moves by truck except where trains or barges provide viable alternatives.

Oregon ranks 13<sup>th</sup> among states nationally in value of fish landings. Clatsop and Lincoln Counties account for about 60 percent of total landings. After reaching harbor facilities, processed and unprocessed fish generally is shipped to markets by truck although some is shipped by air.

## **Commodity Movements**

Data from the federal *Commodity Flow Survey* show that Washington, California, and Idaho are the leading destination states for products shipped from Oregon. In 1993, trucks moved 64 percent of the value and 76 percent of the weight of shipments originating in Oregon. About 38 percent of commodities by value and 80 percent by weight were shipped less than 100 miles. Data from the *Oregon Freight Truck Commodity Flows* study generally are consistent with data from the *CFS*.

In tonnage, farm products and chemical products from other northwestern states and the northern Great Plains are the leading products shipped to Oregon by rail. Lumber and wood products are the leading commodities shipped by rail from Oregon to other states, primarily California and the Midwest. Portland is an important hub for commodities moving by rail.

Grains, forest products, and petroleum are the primary commodities shipped on the Columbia-Snake River System. Grain accounts for about 40 percent of the tonnage moved through terminals in Portland, which ranks 1<sup>st</sup> nationally in the export of wheat. Due to

declines in timber harvest, tonnages shipped through Pacific Coast marine terminals are declining. Tonnages are increasing slightly on the Columbia River above Portland.

Forecasts of commodity and industry growth nationally over the next 10 or so years generally show the most growth in electrical machinery, instruments, and transportation products, industries well-represented in Oregon's economy. Industry groupings based on natural resources, such as lumber and wood products, generally show the least growth or greatest declines nationally and in Oregon. Longer-term forecasts of commodity flows in the Portland area show substantial increases over the next 30 to 40 years. The shares of total tonnage accounted for by trucks and by barge are expected to decrease slightly, while the rail share is expected to grow. Air cargo is expected to grow the fastest, but will remain less than one percent of the total. Metro is incorporating data and other information about commodity flow into Portland area travel modeling procedures.

## **Chapter III Stakeholder Input, System Performance, and Concerns and Needs**

Information about concerns and needs has been obtained in several ways. Interviews with shippers, carriers, and other freight representatives were conducted as part of the work done for Oregon's Intermodal Management System (IMS). Based on these interviews, a list of 210 perceived needs/solutions was obtained. Additional information on needs was collected for the "Oregon Freight Concerns" report that ODOT produced in March 1998. Sources included Metropolitan Planning Organizations, port districts, and various ODOT organizational units.

### **Performance Measures**

Performance measures and other data have been used to supplement information obtained from stakeholders and other knowledgeable persons. Capacity, safety, and time delay are IMS performance measure categories developed for connector roads and highways. For each performance measure, a quantitative or qualitative threshold value helps to signal whether a deficiency may exist. ODOT currently is collecting performance measures and other data for the IMS database.

The *Oregon Highway Plan* update identifies several freight performance measures addressing volume/capacity (highway mobility) standards, accidents, reduction of freight movement barriers, and improvements to intermodal connectors. The Highway Plan does not establish thresholds for satisfactory performance, suggesting that base-year numbers or rates will be established for purposes of tracking and comparison.

ODOT's Motor Carrier Transportation Division has developed a number of performance measures associated with three overall safety assistance program objectives. In general, the

objectives call for a 30 percent reduction over three years in a) sleep/fatigue-related truck crashes, b) truck crashes resulting from unsafe driver behavior in 12 corridors with high numbers of crashes, and c) number of intrastate motor carriers put out of service due to truck mechanical problems.

## **Concerns and Needs**

Concerns and needs are addressed for freight moving by roads, rail, waterways, air, and pipeline. Where possible, performance measure data and concepts are used to help identify needs. Information from plans and other sources supplement performance measure and other data. The result is the identification of concerns and needs based on a blend of modeling, technical data and estimates, public input, and other information.

## **Roads**

**State Freight System Highways.** Based on mobility standards in the Highway Plan update and data developed for the Highway Economic Requirements System (HERS), about 60 percent of Portland-area Freight System mileage exceed Highway Plan mobility (congestion) standards. Outside the Portland area, about six percent of Freight System mileage exceeds Highway Plan mobility standards. Rural highway segments account for about 94 percent of congested Freight System mileage outside the Portland area. The greatest rural concentrations of congested Freight System mileage are on I-5 in the Willamette Valley, OR 58 east of Eugene, and U.S. 26 between Portland and the Oregon Coast.

About 17 percent of State Freight System mileage has pavement in poor or very poor condition. This compares with 23 percent of highways statewide with poor or very poor pavement conditions. I-84 and U.S. 97 each account for about 20 percent of the less-than-fair mileage on the Freight System, more than any other highway. U.S. 20 accounts for another 16 percent of pavement in poor or very poor condition.

Nearly 27 percent of bridges on the State Freight System are functionally obsolete, 1 percent are structurally deficient, and 72 percent do not have structural or functional problems. Statewide, 26 percent of highway bridges are functionally obsolete, 2 percent are structurally deficient, and 71 percent are neither.

No bridges over Freight System highways have overhead clearance of less than 14 feet, the legal minimum height. One tunnel and bridges at 14 locations on the Freight System have an overhead clearance from 14 feet to 14 feet, six inches. The majority of these bridges are on I-5 at various locations and on OR99E in Portland. Four Freight System bridges are weight-restricted. Four of the five bridges are on routes between I-5 and the Oregon Coast.

Sharp roadway curvature and other geometric problems result in limitations on the length of tractor-trailer combinations allowed on Oregon's highways. U.S. 20 between Newport and Philomath is the only Freight System highway segment with limitations for legal-width tractor-trailer combinations over 60 feet in length.

About two-thirds of highway truck crashes occur on the State Highway Freight System. This reflects the importance of Freight System highways for truck freight movements. The number of Freight System truck crashes appears to be increasing at a faster rate than truck crashes on all roads statewide. Crash rates for trucks are considerably lower than for all vehicles, and are lower for Freight System highways than for all highways statewide. The percentage of preventable truck crashes is about the same for Freight System highways as for all highways, and has decreased slightly in recent years.

To help reduce truck crashes, ODOT and other agencies are increasing traffic enforcement and vehicle inspections established through ODOT's Commercial Vehicle Safety Plan. Existing truck safety budgets are being supplemented with TEA 21 safety incentive funding. More State Police officers are needed to help enforce traffic safety laws. Further helping to reduce truck crashes are safety, modernization, preservation, and other improvements including those associated with Intelligent Transportation System technologies.

Over a 20-year period from 1998 to 2017, State Highway Freight System needs are estimated at about \$450 million annually, 43 percent of needs for all state highways. Nearly 70 percent of Freight System needs are for modernization (additions of capacity such as new lanes), preservation (pavement upgrades), and bridge improvements.

**Other Highways.** Problems that affect State Freight System highways also affect highways off the Freight System. Congestion is a growing problem for a number of metropolitan area highways off the Freight System. Congestion also is growing on non-Freight System highways in larger nonmetropolitan communities. Related to congestion are problems local freight haulers experience when trying to cross or enter highways during periods of heavy traffic volumes.

Concerns in rural areas center less on congestion and more on problems such as pavement in poor condition, inadequate bridges, or sharp roadway curvature. Among highways off the Freight System, only six segments have pavement weight restrictions. Pavement conditions, however, are worse for highways off the Freight System than for highways on it. About 27 percent of the non-Freight System mileage has poor or very poor pavement conditions. Only two structures over non-Freight System highways have less than 14 feet of clearance, while structures over non-Freight System highways in 21 locations have overhead clearance between 14 feet and 14 feet six inches. Forty-five bridges on non-Freight System highways have weight restrictions. Numerous segments of non-Freight System highways have length and width restrictions.

**Local Streets and Roads.** Identification of needs to improve freight movements on local streets and roads is the jurisdiction of counties, cities, and regional governments. Metropolitan Planning Organizations have major responsibilities for identifying needed improvements in Oregon's four metropolitan areas. Federal law requires that federally funded projects in MPO transportation improvement programs be included in the Statewide Transportation Improvement Program. Each MPO has completed draft or final regional transportation plans, and all four plans address freight needs to varying degrees.

For the 1999 *Oregon Highway Plan*, ODOT estimated costs of improvements to intermodal connector roads on the National Highway System. Connector roads are included on the NHS if they connect highways to major intermodal facilities as defined by Federal Highway Administration criteria. Freight intermodal connector roads meeting federal criteria are located in Astoria, Boardman, Coos Bay/North Bend, Eugene, and Portland. Connector needs included those for pavement treatments, roadway improvements, and construction or lengthening of grade-separated structures.

## **Rail**

Improving trackage in poor condition is the most significant need for Oregon's Class III short line railroads. ODOT's Rail Division estimates that about 12 percent of Oregon's rail system is in poor condition. Other needs identified by the Rail Division include increasing tunnel clearance through the Siskiyou and Cascade Mountains, replacing a rail bridge over the Coos Bay estuary, building another track across the Columbia River in the Portland-Vancouver area or nearby, and purchasing specialty rail cars.

The Port of Portland has identified a number of needed improvements, including trackage expansion in the Rivergate Industrial District, improvements at T-4, access to proposed new terminals on Hayden Island, and additional trackage in the Kenton area. The Port of Morrow has identified the need for new trackage to construct a spur line between the Union Pacific main line and the port's container facility.

About 125 at-grade rail crossings are located on highways. Of these, seven are on State Freight System highways. One of the State Freight System crossings is on a Class I major railroad; the others are on Class III railroads. Grade-separation projects help improve safety, reduce truck travel time, and decrease the cost of signal maintenance. Where crossings cannot be grade-separated or closed, resources are targeted to increasing safety through enforcement, automated devices, and other programs.

## **Waterways**

**Coastal Concerns and Needs.** Maintenance dredging is a major concern for ports on the Oregon Coast. Concerns that federal funding may decline or be eliminated has heightened concerns about how to pay for future dredging needs. The Oregon Economic Development Department and its Ports Advisory Council have been working with coastal port districts to estimate funding gaps and ways to pay for needed improvements.

**Lower Columbia River Concerns and Needs.** To compete with ports that have deeper marine channels, ports along the Columbia River from Portland to the mouth are working with the U.S. Army Corps of Engineers to assess the environmental impacts associated with deepening the navigation channel from 40 to 43 feet. The Oregon Transportation Commission has endorsed efforts to develop an economically viable and environmentally sound plan to deepen and maintain the channel. The Corps also is conducting environmental analyses for channel improvements to serve proposed Port of Portland marine facilities on Hayden Island.

**Willamette River Concerns and Needs.** Most of Portland's marine terminals for ocean shipping are located along the lower Willamette River below the Broadway Bridge. A small amount of barge traffic occurs above Portland as far as Newberg. Over 100 years of commerce along and on the river have contributed to the accumulation of hazardous materials on the river bottom. Concerns include adverse environmental impacts that could occur with dredging of the river bottom, along with adverse economic impacts that could occur as environmental concerns are addressed.

**Concerns and Needs above Portland.** River drawdown to accommodate salmon recovery could substantially affect barge navigation above Portland, especially from the John Day Dam eastward. During the 1990s, numerous efforts have been made to identify options that would contribute to salmon recovery while meeting the needs of other river users. Several studies are currently underway to evaluate various action and no action alternatives. These include drawdown studies for the lower Snake River and for the Columbia River above the John Day Dam. Analysis for the latter includes a John Day Drawdown Study which is investigating two drawdown options. The first would lower the operating level by 50 feet. The second would breach the dam or route water around it.

Barge traffic to the Ports of Arlington, Morrow, and Umatilla would be affected to varying degrees by drawdowns associated with the John Day pool. The Port of Morrow and the Corps of Engineers currently are investigating the feasibility of constructing a larger turning basin where an entire tow of barges could be brought alongside marine terminal facilities. Feasibility of constructing the turning basin or other improvements would be influenced by the implementation of options being investigated for the John Day Drawdown Study. The second drawdown option currently being studied likely would result in the end of all or much of the commercial navigation presently occurring above the John Day Dam.

Construction of a proposed petroleum pipeline from the Puget Sound to the Tri-City area in Washington would eliminate or substantially reduce the feasibility of shipping petroleum upriver on barges. This in turn could result in higher prices for commodities shipped down river if barging company profitability is adversely affected by the loss in petroleum traffic. Elimination of petroleum shipments upriver would mean the closure of a marine terminal at the Port of Umatilla where petroleum is reloaded to trucks and shipped by pipeline to the Union Pacific's Hinkle rail yard near Umatilla.

## **Air**

The 1997 *Oregon Continuous Aviation System Plan* identifies a number of enhancements that would directly or indirectly enhance air freight mobility. These include developing commercial service at five airports without such service, expanding the air cargo apron at the Eugene Airport, making improvements to air cargo facilities and the Foreign Trade Zone at the Rogue Valley International-Medford Airport, and developing a parallel runway at the Portland-Hillsboro Airport.

ODOT currently is preparing an Oregon Aviation Plan which will include policies and actions to address various issues associated with Oregon's air transportation system. Individual airports currently are updating airport master plans which identify needs for

various types of improvements. For air cargo facilities, this includes the cargo apron, cargo building area, dock facilities, parking spaces, and cargo site area.

## **Pipelines**

**Petroleum.** Petroleum pipeline capacity in Oregon generally appears appropriate to meet current and near-term needs. As population and economic activity increase, petroleum pipeline companies may install larger lines or improve operational efficiency to accommodate anticipated needs.

The Olympic Pipeline Company's line between the Puget Sound and Portland is operating at or near capacity. This means increases in demand in the Portland area may need to be met from other sources such as ships or trucks. Construction of the Cross Cascade Pipeline from the Puget Sound area to the Tri-City area in Washington would free up capacity on the line from the Puget Sound to Portland. As noted above, construction of the Cross Cascade Pipeline could eliminate pipeline service from a Port of Umatilla marine terminal to the Union Pacific Hinkle rail yard near Hermiston.

**Natural Gas.** Deregulation has resulted in the natural gas becoming more competitive with other fuels and greater usage of gas especially for generating electricity. In the near term, NW Natural will be constructing a new 24-inch line between suburban Portland and the NW Natural storage field near Mist, Oregon. Eventually the pipeline will tie into the Northwest Pipeline Corporation's main line near Mollala. Natural gas is not currently available to a number of communities in Oregon. The largest unserved communities are Coos Bay and North Bend. Other unserved areas include a number of cities on the Oregon Coast, John Day, Burns-Hines, and Wallowa County.

## **Chapter IV Next Steps**

Next steps represent opportunities to refine and implement existing transportation policies and plans, fill gaps in information, identify freight transportation needs and concerns, and address selected other topics such as freight funding sources and Intelligent Transportation Systems. Further discussion could include a) identifying resource requirements to carry out the next steps, and b) prioritizing the steps for implementation. Other steps may be added as ideas and topics emerge. The following summarizes actions that might be taken to move forward with the next steps.

### **Freight Transportation Policy and Planning**

- Update freight policies and actions as needed in the *Oregon Transportation Plan*,
- Consider developing a state freight policy,
- Continue working to address air freight issues in the Aviation Plan,
- Assist in implementing policies and issues in the Highway Plan,
- Update ODOT's rail freight and passenger plans,

- Explore the need to develop a marine freight plan, and
- Continue to assist ODOT regions, MPOs, and others with freight planning.

### **Information Gaps**

- Install additional ATRs to monitor truck traffic volumes,
- Develop better commodity flow information statewide,
- Further develop information on freight's importance to Oregon's economy,
- Work with the ODOT Research Group and others to identify freight research topics, and
- Consider conducting a customer satisfaction survey.

### **Needs Identification**

- Continue monitoring Columbia River deepening and drawdown issues,
- Continue developing the Intermodal Management System,
- Set up a STIP process to improve highways with freight impediments

### **Other**

- Prepare a study on freight funding sources,
- Continue to identify and develop ITS applications for freight movements, and
- Develop user friendly information about freight transportation.