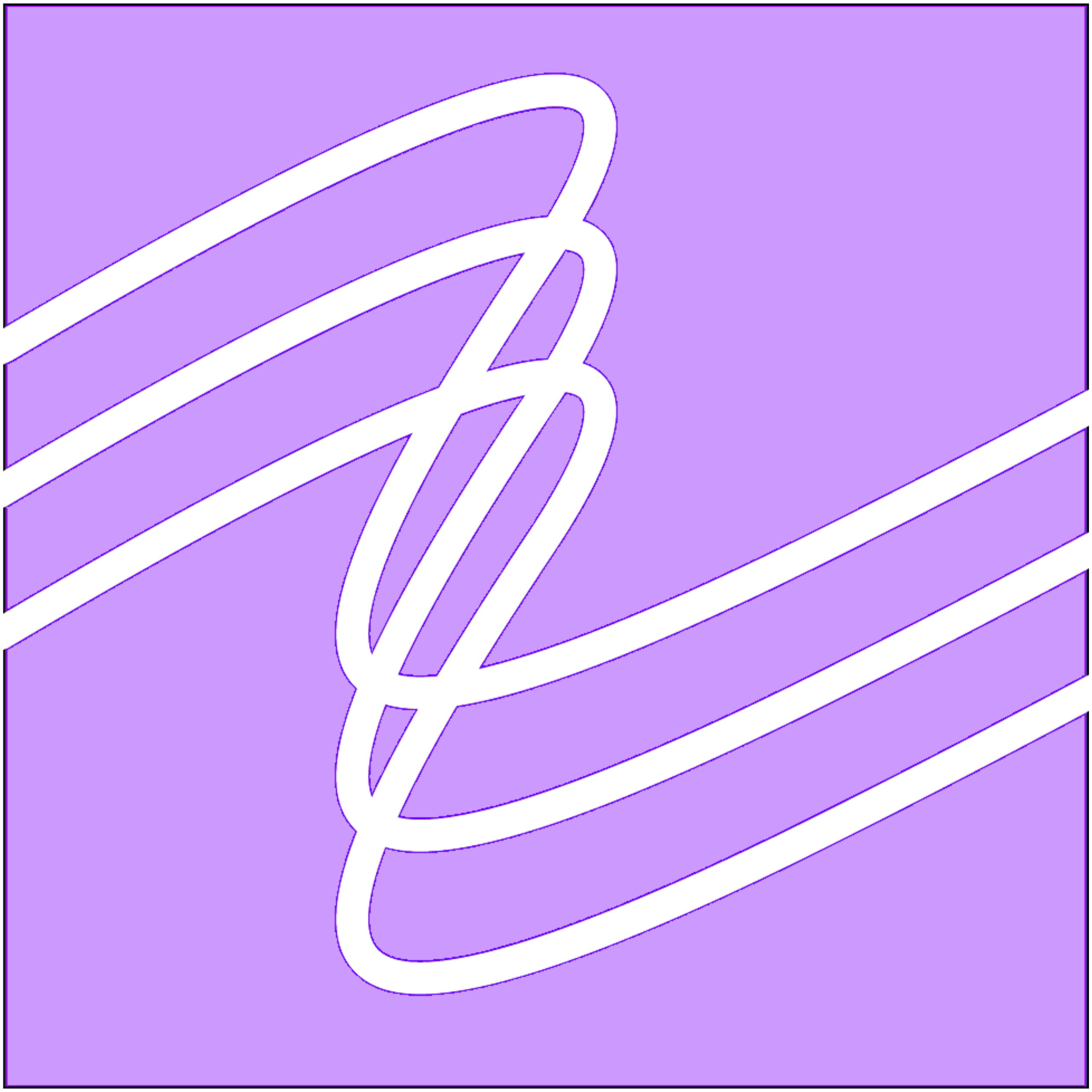
OREGON FREIGHT PLAN

Adopted June 15, 2011 (Revised November 17, 2017)



An Element of the Oregon Transportation Plan

THE OREGON DEPARTMENT OF TRANSPORTATION

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Oregon Freight Plan

AN ELEMENT
OF THE OREGON
TRANSPORTATION PLAN

Prepared By
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And
ODOT Freight Mobility Unit
Adopted
June 15, 2011

Amended
November 17, 2017
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Oregon Freight Plan

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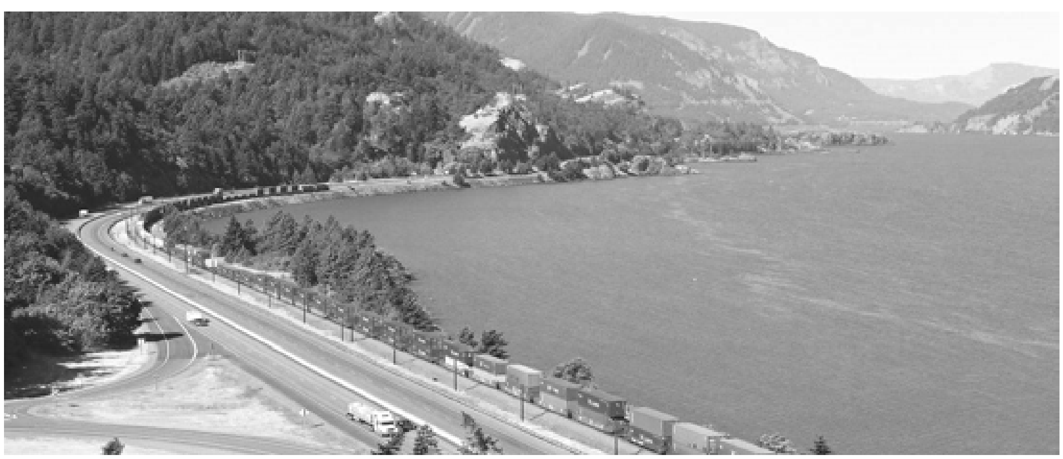
INTRODUCTION

Preserving and enhancing the efficiency of Oregon's freight system is essential to supporting economic development and the quality of life in Oregon. Whether it is carrying goods from Oregon manufacturers, farmers and other producers to markets, or delivering goods to homes and workplaces, the movement of freight supports the daily functioning of the state's businesses and residents. In 2008, manufacturing, agriculture, construction and retail trade (freight-dependent industries) provided 700,000 jobs and generated $29 billion of personal income.[1] Transportation and warehousing accounted for another 70,000 jobs and $3.2 billion of personal income.

This plan provides a roadmap for the Oregon Department of Transportation (ODOT), other state and local agencies, tribal governments and the private sector to work together to preserve and enhance the state's freight system. Implementation of the OFP will ensure a future freight system that supports diverse industrial sectors, including both traditional resource-based industries (like agriculture and forestry) and the modern high-tech sectors. It will be a system that ensures the safety of its users, connects businesses with their supply chains and global markets and provides steady employment while incorporating stewardship of natural resources.



1 U.S. Bureau of Economic Analysis, Regional Economic Accounts, State Economic Profiles.

Oregon Transportation Plan Vision

> *By 2030, Oregon's transportation system supports people, places and the economy. We travel easily, safely and securely, and so do goods, services and information. Efficient vehicles powered by renewable fuels move all transportation modes. Community design supports walking, bicycling, travel by car and transit wherever appropriate. Our air and water are dramatically cleaner, and community sensitive and sustainable transportation solutions characterize everything we do.*
>
> *Oregonians and visitors have real transportation choices and transfer easily between air, rail, motor vehicles, bicycles and public transportation while goods flow just in time through interconnected highway, rail, marine, pipeline and air networks. Our communities and economies – large and small, urban and rural, coastal and mountain, industrial and agricultural – are connected to the rest of Oregon, the Pacific Northwest and the world. Land use, economic activities and transportation support each other in environmentally responsible ways.*
>
> *We excel in using new technologies to improve safety and mobility. We maximize the use of existing facilities across traditional jurisdictions and add capacity strategically. Public/private partnerships respond to Oregonians' needs across all transportation modes. Transportation system benefits and burdens are distributed fairly, and Oregonians are confident transportation dollars are being spent wisely. By 2030, Oregonians fully appreciate the role transportation plays in their daily lives and in the region's economy. Because of this public confidence, Oregonians support innovative, adequate and reliable funding for transportation.*

The OFP is a multimodal topic plan as required by the 2006 *Oregon Transportation Plan* (OTP). The OTP Vision defines the kind of transportation future we want to build and the outcomes we want to achieve. As an element of the OTP, the OFP will implement the OTP Vision.

The OTP includes a general discussion of freight in its identification of goals, policies and strategies for the state's multimodal transportation system and calls for the development of strategies and actions to implement the freight goals and policies of the OTP.[2] The OFP focuses more specifically on the economic benefits that a strong freight transportation system will support.

[2] The *Oregon Transportation Plan* is available online at: https://www.oregon.gov/ODOT/Planning/Pages/Plans.aspx

Oregon Freight Plan Vision

> *By 2035, Oregon benefits from a reliable, multimodal freight transportation system that supports its quality of life. This multimodal freight transportation system supports a healthy economy by safely and efficiently moving goods within Oregon, regionally, nationally and internationally. The quality, dependability and efficiency of Oregon's multimodal freight transportation system encourage businesses to remain in and move to Oregon, providing jobs in a diverse set of industries.*

PURPOSE STATEMENT

A Freight Plan Steering Committee of freight industry and public sector stakeholders guided the development of the *Oregon Freight Plan (OFP)*. The committee developed the following purpose statement that helps focus the OFP vision:

> *The purpose of the Oregon Freight Plan is to improve freight connections to local, Native American, state, regional, national and global markets in order to increase trade-related jobs and income for workers and businesses.*

To achieve the purpose statement, the *Oregon Freight Plan*:

- Supports identifying, prioritizing and facilitating investments in Oregon's highway, rail, marine, air and pipeline transport infrastructure to advance a safe, seamless multimodal and interconnected freight system;
- Identifies institutional and organizational barriers to an efficient and effective freight transportation system in Oregon, and develops strategies for addressing issues associated with overcoming these barriers; and
- Adopts strategies for implementation of OTP goals and policies related to the maintenance and improvement of the freight transportation system.

PLAN DEVELOPMENT

The OFP was developed with the involvement of a diverse group of organizations and stakeholders, including the Oregon Transportation Commission (OTC); the OFP Steering Committee; the Oregon Freight Advisory Committee (OFAC); other freight transportation, industry, land use and environmental experts; tribal governments; regional and local governments; and other stakeholders. The process by which the OFP was developed is described in more detail in Chapter 1.

The OFP is informed by a series of topical technical papers developed in coordination with the Working Groups and Steering Committee during 2009 and 2010.

Using this technical input and with the guidance of the Steering Committee and Working Groups, the OFP was developed to:

- Describe the economic structure of the state's freight industries and the freight infrastructure that supports these industries and movements;
- Analyze impacts of potential changes in commodity flows, the economy and other factors on the freight system;
- Discuss possible implications of climate change on freight movements;
- Present options for financing the state freight system and for evaluating the relative importance of undertaking specific improvements that would enhance freight movement; and
- Present strategies for ensuring a safe, efficient and sustainable freight transportation system.

THE OREGON ECONOMY

Understanding the structure of the Oregon economy and how it will grow and change in the future is critical for understanding the needs of the state's freight transportation system because:

- The industries that comprise the economy and their supply chain and logistics systems determine the type of freight services that will be required.
- The growth of the overall economy and specific industry sectors will determine future freight demand and the growth rate for modal services.
- The relative economic growth by region will determine where freight modes will experience demand and where new connections to the freight system will be required.

Two key indicators of the future health of the Oregon economy, Gross State Product (GSP) and employment are projected to grow over the next 25 years. Oregon's GSP, a measure of the value added to products and services by all Oregon businesses and industries, is projected to top $310 billion,[3] by 2035

[3] Real GSP in year 2000 dollars.

growing by 121 percent.[4] Total non-farm employment in Oregon is projected to grow to 2.19 million jobs by 2035, an increase of 34 percent from 2009. Slower growth in employment as compared to GSP is an indication of a shift in the Oregon economy to higher value products and increasing labor productivity. This means that demand for freight transportation may grow faster than employment and come from different industrial sectors than it has in the past.

The Oregon Office of Economic Analysis (OEA) estimates that Oregon is the ninth most trade-dependent state in the nation.[5] The ranking illustrates the importance of export-oriented sectors, such as computer and electronics manufacturing, logistics and distribution, and processed foods to the Oregon economy.

Freight transportation demand is not only driven by the needs of Oregon's businesses. Growth and changes in the age and incomes of the state's population also determine consumer demands that must be supported by the freight system. Oregon's population is projected to grow approximately 34 percent between 2009 and 2035.[6]

4 Data from the Oregon Office of Economic Analysis (OEA), IHS Global Insight November 2009 data.

5 Oregon Business magazine: https://www.oregonbusiness.com/

6 The U.S. Census Bureau's projection to 2030 and Oregon's Office of Economic Analysis projection to 2030 differ by only 1.5 percent or about 57,000 people.

FREIGHT TRANSPORTATION DEMAND AND NEEDS OF OREGON INDUSTRIES

Analysis identified eight industries that represent freight-dependent industries that contribute significantly to Oregon's economy:

- High value product industries:
  - 1) Computer and electronics manufacturing; and
  - 2) Wholesale trade, footwear, apparel and recreation products.
- General manufacturing industries:
  - 3) Metals manufacturing;
  - 4) Machinery manufacturing;
  - 5) Food manufacturing; and
  - 6) Transportation equipment manufacturing.
- Natural resource-dependent industries:
  - 7) Agriculture, forestry, and fishing; and
  - 8) Wood and paper manufacturing.

In addition to these industries, the OFP analysis also identified the transportation, logistics and distribution industry as a critical freight-dependent industry cluster.

The growth of these industries, their products and the supplies they require explains the mix of commodities that will be shipped in the Oregon freight system, the modes that will experience growth in demand and the freight corridors that will see the most growth in freight traffic. A larger population will also increase demand for consumer goods.

Observations about anticipated future modal freight demand in Oregon include the following:

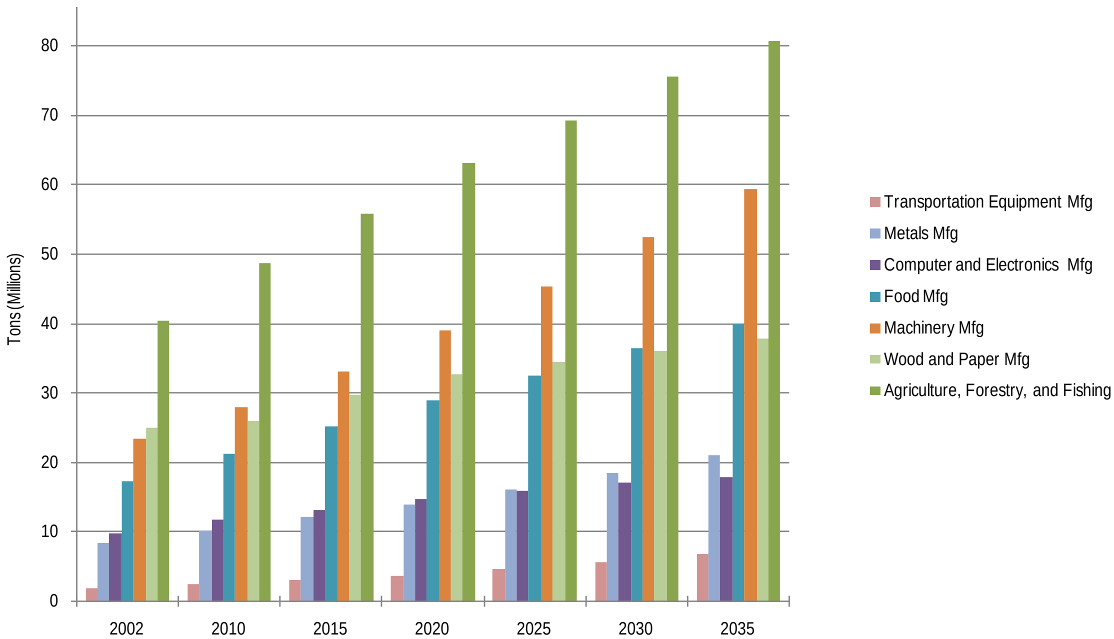
- The value of freight movements shows a steeper increase in value than tonnage as the economy continues its shift to higher value products.
- Trucking will continue to be the dominant mode for freight transport reflecting the shift towards higher value products, greater time sensitivity in product movements, and the ability of trucks to reach all parts of the state. This will create increasing demand on the state's highways and local roads, and metropolitan congestion will become an increasing concern for key industries.

- High level of rail demand from growth in consumer goods that are shipped by long haul intermodal and bulk commodity shipments through the state's seaports may create capacity issues. This could affect important industries in the state, such as the wood product and transportation equipment manufacturing industries, and may cause highway maintenance issues if these products are diverted to trucking.
- Substantial increase in airfreight is expected and will require improved access to major cargo airports.

Figure ES.1 highlights the anticipated growth in tonnage shipments of key industries. The industries currently responsible for the highest tonnage of shipments (agriculture, forestry and fishing; machinery manufacturing; and, food manufacturing) are expected to experience the highest growth.

Figure ES.0.1 Key Oregon Industries – Projected Growth of Related Commodity Tonnage with Oregon Origin*

2002 to 2035



Source: Oregon Commodity Flow Forecast data, October 2009.

*Retail trade and wholesale trade were not included in the tonnage overview.

While tonnage is a better indicator of the impact that product shipments have on the state's freight system, the value of shipments is an important indicator of the impact that an industry's shipments have on the economy. Viewed from this perspective, computer and electronics manufacturing contributes most to the value of shipments and is expected to continue to experience high growth. The major categories of freight-dependent industry sectors have their own unique transportation and logistics requirements, and a well-functioning freight system will need to meet all of these needs.

A survey for the OFP of shippers and carriers identified a number of critical issues:

- Highway congestion on major freight corridors, particularly within the Portland area and on major connector routes to airports, seaports, and freight terminals, affect many Oregon industries adding costs and uncertainty to shipments.
- Growing rail congestion on mainlines and at terminals and declining shortline services could limit the ability of the state to fully realize the potential of its rail system.
- Necessary road and bridge size and weight restrictions makes it critical to ensure that there is connectivity and redundancy in corridors that experience relatively high volumes of permitted truck loads. Lack of highway system redundancy, in certain major freight corridors, makes the state's freight system vulnerable to disruptions caused by weather, the need to move nondivisible loads in key corridors and congestion/safety related delays.
- Lack of rural highway infrastructure or motor carrier services to support rural shippers remains a critical issue in certain parts of the state where natural resource-based shipments occur.
- Lack of designated truck routes and maintenance of truck routes, particularly off the state highway system, can create gaps in the freight system and limit access via "last mile" connections to major freight terminals.
- Increased demand for urban and waterfront industrial land supply to support freight-dependent industries, such as wood and paper manufacturing, may conflict with residential and commercial developments in the same real estate markets. A focused effort to protect industrial land throughout the state is important to maintain Oregon industry competitiveness and viability.

THE FREIGHT SYSTEMS

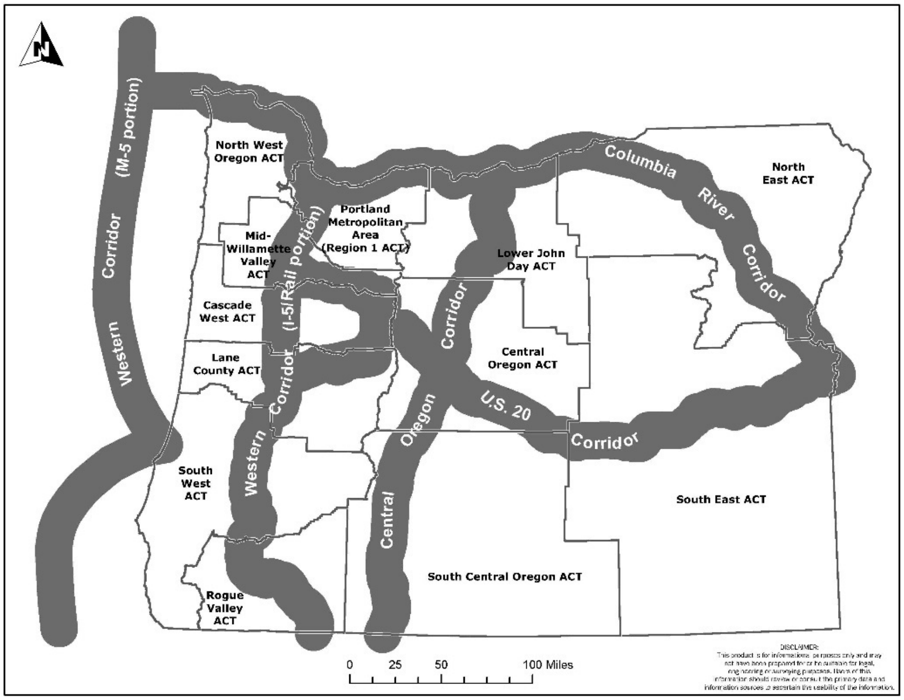
Freight mobility in Oregon is provided by a multimodal network that includes highways, local roads, rail, air, marine and pipeline operations. The transportation system includes the following infrastructure:

- 7,441 miles of state highways,
- 4,664 miles of other state roads,
- 26,861 miles of county roads,
- 10,011 miles of city roads,

- 38,666 miles of other government-owned roads,
- 2,086 miles of privately-owned route miles of rail track,
- 314 miles of publicly-owned rail track,
- 1,126 miles of Class I carrier operated rail track,
- 1,274 miles of Class III shortline-operated railroad track,
- 18 Class I railyards,
- Five deep-draft marine ports,
- Four shallow-draft marine ports,
- Numerous private marine terminals,
- 31 Category I, II, and III airports, and
- Nine pipelines to move petroleum and natural gas.

To ensure a long-term competitive advantage for Oregon freight-dependent industries, the OFP identifies a strategic network of multimodal freight corridors. This system has been developed with a focus on the strategic routes and modes used by the important freight-dependent industries to support their supply and distribution chains. The OFP defines multimodal corridors that include these strategic routes based on the value and tonnage of freight carried and connections to centers of economic activity. Figure ES.2 illustrates these corridors described in Chapter 4.

Figure ES.0.2 Freight Strategic Corridors in Oregon



FREIGHT AND CLIMATE CHANGE

According to the EPA, transportation sources account for one-third of carbon dioxide emissions which contribute to global climate change.[7] Research and policy have historically focused on reducing GHG emissions from passenger vehicles. However, freight sources are increasingly being considered due to their contribution to carbon dioxide, nitrogen oxides, sulfur dioxide and particulate matter emissions. The Transportation Research Board found that the conveyance of freight—via rail, commercial trucks, ships, boats and pipelines—accounts for 38 percent of all transportation-related carbon dioxide emissions[8] or 12 percent of all man-made sources. Thus, addressing freight emissions and efficiency has the potential for long-term effects on GHG emissions and public health parameters.

7 EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006, Table 2-14

8 "Potential Impacts of Climate Change on U.S. Transportation" (TRB 290), Table B-2

FUNDING

Federal, state and local governments provide much of the funding for freight transportation system improvements including highways, airports and certain marine port facilities. The private sector provides funding for those elements of the transportation system that are privately owned and operated, including marine terminals, pipelines and rail lines. Governments and the private sector sometimes work together in public-private partnerships to fund freight transportation improvements.

The state has shown foresight in the development of an array of multimodal funding sources, many of which involve partnerships with federal, local and private sources and across a number of different state agencies to leverage all available funding. For example, the Multimodal Transportation Fund (also known as *Connect*Oregon) is a model program that has supported numerous non-highway freight investments and that other states have sought to emulate.

The OFP presents a number of potential funding opportunities that should be explored. These include:

- Existing federal funding and financing programs that Oregon could take greater advantage of, such as:
  - CFR Title 23, Section 129 loans,
  - Transportation Infrastructure Finance and Innovation Act (TIFIA) credit assistance, and
  - Grant Anticipation Revenue Vehicles (GARVEE) bonds.
- State funding sources such as:
  - *Connect*Oregon,
  - Oregon Jobs and Transportation Act (JTA),
  - Oregon Transportation Improvement Acts (OTIAs), and
  - Public-private partnerships.

Chapter 6 discusses these funding sources in detail along with a number of other potential alternatives that would need to be authorized at the federal level and looks towards potential changes and opportunities for funding freight projects through programs that may be incorporated in reauthorized federal surface transportation funding legislation. Chapter 9 discusses the funding sources that were included in the Fixing America’s Surface Transportation (FAST) Act.

ISSUES AND STRATEGIES

Analysis and outreach efforts supporting the development of the *Oregon Freight Plan* have identified a number of issues that need to be addressed in order to ensure that Oregon has an efficient and sustainable freight transportation system that continues to support economic growth. These issues are summarized below.

- Issue 1. A clearly defined, multimodal "Strategic Freight System," is essential in order to focus freight system improvements, maintenance and protection on the freight corridors that play the most critical role in supporting the state's economy. Currently, this does not exist.
- Issue 2. Capacity constraints, congestion, unreliability, and geometric deficiencies in key highway, rail, air and marine freight corridors cause inefficiencies in statewide freight movement.
- Issue 3. Congestion and unreliable travel time on roads to access major intermodal facilities can cause disruptions to freight movement and industry supply chains.
- Issue 4. Improvements to the efficiency, reliability and safety of long-haul freight corridors require collaboration between Oregon and neighboring states in the region.
- Issue 5. Changes to the physical dimensions of a highway may either accommodate or restrict permitted loads throughout the entire state and can cause connectivity issues to key businesses and freight generating activities.
- Issue 6. Freight needs to be able to move throughout the state in a manner that is as safe as possible. Its movement may impact safety in Oregon communities and to the environment.
- Issue 7. Industrial land supply for freight-dependent land uses may be insufficient to meet future demand. Lack of necessary land use protections may threaten the viability of freight transportation systems.
- Issue 8. Freight emissions include pollutants such as GHGs and particulate matter that contribute to climate change and health risk concerns.
- Issue 9. National Environmental Policy Act (NEPA) review procedures and permitting requirements for freight projects involve complexities that, if overlooked, can result in negative impacts to project development and implementation cycles.
- Issue 10. New and emerging safety, security and environmental regulations, though beneficial, can be confusing to shippers and carriers and be expensive to implement.

- Issue 11. The freight system in Oregon lacks system redundancy in several key locations. This leaves it vulnerable to disruptions that threaten freight system continuity, especially during emergencies.
- Issue 12. Lack of a sustained source of statewide freight funding decreases the ability of the public sector to plan for long- and medium-term freight needs in a comprehensive manner.
- Issue 13. Limited availability of state transportation funds means that use of existing sources of funding must be effectively optimized.
- Issue 14. The lack of a continuous federal freight funding source makes it very challenging for Oregon to implement the ongoing planning and programming of freight projects. Those projects that are of regional or national significance should be eligible for federal participation and funding.
- Issue 15. The economic importance of freight is not always understood or appreciated by the public.

For each freight issue, Chapter 8 details strategies and actions that Oregon can use to implement the plan.

Plan Implementation

Implementation of the OFP strategies and actions will build on the planning framework established in the OTP and other modal and topic plans. This will include working with a variety of public agencies and private sector stakeholders through existing and new partnerships. Implementation of some of the strategies and actions can be accomplished in the short-term while others will require commitments over the longer term. Some may require legislative action or action by other governmental entities. Implementation will occur in phases and will require coordination with efforts to update other plans such as the modal and topic plans as well as regional and local transportation system plans. Funding availability will be critical to implementing many of the strategies and associated actions.

Some implementation actions can start soon after the plan is adopted. These include the following:

- Develop an Implementation Plan using the OTP key initiatives and *Oregon Freight Plan* purpose statement to provide a framework.
- Continue discussions to update Oregon’s transportation finance structure with stakeholders and the public.
- Develop performance measures and analytical tools for plan implementation.

- Seek freight stakeholder input on bottlenecks or choke points on the Strategic Freight System.
- Communicate the bottlenecks or choke point locations to infrastructure owners.

Introduction

1.0 Introduction

1.1 Overview of the Plan

Preserving and enhancing the efficiency of Oregon's freight system is essential to supporting economic development, prosperity and the quality of life in Oregon. Whether it is carrying goods from Oregon manufacturers, farmers and other producers to markets, or delivering goods to homes and stores for consumption, the movement of freight supports the daily functioning of the state's businesses and residents. In 2008 freight-dependent industries like manufacturing, agriculture, construction and retail provided 700,000 jobs and generated $29 billion of personal income.[9] Transportation and warehousing accounted for another 70,000 jobs and $3.2 billion of personal income.

Anticipated growth in Oregon's population, freight volumes and resulting congestion highlight the need to plan for transportation system improvements to meet requirements of shippers, carriers and other freight system stakeholders. Oregon's population is forecast to increase from 3.4 million people in 2000 to 5.2 million by 2035.[10] In 2008, roughly 389 million tons of freight worth about $242 billion moved on Oregon's transportation system.[11] These values are projected to grow to 651 million tons of freight worth $554 billion by 2035, even after taking the impacts of the recent recession into account.[12,13] This growth will increase infrastructure and capacity needs and impact industries, communities and the natural environment.

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9 U.S. Bureau of Economic Analysis, Regional Economic Accounts, State Economic Profiles.

10 Oregon Office of Economic Analysis Forecasts of Oregon's County Populations and Components of Change, 2000-2040. Release: April 2004. Website: https://www.oregon.gov/das/OEA/Pages/forecastdemographic.aspx

11 These values do not include freight movements that do not have an Oregon origin or destination.

12 Oregon Commodity Flow Forecast data. Prepared by Parsons Brinckerhoff using FAF2 commodity flow data, October 2009.

13 At the time of the OFP adoption by the OTC in 2011, Oregon was still recovering from the 2009 recession. The plan and data presented within the plan take into account the expected impacts of the 2009 recession on future freight growth. However, growth values are best estimates. Chapter 7 discusses general impacts on freight under several scenarios, including higher and lower than expected growth.

The *Oregon Freight Plan* (OFP) expresses a 25-year vision of a freight system that supports diverse industrial sectors, including both traditional resource-based industries (like agriculture and forestry) as well as the modern high-tech sectors. The freight system connects Oregon to the rest of the global supply chain while at the same time ensuring that all regions of the state have access to quality transportation services. It is a system that ensures the safety of its users while maintaining a sustainable future – socially sustainable, providing for the physical needs of the residents of the state; economically sustainable, providing steady employment and financing the transportation system; and, environmentally sustainable, incorporating stewardship of natural resources.

The OFP brings together issues affecting all freight-related modes of transportation and proposes strategies to maximize the effectiveness of the multimodal freight system. The OFP:

- Describes the economic effect of the state's freight-dependent industries, and the freight infrastructure that supports these industries and movements;
- Analyzes impacts of potential changes in commodity flows, the economy and other factors of the freight system;
- Discusses possible implications of climate change on freight movements;
- Presents options for financing the state freight system and for evaluating the relative importance of undertaking specific improvements that would enhance freight movement; and
- Presents strategies for creating and improving a safe, efficient and sustainable freight transportation system.

As a statewide plan adopted by the Oregon Transportation Commission (OTC), it will guide the Oregon Department of Transportation's (ODOT) freight-related actions and investments and guide freight planning in state, regional and local plans.

Oregon Transportation Plan Vision

> *By 2030, Oregon's transportation system supports people, places and the economy. We travel easily, safely and securely, and so do goods, services and information. Efficient vehicles powered by renewable fuels move all transportation modes. Community design supports walking, bicycling, travel by car and transit wherever appropriate. Our air and water are dramatically cleaner, and community sensitive and sustainable transportation solutions characterize everything we do.*
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The OFP is a multimodal topic plan as required by the 2006 *Oregon Transportation Plan* (OTP). The OTP Vision defines the kind of transportation future we want to build and the outcomes we want to achieve. As an element of the OTP, the OFP will implement the OTP Vision.

The OTP includes a general discussion of freight and calls for the development of the OFP to further its freight goals and policies.[14] The OFP focuses on the economic benefits that a strong freight transportation system will support.

[14] The *Oregon Transportation Plan* is available online at: https://www.oregon.gov/ODOT/Planning/Pages/Plans.aspx

Oregon Freight Plan Vision

> *By 2035, Oregon benefits from a reliable, multimodal freight transportation system that supports its quality of life. This multimodal freight transportation system supports a healthy economy by safely and efficiently moving goods within Oregon, regionally, nationally and internationally. The quality, dependability and efficiency of Oregon's multimodal freight transportation system encourage businesses to remain in and move to Oregon, providing jobs in a diverse set of industries.*

Oregon Freight Plan Initiation and Development

Over the last 20 years, ODOT and other state agencies have addressed freight in statewide multimodal, modal and topical transportation plans, including the 2006 *Oregon Transportation Plan* (OTP). The OTP includes a general discussion of freight in its identification of goals, policies and strategies for the state's multimodal transportation system. The OTP recommends that other multimodal, modal/topic and system plans further define the OTP's broad goals, policies, strategies and investment scenarios.[15] The OFP responds to this recommendation by taking freight planning in the state to the next level. It is the first plan at the state level focused entirely on the improvement of the freight system. The OFP builds on efforts of the OTC, the Oregon Freight Advisory Committee (OFAC), the state's ports, shippers, railroads and other public and private stakeholders.

Oregon's Freight Plan Purpose and Implementation Statements

A Freight Plan Steering Committee (See Appendix A) of executive-level industry and public sector stakeholders guided the development of the OFP. The committee developed the following purpose statement for the Plan that focuses the OFP vision:

> *The purpose of the Oregon Freight Plan is to improve freight connections to local, Native American, state, regional, national and global markets in order to increase trade-related jobs and income for Oregon workers and businesses.*

[15] Volume 1 of the OTP contains detailed information on OTP goals, policies, strategies and investment scenarios.

To achieve the state's freight planning goals, the *Oregon Freight Plan*:

- Supports identifying, prioritizing and facilitating investments in Oregon's highway, rail, marine, air and pipeline transport infrastructure to further a safe, seamless multimodal and interconnected freight system;
- Identifies institutional and organizational barriers to an efficient and effective freight transportation system in Oregon, and develops strategies for addressing issues associated with overcoming these barriers; and
- Adopts strategies for implementation of OTP goals and policies related to the maintenance and improvement of the freight transportation system.

As the guiding statement for the *Oregon Freight Plan* process, the purpose statement recognizes that freight system efficiency supports the competitiveness of the state's industries by providing more efficient access to domestic and international markets. Market competitive industries contribute to economic growth across the state. Finally, the OFP furthers the goals of the OTP, including the development of strategies to make freight movements more efficient and to lessen the impact on Oregon's communities and natural environment.

Freight Impacts

Development of the OFP required input by private and public stakeholders as a result of the vast impact of freight on communities, regions and the state. Public sector stakeholders rely on freight to support local, regional and state industries; provide jobs to constituents; and maintain a high standard of living. Private sector stakeholders rely on freight movements to and from various markets in an efficient and affordable manner. In turn, public and private stakeholders decisions affect the freight system and surrounding communities. The relationships between public and private sector actions and the freight system are briefly summarized in Figure 1.1.

Figure 1.1 Stakeholder Roles and Relationships

	How Stakeholders Impact Freight
Local Government	· Design and maintain local roads · Route of truck traffic through local communities · Make land use decisions that impact where freight-dependent industries are located and that impact how freight will interact with the community · Develop a local vision for portions of highways that also serve significant local needs · Work with railroads, trucking firms, shipping lines and others on the mitigation of impacts to the environment and communities
Regional Agencies and Groups (includes MPOs and ACTs)	· Support statewide decision-making by prioritizing and supporting selection of necessary regional transportation and freight projects · Consider local/regional transportation and freight issues if they impact the state system · Recommend (ACTs) or direct (MPOs) projects in their area or jurisdiction to receive federal funds
Port Authorities (Marine and Airports)	· Improve freight efficiency by managing and maintaining key intermodal freight facilities such as ports and airports, which improves economic opportunity and quality of life in the region and state. Ports and airports rely on the surface transportation infrastructure provided by railroads and road authorities to move goods.

State Agencies	· Plan for statewide improvements in the transportation and freight system · Design, construct, operate and maintain multimodal state facilities
Tribal Governments	· Consult with Tribal governments throughout the statewide and metropolitan planning and programming processes (23 USC 134 and 23 USC 135)
Private Sector	· Creates economic demand that generates freight traffic · Select modes and distribution patterns which will impact freight system efficiency, local/regional/state economies, environment and other critical factors

Source: Prepared by Cambridge Systematics, Inc. for the Oregon Freight Plan

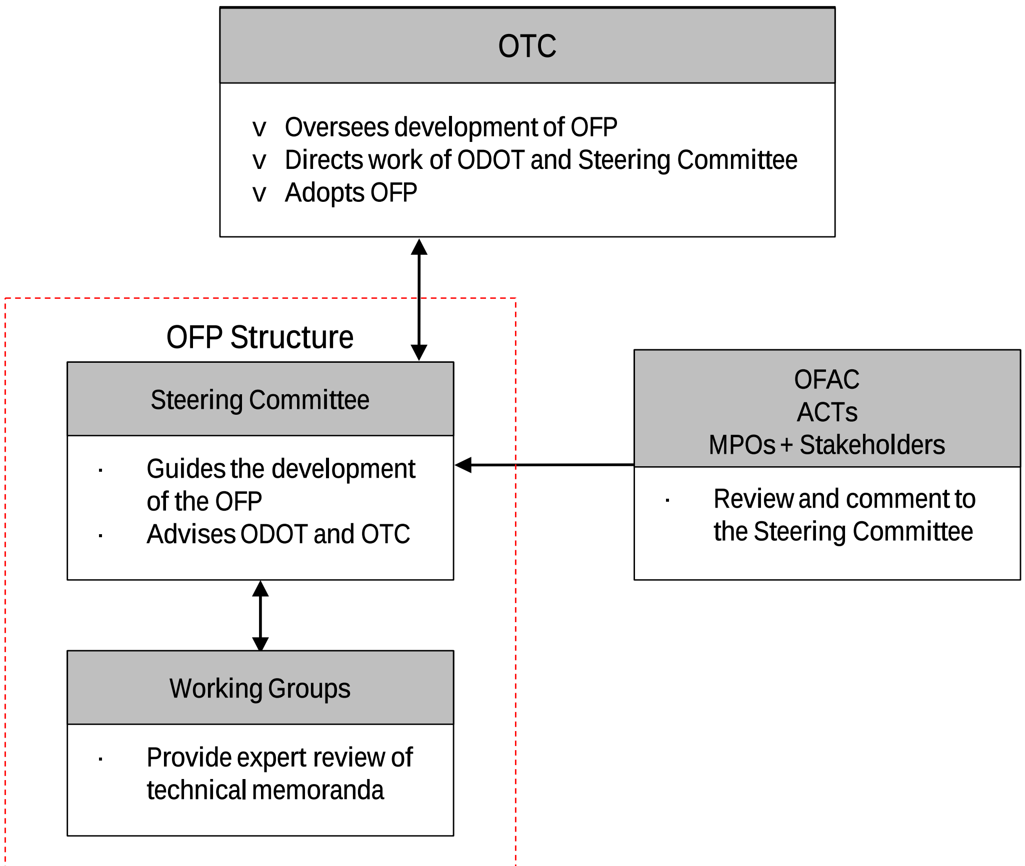
As a result of different levels of government jurisdiction over freight infrastructure, conflicts can arise. For example, a local community's decision to develop a pedestrian oriented streetscape that does not adequately support truck traffic impacts the efficiency and the quality of the regional and state freight system. This makes communication and cooperation among stakeholder groups essential.

Plan Development[16]

The Oregon Transportation Commission, OFP Steering Committee, other freight transportation, industry, land use and environmental experts, regional and local governments and other stakeholders were involved in the development of the *Oregon Freight Plan* (Figure 1.2). Groups included the following:

16 Information on the consultation process associated with the 2017 amendment can be found in Appendix A.

Figure 1.2 Stakeholder Groups Involved in the Development of the OFP[17,18]



- The Oregon Transportation Commission. The OTC, a five-member commission appointed by the Governor, establishes state transportation policy and is responsible for guiding the planning and management of Oregon's transportation system. This includes adoption of the OFP as a component of the OTP. The OTC played a leadership role in the development of the freight plan by convening the OFP Steering Committee, monitoring plan progress and providing input on plan content, strategies and decisions. A commissioner chaired the Steering Committee.
- The Freight Plan Steering Committee. The Steering Committee, which included executive-level freight, industry, community and transportation professionals from around the state, provided overall direction to ODOT for development of the OFP, its contents and its strategies. Appendix A provides a list of Steering Committee members.

17 See text below and Appendix E – Glossary for an explanation of acronyms.

18 Information on the consultation process associated with the 2017 amendment can be found in Appendix A.

- Freight Plan Working Groups. Three Working Groups provided expert review of the technical memoranda prepared by consultants. Lists of Working Group members are provided in Appendix A.
- The Oregon Freight Advisory Committee. The OFAC is a multimodal advisory committee made up of shippers, carriers, intermodal operators and public agency representatives created by the state legislature to advise the OTC and ODOT about freight issues and high priority freight projects. OFAC work was instrumental to the development of this OFP. Several of the OFAC members were members of the OFP Steering Committee and Working groups. In addition, the OFAC discussed updates to the status of the freight plan at its quarterly meetings.
- Oregon Area Commissions on Transportation. The ACTs are advisory bodies of local and regional officials and other stakeholders chartered by the OTC; the 11 ACTs cover all parts of Oregon except the Portland Metro area and Hood River County. They provide comment on transportation plans and play an important advisory role in the State Transportation Improvement Program (STIP) in establishing area project priorities. Information and studies completed by the ACTs were consulted during the creation of this plan. Appendix B provides a list of ACTs.
- Oregon Metropolitan Planning Organizations. MPOs are responsible for planning, programming and coordinating federal transportation investments in Oregon's largest urbanized areas. Appendix B provides a map of MPOs in Oregon.
- Topical Technical Papers. The OFP has been informed by a series of topical technical papers developed in coordination with the Working Groups and Steering Committee during 2009 and 2010.

1.2 POLICY AND LEGAL CONTEXT OF THE PLAN

Consistency with Oregon Statewide Transportation Plans

Oregon Transportation Plan and Statewide Modal and Topic Plans

The OFP is one of several statewide transportation plans that further define and implement the OTP's goals, policies, strategies and investment scenarios. The freight plan helps the OTC fulfill its responsibilities under Oregon Revised Statute (ORS) 184.619(1). Appendix C details how the Oregon Freight Plan meets consistency and other requirements for multimodal, modal and topic plans, as specified in the OTP.

In addition to helping define and implement the OTP, the freight plan complements and helps to implement various statewide modal/topic plans, including the Aviation Plan, Highway Plan, Ports Strategic Plan, Rail Plan and Transportation Safety Action Plan. See Figure 1.3.

Federal Requirements

Federal Regulations

Like the OTP, the *Oregon Freight Plan* is required to comply with federal requirements. This includes:

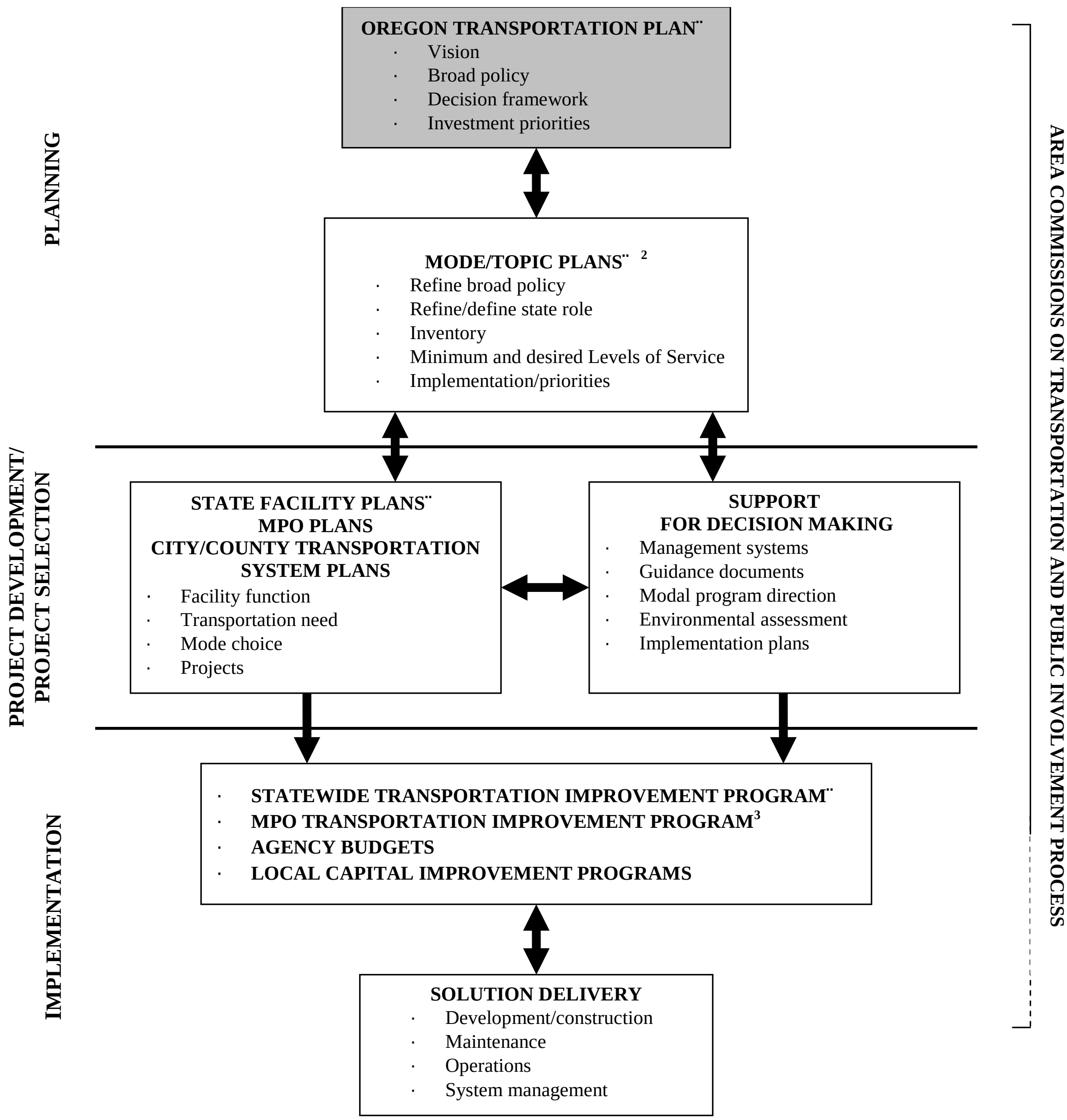
- The planning regulations stipulated in the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU);
- The Passenger Rail Investment and Improvement Act (PRIIA) of 2008; and
- The Federal Aviation Administration (FAA) policy and guidance for aviation system planning.

Appendix C provides a detailed discussion of relevant federal legislation and requirements that apply to the *Oregon Freight Plan* and describes how the OFP maintains consistency with these requirements.[19]

[19] Chapter 9 details how the plan is consistent with MAP-21and the FAST Act.

Figure 1.3 Relationship of Integrated Transportation Planning to the OTP and Statewide, Regional and Local Transportation Plans

INTEGRATED TRANSPORTATION PLANNING [1]



¨ Oregon Transportation Commission action.
1. Influenced by the Transportation Planning Rule.
2. Aviation, Bicycle/Pedestrian, Freight, Highway, Public Transportation, Rail, Transportation Safety Action.
3. MPO TIPs must be included in ODOT's STIP without modification. To ensure state priorities are considered, ODOT must be involved in the MPO planning project selection process.

Source: Prepared by ODOT

Oregon State Requirements

The Land Conservation and Development Commission (LCDC) has adopted 19 statewide land use planning goals that express Oregon's goals on land use, transportation, economic development and related topics. To implement Goal 12, Transportation, the LCDC adopted the Transportation Planning Rule (TPR), which requires ODOT to prepare a state transportation system plan (TSP) that identifies a system of transportation facilities and services adequate to meet identified state transportation needs. The *Oregon Freight Plan* is part of the state TSP. Regional and local transportation plans, in turn, must be consistent with the state TSP. This requirement extends the *Oregon Freight Plan's* influence to local and regional freight planning.

To facilitate coordination of land use planning activities among various governmental entities, Oregon statutes require that state agencies prepare coordination programs. ODOT's coordination program establishes procedures that ODOT uses to ensure compliance with statewide planning goals in a manner compatible with acknowledged city, county and regional comprehensive plans. Appendix C provides *Oregon Freight Plan* findings of compliance with the State Agency Coordination Program and statewide planning goals.

Oregon Transportation Commission Public Involvement Policy

To assist in meeting state and federal public participation requirements for statewide planning processes and the STIP development, the OTC has adopted a public involvement policy for the commission and ODOT activities.

The public involvement process for the *Oregon Freight Pl*an was consistent with the OTC's public involvement policy and included periodic briefings and discussions at OTC meetings, *Oregon Freight Plan* Steering Committee and Working Group meetings, quarterly updates at OFAC meetings, newsletters on the freight plan website, meetings with stakeholder groups and interested parties to solicit comments and coordination internally within ODOT and with other governmental agencies. Further information on the public involvement process for the plan can be found in Appendix D.

1.3 SUMMARY OF OREGON FREIGHT PLAN CONTENTS

Plan Chapters

This OFP is organized into an executive summary and nine chapters:

- **Executive Summary.** Major findings and recommendations of the plan;
- **Chapter 1 – Introduction.** Background and overview of the OFP, including its development, the plan structure, planning compliance and public involvement;
- **Chapter 2 – Economy and Freight Demand.** Oregon's current economic structure, including major industry sectors and key goods-dependent industries and anticipated economic trends and forecasts; this is followed by an overview of commodity flows in Oregon, including weight, value, mode splits and specific freight corridors;
- **Chapter 3 – Oregon Industries and Freight Movement.** Key industries in Oregon, their contribution to statewide economic output and jobs, and their needs, issues and opportunities as they relate to the freight plan;
- **Chapter 4 – Freight Systems.** Oregon's multimodal freight network, methodology of strategic system selection and corridor connectivity;
- **Chapter 5 – Freight and Climate Change.** Discussion about the impact of climate change on freight, Oregon's actions to mitigate greenhouse gases from freight and potential additional methods to reduce freight impact on greenhouse gases;
- **Chapter 6 – Funding.** Comparison of funding resources to funding needs, and identification of opportunities for closing the funding gap;
- **Chapter 7 – Alternative Scenarios.** Overview of the impact on freight and goods movement when taking alternative economic and policy scenarios into consideration; and
- **Chapter 8 – Freight Issues and Strategies.** Recommended policy, investment, operational and institutional strategies to maintain and improve freight mobility in Oregon and further the goals of the plan.
- **Chapter 9 – Federal Compliance.** Brings the Oregon Freight Plan into compliance with the federal FAST Act.

Economy and Freight Demand

2.0 Economy and Freight Demand

2.1 INTRODUCTION

Economic growth and the composition of Oregon's economy is an important driver of freight transportation demand. This chapter describes the state's economy and factors that may affect future growth patterns, followed by a discussion of current and expected freight demand on the state's transportation network.

This chapter is divided into the following sections:

- Summary of major Oregon economic and demographic trends and the relationship between these trends and freight demand;
- Freight demand on Oregon's freight network; and
- Freight demand by Area Commissions on Transportation (ACTs).

2.2 OREGON'S ECONOMY

A review of the Oregon economy – in terms of Gross State Product (GSP), employment, population growth and industry trends – is critical to understanding future demand and use of the state's freight system.

Oregon's GSP and Employment

In the long term, Oregon's GSP and employment are projected to grow. The focus of this plan is on long term trends while acknowledging near term fluctuations in growth rates. GSP, as a measure of the value added to products and services by all Oregon businesses and industries, is a broad indicator of the level and strength of economic activity in a state. Oregon's GSP was \$162 billion[20] in 2008, making it the 26th largest economy among U.S. states.

Figure 2.1 shows the trend in Oregon GSP from 1990 to 2035. By 2035, Oregon's GSP is projected to top \$310 billion,[21] growing by 121 percent at an

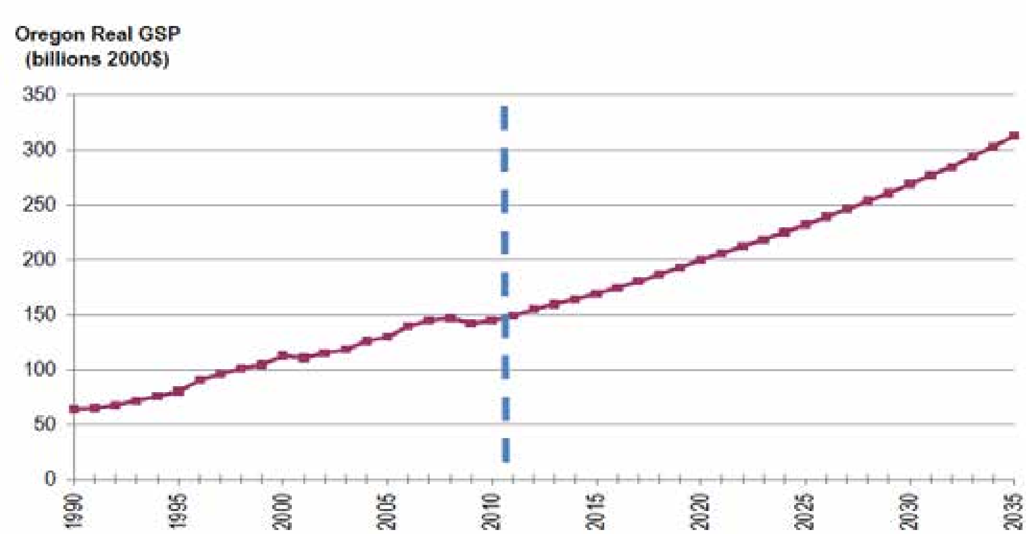
[20] Figure 2.1 shows inflation-adjusted numbers; hence the \$162 billion GSP in 2008 becomes \$147 billion in the comparison graphic.

[21] Real GSP in year 2000 dollars.

average rate of 3.1 percent between these years.[22] In comparison, the output of the U.S. economy (US GDP) is expected to grow by about 90 percent by 2035 (around 2.6 percent annually).

Figure 2.1 Oregon Real Gross State Product, 1990 to 2035

In Billions of Constant 2000 Dollars



Source: Oregon Office of Economic Analysis, IHS Global Insight November 2009.

* Blue line indicates the present.

Employment is another key indicator of economic health. Oregon's total nonfarm employment was about 1.69 million in 2009, which is a slight decline from the previous year as a result of the 2008 recession (See Figure 2.2). Total nonfarm employment is projected to grow to 2.19 million in 2035, an increase of 33 percent from 2009. The Oregon Office of Economic Analysis (OEA) forecasts that employment growth between 2009 and 2015 (forecasted to increase 9.3 percent during this time period)[23] will be slower than in the mid 1990s, but greater than the growth rate for the nation as a whole.

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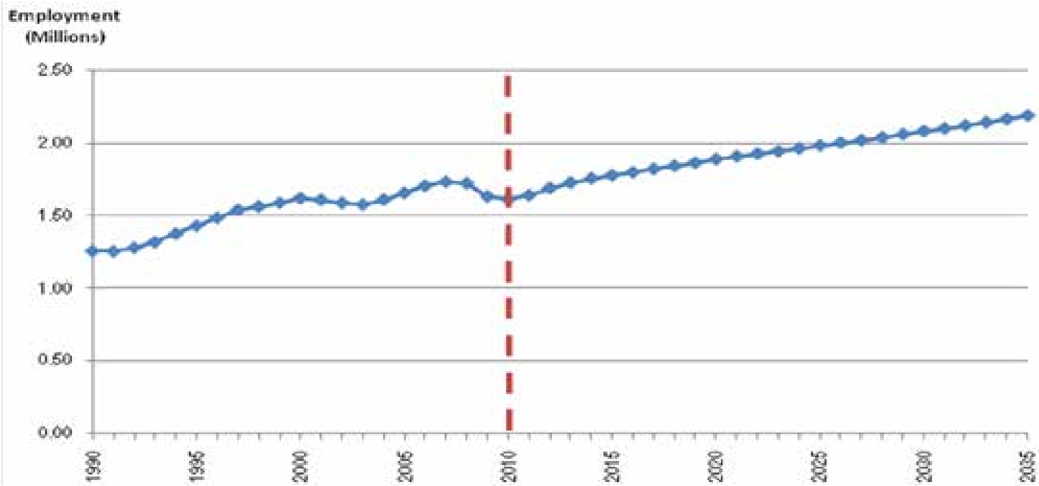
22 Data from the Oregon Office of Economic Analysis, IHS Global Insight November 2009 data.

23 Oregon Office of Economic Analysis, Oregon Economic and Revenue Forecast, September 2010.

Figure 2.2 Oregon Employment, 1990 to 2035
Millions of Jobs



Source: Oregon Office of Economic Analysis, IHS Global Insight November 2009.

Oregon's Pronounced Economic Cycles

Oregon's economic growth rates fluctuate substantially because of the concentration of value in a few industries and the State's dependence on trade as indicated in Figure 2.3. In six of the ten years depicted, Oregon grew more rapidly than the United States as a whole, and in two of the last ten years, it grew at about the national average. In the other two years, Oregon's rate was lower than the national rate.

Figure 2.3 U.S. and Oregon Annual Real GSP Growth Rates, 1998 to 2007

Source: U.S. Bureau of Economic Analysis, U.S. Department of Commerce

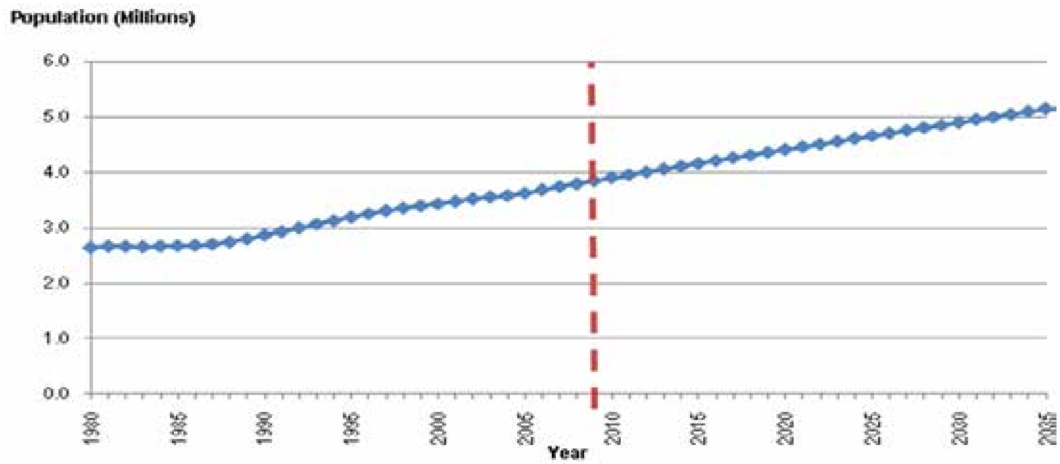
Oregon's Growing and Aging Population

Population growth is another key indicator that can help predict long-term economic growth. Figure 2.4 shows that the population of Oregon is projected to grow to approximately five million by 2035.[24] Except for the Oregon coastal communities, all Oregon regions are projected to grow by 33 percent or more by 2035. The Greater Portland Metropolitan Statistical Area is projected to increase 47 percent.[25] Oregon population growth will be driven by in-migration of working age adults attracted by job opportunities in the state, and relatively lower-cost housing compared to California and the Southwest. The 2035 Oregon population is expected to include fewer children under 19, more adults aged 20 to 65, and a sharp increase in the number of residents over age 65. A growing population suggests increased consumption of goods, fueling economic growth.

24 The U.S. Census Bureau's projection to 2030 and the Oregon's Office of Economic Analysis, 2009 projection to 2030 differ by only 1.5 percent or about 57,000 people.

25 Oregon Office of Economic Analysis, "Oregon Economic and Revenue Forecast," May 2009.

Figure 2.4 Oregon Population, 1980 to 2035



Source: Oregon Office of Economic Analysis, IHS Global Insight November 2009.

Oregon's Productivity

The productivity of Oregon businesses and industries is forecast to remain relatively high, which creates a competitive advantage for Oregon in both domestic and international markets. Factors that impact productivity include workforce education, workers compensation rates and energy prices.

- 87 percent of Oregon residents have completed a high school or equivalent degree, ranking the state 19th in the nation; 26 percent have a Bachelor's degree or higher, ranking the state 24th; and 10 percent have completed an advanced degree, ranking the state 16th.[26]
- Oregon ranked 39th in workers compensation rates.[27]
- Oregon ranks 20th in the nation for total energy prices. Oregon spends 18.23 nominal dollars per million British Thermal Units (BTU).[28] In terms of diesel prices to power the majority of trucks and trains, Oregon also has relatively high costs. Oregon's cost per gallon of diesel was $4.29 per gallon in April of 2011, which was the seventh highest average price for diesel in the nation.[29]

26 Source: U.S. Census Bureau, 2004, at http://www.statemaster.com/index.php.

27 Oregon Department of Consumer and Business Services, Biannual Report, at https://www4.cbs.state.or.us/ex/imd/reports/.

28 Source: U.S. Energy Information Administration (EIA) (document no longer online)

29 American Automobile Association (AAA). Daily Fuel Gauge Report, April 26th, 2011.

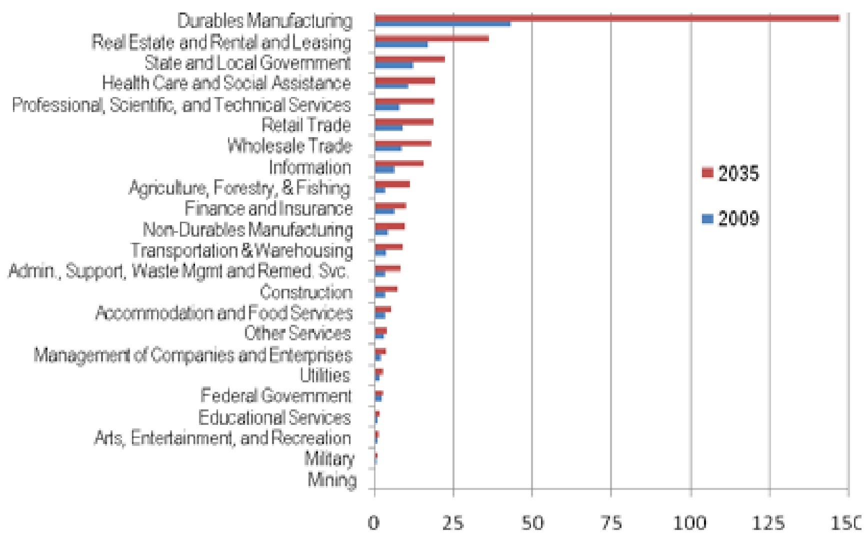
Transformation of Oregon's Economy

Oregon's economy will continue to change from a resource-based economy to a high-value-added manufacturing and service economy. As shown in Figure 2.5, Oregon's top private sector industries in 2009 in terms of real GSP include durables manufacturing, real estate and rental/leasing, health care and social assistance, retail trade and wholesale trade. The manufacturing sector alone accounted for 34 percent of the state's GSP in 2009.

The OEA anticipates strong GSP growth in manufacturing. This comes as a result of increased production of high-value products such as those manufactured by the computer and electronics industry. Offshore sales and productivity gains should also contribute to the expected growth in manufacturing. Figure 2.5 compares the estimated real GSP by industry sector in 2009 with the projected real GSP by industry in 2035. The data show continued strength in professional, scientific and technical services, retail trade, wholesale trade, transportation and warehousing and other sectors.

Figure 2.5 Real GSP by Oregon Industry Sector, 2009 and 2035

In Billions of 2000 Dollars



Source: Oregon Office of Economic Analysis, IHS Global Insight November 2009.

Oregon's resource-based industries – comprised primarily of the agricultural, forestry and fishing sector – contributed approximately 3 percent to GSP. Wood products manufacturing is the second largest manufacturing subsector but accounts for only a small portion of total manufacturing value and GSP.

Oregon's Dependency on Trade and Freight Transportation

The OEA estimates that Oregon is the ninth most trade-dependent state in the nation.[30] The ranking illustrates the importance of export-oriented sectors, such as computer and electronics manufacturing, logistics and distribution and processed foods to the Oregon economy. As shown in Table 2.1 below, manufactured products, such as computers and electronics, have medium to high dependency on highway, railroad, and water/marine transportation, and for some types of products, on air transportation. While professional and technical services are generally low freight dependent, they are predominately dependent on air freight when utilizing freight options.

Table 2.1 Oregon Transportation Dependency Rating of Oregon's Top Industries

Industry Sector	Highway	Railroad	Water/ Marine	Air	Pipeline
Agriculture, Forestry and Fishing;	High	High (except fishing)	Medium	Low (except Fishing)	Low
Computer and Electronics Manufacturing;	High	Medium	Medium	High	Low
Food Manufacturing;	High	Medium	Medium	Low	Low
Machinery Manufacturing and Metals Manufacturing;	High	High	High	Medium	Low
Wood and Paper Manufacturing;	High	High	High	Low	Low
Retail Trade;	High	Medium (Except long distance)	Medium	Low	Low
Services and Other.	Low	Low	Low	Low	Low

Source: Cambridge Systematics with data from Parsons Brinckerhoff, "Relationship of Freight Transportation to Economic Development."

For Oregon businesses to grow, they must be able to ship goods quickly and effectively to U.S. and international markets. To retain or gain market share, Oregon businesses must be cost-competitive in both producing and shipping their goods to market. The same is true for raw materials, components and other inputs

30 Oregon Business: https://www.oregonbusiness.com

transported to Oregon manufacturing and processing facilities. Many manufacturing businesses and other industries have adopted the just-in-time inventory strategy to reduce inventory and associated carrying costs, which requires a high degree of flexibility by suppliers. Just-in-time inventory strategies also make shipments more time-sensitive as a result of decreased inventories at production locations. In turn, reduced congestion and low travel time variability is important to facilitate businesses using the just-in-time model.

Another trend that impacts the retail trade industry is the sustained increase in online retailing, or business-to-consumer shopping. In the U.S., online retailing is forecasted to grow by 10 percent annually through 2014, with its share of total U.S. retail sales increasing from 6 percent in 2009 to 8 percent in 2014.[31] This will result in an increase in the volume of small package deliveries to homes by carriers, such as UPS, FedEx and the U.S. Postal Service. As a result of these and other trends, the future of Oregon's economy will be highly dependent on dependable, flexible and affordable freight transportation services.

2.3 FREIGHT DEMAND OVERVIEW - OREGON

Freight demand and the transportation modes chosen to accommodate this demand are driven by the characteristics of the economy that were discussed in Section 2.2. Industry growth or decline, shifting population patterns and factors such as shifting international trade and logistics patterns all influence freight demand patterns.

Where, when, how often and why businesses make freight movements is largely dependent on industry supply chains. Every shipper, carrier and customer makes decisions frequently that will affect how goods move in Oregon and thus how the surrounding environment will be impacted by freight. Figure 2.6 below highlights the complexity of variables that each player in supply chains needs to consider, in addition to outside uncertainties such as the market, transport macroeconomics, disasters and others. In this figure, the shippers, carriers and customers are shown to be the three main actors in the supply chain process. The variables directly surrounding each actor in the supply chain process (as shown in the same color font as the actor) are considerations that may impact the supply chain process, specific to that actor. External variables that may impact the supply chain process are shown in the periphery of Figure 2.6 including variables such as the market, politics and macroeconomics. Both actor-specific and external variables have an impact on the supply chain and how freight moves in Oregon.

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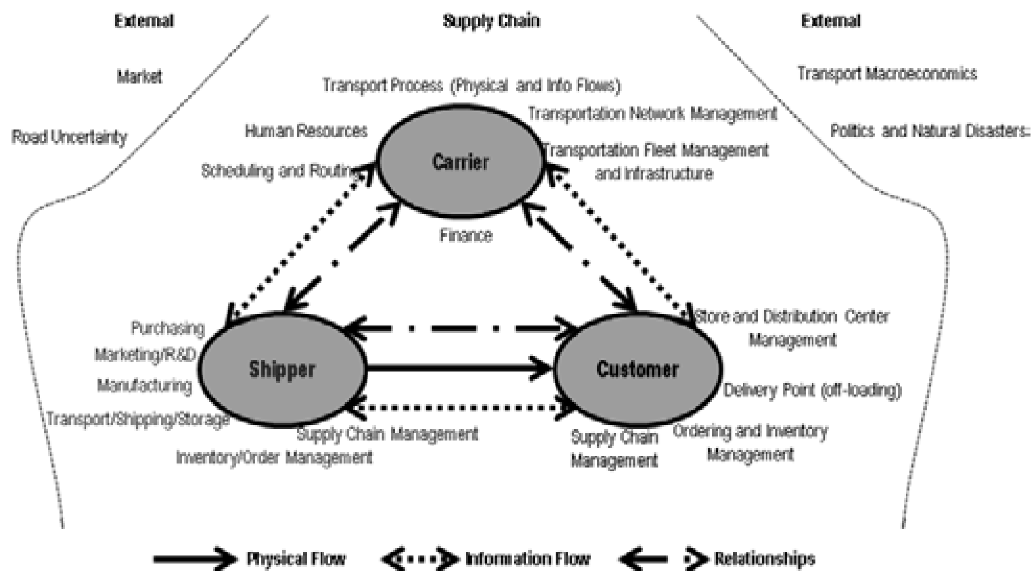
31 Forrester Research, Inc. Reported in Tech Crunch, March 8, 2010, at https://techcrunch.com/2010/03/08/forrester-forecast-online-retail-sales-will-grow-to-250-billion-by-2014/.

A state's commodity flow profile is, therefore, a reflection of a state's socioeconomic and population profile as well as the industries and businesses that make up the state's economy. This section will present data and observations concerning the impact of future freight demand on policy and the statewide multimodal transportation system.

Figure 2.6 Supply Chain Nodes and Internal/External Factors that Create Uncertainty of Freight Movements



Source: Diagram concept and much of the content taken from "Establishing a Transport Operation Focused Uncertainty Model for the Supply Chain" Rodrigues et al, 14th International Annual EuROMA Conference, Ankara, June 2007. Diagram content was adjusted to focus on key contributors in the supply chain for the purposes of this freight plan.

Oregon GSP and employment growth signal an increase in demand for the freight system in general. In addition, a larger population will consume more food, clothing, housing, and other household goods, increasing freight demand. As a result of these economic and demographic forecasts, the Oregon Commodity Flow Forecast estimates significant increases in total freight traffic in Oregon, as shown in Table 2.2.[32]

[32] Oregon Commodity Flow Forecast data, October 2009: http://library.state.or.us/repository/2010/201010251112531/index.pdf

Table 2.2 Oregon Freight Tons and Value, All Modes[33]
2002, 2010 and 2035

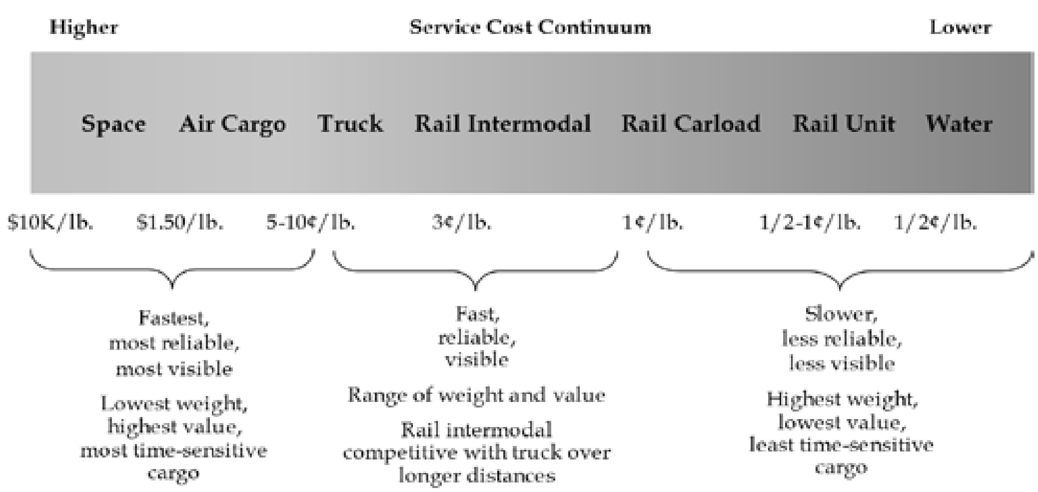
	2002	2010	2035	2002 to 2035 % Growth
Weight (millions of tons)	347	403	651	88%
Value (billions of $)	213	253	554	161%

Source: Oregon Commodity Flow Forecast data, October 2009.

Freight Demand by Mode

A number of factors influence mode selection by industry and commodity. Cost of service and accessibility are key criteria when selecting mode for transport of goods. Figure 2.7 below shows the type of cargo that certain modes tend to transport. For instance, water and non-intermodal rail modes tend to ship high weight, lower value products that are not time sensitive. Heavy commodities such as gravel and lumber tend to use rail and barge. Therefore, businesses that require lower cost transportation service and are able to deal with slower shipments turn to barge and rail carload or unit trains. On the other hand, trucks generally ship lighter goods that are of higher value and more time-sensitive. Truck and intermodal rail are faster and more reliable than options with lower service costs. Finally, air cargo is used to ship the most time-sensitive and highest value cargo. The air mode represents a small but increasingly important share of total freight movements.

Figure 2.7 Freight Transportation Service Spectrum



Source: Freight Rail Bottom Line Report AASHTO.

33 The values in this table do not include freight movements that do not have an Oregon origin or destination.

As shown in Table 2.3, all major transportation modes – air, pipeline, rail, truck and water – will see growing volumes of freight, with truck volumes growing the most in terms of total weight and value. The projected 88 percent increase in freight tonnage moving into, out of and within Oregon will place additional demands on the Oregon freight system. This number does not take into account the impact of "through" tonnage, which is also growing. As a comparison, the United States freight system is expecting a 93 percent increase in total tonnage between 2002 and 2035, with a compound annual growth rate (CAGR) of 2.0 percent.[34] Oregon's expected CAGR for tonnage moving into, out of and within Oregon is 1.9 percent, average for the nation.

Table 2.3 Oregon Freight Demand by Weight/Value (All Modes)[35]

2002, 2010 and 2035

Mode	Weight (Millions of Tons)				Value (Billions of Dollars)			
	2002	2010	2035	2002-2035 % Growth	2002	2010	2035	2002-2035 % Growth
Air	0.22	0.27	0.75	236%	12	17	56	349%
Pipeline	14	13	17	28%	3	3	4	37%
Rail	39	47	64	65%	16	17	27	76%
Truck	259	294	508	96%	159	185	406	155%
Water	35	48	60	73%	22	32	61	171%
Total	347	403	651	88%	213	253	554	161%

Source: Oregon Commodity Flow Forecast data, October 2009.

Other important observations can be made from Table 2.3:

- The value of freight movements shows a steeper increase than tonnage. The value of freight moved into, out of and within Oregon is expected to increase 161 percent between 2002 and 2035, substantially higher than the 88 percent increase in tonnage. The 2002 to 2035 CAGR of total tonnage is at 1.9 percent, while the CAGR of value of all commodities shipped is 2.9 percent. Machinery manufacturing is one of the fastest increasing commodities by value during this time period and is a high-value product, which is a likely contributor to the high increases in value moved on Oregon's freight system. This increase in higher-value commodities on the

34 FHWA, "Freight Facts and Figures 2009," based on FAF2 data, https://ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/09factsfigures/table2_1.htm.

35 Table does not include commodities traveling through Oregon, without an Oregon origin or destination.

freight system implies a greater reliance on truck and air cargo and the growing importance of reliability, urban mobility and access to airports and international cargo handling facilities.

- Trucking will continue to be a dominant mode for freight transport. Although Table 2.3 shows that tonnage/value movements by rail, air and water are expected to increase substantially on a percentage basis between 2002 and 2035, truck tonnages will continue to increase the most in absolute terms (total tonnage and value). Table 2.3 also shows that truck tonnage will increase at a more rapid rate than all other modes, except air travel, which represents a small but important share of overall freight demand. Increasing truck traffic places further demands on the system and requires substantial investment in maintenance of the existing highway and road network. The growth of truck share reflects the shift towards higher value products and greater time sensitivity in product movements. With truck traffic anticipated to rise substantially in the future, roadway congestion issues, transport reliability and road access issues will be exacerbated. Roadway issues are therefore anticipated to become an even greater focus of future freight planning in Oregon.
- High rail demand may create capacity issues. The 64 percent increase in rail tonnage moving into, out of and within Oregon will create capacity issues on major corridors, especially around Portland and along the Columbia River Gorge.[36] Capacity issues will impact all industries that utilize freight rail, including the lumber and transportation equipment industries. Failure to address capacity issues may result in increased diversion of commodities to other modes[37].
- A substantial increase in airfreight by tonnage is expected. Airfreight demand in Oregon is expected to increase sharply as a result of projected increases in the high-value-manufacturing (i.e., computer and electronics products) and professional service industries. The expected 240 percent increase in airfreight between 2002 and 2035 will require improved access to airports as freight demand grows. Improving access will make it easier and more efficient for trucks to get to airports to pick up and unload cargo. Capacity for the cargo airports (primarily Portland International) is not expected to be an issue during the planning period.

36 It should be noted that the data on rail tonnages does not include data on through movements that have neither an origin nor a destination within the state. Through tonnage and value were not available in the commodity flow data. However, through movements are discussed further in Section 4.5 of this plan

37 Failure to address rail capacity issues will also impact efforts to increase passenger rail options.

Commodity Movements and Freight Demand

Different modes are responsible for moving key commodities into, out of and within Oregon. For example, marine vessels are often used to carry heavy, low-value items, within states or between regions. Airfreight often carries low-weight, high-value goods to markets all across the world. Table 2.4 highlights the major commodities carried into, out of and within Oregon by mode in 2002 and the expected yearly growth rate of tonnage and value between 2002 and 2035.

Table 2.4 Top Commodities by Mode (Into, Out of and Within Oregon)

Compound Annual Growth Rate (CAGR) 2002 to 2035

	Top Commodities (Tonnage)	CAGR % 02-35	Top Commodities (Value)	CAGR % 02-35
Truck Freight	Clay, concrete, glass, stone	1.6%	Miscellaneous freight shipments	3.6%
	Farm products	1.9%	Non-electrical machinery	4.0%
	Lumber or wood products	0.7%	Food and kindred products	2.5%
	Petroleum, natural gas and other petroleum-based products[38]	2.3%	Electrical machinery	3.4%
	Forest products	-0.1%	Apparel/finished textile products	-0.8%
Rail Freight	Lumber or wood products	1.1%	Lumber or wood products	1.1%
	Chemicals or allied products	1.2%	Transportation equipment	2.5%
	Farm products	0.1%	Pulp, paper or allied products	1.4%
	Pulp, paper or allied products	1.4%	Miscellaneous mixed shipments	1.4%
	Miscellaneous mixed shipments	1.4%	Chemicals or allied products	1.2%
Water/ Marine Freight	Clay, concrete, glass, stone	1.2%	Non-electrical machinery	5.1%
	Farm products	2.1%	Chemicals or allied products	2.3%
	Chemicals or allied products	2.3%	Transportation equipment	0.0%
	Petroleum, natural gas and other petroleum-based products	0.4%	Farm products	2.1%
	Forest products	-1.6%	Petroleum, natural gas and other petroleum-based products	0.4%
Air Freight	Electrical machinery	4.8%	Electrical machinery	4.8%
	Food and kindred products	3.6%	Chemicals or allied products	3.6%
	Fabricated metal products	-0.7%	Misc. manufactured products	3.9%
	Chemicals or allied products	3.6%	Transportation equipment	5.7%
	Fresh fish	2.3%	Precision instruments	6.1%

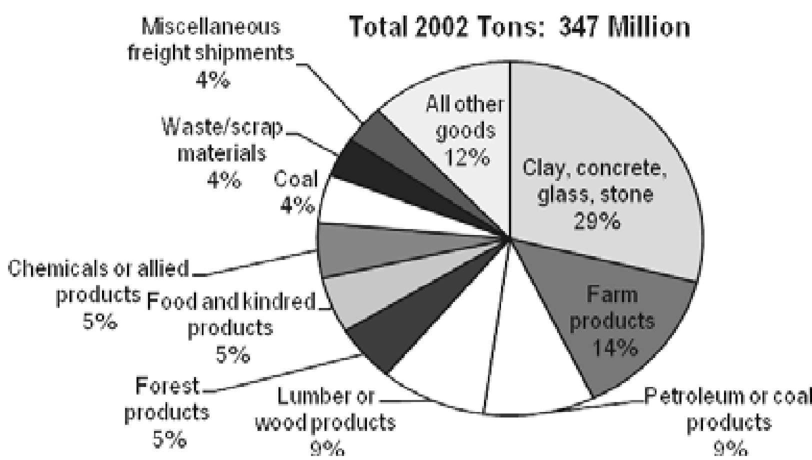
[38] This commodity group includes some coal products as well.

Source: Oregon Commodity Flow Forecast data, October 2009.

While commodity group classifications used in the OFP provide sufficient detail about the types of goods moving on Oregon's freight system, the classifications used are summaries of many specific commodities. An example of commodity classification group summarization is "concrete/glass/clay/stone." The amount of tons moving on Oregon's system, for the group as a whole is known, but the percentage of tons moving for each commodity of concrete, glass, clay or stone is not known.[39] The analysis of commodity movements represents estimates based on best available data. It is important to make a note of this before attempting to understand the commodity flow data in Chapter 2 and 3. Appendix F presents detailed information on which commodities make up each commodity group.

Figures 2.6 to 2.11 present an overview of the top commodities that used the freight system in 2002, by tonnage and value, compared to those that will be using the freight system in 2035.

Figure 2.8 Breakdown of Commodity Shipments – Weight, All Modes, In/Out/Intra – 2002



Source Oregon Commodity Flow Forecast data, October 2009.

[39] The commodity of glass is rarely or never shipped by marine freight modes, although the analysis indicates that a certain percentage of the commodity group of "clay / concrete / glass / stone "is moved by ship.

Figure 2.9 Breakdown of Commodity Shipments – Weight, All Modes, In/Out/Intra – 2035

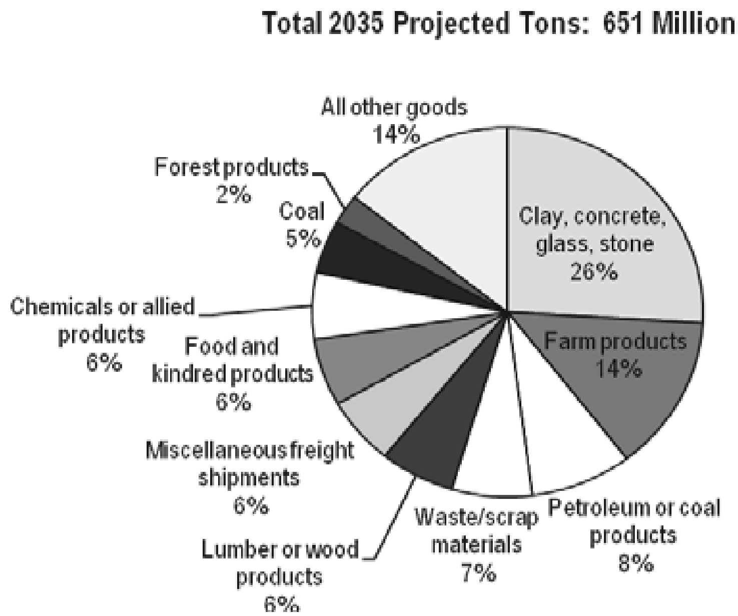
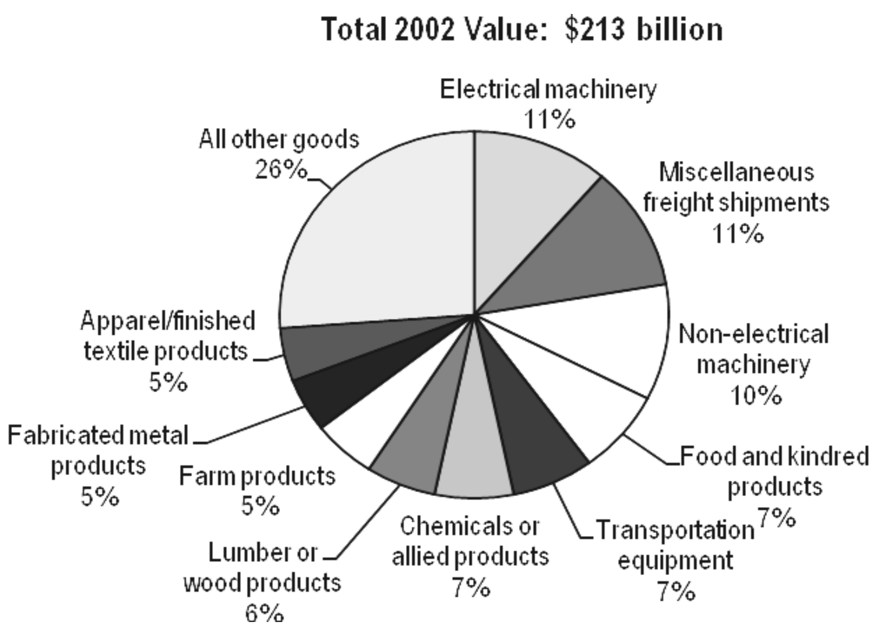
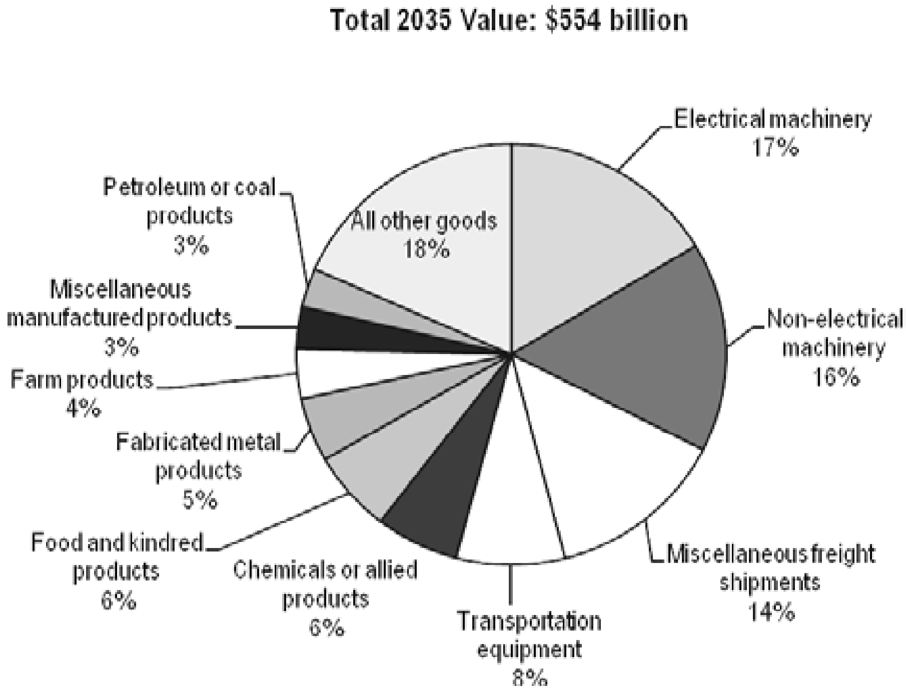


Figure 2.10 Breakdown of Commodity Shipments – Value, All Modes, In/Out/Intra – 2002



Source Oregon Commodity Flow Forecast data, October 2009.

Figure 2.11 Breakdown of Commodity Shipments - Value, All Modes, In/Out/Intra – 2035



Source: Oregon Commodity Flow Forecast data, October 2009. Values derived from tons on a $/ton basis per commodity, as defined in Oregon Commodity Flow Forecast, October 2009: http://library.state.or.us/repository/2010/201010251112531/index.pdf .

The information in Table 2.4 and Figures 2.6 – 2.11 has the following implications for freight transportation in Oregon:

- Oregon will see continued growth in heavy goods movement.[40] Shipments of heavy commodities such as clay, concrete, glass and stone commodities and lumber products will continue to increase. Since a number of these heavy commodities depend on rail, for example lumber, a steady demand for rail traffic should persist. This will require the public sector to work with private

40 Oregon's permitting system for truck loads that exceed standard limits can be broken into three general components: 1) trucks moving divisible loads may carry up to 105,000 pounds but axle weights must be standard, comply with Oregon's bridge formula, and be of standard widths and heights; 2) trucks moving nondivisible loads up to 98,000 pounds may have slightly higher than standard axle weights, must not exceed 12 feet in width and 13 feet, 6 inches in height and must meet the bridge formula; and 3) trucks moving nondivisible loads exceeding 98,000 pounds, with widths greater than 12 feet and height greater than 13 feet, 6 inches (very small percentage of trucks that require a permit). These latter trucks may exceed axle weights but usually do not exceed the bridge formula.

sector railroad companies to ensure adequate supply of rail infrastructure. Keeping a share of heavy goods, such as farm products, on rail can reduce the maintenance costs of Oregon roads and, therefore, should be considered in planning for future investments. Trucks are critical to moving heavy goods throughout Oregon. The location of industries that require permitted loads may change over time; the monitoring of where clusters of industries that require permitted loads are locating will reduce disruptions in the flow of goods.

- The lumber or wood products industry is by far the biggest user of the rail system in Oregon excluding through rail shipments. Rail infrastructure in the regions where lumber or wood products are picked up will need to be able to handle the increased demand for rail freight to move these goods.

- Several commodities will continue to rely on timely delivery through airfreight. Some of the commodities produced in Oregon, including electrical machinery (includes computer products and computer-related goods), fresh fish and precision instruments, are expected to continue to increase their demand for airfreight in order to deliver their high-value (electronics) and perishable (fish) goods to market. It will be critical to ensure the industries that produce these commodities have adequate access to airports and that bottlenecks between production facilities and the airport are minimized.

- Machinery will continue to be moved by truck, air and marine modes. As the machinery manufacturing industry is one of the largest contributors to manufacturing GSP in Oregon, it is critical that this industry have adequate airport access. For machinery exported or imported by water, it is critical that trucks are able to make timely and reliable deliveries to or from port facilities.

- Transportation equipment movements will continue to increase. This commodity will continue to increase for both truck and rail. It will be the top commodity by value moved on rail in 2035. On truck, it will increase in terms of value, after machinery and miscellaneous freight shipments.

- Farm products, chemicals and clay, concrete, glass and stone will continue to dominate goods moved by water. It is important to have adequate connections from point of production to ports for these commodities in order to meet the expected demand for water movements. Adequate access and routing to and from ports for trucks, including those requiring permits, as well as the consideration of additional rail service may be necessary to facilitate movement of these heavier goods to and from ports.

Freight Demand – By Direction

Inbound, internal and outbound movements are all expected to grow at a moderate rate through 2035. Table 2.5 below shows expected tonnages for 2010 and 2035, as well as baseline tonnages for 2002 by direction of movement.

Through traffic exists on Oregon highways, railways, waterways and pipelines. Through traffic for each mode is discussed in further detail in Chapter 4.

Table 2.5 Oregon Commodity Flow Tonnage by Direction, 2002 to 2035

In Thousand Tons

Direction	Year			Growth Rate 2002-2035
	2002	2010	2035	
Inbound	86,365	101,157	131,957	1.30%
Internal	197,993	223,356	364,482	1.90%
Outbound	62,533	78,909	154,644	2.80%

Source: Oregon Commodity Flow Forecast data, October 2009.

Table 2.6 highlights the top commodities by tons and value moving into, out of and within Oregon in 2002 and 2035.

Table 2.6 Top Commodities by Direction, 2002*

	Top commodities (tonnage)	CAGR % 02-35	Top commodities (value)	CAGR % 02-35
Inbound Shipments	Clay, concrete, glass, stone	1.2%	Electrical machinery	4.8%
	Petroleum, natural gas and other petroleum-based products	1.0%	Non-electrical machinery	4.8%
	Farm products	-0.7%	Transportation equipment	1.7%
	Chemicals or allied products	1.3%	Miscellaneous freight shipments	3.0%
	Lumber or wood products	0.5%	Chemicals or allied products	1.6%
	Crude petroleum, natural gas	1.7%	Apparel/finished textile products	-1.3%
	Food and kindred products	1.0%	Food and kindred products	1.0%
	Coal **	1.4%	Fabricated metal products	1.9%
Outbound Shipments	Lumber or wood products	1.1%	Chemicals or allied products	3.0%
	Farm products	3.0%	Electrical machinery	3.3%
	Chemicals or allied products	3.0%	Miscellaneous freight shipments	4.4%
	Food and kindred products	3.5%	Lumber or wood products	1.2%
	Petroleum, natural gas and other petroleum-based products	2.3%	Food and kindred products	3.6%
	Pulp, paper or allied products	1.5%	Non-electrical machinery	4.0%
	Clay, concrete, glass, stone	3.9%	Transportation equipment	5.2%
	Miscellaneous freight shipments	4.4%	Pulp, paper or allied products	1.6%
Internal Shipments	Clay, concrete, glass, stone	1.6%	Miscellaneous freight shipments	3.5%
	Farm products	2.0%	Food and kindred products	2.1%
	Petroleum, natural gas and other petroleum-based products	1.7%	Non-electrical machinery	3.9%
	Forest products	-0.1%	Farm products	2.0%
	Coal **	2.1%	Electrical machinery	3.0%
	Lumber or wood products	0.5%	Petroleum, natural gas and other petroleum-based products	1.7%
	Waste/scrap materials	3.3%	Lumber or wood products	0.5%
	Food and kindred products	2.1%	Fabricated metal products	3.3%

Source: Oregon Commodity Flow Forecast data, October 2009.

* Compound Annual Growth Rate (CAGR) % 02-35 in the figure represents the compound annual growth rate projections per commodity between 2002 and 2035.

** CAGR is based on analysis of historic trends. Closure or changing the type of fuel used in Portland General Electric's Boardman coal plant that is currently being negotiated will result in a significant reduction in coal shipments.

Information in Tables 2.5 and 2.6 has the following implications:

- Outbound tonnage, compared to inbound and internal, will grow fastest. Table 2.5 shows the amount of freight originating in Oregon is expected to exceed the amount of freight coming into Oregon by 2035. This is a change from 2002, where inbound tonnage exceeded outbound tonnage by nearly 24 million tons. Directional imbalances in freight flows could impact service levels for certain modes and need to be monitored as an issue for the freight community. Outbound tonnage for all modes is expected to grow at a CAGR of 2.8 percent between 2002 and 2035, while inbound and internal movements are expected to increase annually at 1.3 percent and 1.9 percent, respectively. This reflects relative growth in Oregon's export-oriented commodities that are critical to overall economic growth, including chemicals or allied products, lumber or wood products, machinery and transportation equipment. As a result, it will be critical to continue to maintain and improve connections between Oregon and the rest of the world for all modes in order to be able to support this expected increase in exports.
- Internal freight movements will remain substantial. The movement of goods within Oregon (more than 364 million tons in 2035) will remain higher than both inbound and outbound shipments combined, indicating that transportation connections within and between cities and industries need to be maintained and potentially enhanced to meet this growth. Internal freight movements in Oregon are dominated by the truck mode to an even greater degree than trucking dominates overall freight movement.[41] As noted in the Oregon Rail Study, changes in Class I business models over the last decade and the general economics of rail and truck transportation have tended to limit the use of rail as a mode alternative for internal freight movements in Oregon. Given the high level of anticipated growth in internal freight movements, strategies should be examined to encourage shorter haul freight rail movements where there is measurable public benefit (such as reduction of highway investment and maintenance needs) and where the economics of freight rail can be made competitive with trucking.
- Many important inputs for Oregon industries will continue to be imported. Strong continued growth of inbound machinery shipments by value will most likely be production inputs for the computer and electronics sector, a major export area for the state. It will be critical to Oregon industries to make sure that the transportation system supports reliable and timely service to get these goods into the state.

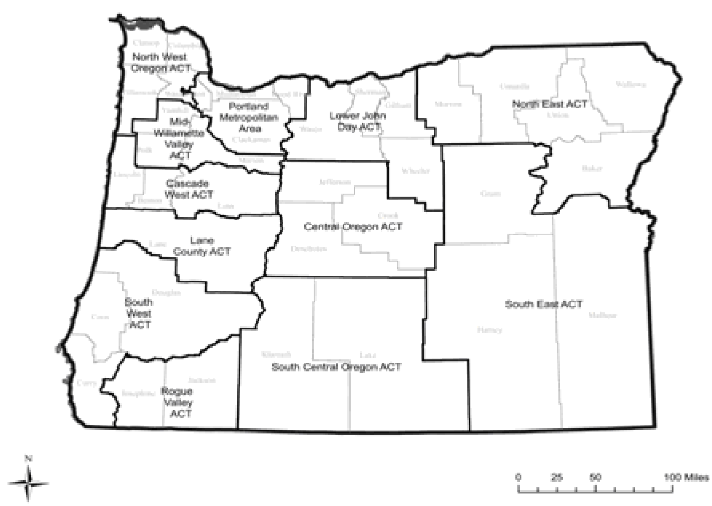
41 According to the Oregon Commodity Flow Forecast, 2002, 98.3 percent of all intra-Oregon tons moved and 99.1 percent of intra-Oregon value moved by truck. For all in, out and intra movements in 2002, trucks moved 74.7 percent of total tonnage and 74.8 percent of total value.

- A major driver in the growth in commodities supporting personal consumption is population growth. The expected growth rate of Oregon's population is similar to the expected growth rate of inbound and internal shipments of staple commodities, including food, fuels and construction-related commodities (clay/concrete/glass/stone).

2.4 FREIGHT DEMAND OVERVIEW – OREGON AREA COMMISSIONS ON TRANSPORTATION (ACTS)

So far, this chapter has highlighted key statewide trends in freight demand. Another perspective from which to analyze freight demand is that of Area Commissions on Transportation, advisory bodies chartered by the Oregon Transportation Commission. ACTs address all aspects of transportation (road, marine, air and transportation safety) with a primary focus on the state transportation system. ACTs consider regional and local transportation issues if they affect the state system, and they work with other local organizations dealing with transportation-related issues.[42,43] Oregon ACTs are shown in Figure 2.12.

Figure 2.12 Oregon Area Commissions on Transportation (ACTs)[44]



42 https://www.oregon.gov/ODOT/Get-Involved/Pages/Area_Commissions.aspx.

43 ACTs play an important advisory role in the development of the Statewide Transportation Improvement Program, which schedules funded transportation projects. ACTs establish a public process for area project selection priorities for the STIP. Through that process and following adopted project eligibility criteria, they prioritize transportation problems and solutions, and recommend projects in their area to be included in the STIP.

44 Since the OFP was originally adopted in 2011, the Region 1 ACT was created to cover area noted as the Portland Metropolitan Area.

Northwest ACT

Table 2.7 Northwest ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rate

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	54%	1.7%	52%	54%	6%	0.6%	17%	4%
Food or Kindred Products	12%	1.3%	37%	10%	10%	0.8%	23%	8%
Petroleum, Coal, Chemicals	8%	2.1%	68%	9%	15%	2.4%	81%	18%
Pulp or Paper Products	4%	2.2%	72%	5%	2%	1.5%	43%	2%
Other/Miscellaneous	12%	1.9%	60%	12%	1%	2.1%	69%	2%
Forest or Wood Products	9%	1.9%	61%	9%	41%	2.1%	67%	45%
Clay, Minerals, Stone	1%	0.4%	10%	1%	25%	1.1%	33%	21%

The Northwest ACT includes Clatsop, Columbia, Tillamook and approximately two-thirds of Washington County. About 165,000 people currently reside in this area, representing 4 percent of Oregon’s total population. Population centers include Astoria, St. Helens and Tillamook. Table 2.7 lists Northwest ACT commodity flow shares and forecast growth rates. The Machinery, Instruments, Transportation Equipment and Metals group represents the largest share (54 percent) of the Northwest ACT but only a six percent share in terms of tonnage in 2010. This pattern is expected to continue into the future, with value forecast to increase about 52 percent over 25 years at a Compound Annual Growth Rate (CAGR) of 1.7 percent. The next largest commodity group produced by value is Food or Kindred Products, with a CAGR of 1.3 percent over the next 25 years.

Forest or Wood Products represents the largest share of the Northwest ACT production in terms of tonnage, but a fairly small share in terms of value. Commodity production for this group is expected to increase from 61 to 67 percent in terms of tonnage and value, increasing at a CAGR of 1.9 percent by value and 2.1 percent by tonnage.

Growth by tonnage in the Petroleum, Coal and Chemical group is expected to be larger than the other commodity groups, although this group represents a fairly small share of regional production and is subject to variation in production levels due to economic conditions.[45] The Paper and Pulp Products group's regional share of production is similarly affected by economic conditions, meaning production levels and growth depend on the overall strength of the economy. When the economy expands or contracts, commodity production varies more for these two groups than the other five groups in the Northwest ACT. The Northwest ACT's top exported commodities are in the Machinery, Instruments, Transportation Equipment and Metals, Forest or Wood Products, and Food or Kindred Products groups. [46]

Portland Metro Area[47]

Table 2.8 Portland Metro Area Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2035	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2035
Machinery, Instruments, Transportation Equipment, Metals	60%	1.40%	42%	57%	10%	1%	28%	8%
Food or Kindred Products	10%	1%	27%	8%	15%	1%	29%	13%
Petroleum, Coal, Chemicals	8%	2.40%	80%	10%	22%	2.80%	99%	29%
Pulp or Paper Products	6%	2.40%	80%	7%	4%	2.10%	68%	4%
Other/Miscellaneous	13%	2.20%	72%	15%	3%	1.90%	60%	3%
Forest or Wood Products	2%	2%	63%	2%	23%	2.10%	67%	25%
Clay, Minerals, stone	1%	0.60%	17%	1%	23%	0.80%	22%	18%

The Portland Metro Area contains the majority of Oregon's population, representing about 40 percent of statewide population. This area includes about one-third of Washington County, Multnomah, Hood River and Clackamas Counties. A large amount of commodity production for the state comes from the Portland Metro area. Table 2.8 lists the Portland Metro Area commodity production shares and forecast growth rates. In 2010, Machinery, Instruments,

45 More information on economic uncertainty can be found in Chapter 7

46 More detail on ACT export patterns can be found in Chapter 7

47 Since the original adoption of the OFP in 2011, jurisdictions in the Portland Metro Area and Hood River County formed the Region 1 ACT.

Transportation Equipment and Metals production represents the largest share of the area commodity production in terms of value (60 percent), and a relatively small share in terms of tonnage (10 percent). This share of total area production is expected to continue into the future, with the value expected to increase over 40 percent over the next 25 years, increasing at a CAGR of 1.4 percent by value and 1 percent by tonnage.

In 2010, the Petroleum, Coal, and Chemicals group, Pulp or Paper Products, and Other Miscellaneous Goods groups represented over 25 percent of the total value of commodity production in the area in terms of value (29 percent by tonnage.) These three commodity groups are expected to grow at rates higher than other commodity groups. However, production levels within these three categories vary significantly depending on economic conditions. The Petroleum, Coal and Chemical group tonnage is expected to nearly double over the next 25 years.

Many of the commodities produced are consumed within the area. Exported commodities include the Machinery, Instruments, and Transportation Equipment and Metals, Pulp or Paper Products, and the Petroleum, Coal and Chemicals groups.

North East ACT

Table 2.9 North East ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2035	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2035
Machinery, Instruments, Transportation Equipment, Metals	26%	1.40%	42%	25%	2%	1.30%	37%	2%
Food or Kindred Products	43%	1.60%	49%	43%	26%	1.80%	55%	22%
Petroleum, Coal, Chemicals	9%	2.80%	102%	12%	17%	3.90%	159%	24%
Pulp or Paper Products	1%	3.30%	124%	1%	0%	1.70%	54%	0%
Other/Miscellaneous	13%	-0.50%	-11%	7%	1%	1.10%	33%	1%
Forest or Wood Products	7%	3.20%	119%	11%	33%	2.70%	95%	35%
Clay, Minerals, Stone	1%	1.60%	48%	1%	21%	1.60%	49%	17%

The North East ACT is predominantly rural. This ACT includes Morrow, Umatilla, Union, Wallowa and Baker Counties. Population centers for the ACT include Hermiston, Pendleton, LaGrande and Baker City. Table 2.9 lists the North East ACT commodity production shares and forecast growth rates. In 2010, Food or Kindred Products was the principal commodity, making up over 40 percent of the regional production in terms of value and over 25 percent by tonnage. The amount of production is expected to increase by 49 percent by value and 55 percent by tonnage over the next 25 years. Machinery, Instruments, Transportation Equipment and Metals is the next largest commodity group in terms of value but is quite low in tonnage. In 2010, the Other Miscellaneous Goods group represented 13 percent of ACT commodity production by value, only 1 percent by tons. Tonnage for this commodity group is expected to increase about 30 percent over the next 25 years, but decrease more than 10 percent in terms of value, dropping to about half the current share of regional production.

The fastest growing commodity groups for the North East ACT are the Petroleum, Coal and Chemicals group, Pulp or Paper Products, and Forest or Wood Products. All three groups are expected to at least double their share of regional production by value over the next 25 years. Growth for the Petroleum, Coal and Chemical group by tons is quite high – 159 percent higher in 2035 and growing to nearly one quarter of the region’s commodity production in terms of tonnage. However, production levels within this category vary significantly depending on economic conditions.

The North East ACT’s top exported commodities include Food or Kindred Products, Petroleum, Coal and Chemicals, Machinery, Instruments, Transportation Equipment and Metals, and Forest or Wood Products.

South Central ACT

Table 2.10 South Central ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rate

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	35%	-0.80%	-18%	27%	2%	-2.30%	-44%	1%
Food or Kindred Products	17%	0.10%	3%	16%	11%	-0.70%	-16%	8%
Petroleum, Coal, Chemicals	11%	3.10%	113%	21%	24%	2.30%	76%	33%
Pulp or Paper Products	3%	0.30%	8%	3%	1%	1.40%	42%	1%
Other/Miscellaneous	16%	0.20%	5%	16%	1%	2.60%	88%	2%
Forest or Wood Products	16%	0.50%	12%	17%	47%	0.70%	19%	45%
Clay, Minerals, Stone	1%	-0.10%	-2%	1%	14%	-0.40%	-9%	10%

The South Central ACT is predominantly rural and includes Klamath and Lake Counties. Population centers include Klamath Falls and Lakeview. Table 2.10 lists the South Central ACT commodity production shares and forecast growth rates. The Machinery, Instruments, Transportation Equipment and Metals group is the largest commodity group produced in the South Central ACT. This group represents over one-third of the commodity production by value. Production is expected to decline in this group over the next 25 years but will remain a major commodity group for the region.

The Petroleum, Coal and Chemicals group makes up about 10 percent of commodity production by value and nearly one-fourth of production by tons. This commodity group is expected to grow at a fairly high rate, resulting in an expected increasing share of regional production. Production levels within this category and Forest or Wood Products vary significantly depending on economic conditions. Most of the other commodity groups' production shares are expected to remain the same over time. Other Miscellaneous Goods are expected to grow in terms of tonnage, but the share remains quite small for the area.

The South Central ACT's exported commodities include Forest or Wood Products, Petroleum, Coal and Chemicals, and Food or Kindred Products.

Rogue Valley ACT

Table 2.11 Rogue Valley ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	40%	0.60%	15%	35%	3%	0.10%	1%	3%
Food or Kindred Products	11%	0.90%	25%	11%	8%	1.10%	31%	8%
Petroleum, Coal, Chemicals	8%	2.60%	92%	11%	16%	2.80%	98%	22%
Pulp or Paper Products	6%	1.10%	32%	6%	1%	1.20%	34%	1%
Other/Miscellaneous	23%	1.50%	44%	25%	2%	0.80%	21%	2%
Forest or Wood Products	12%	0.80%	22%	11%	53%	0.70%	19%	46%
Clay, Minerals, Stone	1%	0.50%	12%	1%	16%	1.60%	48%	18%

The Rogue Valley ACT includes Josephine and Jackson Counties located on the California-Oregon border and includes the population centers of the Rogue Valley MPO (Medford vicinity) and Grants Pass. Table 2.11 lists the Rogue Valley ACT commodity production shares and forecast growth rates. The largest commodity group is Machinery, Instruments, Transportation Equipment and Metals in terms of value, and Forest or Wood Products in terms of tons. Neither group is expected to grow particularly fast over the next 25 years, which results in a decline in their share of total ACT commodity production. The Petroleum, Coal and Chemicals group is expected to nearly double over the next 25 years both in terms of value and tons. Production levels within this category and Machinery, Instruments, Transportation Equipment and Metal vary significantly depending on economic conditions.

The Other Miscellaneous Goods group is expected to grow in terms of value over the next 25 years, increasing its share of ACT commodity production to about one-fourth of the total. The Food and Kindred Products share of ACT production will remain stable over time, but increase more than 25 percent over the next 25 years. The Clay, Minerals and Stone group is not expected to increase production share much in terms of value. However, in terms of tons production the group is expected to increase nearly 50 percent over the next 25 years.

The Rogue Valley ACT's exported commodities include Machinery, Instruments, Transportation Equipment and Metals, Forest or Wood Products, Food or Kindred Products, and Pulp or Paper Products.

Lower John Day ACT

Table 2.12 Lower John Day ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	29%	4.10%	172%	48%	4%	1.10%	32%	4%
Food or Kindred Products	27%	0.50%	12%	18%	15%	0.40%	10%	14%
Petroleum, Coal, Chemicals	14%	2.60%	89%	16%	29%	1.30%	37%	33%
Pulp or Paper Products	3%	2%	66%	3%	1%	3.10%	114%	2%
Other/Miscellaneous	17%	-0.70%	-16%	9%	2%	-2.30%	-43%	1%
Forest or Wood Products	9%	-0.20%	-5%	5%	31%	0.70%	18%	30%
Clay, Minerals, Stone	2%	-1.20%	-27%	1%	17%	0.60%	15%	16%

The Lower John Day ACT includes Wasco, Sherman, Gilliam and Wheeler Counties. Less than 1 percent of the state's population resides within this ACT. Table 2.12 lists the Lower John Day ACT commodity production shares and forecast growth rates. The Machinery, Instruments, Transportation Equipment and Metals group and Food and Kindred Products group represent the major commodities produced within this ACT. Together they make up over half the commodity production for the area. The Food and Kindred Products group is expected to grow modestly in the future. Growth is expected for Machinery, Instruments and Transportation Equipment, with production more than doubling over the next 25 years. This commodity group is subject to varying levels of production depending on economic conditions.

Other Miscellaneous Goods, Forest or Wood Products, and Clay, Minerals, and Stone commodity production are expected to decline over the next 25 years in terms of value. A decline in terms of tons is expected only for Other

Miscellaneous Goods; tonnage increases modestly for the other two commodity groups.

Lower John Day ACT's exported commodities include Petroleum, Coal and Chemicals, Food or Kindred Products, and Machinery, Instruments, Transportation Equipment and Metals.

Central Oregon ACT

Table 2.13 Central Oregon ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	45%	1%	28%	40%	3%	0.40%	9%	2%
Food or Kindred Products	12%	1.40%	40%	12%	8%	1.70%	53%	7%
Petroleum, Coal, Chemicals	7%	3.40%	130%	12%	16%	3%	109%	21%
Pulp or Paper Products	2%	1.60%	48%	2%	1%	1.10%	30%	1%
Other/Miscellaneous	16%	1.20%	34%	15%	2%	1.70%	53%	2%
Forest or Wood Products	16%	2%	66%	18%	53%	1.90%	58%	52%
Clay, Minerals, Stone	1%	0.40%	10%	1%	17%	1.30%	40%	15%

The Central Oregon ACT includes the counties of Jefferson, Deschutes and Crook. About 6 percent of Oregon's population resides within this ACT, and it includes the Bend MPO. Table 2.13 lists the ACT's commodity production shares and forecast growth rates. Machinery, Instruments, Transportation Equipment and Metals is the largest commodity production group for this ACT, making up nearly half the commodities produced in terms of value. Forest or Wood Products is the largest commodity group in terms of tons. The Machinery, Instruments, Transportation Equipment and Metals group is expected to grow modestly over the next 25 years, resulting in a small reduction in the share of regional commodity production. The Forest or Wood Products group is expected to increase over 50 percent over the next 25 years both in terms of value and tons.

The Petroleum, Coal and Chemicals group represents less than 10 percent of the total commodity production in the ACT, but the forecast growth rate is relatively high. The share of total commodity production in terms of value and tons is expected to more than double over the next 25 years. This commodity group and the Machinery, Instruments, Transportation Equipment and Metals group vary in the level of production depending on economic conditions.

Central Oregon ACT exports include Machinery, Instruments, Transportation Equipment and Metals, Forest or Wood Products, Food or Kindred Products, and Petroleum, Coal and Chemicals.

Mid Willamette Valley ACT

Table 2.14 Mid Willamette Valley ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	42%	1.50%	45%	41%	3%	0.90%	24%	2%
Food or Kindred Products	22%	1%	29%	19%	15%	1%	30%	12%
Petroleum, Coal, Chemicals	10%	2.40%	83%	12%	15%	2.60%	91%	17%
Pulp or Paper Products	5%	1.60%	50%	5%	2%	1.50%	44%	2%
Other/Miscellaneous	11%	2.40%	82%	14%	4%	1.90%	61%	3%
Forest or Wood Products	8%	2%	66%	8%	39%	2.10%	69%	40%
Clay, Minerals, Stone	1%	1.70%	51%	1%	22%	2.40%	81%	24%

The Mid Willamette Valley ACT includes Marion, Yamhill and Polk Counties. About 12 percent of the state's population resides in this ACT, and it includes the state capital of Salem. Table 2.14 lists the ACT's commodity production share and forecast growth rates. The Machinery, Instruments, Transportation Equipment and Metals group makes up the largest share of commodity production by value for this ACT. Growth is forecast to be modest, but the share of production is expected to be stable. The level of production varies, depending on economic condition.

The Food and Kindred Products group represents the next largest commodity production share with modest growth and a stable share expected. The Petroleum, Coal, and Chemicals group and Other Miscellaneous Goods group are expected to grow significantly, over 80 percent over the next 25 years. This results in their commodity share increasing a little in the future. The Forest or Wood Products, Petroleum, Coal and Chemicals, and Clay, Minerals and Stone commodity groups are expected to grow at a CAGR rate greater than 2 percent over the next 25 years in terms of tonnage.

The Mid Willamette Valley ACT's exports include Machinery, Instruments, Transportation Equipment and Metals, Food or Kindred Products, Petroleum, Coal and Chemicals, and Pulp or Paper Products.

Cascades West ACT

Table 2.15 Cascades West ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	66%	0.80%	23%	66%	5%	0.50%	13%	4%
Food or Kindred Products	10%	0.10%	2%	8%	10%	0.10%	3%	7%
Petroleum, Coal, Chemicals	5%	1.80%	56%	7%	13%	1.90%	58%	15%
Pulp or Paper Products	4%	0.30%	7%	3%	3%	0%	0%	2%
Other/Miscellaneous	8%	1.20%	34%	9%	1%	-0.40%	-9%	1%
Forest or Wood Products	6%	1.20%	36%	7%	45%	1.40%	40%	46%
Clay, Minerals, Stone	1%	0.90%	25%	1%	23%	1.50%	45%	25%

The Cascades West ACT includes Lincoln, Benton and Linn Counties. About 6 percent of the state's population resides within this ACT, and it includes the Corvallis MPO. Table 2.15 lists the ACT's commodity shares and forecast growth rates. The Machinery, Instruments, Transportation Equipment and Metals group is the major commodity production group by value, over 60 percent of the area total production. Growth is forecast to be modest for this group within the Cascades West ACT. Production is expected to increase slightly more than 20 percent over the next 25 years with regional production share remaining the same over time. Production levels vary significantly depending on economic conditions.

Food and Kindred Products is the next largest commodity production group, making up about 10 percent of ACT production with growth expected to be flat into the future. The Petroleum, Coal and Chemicals group is expected to grow over the next 25 years at CAGR rates close to 2 percent. However, this commodity group has a fairly small share of ACT production and will increase in share modestly in the future. The Forest or Wood Products group represents a large share of commodity production in terms of tons, with an expected increase of 40 percent over the next 25 years.

The Cascades West ACT's exports include Machinery, Instruments, Transportation Equipment and Metals, Petroleum, Coal and Chemicals, Food or Kindred Products, and Pulp or Paper Products.

South West ACT

Table 2.16 South West ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	28%	1%	30%	29%	1%	0.30%	9%	1%
Food or Kindred Products	17%	0.30%	7%	15%	6%	0.80%	21%	6%
Petroleum, Coal, Chemicals	6%	2.90%	104%	11%	10%	2.40%	81%	13%
Pulp or Paper Products	8%	-1.10%	-25%	5%	2%	-1.10%	-25%	1%
Other/Miscellaneous	15%	0.50%	13%	13%	1%	1.80%	56%	1%
Forest or Wood Products	25%	1.20%	34%	26%	66%	0.90%	26%	64%
Clay, Minerals, Stone	1%	-0.10%	-3%	1%	14%	1.10%	31%	14%

The South West ACT includes Douglas, Coos and Curry Counties. Just over 4 percent of the state's population resides in this ACT. Table 2.16 lists the ACT's commodity shares and forecast growth rates. The Machinery, Instruments, Transportation Equipment and Metals, and Forest or Wood Products groups make up just over half of the ACT commodity production in terms of value. The Machinery, Instruments, Transportation Equipment and Metals group represents a very low share by tons, while the Forest or Wood Products group makes up a very large share of commodity production by tons. Both commodity groups are expected to grow modestly over the next 25 years in the South West ACT, and their share will remain stable.

The Petroleum, Coal, and Chemicals group is expected to more than double in terms of value over the next 25 years, increasing the production share from 6 percent to more than 10 percent. Tonnage for this commodity group is expected to increase as well, but not quite to the same extent. The ACT's production of Pulp or Paper Products is expected to decline in the future. The forecast CAGR is negative, resulting in an expected 25 percent decrease in commodity production for this group in terms of value and tons.

This ACT's commodity production occurs in areas subject to variation due to economic conditions, including the Machinery, Instruments, Transportation Equipment and Metals, Petroleum, Coal and Chemicals, and Forest or Wood Products groups. The South West ACT's exports include these three commodity groups and also Food or Kindred Products.

South East ACT

Table 2.17 South East ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	9%	2.70%	93%	12%	1%	0.50%	14%	0%
Food or Kindred Products	45%	1%	27%	38%	25%	1%	29%	20%
Petroleum, Coal, Chemicals	12%	2.60%	88%	15%	27%	2.60%	90%	31%
Pulp or Paper Products	4%	- 0.90%	-21%	2%	1%	- 0.90%	-20%	0%
Other/Miscellaneous	22%	2.10%	67%	25%	1%	2.50%	84%	1%
Forest or Wood Products	8%	1.60%	49%	8%	28%	1.90%	61%	28%
Clay, Minerals, Stone	0%	1.90%	60%	0%	18%	2.40%	79%	20%

The South East ACT area is predominantly rural, including Grant, Harney and Malheur Counties. Population centers for the ACT include Ontario and Burns. Table 2.17 lists the South East ACT's commodity production shares and forecast growth rates. Food and Kindred Products are the principal commodity produced, making up over 40 percent of the regional production in terms of value and 25 percent by tons. The amount of production is expected to grow at a moderate pace, resulting in a reduced share of the ACT's commodity production.

Growth is expected for the Machinery, Instruments, Transportation Equipment and Metals group, Petroleum, Coal and Chemicals group, and Other Miscellaneous Goods group. All three groups are expected to grow at CAGRs greater than 2 percent. The commodity production shares by value for these three groups together increase from 43 percent to 52 percent over 25 years. The Clay, Minerals and Stone group represents a very small share of commodity production by value, but nearly 20 percent in terms of tons. This share by tons is expected to increase nearly 80 percent over the next 25 years. Pulp or Paper Products are expected to decline in the future. This commodity group represents a small share of production, which is forecast to decline about 20 percent over the next 25 years.

The South East ACT's exports include Food or Kindred Products, Petroleum, Coal or Chemicals, and Forest or Wood Products. Commodities produced within these categories are subject to less variation due to economic conditions than commodities in other ACTs within Oregon.

Lane County ACT

Table 2.18 Lane County ACT Shares by Commodity Group 2010 – 2035, by Tons, Value and Growth Rates

	Value				Tons			
	Region Share - 2010	CAGR	25 Year Percent Change	Region Share - 2030	Region Share - 2010	CAGR	25 Year Percent Change	Region Share – 2030
Machinery, Instruments, Transportation Equipment, Metals	54%	1.70%	52%	54%	6%	0.60%	17%	4%
Food or Kindred Products	12%	1.30%	37%	10%	10%	0.80%	23%	8%
Petroleum, Coal, Chemicals	8%	2.10%	68%	9%	15%	2.40%	81%	18%
Pulp or Paper Products	4%	2.20%	72%	5%	2%	1.50%	43%	2%
Other/Miscellaneous	12%	1.90%	60%	12%	1%	2.10%	69%	2%
Forest or Wood Products	9%	1.90%	61%	9%	41%	2.10%	67%	45%
Clay, Minerals, Stone	1%	0.40%	10%	1%	25%	1.10%	33%	21%

The Lane County ACT is a mix of rural and urban activity. Over 8 percent of the state's population resides in this county, and it includes the Eugene/Springfield MPO. Table 2.18 lists the Lane County ACT commodity production shares and forecast growth rates. The Machinery, Instruments, Transportation Equipment and Metals group makes up over 50 percent of the share of commodity production by value, only 6 percent by tons. Production within this group is expected to increase over 50 percent over the next 25 years. The Food or Kindred Products group and Other Miscellaneous Goods make up nearly one-fourth of commodity production for the Lane County ACT by value. The Food or Kindred Products group is expected to increase somewhat modestly over the next 25 years with the regional share of production declining a small amount.

The Forest or Wood Products group is expected to grow at a CAGR of nearly 2 percent over the next 25 years, increasing more than 60 percent in terms of value. Commodities in this group are heavy, making up over 40 percent of the region's commodity production by tons. The Petroleum, Coal and Chemicals group makes up about 8 percent of the area commodity production by value, 15 percent by tons, and is expected to increase more than 80 percent over the next 25 years.

Lane County ACT exports include Machinery, Instruments, Transportation Equipment and Metals and Petroleum, Coal and Chemicals, which vary significantly depending on economic conditions. Pulp or Paper Products, Forest or Wood Products, and Food or Kindred Products are also exported from this area.

2.5 CONCLUSION

Generally, Oregon's economy is expected to grow and increase the demand for freight, despite the recent setbacks witnessed during the recession. This is assumed to be the most likely direction that the economy will take in the future. However, it is possible that significant changes, such as faster or slower than expected economic growth, may occur in coming years, which would have significant impacts on freight demand. Chapter 7 discusses potential impacts on Oregon freight demand if alternate scenarios were to occur.

Oregon Industries and Freight Movement

3.0 Oregon Industries and Freight Movement

3.1 INTRODUCTION

A state's economy and industry structure – its major businesses, their suppliers, the markets they serve and their growth prospects – have a direct impact on the condition and performance of its freight transportation system. Understanding how Oregon industries rely on transportation is critical to developing a system which meets user needs. Such a system supports industry competitiveness and ensures a healthy Oregon economy in the future.

In order to better understand the relationship between industry needs and the freight transportation system, data analyses, in-depth interviews with Oregon businesses, industry stakeholders and American companies that use Oregon's multimodal transportation network were completed. Results of this process include:

- Identification of key Oregon industries;
- Analysis of the impact of key industry supply chain operations on Oregon's freight transportation system; and
- Understanding of the critical issues that companies in these key industries encounter when moving their products on the Oregon freight system.

Several major Oregon industry groups were analyzed, as listed in Table 3.1. These industries were selected for a number of reasons:

- They are the largest sectors in Oregon based on a number of economic measures (contribution to state gross domestic product, contribution to state employment, overall payroll ranking); and/or
- They have substantial transportation system requirements and are highly freight dependent; and/or
- A sizable portion of their production costs consist of transportation costs.

Table 3.1 Key Oregon Industries Profiled in this Chapter

Industry Title (NAICS code[48])	2009 Employment*	2009 Share of Total Employment
Agriculture, Forestry, Fishing, (111)	48,700**	3.0%
Computer and Electronics Manufacturing (334)	35,500	2.5%
Food Manufacturing (311)	23,700	1.0%
Machinery Manufacturing (333),	9,700	0.6%
Metals Manufacturing (331 & 332),	22,000	1.0%
Transportation Equipment Manufacturing (336)	10,000	0.6%
Wood and Paper Manufacturing (321)	20,900	1.0%
Wholesale Trade (42)	75,500	5.0%
Retail Trade (44)	183,600	11.0%
Services and All Others (5)***	1,224,100	74.0%
Total Non-Farm Employment	1,653,700	100.0%

*Oregon Employment Department "Current Employment Statistics 2009" https://www.qualityinfo.org/ed-ceest/
** Oregon Employment Department "Covered Employment and Wages 2009" This number also represents employment for Hunting, Mining and Logging.
***The 'Services and All Others' category includes a wide range of industries, but primarily includes service-sector industries, such as financial activities, government, real estate and educational and health services, which generate limited freight transportation demand and are thus less dependent on freight services.

3.2 INDUSTRY CONTRIBUTION TO OREGON'S ECONOMY

The contribution of the key industries to Oregon's economy will be discussed in terms of 1) output and Oregon GSP share, 2) contribution to employment and 3) anticipated industry growth.

Output and Oregon Gross State Product (GSP) Share

Table 3.2 below describes industry contribution to total Oregon GSP and total Oregon manufacturing GSP of each of the key industries. As is true of much of the U.S. economy, the majority of Oregon GSP is concentrated in service sector industries that are not generally dependent on freight transportation services.

48 North American Industry Classification System (NAICS): See Appendix F.

However, the key freight-dependent industries highlighted in Table 3.2 provide many of the products that Oregon trades with other parts of the U.S. and the world and therefore represent a particularly important component of the state's economy.

Table 3.2 Industry Contribution to GSP

Industry Sector*	2008 GSP (in Millions)	Percentage of Total Manufacturing GSP	Percentage of Total GSP
Agriculture, Forestry & Fishing	$3,984	N/A	2.50%
Computer & Electronics Manufacturing	$15,211	50.40%	9.40%
Food Manufacturing	$2,669	8.80%	1.70%
Machinery Manufacturing	$1,288	4.30%	0.80%
Metals Manufacturing	$2,569	8.50%	1.60%
Transportation Equipment Manufacturing	$941	3.10%	0.60%
Wood and Paper Manufacturing	$3,302	10.90%	2.00%
Wholesale Trade	$10,514	N/A	6.50%
Retail Trade	$8,691	N/A	5.40%
Service and All Others*	$112,404	14.00%	69.50%
2008 Oregon Total GSP (in Millions: 2008)	$161,573	100%	100%

Source: State of Oregon Office of Economic Analysis (OEA) Data and 2006 Annual Survey of Manufactures.

* The 'Services and All Others' category, which includes the remaining 69.5 percent of GSP, includes a wide range of industries, but primarily includes service-sector industries, such as financial activities, government, real estate and educational and health services, which generate limited freight transportation demand and are thus less dependent on freight services. The 14 percent of total manufacturing GSP in the "Service and Others" Industry Sector includes apparel, chemical, plastics/furniture manufacturing and others.

Several observations can be drawn from the data in Tables 3.1 and 3.2:

- Oregon is a state that relies heavily on the manufacturing sector. Table 3.2 shows that a significant percentage of total state GSP comes from the manufacturing sector. According to the Bureau of Economic Analysis (BEA), 18.7 percent of Oregon's total GSP comes from the manufacturing sector; comparatively, only 11.6 percent of the U.S. total GDP and 9.9 percent of the State of Washington's GSP come from the manufacturing sector.[49] Oregon's

[49] Bureau of Economic Analysis: Regional Economic Accounts at: https://www.bea.gov/regional/index.htm.

heavy dependence on the manufacturing sector leaves the state vulnerable as a result of cheaper labor in overseas manufacturing. However, current forecasts predict increases in Oregon manufacturing GSP (both in terms of actual value and as a percentage of total GSP), especially in durables manufacturing.[50] Due to the state's heavy reliance on this industry, it is important that businesses in the manufacturing industry are well served by the transportation system to keep costs low and remain competitive in the global economy.

- Computer and electronics manufacturing is a major contributor to total state GSP and state manufacturing GSP (in 2008, more than 50 percent of state manufacturing GSP came from computer and electronics manufacturing). In the past several decades, Oregon has seen a strong increase in high-technology companies and their contribution to GSP. As the state succeeds in attracting more computer and electronics manufacturing firms, which have high-value-added product content and require higher than average skilled workers, Oregon's manufacturing GSP (actual value and share of total GSP) is expected to increase in the future. High-tech companies have high or medium dependence on all modes of transport except pipeline, as well as complex international supply chains. It will be important as volumes increase for the state to enhance freight mobility on these modes, particularly truck and air, and facilitate better connections between modes to satisfy the needs of this critical industry group.[51]

- Industries in decentralized locations are important contributors to the Oregon economy. Agriculture, forestry and fishing, and wood and paper manufacturing are critical components of Oregon's economy, particularly where employment and rural economic vitality are concerned. These industries rely on having multimodal transportation access and tend to be distributed in remote and rural areas. Bulk commodities, such as wood products, are often trucked to reload facilities and transferred into rail containers, railcars or ocean containers for movement to destinations across the U.S. and the world. Rural production areas are not always served by multiple modes of transportation (i.e., barge and rail), thereby restricting modal choice. Transportation costs for these sectors usually make up a large percentage of the cost of goods, so constrained access or mobility can drive up operating costs. To ensure the support of these basic industries, multimodal access and mobility must be preserved and improved, when viable.

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50 State of Oregon Office of Economic Analysis (OEA) data 2008

51 See Table 2.1 in Chapter 2 for more detail.

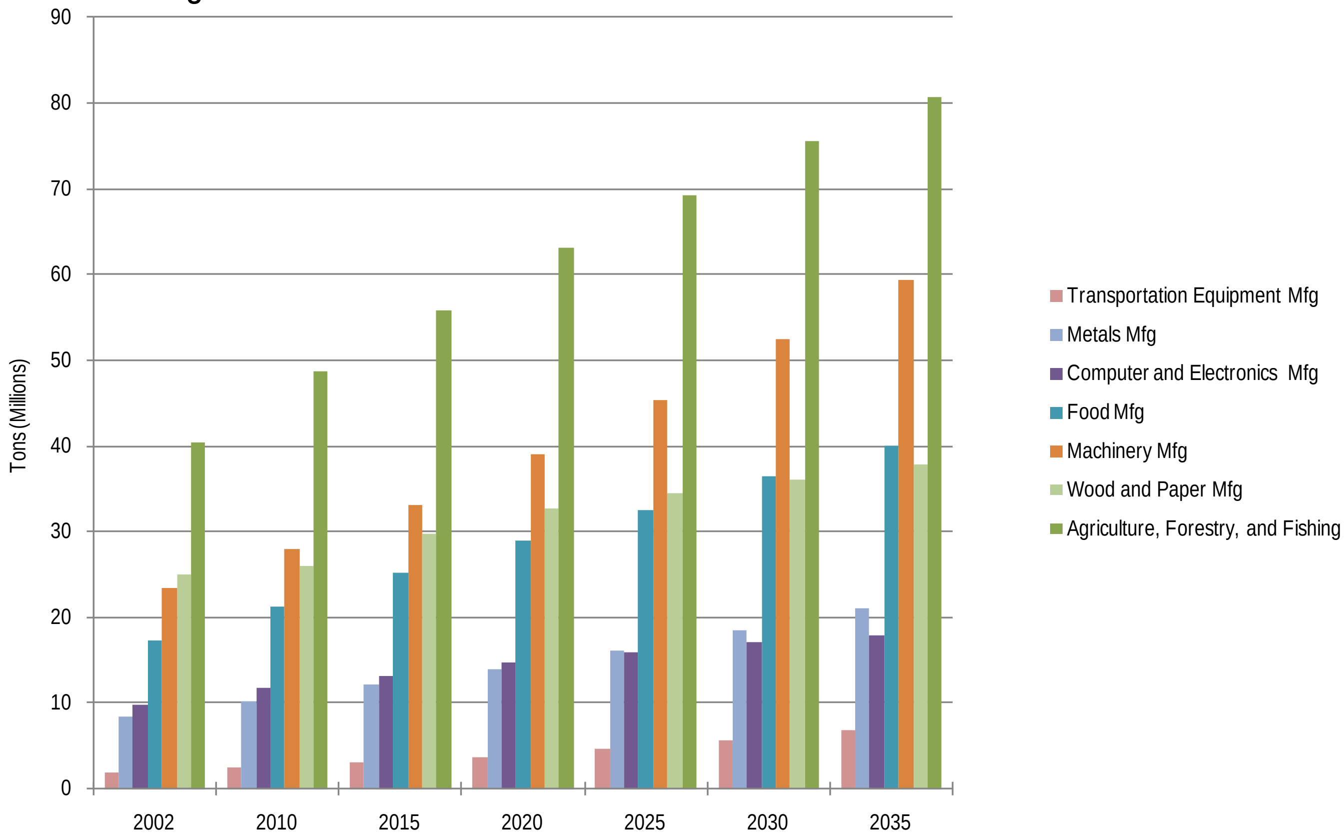
Anticipated Industry Growth in Freight Shipments

Figure 3.1 highlights the anticipated growth in tonnage shipments of key industries. The commodities that make up these industries can be found in Appendix F. The data shows that there are moderate to high-growth industries and slower-growth industries in terms of tonnage movements. High-growth industries include the following:

- Agriculture, Forestry and Fishing. Shipments related to this sector are expected to grow at a high rate of around 2.1 percent annually through 2035.
- Computer and Electronics Manufacturing. The volumes of commodity movements associated with the computer and electronics manufacturing industry are expected to grow at a steady pace, about 1.9 percent annually through 2035.[52]
- Food Manufacturing. Movements related to food manufacturing are expected to increase at a high annual rate of around 2.6 percent by 2035.
- Machinery Manufacturing. Shipments of machinery manufacturing outputs are expected to continue to increase substantially through 2035, with an expected annual growth rate of around 2.9 percent.
- Metals Manufacturing. Movements related to metals manufacturing are expected to grow at a fast pace of around 2.9 percent through 2035.
- Transportation Equipment Manufacturing. The volume of movements of transportation equipment manufacturing-related commodities is expected to grow at a very high rate – around 4 percent annually through 2035.
- Wood and Paper Manufacturing. Movements are expected to increase modestly at 1.3 percent annually through 2035.

52 Oregon Commodity Flow Forecast, October 2009.

Figure 3.1 Key Oregon Freight Dependent Industries – Projected Growth of Related Commodity Tonnage with Oregon Origin[53,54] 2002 to 2035



Source: Oregon Commodity Flow Forecast data, October 2009.

53 Retail trade and wholesale trade were not included in the tonnage overview because tonnage conversion data are not available for these industries.

54 Tonnage does not translate into the value of goods or economic output. Thus, the growth rate of Agriculture, Forestry and Fishing does not indicate that jobs in this sector are going to increase at the same rate. The only growth that this graph shows is the growth in tonnage.

Implications of Industry Growth for the Freight System

Implications for Oregon freight transportation can be drawn from the data in Figure 3.1:

- High growth in volume of goods will occur in the computers and electronics manufacturing industry. The growth in economic importance (and increased freight tonnage in support of this growth) of computer and electronics manufacturing and the industry's reliance on air and trucking and complex global supply chains will result in an increasing need to strengthen the intermodal connections between these modes and focus efforts on improving overall system reliability.
- Many of Oregon's resource-based industries will still play an important role in the state's economy and a critical role in the economies of many rural and coastal areas. However, the Class I railroad business model currently focuses on long haul freight movements. This consolidation of service and the unprofitable nature of some carload movements have resulted in reduced rail service to some of Oregon's resource-based industries that move their railcar cargo in small lots. Oregon grain shippers struggle to obtain competitive pricing, for example, from Class I railroads because of their low volumes and relatively short hauls. Grain growers usually move goods from rural Oregon, east of the Cascades, to grain export facilities on the Columbia River and the Puget Sound. The change in Class I railroad operations makes rail a less viable option to move goods from the field to these export facilities. Shifting these commodities to trucks has both a cost and competitiveness impact for these sectors and has potential implications for road maintenance and congestion. As a result, ensuring transportation access and routes that can handle heavier loads is particularly important to these industries.

3.3 INDUSTRY LOCATION AND CLUSTERING

While many of Oregon's industries are located near Portland and around the I-5 corridor, many others, especially Oregon's traditional resource-based industries, are located in rural areas throughout the state. Industry site location can be influenced strongly by the nature of the products that are grown, processed or manufactured, domestic or international trade orientation, and the type of transportation modes required.

High-Value Industries

The computer and electronics manufacturing industry is clustered almost entirely within the Portland metropolitan area and Willamette region. In general, this urban clustering provides the following benefits to these industries, which help them be successful:

- Access to transportation infrastructure that facilitates exports (including airports, highways and rail), which is critical to these export-heavy industries;
- Availability and relatively low cost of utilities and land on the urban fringe; and
- Ability for companies to draw on a pool of highly-skilled employees (such as engineers and computer technicians) from the Portland metropolitan region.

Firms within high value-added manufacturing industries, such as machinery manufacturing, are relatively mobile and tend to locate near places with access to ports and relatively congestion-free highway corridors. However, larger manufacturers tend to be stationary due to the investment and infrastructure required to sustain their production sites.

Green technology is a sector that Oregon seeks to promote and develop. Wind turbine farms have clustered along the Columbia River Gorge and central and eastern Oregon, where strong wind currents combine with sparsely-populated land to facilitate installation of wind farms. Oregon is also becoming a hub for solar power manufacturing. Solar energy firms are located in urban areas, including Hillsboro, Gresham, Salem and Eugene, where plentiful higher-skilled labor and large land parcels are available.

Companies in the wholesale trade, footwear, apparel and recreation products sectors are predominantly located in the Portland metro region because of easy access to maritime, air, truck and rail transportation. These industries also have a strong import orientation, which makes access to various modes critical.

General Manufacturing Companies

General manufacturing companies are located across Oregon, with many concentrated in the Portland and Salem urban areas. Metals manufacturers are clustered in the northwest portion of the state, in particular in the Portland metro and upper Willamette Valley areas. Most food manufacturers are located in the western half of the state, with a heavy concentration around Portland and Salem. There are also some clusters in eastern Oregon near the Columbia River. Outside of these urban clusters, this industry is somewhat more dispersed than others because location decisions tend to be driven by proximity to cheaper, inexpensive land, rail corridors and raw materials (e.g., agricultural inputs).

Natural Resource-Dependent Industries

Natural resource-dependent industries tend to be located in the state's rural areas. Fishing companies are naturally located on the coast near their supply source, though they generally have sales offices in the Portland region.

Wood manufacturers are based in mountainous areas, largely west of the Cascade Range close to where timber is harvested to reduce transportation costs, which make up a high percentage of the products' total market price. Clusters of wood and paper mills and production facilities are located throughout the Portland metro area and upper Willamette Valley and in coastal, southwest and central Oregon.

The agriculture sector tends to be fixed by location but is also relatively dispersed throughout the state, depending on the type of resource. Most farms and agricultural reload and processing facilities are spread throughout the upper Willamette Valley, and western, central, eastern and southern Oregon, where land is rich and abundant. Within this diverse industry cluster, specific industries tend to cluster in certain regions. For example:

- Many of Oregon's vineyards are located in the Willamette Valley, as well the Columbia River, Umpqua, Rogue and Applegate Valleys because of the nature of the soil and climate; and
- Growers of nursery stock and trees used in residential and commercial landscaping are highly concentrated in the Willamette Valley,

Transportation and Logistics Service Companies

Service companies, such as those in the transportation, logistics and distribution sector, serve domestic and international shippers all across Oregon and therefore operate where their customers are located.

3.4 INDUSTRY TRANSPORTATION SYSTEM AND SERVICE REQUIREMENTS, ISSUES AND OPPORTUNITIES

High-Value Industries

High-value industries are characterized by complex, long-distance supply chains that require materials from all over the world. In turn, many of the products produced by these high-value industries are also sold globally. As a result, these industries are dependent on smooth functioning marine and air transport. Domestic shipments of high-value industries move by truck and, to a lesser extent, on rail, and reliability on these modes is critical. Companies that manufacture high-value products have the following transportation requirements:

- Access to international air cargo service at Portland International Airport (PDX). Since the majority of the finished products in this sector are high value, time sensitive and/or relatively small, they utilize airfreight to international and out-of-state domestic customers. Therefore, having adequate, reliable and direct international air carrier service at Portland International Airport is important; otherwise, products must be trucked to Seattle-Tacoma International Airport or San Francisco International Airport, which may increase costs and transit time. In addition, to satisfy promised delivery dates to their customers, technology firms must be able to access Portland International Airport in a reliable and consistent manner via the road and highway network to meet airfreight deadlines.
- Dependable transit times to and from the Port of Portland. Raw materials and components required by these industries for production often arrive from Europe and Asia by ship. Ensuring these goods can move quickly through the Port of Portland and over the surface transportation system is of utmost importance to the just-in-time manufacturing processes of this industry cluster.
- Supply chain consistency and reliability. Predictable supply chains are essential to manage the complexity of materials arriving from all over the world and to mitigate the risk of business interruption. High-value industries are less price-sensitive than other industries when it comes to transportation costs and are more concerned about transportation service reliability.
- Access to regions of new industry development. Green energy businesses are branching out to rural parts of the state to develop infrastructure such as wind farms. Growth in the wind industry will depend on having sufficient transportation to rural locations and planned wind farm facilities for delivering the heavy and large wind turbine components.

General Manufacturing Industries

Food and metals manufacturers depend on having low-priced transportation options, supply chain consistency and reliability, transportation modal choice, and access to fast, refrigerated transportation modes to ship perishable goods. A supply of industrial land near major markets is also essential to keep transportation costs down for these industries.

Supply chain consistency and reliability are essential to companies in the wholesale trade, footwear, apparel and recreation equipment industries. They are less transportation price-sensitive than firms in some other industry clusters, such as agriculture and forest products.

Resource-Dependent Industries

Wood and paper manufacturers rely heavily on trucks, Class I rail and shortline rail to get their goods to market and on barges for shipment of raw materials. Though wood and paper manufacturers source many inputs from Oregon and the Pacific Northwest, they also ship to and from many international locations, using marine ports on the Pacific, Gulf and Atlantic coasts, as well as several international land border gateways with Canada.

Overall, resource-dependent industries receive a high percentage of value-added from transportation, which means that the overall direct effect of freight investments on them is high. Some of the critical transportation system needs of these industries include the following:

- Supply chain dependability. These industries rely on a steady flow of raw materials to function. Therefore, fast and reliable transportation is critical, in particular if the commodity being shipped is perishable.
- Modal choice. Resource-dependent shippers need modal flexibility, depending upon the products being transported, so having access to all modes – shortlines, Class I railroads and intermodal facilities, barge, ocean transport, air service (for certain exported perishable agricultural products) and truck – is very important.
- Access to the nation’s marine and land border crossing/gateways. These industries make use of ports on all three coasts of the U.S., as well as several land border gateways with Canada like Blaine, Washington, to import raw materials and export finished goods.
- Widespread truck network. These industries rely on trucking for many trips that are less than 500 miles in length, to and from locations all around the Oregon and bordering states.
- Special equipment and designated routes for trucks that require permits**.** Some agricultural products and fish are highly perishable, so access to refrigerated equipment in all modes (rail, truck, air and barge) is essential. Some products like mining and construction materials are heavy, so having an adequate number of over-dimensional truck routes across the state facilitates safe, timely and cost-effective transportation of heavy loads.

Transportation and Logistics Service

Companies in the transportation, logistics, distribution and warehousing industry require consistent transit times to ensure customer satisfaction and on-time delivery of manufacturing inputs and finished products, access to all modes of transport and smooth connections between transportation modes.

Critical Industry Issues

A survey for the OFP of shippers and carriers identified a number of critical issues.

High-Value Industries

Several issues can adversely affect the critical transportation functions of high-value industries, including the following:

- Highway congestion issues within the Portland area and around Portland International Airport. Congestion and bottlenecks on highways leading to/from Portland International Airport can result in cost and transit time reliability issues for industries dependent on air freight.
- Limited direct international air freight service at Portland International Airport and ocean carrier service at Port of Portland. The availability of air cargo service and marine cargo service is volatile. The addition or removal of a single flight at Portland International Airport may have far-reaching impacts on supply chains throughout the region. For example, airlines may determine to remove service because of market conditions or add service to a new market which might reduce travel time and cost for Oregon businesses significantly. This type of change in freight carriers and destinations impact distribution patterns and costs for those industries reliant on air freight to get goods to lucrative overseas markets. A similar situation exists at Portland's marine terminals.
- Permitted load truck standards and regulations. Size and weight permitting is necessary to protect transportation infrastructure from excessive wear, especially from those trucks that have significantly higher weights per axle. Highways are designed to specific national or state standards, which are exceeded by trucks that require permits. These trucks are a low percentage of truck movements; however, industries clustered in certain areas can benefit from or need access to trucks that require permits. For example, the wind industry requires transportation of wind turbines, which are heavy and overdimensional. A well-functioning and user-friendly permitting system requires knowing where these movements are concentrated and understanding the logistics patterns and common routes of these industries. It may be possible to offer more permitting opportunities or to selectively upgrade roads, bridges and tunnels to accommodate permitted loads. In some cases, it may also be cost-effective for the state to assist shortline railroads with track upgrades to maintain adequate service for the shipment of heavy loads.

- Weather-related delays. Some major corridors are often affected by weather-related road closures including I-5, I-84, I-205, U.S. 26, U.S. 30 and facilities over the Siskiyou Pass.

General Manufacturing Industries

Companies in these sectors are impacted by the following challenges:

- Growing transportation delays from increasing highway congestion and lack of highway system redundancy. Shippers report negative impacts from increasing congestion on highways in Oregon and on bridges in metro Portland. Also reported was lack of adequate highway system redundancy that would enable the motor carriers to route around traffic bottlenecks.
- Growing rail congestion and general rail issues. Some shippers noted in interviews that local Class I railroad yards are congested, particularly around Portland. Periodic rail equipment shortages make rail a less attractive option for some shippers, which can lead companies to use trucks instead of rail. This, in turn, increases transport costs. Most shippers are limited to one Class I railroad, which can limit options for service and competition for pricing.[55] Other challenges exist, including the Class I railroads' current pricing structure which favors more efficient longer trains traveling long distances. Shippers requiring short-haul moves or those with insufficient cargo volume sometimes are priced out of the rail market. Access to rail is limited in certain rural areas where shippers would like to use rail. Some stretches of shortline track are deteriorating or unable to handle heavier loads.
- Bridge restrictions. These restrictions are critical to keeping bridges safe for a long period of time and for reducing damage to bridge infrastructure, as damage prevention saves money for repairs. These restrictions do, however, impact routing choices for some general manufacturing companies with heavy loads, such as food or beverage products. Oregon has replaced or repaired hundreds of bridges with Oregon Transportation Investment Act III Bridge Program funds.[56] Oregon, unlike most other states, has taken the initiative to ensure that critical bridges necessary for efficient freight movements are capable of handling heavier loads. Still, it is important to get a clear picture of route and logistics patterns for major industries and to consider upgrading any industry-critical bridges that require work.

55 "Oregon Freight Rail System." Prepared by Parsons Brinckerhoff for the Oregon Rail Study, April 2010.

56 Background Brief: Legislative Committee Services: Bridges. State of Oregon at https://www.oregonlegislature.gov/lpro/Publications/BB2014Bridges.pdf

- Increased demand for industrial land supply on waterfronts and in urban areas. As a result of increased maritime trade to support marine-dependent industries, such as wood and paper manufacturing, the demand for waterfront terminal facilities and waterfront industrial land supply will increase. However, pressure exists to convert industrial land to other uses, such as residential or commercial land. The Metro Regional Freight Plan 2035, suggests that "industrial sanctuaries should continue to be considered a unique and protected land use" in the Metro region.[57] A focused effort to protect industrial land throughout the state is important to maintain Oregon industry competitiveness and viability.
- Ocean carrier and direct international air freight service schedules at the Port of Portland. At times, limitations in port calls or flight schedules can cause companies to use alternate gateways such as the Puget Sound ports of Seattle-Tacoma, or San Francisco-Oakland, which increase costs and transit times.

Resource-Dependent Industries

Companies in this sector are impacted by the following challenges:

- Congestion on major freight corridors. In interviews, shippers reported that increasing congestion is a major concern, especially in Oregon's urban areas and on the Columbia River Crossing I-5 Bridge.
- Lack of highway system redundancy. There are few roads connecting the Oregon coast and coastal range to major population centers in Oregon including the Willamette Valley and beyond the state, as well as to the Port of Portland and Portland International Airport. Because road and highway system redundancy is lacking, companies in the forestry and fisheries industries that harvest and process products off the Oregon coast and in the coastal range face supply chain disruptions when winter weather-related events like flooding, landslides and downed trees cause road closures, or increased summer traffic slows down driving speeds.
- Lack of motor carriers to support rural shippers. Shippers in some rural areas reported having difficulty procuring sufficient empty trucks during certain times of the year. Access to adequate motor carrier service is often limited when motor carriers are resistant to serve rural areas because there often is no return cargo to create a revenue paying round-trip. Therefore, trucks either return empty or motor carriers charge higher rates than for their urban customers.

57 The Metro "Regional Freight Plan 2035," which was released in June 2010, also brings this up as a key finding.

- Truck permitting issues and diminished routing choices. Shippers mentioned that restrictions and rules for permitting heavy and over-dimensional vehicles are somewhat cumbersome; this includes restrictions concerning, for example:
  - Location of pilot car for some loads: some are required in front, others in back, others both;
  - Restrictions on transporting during certain times of day;
  - Restrictions on transporting during certain weather conditions; and
  - Restrictions against holiday moves.

  Permitting regulations allow heavy and over-dimensional loads while balancing the needs of public safety and road users. Good connectivity of routes available to permitted loads is important to industries, as reduced transit time lowers costs and increases competitiveness.
- Challenges with rail service. Forestry shippers lack nearby rail access in certain rural areas where timber harvesting and processing occur. Grain growers have not been able to consistently attain dependable and affordable rail service. In addition, inadequate maintenance and insufficient capacity on some shortline railroads can negatively affect shippers.

Service Companies

Companies in this sector are primarily challenged with growing congestion, in particular in and around the Portland metropolitan region. Decreasing direct commercial airline flights as a result of systemwide capacity reductions may have an impact on Portland competitiveness in the service and other industries sector.

Freight Systems

4.0 Freight Systems

4.1 INTRODUCTION

The previous chapters provide background on the economy, freight demand and critical freight dependent industries and their supply chains. This chapter focuses on describing the freight transportation system and its importance to the industries that use the system. The chapter is divided into the following sections:

- Freight System Overview. This section provides an overview of the multimodal freight system in Oregon, with a focus on truck, rail, marine and aviation, and the connectivity between these modes.
- Strategic Freight Network Selection Methodology and Description. This section provides a system description of how the freight dependent industries of Oregon use major multimodal corridors that support the Oregon economy. The information is used to define a list of strategic freight corridors by industries for the entire state.
- Connectivity. This section provides a description of system elements (roads, rail lines, marine facilities, airports and pipelines) that help connect centers of economic activity for freight-dependent industries with strategic freight corridors.

4.2 FREIGHT SYSTEM OVERVIEW

Freight mobility in Oregon is provided by a multimodal network that includes highways, local roads, rail, air, marine and pipeline operations. The freight system is also part of the National Defense System. According to the 2006 OTP and ODOT's Rail Division, Oregon's transportation system is made up of the following infrastructure:

- 7,441 miles of state highways.
- 4,664 miles of other state roads; 26,861 miles of county roads; 10,011 miles of city roads; 38,666 miles of other government-owned roads. These roads help connect Oregon industries, businesses, population centers and other freight-generating facilities to the major freight transportation corridors.
- 2,086 miles of privately-owned route miles of rail track; 314 miles of publicly-owned track; 1,126 miles of Class I carrier-operated track; 1,274 miles of Class III shortline-operated track; and, 4 miles of switching railroad

track (included in the shortline total).[58] This includes two major transcontinental railroads: The Burlington Northern Santa Fe (BNSF) Railway and the Union Pacific (UP).

- 18 Class I railyards and nine facilities that have the capacity to load and unload unit trains.
- Five deep-draft and four shallow-draft marine port locations.
- Two marine highways.
- 97 public-use airports.
- Nine pipelines to move petroleum and natural gas.

Road/Highway System[59]

The north/south Interstate 5 and east/west Interstate 84 corridors carry the majority of freight traffic in Oregon. These facilities provide Oregon with freight system connections with national and international destinations. I-5 forms part of an international freight corridor connecting Oregon with California and Mexico to the south and Washington and Canada to the north, while I-84 provides connection to the east including Idaho, Utah and other states.

Several state highways offer important opportunities for freight movement because of their location and connectivity to a variety of markets. Large sections of the state, where no interstates are nearby, rely on state highways to import and export goods. Within major urban areas, the complex road network of arterials and connectors is critical for freight movement. Local arterial roadways that lead to marine facilities or other modal terminals are designated by the Federal Highway Administration as Intermodal Connectors on the National Highway System.

The 1999 *Oregon Highway Plan* establishes long-range policies and investment strategies for the state highway system. These policies include the designation of a system of freight routes. The OHP freight routes provide for highway freight

58 Oregon DOT Rail Division.

59 Please see Chapter 9 for discussion of National Highway Freight Network established under Map-21 and the FAST Act.

through movements and connectivity across the state. Many of the OHP freight routes serve as connectors between the coast or specific communities and the interstate system. The strategies and action items identified in Chapter 8 of the OFP should be used with the OHP policies and investment strategies when planning for freight on the state highway system.[60]

Rail System

Oregon's rail network is predominated by two Class I railroads: the UP and the BNSF Railroads. Oregon's rail system consists of a total of 2,400 route miles of track. The two Class I railroads account for 1,126 miles of track, and the remainder is shared by 21 shortline railroads (Class III railroads). Portland & Western Railroad and Central Oregon & Pacific Railroad have the most track mileage for non-Class I railroads in the state, with the former at 286 track miles and the latter at 241 miles.

Oregon's entire rail network is part of the national rail network since all tracks connect to a Class I railroad. The Oregon network is concentrated in the western part of the state, where forest products industry, agricultural producers and population centers rely on the movement of significant freight volumes. The five main lines, or principal routes, that provide mobility throughout Oregon and connect Oregon to the national network are:

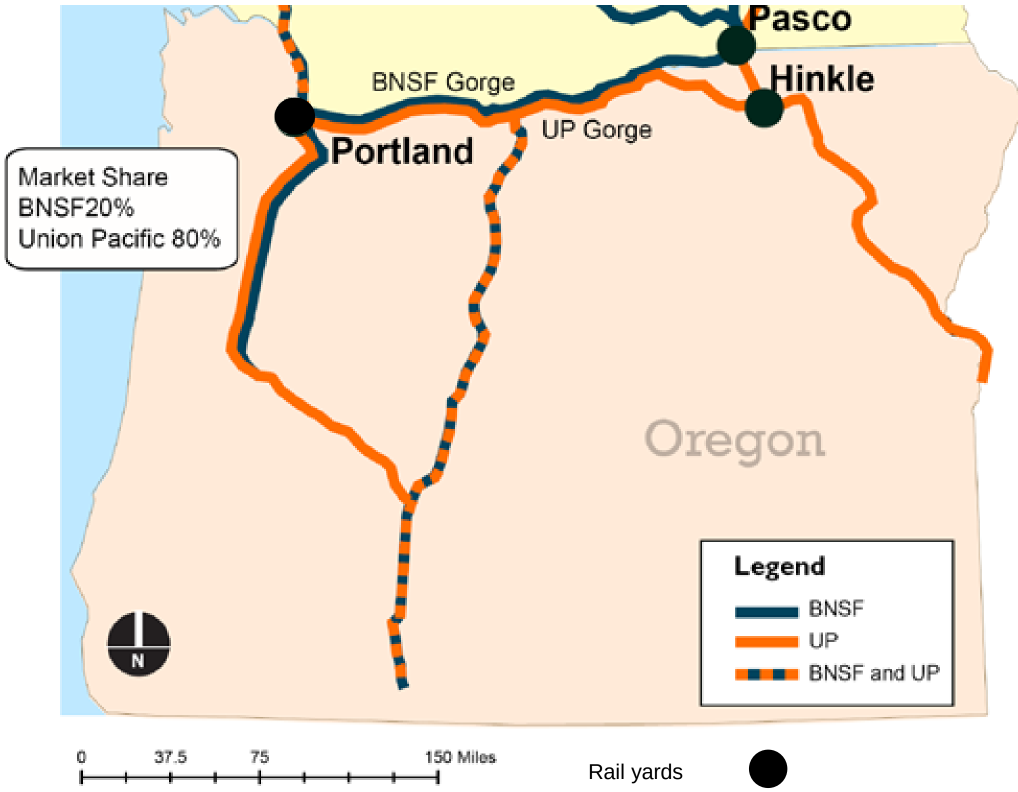
- BNSF Railway (shared by Union Pacific Railroad), northward to Seattle and Canada and eastward to the northern tier states via a crossing of the Columbia River between Portland and Vancouver, Washington;
- Union Pacific Railroad, northward to Spokane, Washington, and Canada via the Hinkle Yard (near Umatilla);
- Union Pacific Railroad, eastward toward the intermountain states and central tier states via La Grande;
- BNSF Railway, crossing the Columbia River into Oregon via Vancouver and Wishram, Washington, and going southward to California through Bend and Klamath Falls; and
- Union Pacific Railroad, southward from Portland to California via Eugene and Klamath Falls.

Figure 4.1 provides an overview of where these Class I corridors are located. The Hinkle and Pasco rail yards, along with the yards in Portland, are important hubs

60 Oregon Highway Plan, https://www.oregon.gov/ODOT/Planning/Documents/OHP.pdf

for rail freight traffic moving through Oregon. For further details, see Oregon Rail Study 2010[61]

Figure 4.1 BNSF and UP Class I Rail Corridors in Oregon



Source: Oregon Rail Study 2010, ODOT.

One factor that could impact freight rail capacity in Oregon is the potential increase in passenger service. As passenger trains increase, tracks could become increasingly congested, which could affect freight rail efficiency. To preserve efficient movement of goods and people in the future, it will be important to make rail improvements so that both freight and passenger capacity needs are met.

Marine System

Oregon's marine freight network is comprised of several waterways and numerous ports. Oregon's waterways serve a large portion of the state through water access to the Pacific Ocean, the Columbia River and Snake River. In

61 ODOT's website: https://www.oregon.gov/ODOT/RPTD/RPTD%20Document%20Library/Oregon-Rail-Study-2010.pdf

August 2010, two major Oregon marine corridors (the Columbia/Willamette/Snake River corridor from the Pacific Ocean to Lewiston, Idaho and the north-south corridor on the Pacific Ocean along Oregon's coast) were designated by the U.S. DOT's Marine Administration as marine highways. Marine highways are eligible for federal funding for improvements and are selected because they will be able to relieve congested truck and rail corridors. The Columbia and Willamette Rivers and the Pacific Coast routes were named M-84 and M-5, respectively.

M-84 connects the ocean Port of Astoria and Oregon's major deep draft port (Portland) with Lewiston, Idaho, and all ports on the Columbia River between the two. In addition, the Pacific Coast Ports of Coos Bay and Newport offer marine outlets for goods moving to and from the central and southern coastal regions of the state. In total, 23 Oregon port districts operate along the Pacific Coast and the Columbia River system, five of which are identified as deep-draft freight terminals: Coos Bay-North Bend and Newport along the coast; Astoria and St. Helens along the Columbia River; and Portland along the Columbia and Willamette Rivers. Shallow-draft freight terminals serve shippers on the Columbia River at The Dalles, Arlington, Boardman (Morrow) and Umatilla. In addition to port districts, the marine system serves many terminals that are entirely owned and operated by private sector entities.

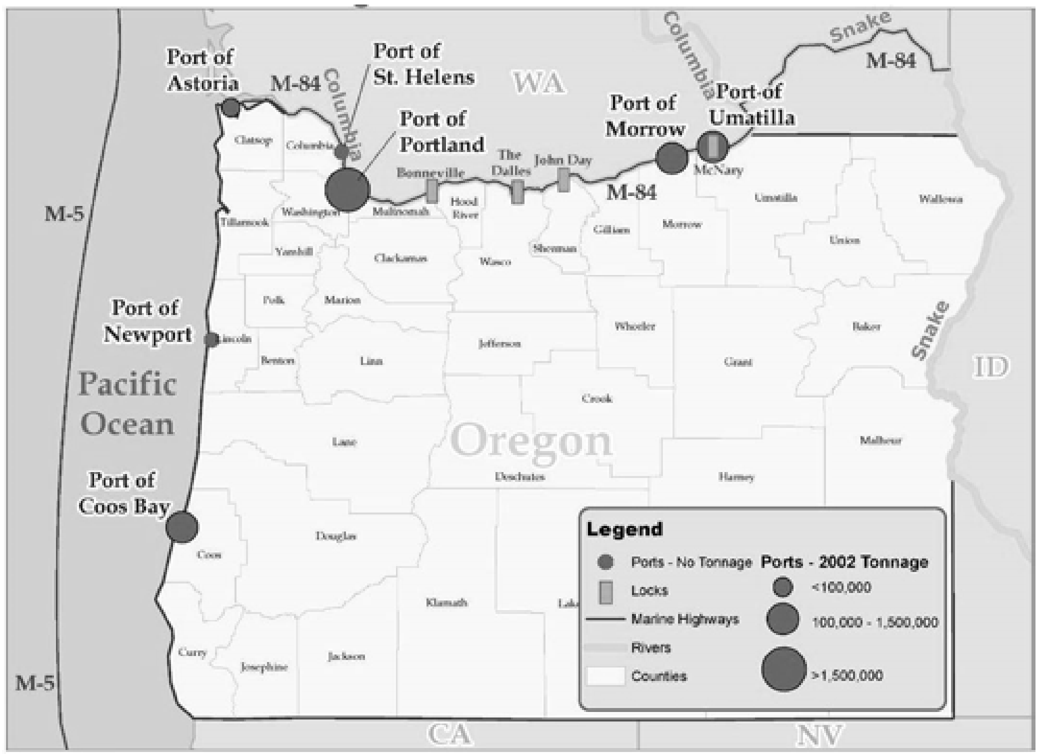
The Portland harbor, located at the confluence of the navigable portion of the Columbia and Willamette Rivers, handles the majority of marine freight in Oregon.[62] The Columbia River's 43-foot channel depth gives Portland access to Pacific Rim trade. From ports to the east of Portland, barges bring agricultural, wood and other products to Portland's marine terminal facilities. Portland harbor constitutes a 12-mile stretch of the Willamette River and two miles along the Columbia River located within Portland's northern industrial districts.

Several locks were built in Oregon. The major locks on the Columbia River are located at McNary Dam, The Dalles Dam, Bonneville Dam and John Day Dam. Channel and jetty maintenance, improvements, dredging and operational locks are all necessary to increase freight throughput and decrease delay and costs for marine freight. Repair and maintenance of jetties on the coast and the jetty on the Columbia River are necessary to protect navigational channels and marinas. Investments in navigational aids are necessary to improve safety and efficiency

62 Parsons Brinckerhoff Ports 2010: A New Strategic Business Plan for Oregon's Statewide Port System December 2009.

on the marine freight network. Figure 4.2 highlights Oregon ports that move a substantial amount of goods, as well as locks and marine highways.

Figure 4.2 Oregon Ports, Locks and Marine Highways



Source: Produced by Cambridge Systematics, Inc for the Oregon Freight Plan.

Aviation System

The *Oregon Aviation Plan* (2007) includes 97 public-use airports in the state's airport system. The Portland International Airport (PDX), operated by the Port of Portland, handles the majority of the airfreight movements in the state. Despite the dominance of Portland International Airport, other regional airports in Oregon provide capacity for the movement of airfreight.

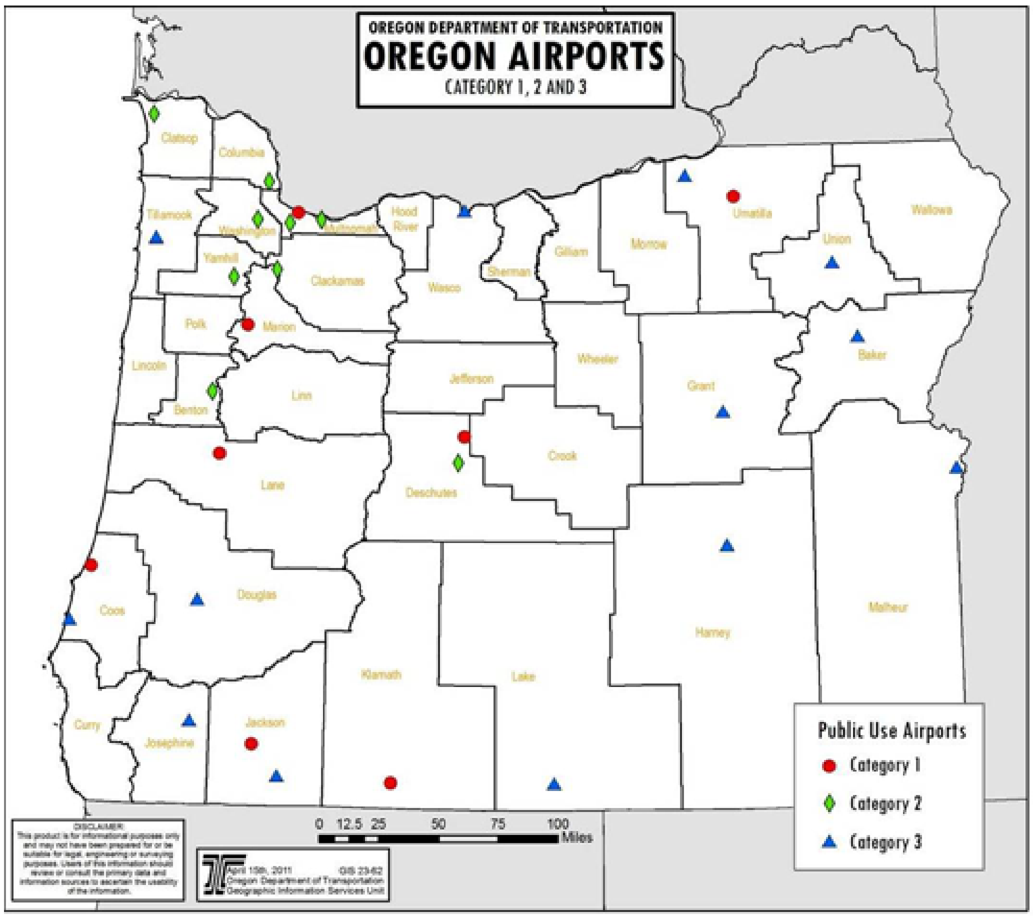
The OAP contains a recommended system of airport classification as shown in Table 4.1. The classification system contains five categories:

1. **Category I –** commercial service airports;
2. **Category II –** urban general aviation airports;
3. **Category III –** regional general aviation airports;
4. **Category IV –** local general aviation airports; and
5. **Category V –** remote access/emergency service airports.

Of the five categories, measurable air cargo shipment volumes are only expected at Category I, II and III airports. These airports are identified in Figure 4.3.

See the OAP and the *Technical Memorandum: Inventory of Oregon Freight Infrastructure*.[63,64]

Figure 4.3 Oregon Category I, II and III Airports



63 https://www.oregon.gov/aviation/Pages/docs/system_plan/2007_oregon_system_plan_details.aspx

64 http://library.state.or.us/repository/2010/201010251124211/index.pdf

Table 4.1 Oregon Aviation Plan Classified Airports

Classification	Airport (Location)*
Category I: Commercial Service Airports	· Eastern Oregon Regional Airport (Pendleton) · Eugene Airport – Mahlon Sweet Field · Klamath Falls International Airport · Portland International Airport · Redmond Municipal Airport – Roberts Field · Rogue Valley International Airport (Medford) · Salem Municipal Airport - McNary Field (Salem) · Southwest Oregon Regional Airport (North Bend)
Category II: Urban General Aviation Airports	· Astoria Regional Airport · Aurora State Airport · Bend Municipal Airport · Corvallis Municipal Airport · McMinnville Municipal Airport · Newport Municipal Airport · Portland Downtown Heliport · Portland – Hillsboro Airport · Portland – Troutdale Airport · Scappoose Industrial Airpark
Category III: Regional General Aviation Airports	· Ashland Municipal Airport – Sumner Park Field · Baker City Municipal Airport · Bandon State Airport · Burns Municipal Airport · Columbia Gorge Regional (The Dalles) · Grant County Regional Airport - Ogilvie Field (John Day) · Grants Pass Airport · Hermiston Municipal Airport · LaGrande /Union County Airport · Lake County Airport (Lakeview) · Ontario Municipal Airport · Roseburg Regional Airport · Tillamook Airport

Source: *Oregon Aviation Plan* 2007, Table 4.2, p. 4-12.

*Note: Location is shown when the airport name does not clearly identify the location of the airport.

Pipeline System

Pipelines are an important part of the multimodal freight network and are responsible for delivering petroleum and related products throughout Oregon. The largest pipelines in the state tend to parallel major freight corridors, such as I-5, I-84 and U.S. 97. The pipeline system in Oregon is completely owned by private companies. The private ownership of this system limits the amount of public information available regarding system capacity and planning.

Pipelines in Oregon carry two primary commodities:

1. **Natural Gas.** There are more than 17,000 miles of natural gas pipeline in Oregon. These lines supply five gas utilities that provide power to households, businesses and industrial users.[65] Oregon does not have any proven gas reserves, so all natural gas must be imported to the state.
2. **Refined Petroleum Products.** Over 300 miles of petroleum product pipelines in Oregon supply the state with gasoline, diesel, jet fuel and other refined petroleum products.[66] Oregon has no petroleum refineries so like natural gas, all of its petroleum must be imported. Oregon is especially reliant on the Olympic Pipeline, which connects Puget Sound refineries to distribution terminals in Portland.

Although the pipeline system is privately owned and operated, it does interact with the rest of the state's transportation network. Petroleum product pipelines, for instance, create demand for truck transportation at their termini since fuel products must be shipped from the terminal to their final destination. If Oregon's pipeline systems reach capacity in the future and no new ones are built, these shipments would have to be made by truck, with potential negative impacts such as infrastructure wear and tear and increased roadway congestion.[67]

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65 American Gas Association, The Natural Gas Industry in Oregon

66 ODOT, Oregon Transportation Plan: Transportation Needs Analysis Summary Report 2005 -2030, July 14, 2005.

67 According to the *Oregon Transportation Plan: Needs Analysis Summary Report 2005*, current and near-term capacity of petroleum pipeline is adequate. However,

4.3 STRATEGIC FREIGHT NETWORK SELECTION METHODOLOGY AND DESCRIPTION

Chapters 2 and 3 summarize the importance of freight-dependent industries to Oregon. These chapters provide background information on factors that drive freight transportation demand in Oregon: the economy, critical freight-dependent industries and their supply chains. The importance of freight-dependent industries to the Oregon economy is highlighted by their contribution to total Oregon GSP (total GSP was $161.5 billion in 2008),[68] total Oregon manufacturing GSP and employment.[69]

To ensure a long-term competitive advantage for Oregon freight-dependent industries, it is necessary to define the elements of the transportation system used by these industries. This analysis highlights the strategic routes for each freight-dependent industry.

The approach to defining the strategic freight network included the following steps:

1. A set of eight important freight-dependent industries was identified by using information contained in Chapters 2 and 3. The Oregon Statewide Integrated Model (SWIM) was used to identify regional commodity production and consumption for each industry.
2. SWIM was used to identify corridors used to transport commodities for each industry. Each corridor focuses on the major state highways in the corridor and includes all non-highway transportation modes such as rail, marine, aviation and pipelines.
3. For each industry, the corridors that carry the largest value and tonnage of freight are considered to be strategic for those industries. In turn, all of the major truck, rail, marine and airport facilities in these strategic corridors are considered to be part of the strategic freight system.
4. In addition to ensuring that corridors serving freight-dependent industries are part of the strategic system, the system was defined to include corridors that carry the majority of freight for each ACT in the state. This ensures that the economies of each of the state's regions are connected to the strategic freight system.

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capacity issues are expected, which may require barges and trucks to transport petroleum. The report also states that natural gas pipelines will require additional improvements to meet future demand, which the natural gas industry should be able to handle over the next 20 years.

68 IHS Global Insight – U.S. Regional Service, Oregon Data: November 2009.

69 Reference Chapter 3 Source: Oregon Office of Economic Analysis, November 2009.

5. Once these strategic routes were defined based on industry needs, corridors were identified that provide connections between centers of industry activity and the strategic backbone corridors.

The following sections present more detail on how this industry-level view of freight flows in the state was used to define the strategic freight network. Additional data on Oregon commodity flows can be found in the *Oregon Commodity Flow Forecast, October 2009*.[70]

Freight Industries Strategic Network Methodology

Based on the data summarized in Chapters 2 and 3, the following freight-dependent industries were analyzed to determine which corridors they use to transport goods to markets and receive supplies:

- Agriculture, Forestry and Fishing;
- Computer and Electronics Manufacturing;
- Food Manufacturing;
- Machinery Manufacturing and Metals Manufacturing;
- Wholesale Trade;
- Wood and Paper Manufacturing;
- Retail Trade;
- Services and All Other.

Each industry was analyzed and represented in terms of the value of freight moved and tonnage[71].

Figures 4.4 through 4.11 show average daily statewide corridor flow by value and tonnage for year 2010 for each of the eight freight-dependent industry groups.[72] The maps are intended to illustrate the broad, multimodal corridors over which industry moves its goods. The maps use the state highway system (and the corridors are often referenced in terms of the principal state highway route in the corridor) to represent all modes of flow. The non-highway freight flows actually move along the modal facility closest to the major highway in the corridor.

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70 http://library.state.or.us/repository/2010/201010251112531/index.pdf

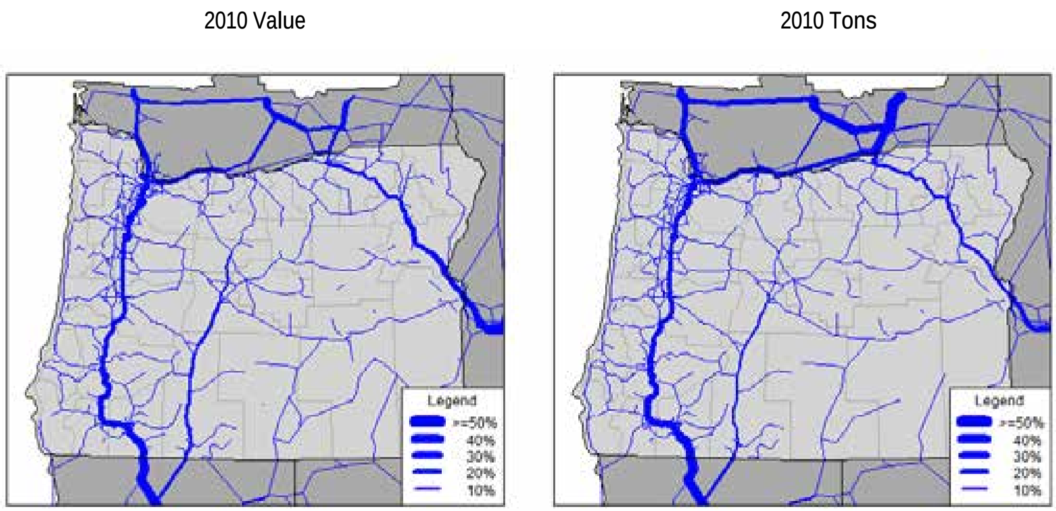
71 Information produced by SWIM for the OFP reference scenario was used to estimate flows by industry.

72 Flow rates outside the state of Oregon represent Oregon activity and do not reflect actual calibrated freight movements.

In Figures 4.4 through 4.12 flows beyond the Oregon borders are illustrative and do not represent all flows on those facilities.

Agriculture, Forestry and Fishing

Figure 4.4 Estimated Agriculture, Forestry and Fishing Industry Output Flows by Value and Tonnage, 2010



Source: Prepared by ODOT, 2010.

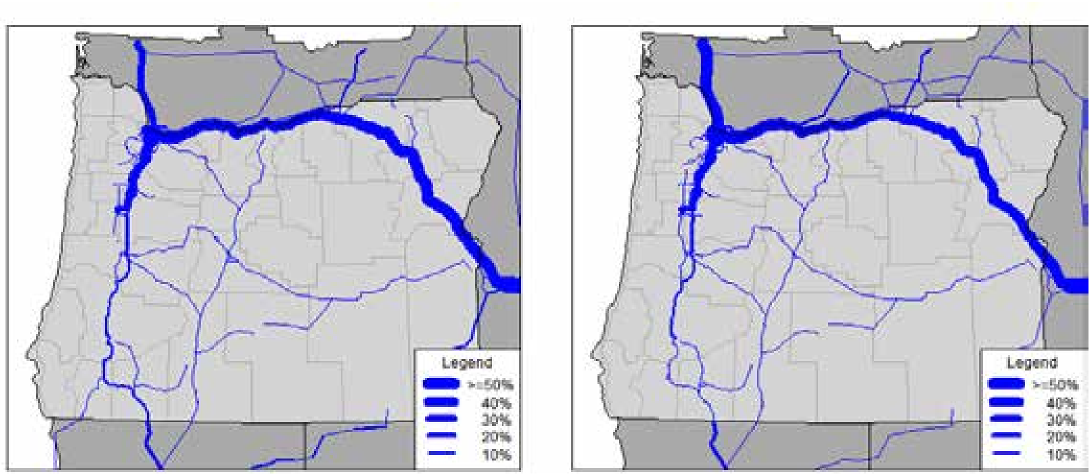
Figure 4.4 presents product flows for the Agriculture, Forestry and Fishing industry group. Goods shipped by industries classified within this group include logs and other wood in the rough and wood products, agricultural products, and fish and wildlife products.

Computer and Electronics Manufacturing

Figure 4.5 Estimated Computer and Electronics Manufacturing Industry Output Flows by Value and Tonnage 2010

2010 Value

2010 Tons



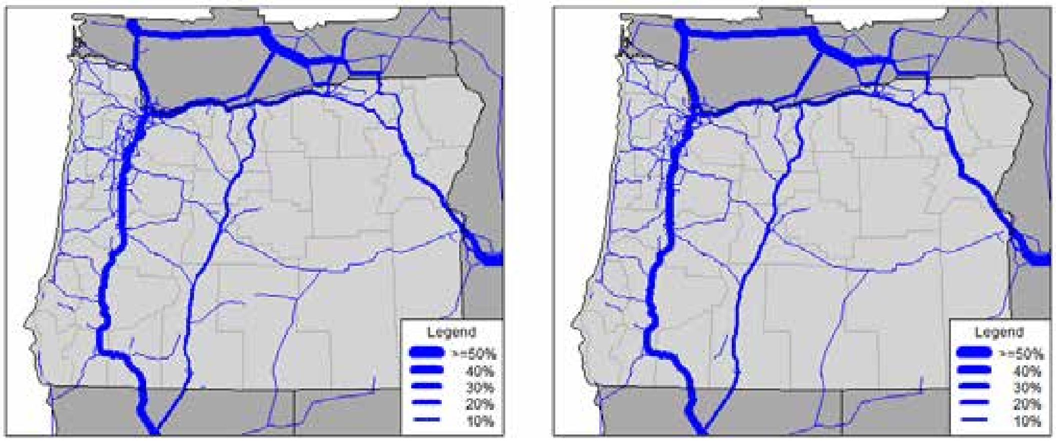
Source: Prepared by ODOT, 2010.

Figure 4.5 shows freight flows for the products of the Computer and Electronics Manufacturing sector. This industry group produces a mix of computer and electronics-related goods and is characterized as a high-value, low weight commodity. Commodity flow is predominantly from outside the state and flows from the north in the I-5 corridor to the Willamette Valley. There are flows east of Portland in the I-84 corridor towards the eastern states. Some of these flows head north into Washington State via the U.S. 97 corridor and the I-82 corridor.

Food Manufacturing

Figure 4.6 Estimated Food Manufacturing Industry Output Flows by Value and Tonnage 2010

2010 Value 2010 Tons



Source: Prepared by ODOT, 2010.

Figure 4.6 presents corridor flows for the products of the Food Manufacturing and Kindred Products industry group. Commodities within this category include live animals and fish, cereal grains, animal feed, meat, seafood, milled grain products, alcoholic beverages and tobacco products. This group represents a wide range of products in terms of value and weight and a mid-range value per unit weight.

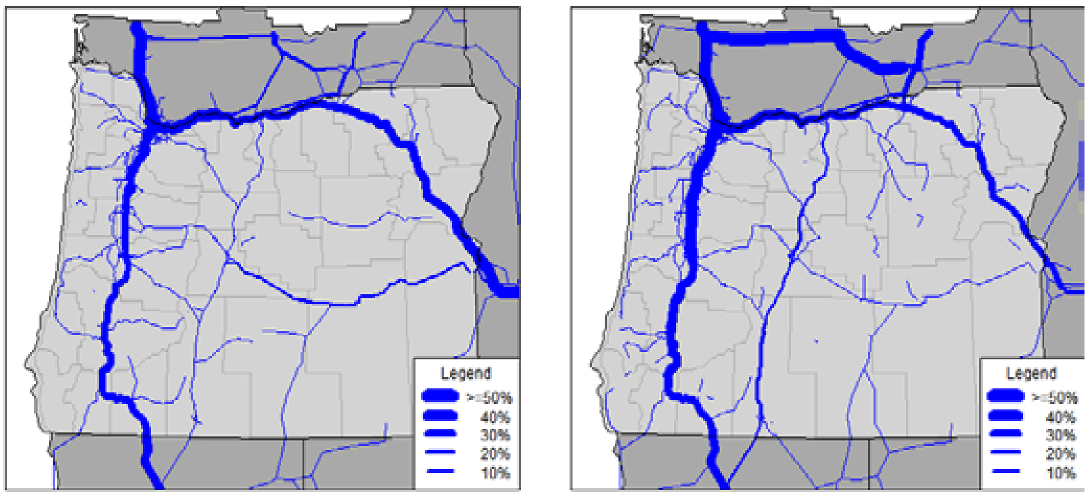
Production of these agricultural and food products occurs primarily in the eastern and central areas of the state, as well as in the northwest Willamette Valley to Astoria. The flow maps reveal that the north-south I-5 corridor, particularly in the Willamette Valley area carries many of the food products in Oregon. However, considerable food manufacturing traffic moves in the I-5 corridor and the U.S. 97 corridor to California and Washington and in the I-84 corridor to the Idaho border.

Machinery Manufacturing and Metals Manufacturing

Figure 4.7 Estimated Machinery/Metals Manufacturing Industry Output Flows by Value and Tonnage 2010

2010 Value

2010 Tons



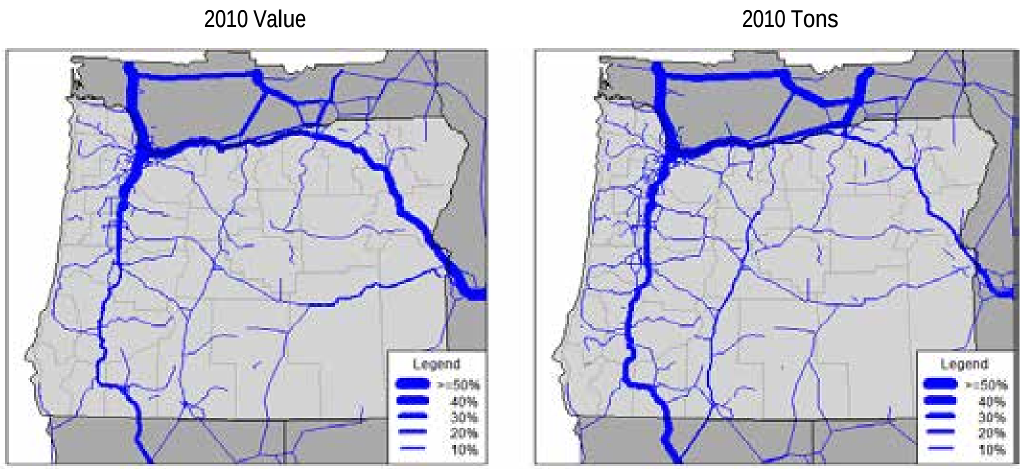
Source: Prepared by ODOT, 2010.

Figure 4.7 shows corridor flows for the products of the Machinery and Metals Manufacturing industry group. Goods within this category include base metal in primary or semi-finished form, articles of base metal, machinery, electronic and other electrical equipment, motorized and other vehicles (including parts), transportation equipment, and precision instruments and apparatus.

The machinery and metals companies producing the flows shown above are predominantly located in the urban areas of the Willamette Valley, with some located in Bend, Astoria and Medford. Their products are primarily trucked to Washington and eastern states. Products of the Machinery and Metals Manufacturing industry group tend to be higher in value and lower in weight. By value goods predominantly move in the I-5 corridor and in the I-84 corridor. The heavier goods movement within this industry group tends to flow in the Willamette Valley I-5 corridor and north of Portland.

Wholesale Trade

Figure 4.8 Estimated Wholesale Trade Industry Output Flows by Value and Tonnage – 2010

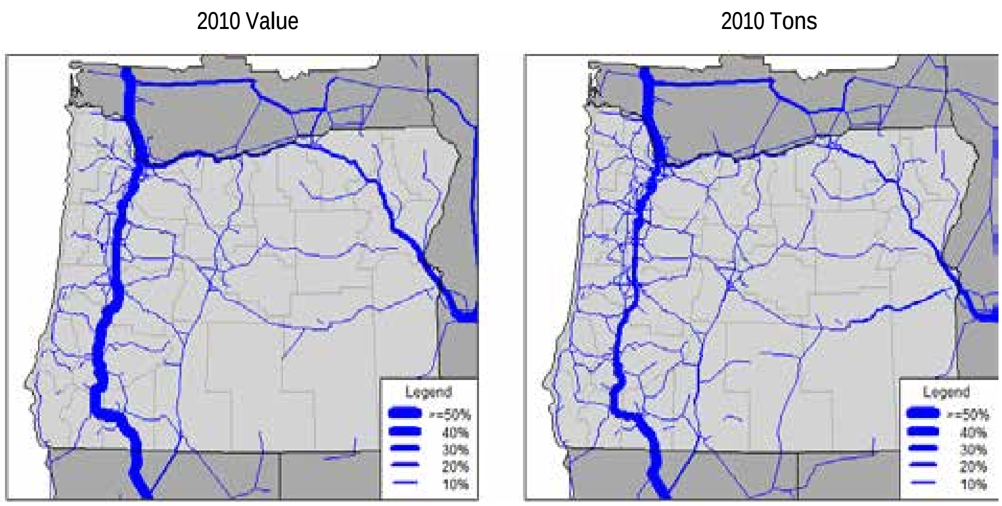


Source: Prepared by ODOT, 2010.

Wholesale Trade products make use of many freight system corridors, as shown in Figure 4.8. However, these goods move primarily on the northern I-5 corridor and on the I-84 corridor. The majority of Wholesale Trade value moves along the I-84 corridor and stays in the northern section of the state. The majority of tonnage moves on I-5.

Wood and Paper Manufacturing

Figure 4.9 Estimated Wood and Paper Manufacturing Industry Output Flows by Value and Tonnage 2010

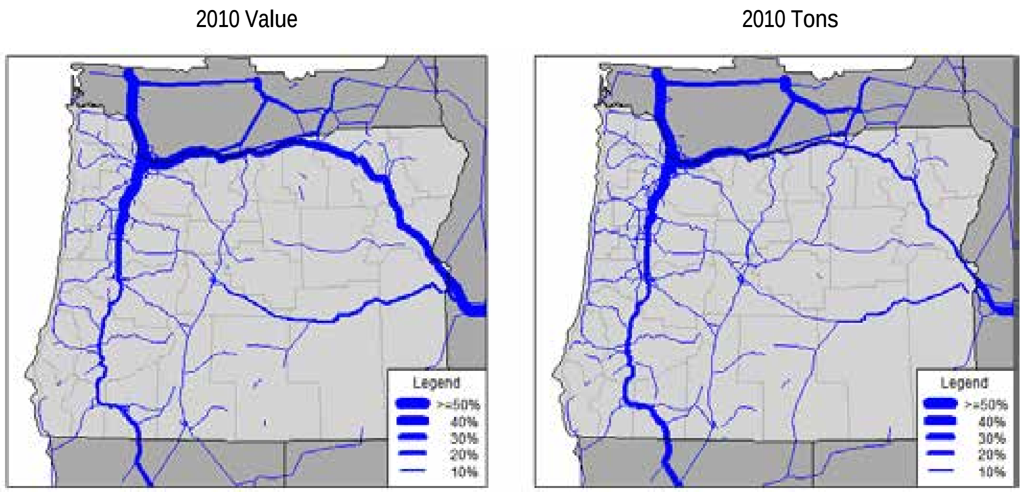


Source: Prepared by ODOT, 2010.

Figure 4.9 presents corridor flows for the Wood and Paper Manufacturing industry group. Industry production in this group includes newsprint, paperboard, paper or paperboard products and printed products. Western Oregon is a heavy production area for these products. Truck flows of this industry group are concentrated along the I-5 corridor and move down to California and up to Washington State.

Retail Trade

Figure 4.10 Estimated Retail Trade Industry Flows by Value and Tonnage 2010

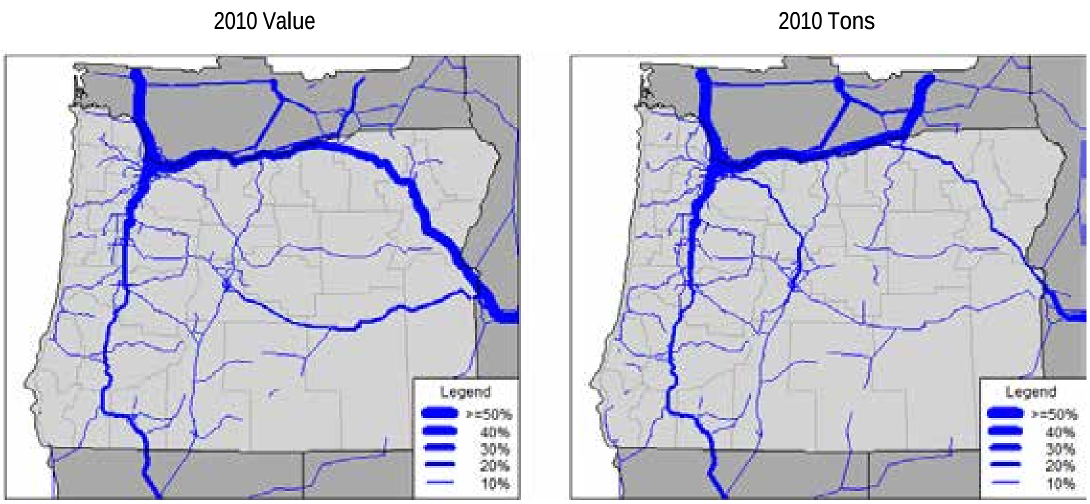


Source: Prepared by ODOT, 2010.

Figure 4.10 shows corridor flows for the Retail Trade industry group. The largest proportion of Retail Trade products by value move in the I-5 and I-84 corridors. A substantial amount of Retail Trade products in value also moves on the U.S. 20 corridor, especially in the eastern one-half of that corridor. In terms of tonnage, the majority of retail goods move in the area around Portland and on I-5 between Portland and Seattle. This highlights the movement of retail goods between major population centers such as Salem, Portland and Seattle.

Services and Other

Figure 4.11 Estimated Services and All Other Industry Flows by Value and Tonnage 2010



Source: Prepared by ODOT, 2010.

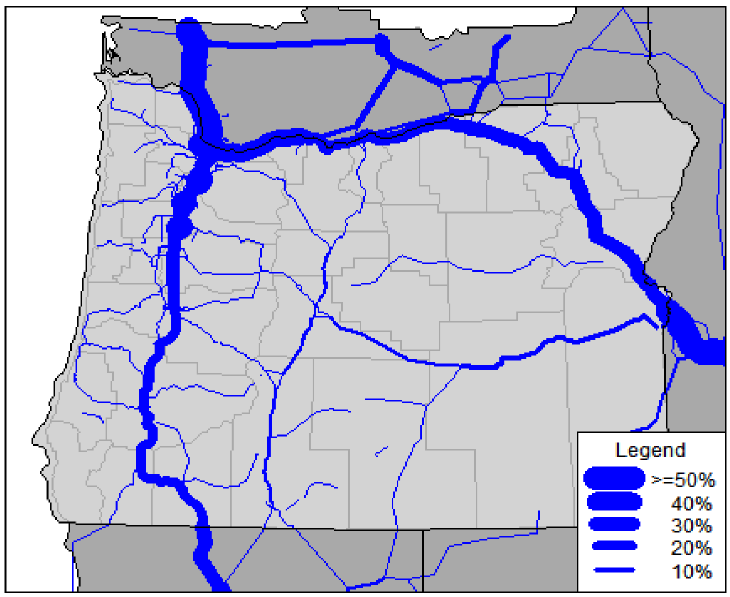
Figure 4.11 presents corridor flows for the Services and All Other industry group. Goods produced within this industry include textiles, leather, articles of textiles or leather, furniture, mattresses and miscellaneous manufactured products.

More Service and Other flows are concentrated in the northern section of the I-5 corridor. There is a notable high-value flow of this industry's output on I-84. Lower value flows occur within the southern one-half of the I-5 corridor. Large lower-value flows are forecast for this commodity group on the entire I-5 corridor, especially the southern portion.

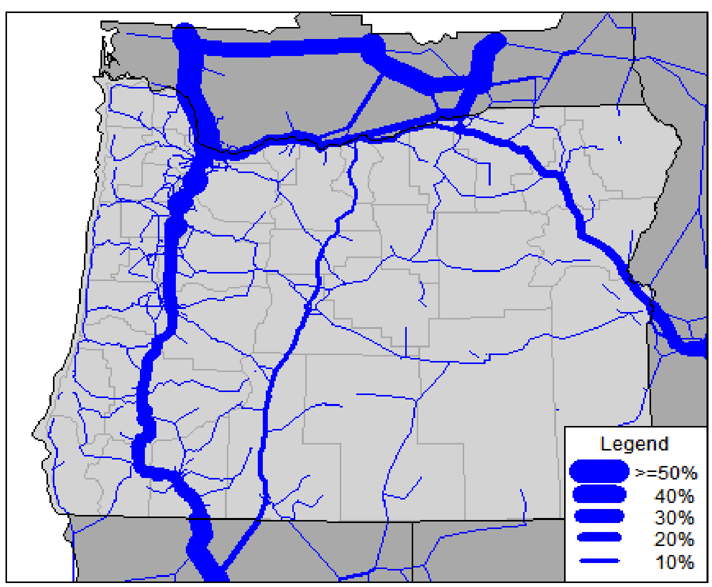
Summarizing Freight-Industry Freight Flows and Defining the Strategic System

Figure 4.12 Total Statewide Industry Output Flows by Value and Tonnage 2010, All Modes

2010 Value



2010 Tons



Source: Prepared by ODOT, 2010.

Figure 4.12 depicts the total flows for all industries. Tables 4.2 and 4.3 highlight how each industry utilizes the major corridors. This information is important in defining the strategic freight network, as the corridors that carry high levels of goods for each industry are critical to the state's economic health and to the businesses utilizing these corridors. Table 4.2 shows the percentage of total value of products shipped by each industry in each major corridor, and Table 4.3 shows the percentage of ton-miles of shipments by each industry in each corridor.

Table 4.2 Industry Output Flows by Percent of Value, per Corridor

Corridor	Total	Computer & Electronics	Wholesale Trade	Machinery & Metals	Retail Trade	Wood & Paper	Agriculture Forestry & Fishing	Food Mfg	Services & Other
I-84	49%	67%	46%	44%	44%	22%	29%	34%	46%
I-5	30%	21%	28%	34%	30%	52%	33%	35%	27%
U.S. 20	6%	4%	7%	8%	9%	7%	6%	3%	11%
U.S. 97	4%	1%	5%	4%	4%	5%	11%	13%	4%
U.S. 26	2%	1%	2%	2%	2%	3%	3%	2%	3%
All other corridors[73]	9%	6%	12%	8%	11%	11%	18%	13%	9%

Table 4.3 Industry Output Flows by Percent of Total Ton-Miles, per Corridor

Corridor	Total	Computer & Electronics	Wholesale Trade	Machinery & Metals	Retail Trade	Wood & Paper	Agriculture Forestry & Fishing	Food Mfg	Services & Other
I-5	37%	24%	37%	38%	37%	45%	35%	35%	34%
I-84	32%	63%	33%	37%	34%	18%	30%	34%	35%
U.S. 97	9%	1%	8%	9%	6%	7%	9%	15%	8%
U.S. 20	5%	4%	5%	2%	7%	8%	5%	2%	7%
U.S. 26	3%	2%	3%	3%	3%	5%	3%	2%	5%
All other corridors	23%	6%	14%	11%	11%	17%	18%	12%	11%

Source: Prepared by ODOT, 2010.

73 Other corridors analyzed included I-82, I-205, I-405, US30, US101, US199, US395, OR6, OR11, OR18, OR22, OR34, OR58, OR99, OR126, OR140, OR204, OR207, and OR217.

From the data in these tables and figures, it becomes apparent that the I-5 and I-84 corridors are the dominant corridors in terms of tonnage and value. This includes all modes that travel along this corridor. In addition, the U.S. 97 and U.S. 20 corridors carry moderate freight volumes but are critical because they provide redundancy in the freight system. U.S. 97 and U.S. 20 act as secondary north-south and east-west cross-state highways, respectively. Tables 4.2 and 4.3 illustrate that the I-5 and I-84 corridors carry the largest share of freight for each of the state's freight-dependent industries. The tables also show that the U.S. 20 corridor is a significant secondary corridor for most industries particularly in terms of tonnage shipped over relatively long distances. The U.S. 97 corridor carries relatively high-value products in the Agriculture, Forestry and Fishing industry group and the Food Manufacturing industry group.

Based on this analysis, the following four corridors are strategic in terms of their significance to major freight-dependent industries:

1. Western corridor (I-5),
2. Columbia River corridor (I-84),
3. U.S. 20 corridor, and[74]
4. Central Oregon corridor (U.S. 97).

The next section of this chapter describes how these and other corridors provide critical connections to centers of freight-dependent economic activity in the state.

4.4 CONNECTIVITY

Connectivity in this section refers to the ability of the freight network to safely and efficiently move goods between important components of the Oregon freight network. This includes connectivity between major highways and intermodal facilities such as airports or marine ports, between all regions of the state, and between key industries and the freight network. Connectivity is critical because it allows businesses and industries to move their goods throughout Oregon and beyond in a cost-effective manner. Four multimodal corridors were selected as major corridors whose connectivity is vital to the state economy.

[74] U.S. 26 is also significant to Oregon industries from Portland to Idaho. However, U.S. 20 carries more freight by industry (see tables on previous page), and it also acts as an important highway for remote areas in southeastern and south central Oregon with little other east-west highway access. Selecting both would not be warranted, as they run parallel to each other for much of eastern and central Oregon.

Strategic Freight Corridors and Connectivity

Western Corridor

The Western Corridor is a split corridor with several components: Marine Highway 5 (M-5), north-south Interstate 5 (I-5) and all parallel truck/rail facilities that connect Oregon with the rest of the nation. M-5 is a designated marine highway in the Pacific Ocean that connects Oregon with other West Coast ports, from Canada to Mexico. I-5 truck and rail facilities connect the three largest population centers of Portland, Eugene and Salem and are the state's primary arteries for truck and rail freight shipments. Together, this Western Corridor connects Oregon with the national freight transportation system via several truck, rail, seaport and airport facilities, including I-84, U.S. 30, U.S. 20 and U.S. 199; Class I and shortline railroads; marine facilities at Astoria, Coos Bay and the Port of Portland; and air facilities at Portland International Airport. These connections are critical for the movement of the majority of goods produced throughout Oregon and on the I-5 corridor.

The Western Corridor contains some of the major intermodal facilities in the state, which move both heavy and valuable goods to markets around the world. Important intermodal infrastructure on the I-5 corridor includes the Portland International Airport, the Port of Portland, the Port of Astoria and the Port of Coos Bay. These features are illustrated in Table 4.4.

Table 4.4 Western Corridor Freight Facilities, by ACT

ACTs	Facilities Providing Connectivity*	Other Freight Facilities
Portland Metro Region and ODOT Region 1	· I-84, I-205, I-405 · U.S. 30, U.S. 26, OR 99W · OR 6	**Class I rail:** BNSF and UP **Shortline rail:** Oregon Pacific Railroad, Portland & Western Railroad, Portland Terminal, Peninsula Terminal **Major Commercial Ports:** Port of Portland **Categories I, II and III Airports:** Portland International Airport, Portland – Hillsboro Airport, Portland –Troutdale Airport
Northwest Oregon ACT	· U.S. 101, U.S. 30, U.S. 26, OR. 99W · OR 6	**Shortline rail:** Port of Tillamook Bay Railroad, Portland & Western Railroad **Major Commercial Ports:** Port of Astoria **Categories I, II and III Airports:** Astoria Regional Airport, Tillamook Airport
Mid-Willamette Valley ACT	· U.S. 101 · OR 22, OR 99W, OR 18	**Class I rail:** BNSF and UP **Shortline rail:** Hampton Railway, Willamette Pacific Railroad, Portland Western Railroad, Willamette Valley Railway, Albany Eastern Railroad **Categories I, II and III Airports:** Aurora State Airport, Salem McNary Field Airport, McMinnville Municipal Airport
Cascades West ACT and Lane County	· U.S. 20, U.S. 101 · OR 99W, OR 58, OR 126	**Class I rail:** BNSF and UP **Shortline rail:** Willamette Pacific Railroad, Albany and Eastern Railroad, Central Oregon & Pacific Railroad, Coos Bay Rail Link, Albany Eastern Railroad **Categories I, II and III Airports:** Corvallis Municipal Airport, Eugene Airport/Mahlon Sweet Field, Newport Municipal Airport
South West ACT	· U.S. 101 · OR 126, OR 42, OR 38	**Shortline rail:** Central Oregon & Pacific Railroad, Coos Bay Rail Link, Longview, Portland & Northern Railway **Major Commercial Ports:** Port of Coos Bay **Categories I, II and III Airports:** Bandon State Airport, Roseburg Regional Airport, Southwest Oregon Regional Airport
Rogue Valley ACT	· U.S. 199 · OR 227, OR 140	**Shortline rail:** Central Oregon & Pacific Railroad, WCTU Railway **Categories I, II and III Airports:** Ashland Municipal Airport, Grants Pass Airport, Rogue Valley International-Medford Airport

*Connector facilities in this context do not include NHS intermodal connectors or other critical local roads mentioned in earlier chapters.

Columbia River Corridor

The Columbia River Corridor, including Interstate 84 (I-84) and Marine Highway 84 (M-84), is the primary link between western Oregon (including Portland) and the east and is one of the few transportation corridors in North America where truck, barge and rail transportation run parallel to one another. Eventually, I-84 links with I-80 in Utah, which connects to the large freight hub of Chicago. For most goods originating in the Portland and Willamette Valley region, I-84 is the route used to move goods to the Midwest and beyond. As a result, this is a heavily used freight corridor that is essential to the Oregon economy. Within Oregon, this corridor connects with Portland, the I-5 corridor, Portland International Airport, the Port of Portland and other ports on the Columbia River. In addition to the interstate, Oregon's major rail corridor that connects Portland and other West Coast cities with the Midwest runs along the Columbia River. Both Union Pacific and BNSF operate service that connects Portland with destinations in states to the east of Oregon. Noteworthy is the dependence of the computers and electronics manufacturing industry on the I-84 corridor; this is a high growth industry that makes up a large part of Oregon's expected future growth.

Table 4.5 Columbia River Corridor Freight Facilities, by ACT

ACTs	Facilities Providing Connectivity	Other Freight Facilities
Portland Metropolitan Region and ODOT Region 1	See Information in Table 4.4	
Lower John Day ACT	· U.S. 26, U.S. 97, U.S. 197	**Class I rail:** BNSF and UP **Shortline rail:** Mount Hood Railroad, Palouse River Coulee City Railroad **Categories I, II and III Airports:** Columbia River Gorge Regional Airport
North East ACT	· I-82 · U.S. 26 · OR 204, OR 82, OR 11	**Class I rail:** BNSF and UP **Shortline rail:** Palouse River Coulee City Railroad, Wallowa Union Railroad, Idaho Northern Pacific Railroad **Major Commercial Port:** Port of Umatilla, Port of Morrow **Categories I, II and III Airports:** Baker City Municipal Airport, Eastern Oregon Regional Airport, Hermiston Municipal Airport and La Grande/Union County Airport

Central Oregon Corridor

This corridor is a major north-south corridor connecting central Oregon with markets in Washington State and California. The largest city in central Oregon is Bend, a metropolitan area with nearly 88,000 residents, which is connected by U.S. 97 to I-84. U.S. 97 is the only major north-south freight route east of the Cascades and acts as a relief highway to support I-5 in case of incidents on that interstate.

- In addition to the highway, a major BNSF and UP rail corridor runs parallel to U.S. 97; it is the major rail line that connects Oregon with California. The U.S. 97 corridor, similar to U.S. 20, connects a large portion of central Oregon that would have insufficient connectivity to major markets such as Portland and the interstate network without its existence. Businesses located in the South Central Oregon ACT and the Central Oregon ACT benefit from the connections to I-84 and California that this route provides. It also provides efficient access to U.S. 20, which allows businesses to move goods to I-5 and to the east.

Table 4.6 Central Oregon Corridor Freight Facilities, by ACT

ACTs	Facilities Providing Connectivity	Other Freight Facilities
Lower John Day ACT	See Information in Table 4.5	
Central Oregon ACT	· U.S. 20, U.S. 26, U.S. 197	**Class I rail:** BNSF and UP **Shortline rail:** City of Prineville Railway **Categories I, II and III Airports:** Redmond Municipal Airport, Bend Municipal Airport
South Central Oregon ACT	· U.S. 20 · OR 58, OR 140	**Class I rail:** BNSF and UP **Shortline rail:** The Klamath Northern Railway, Lake Railway **Major Commercial Port:** Port of Umatilla, Port of Morrow **Categories I, II and III Airports:** Klamath Falls Airport, Lake County Airport

U.S. 20 Corridor

This is a major east-west connector corridor that runs through the middle of the state, from the Idaho border all the way to Newport on Oregon's Pacific Coast. The route ties together several important cities from Boise, Idaho to Bend. Further routes on OR 22 and OR 126 provide freight routes to Salem and

Eugene. One issue to consider with this route is that 53-foot trailers are currently not allowed between the U.S. 20/OR 22 junction and Sweet Home and between Newport and Corvallis. Trucks currently rely on OR 22, OR 126 and other routes to travel this area. The corridor concept allows the parallel facilities to carry the corridor traffic. In general, east-west connectivity in Oregon can be improved, especially between I-5 and U.S. 97.

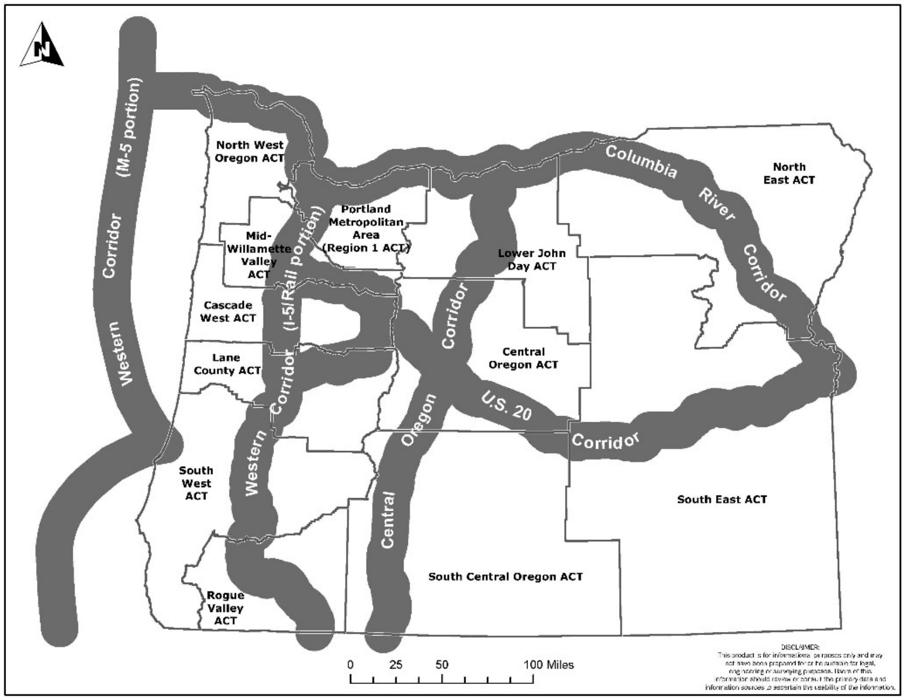
In essence, U.S. 20 acts as the major east-west highway for central and eastern Oregon – interstates only exist in the northern and western sections of the state. No major rail corridors run parallel to U.S. 20. At the Idaho border, however, a Class I railroad intersects with U.S. 20; Class I railroads also intersect U.S. 20 in Bend and near Corvallis. Within Oregon, U.S. 20 connects the north-south corridors of U.S. 97, U.S. 395 and I-5. This is illustrated in Table 4.7. U.S. 20 is a major mover of agricultural products in the central and eastern one-half of the state. In the western one-half, the U.S. 20 Corridor is important to companies producing forest/wood products and clay/mineral/stone – 15 percent of the shipments from the former and 20 percent of the latter utilize U.S. 20.

This route is important in terms of connectivity because it connects a major area (Central Oregon) with two major interstates (I-84 and I-5). It also connects the freight-dependent industries in Bend with cities to the east and the I-5 Corridor to the west. Without this facility, businesses located near U.S. 20 in the South East Oregon ACT or Central Oregon ACT might struggle to compete because of high travel times and transportation costs to get goods to market. See Figure 4.13.

Table 4.7 U.S. 20 Corridor Freight Facilities, by ACT

ACTs	Facilities Providing Connectivity	Other Freight Facilities
South East ACT	· I-84 · U.S. 95, U.S. 26, U.S. 395	**Class I rail:** UP **Shortline rail:** The Wyoming Colorado Railroad **Categories I, II and III Airports:** Ontario Municipal Airport, Burns Municipal Airport, Grant County Regional Airport
Central Oregon ACT	See information in Table 4.6	
Cascades West ACT	See information in Table 4.4	

Figure 4.13 Freight Industries Strategic Corridors in Oregon



Source: Prepared by ODOT for the OFP

In summary, these corridors, when viewed as a system, provide cross-state or cross-regional access to the majority of the state. All of the roadways in Figure 4.12 above also have parallel Class I railroads except U.S. 20. Since the majority of the population in the state lives along the I-5 Corridor, a significant amount of inbound freight needs to be moved there. U.S. 20 and U.S. 97 connect remote, rural places with routes that connect with Portland; this allows goods to be moved to major markets. For further detail on important intermodal connectors in these corridors, a list of the official NHS Intermodal Connectors is available from FHWA.[75]

4.5 FREIGHT THROUGH MOVEMENTS

The Western Corridor and Central Oregon Corridor serve as the main north-south connections through Oregon between Washington and California. To the east the Columbia River Corridor is the main connection between Oregon and Idaho and eastern states. Goods move from the east and the Pacific through

75 FHWA Website : https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/

Oregon's ports and to destinations outside of Oregon. As a result, significant "through" traffic exists on Oregon highways, railways, waterways and pipelines.

Truck Through Traffic

Oregon is a bridge state between Washington and California for numerous trucks traveling each day destined for locations outside of the state. Table 4.8 shows that about 2400 through-trucks cross the southern end of the Western Corridor, while about 3100 through-trucks cross the corridor from the north. Some of these trucks are likely eastbound within the Columbia Corridor. About 2100 through-trucks cross into the Columbia Corridor from Washington State in the vicinity of I-82, while about 2700 through-trucks cross the Oregon/Idaho border on an average day. About 600 to 800 through-trucks cross the border at the southern end of the Central Oregon Corridor a day. The through routes are varied and depend on their final destination outside of Oregon. The U.S. 20 Corridor does not appear to be a significant corridor for through-truck traffic. While these trucks have limited direct economic impact on Oregon, they contribute to congestion and environmental concerns in the state. These trucks also pay the Oregon weight mile tax.

Table 4.8 Average Annual Daily Through-Trucks Crossing Oregon Borders

Corridor Name	Through Trucks Entering or Exiting Corridor
Western Corridor	2400 – 3100
Columbia River Corridor	2100 – 2700
Central Oregon Corridor	600 – 800
U.S. 20 Corridor	not a significant through-trip corridor

Source: ODOT, 2009

Rail Through Traffic

Rail through movements make up the largest share of rail carloads, at over 600,000 carloads.[76] These are loads with rail origins outside of Oregon and rail movements through Oregon, during which time tracks in Oregon are used. This does not include shipments that come into Oregon ports and are transloaded to rail. Rail through movements mainly travel in the Western, Central Oregon and Columbia River Corridors.

76 Carload Waybill, 2008: https://www.stb.gov/stb/industry/econ_waybill.html

Marine Through Traffic

For marine traffic, through movements refer to those commodities that are transferred on or off of ships or barges at Oregon ports, but have neither an Oregon origin nor destination. Many of these goods (especially bulk) arrive at the Portland harbor by rail and are loaded onto ships. The 2009 Oregon Commodity Flow Forecast (CFF) estimates that rail moved 565,000 tons of goods from locations outside of Oregon to the Port of Portland in 2010. This is only a small percentage of the total commodity volume that moves from outside of Oregon to the Portland area; the CFF estimates this volume to be 19 million tons in 2010. The CFF estimates that Portland harbor will move a total volume of 227,000 tons of marine imports to areas outside of Oregon in 2010.

Pipeline Through Traffic

The 2009 Oregon Commodity Flow Forecast shows that a significant amount of natural gas product moves through Oregon for use in other states. The total 2002 volume of natural gas that moved through Oregon was 13.7 million tons compared to 4.7 million tons imported to Oregon in 2002.

Freight and Climate Change

5.0 Freight and Climate Change

According to the U.S. Environmental Protection Agency (EPA), transportation sources account for one-third of carbon dioxide emissions which contribute to global climate change.[77] Research and policy have historically focused on reducing Green House Gas (GHG) emissions from passenger vehicles. However, freight sources are increasingly being considered due to their contribution to carbon dioxide, nitrogen oxides, sulfur dioxide and particulate matter emissions. The Transportation Research Board (TRB) found that the conveyance of freight—via rail, commercial trucks, ships, boats and pipelines—accounts for 38 percent of all transportation-related carbon dioxide emissions[78] or 12 percent of all man-made sources. Thus, addressing freight emissions and efficiency has the potential for long-term effects on GHG emissions and public health parameters.

The freight sector can take a number of actions to reduce the GHGs it produces. Low-cost, high-payoff actions that offer benefits for the freight sector are particularly attractive.

This chapter analyzes trends, actions and current policy as it relates to the freight sector and GHG emissions in the following sections:

- The Oregon policy context, summarizing relevant policies recently adopted in Oregon that are contributing to the GHG and climate change discussion;
- Technological and regulatory trends affecting freight GHG emissions and infrastructure;
- Potential opportunities to reduce GHG emissions from freight; and
- Impacts of climate change on freight.

Further details are contained in Freight and Climate Change: Background Paper for the *Oregon Freight Plan*.

5.1 THE OREGON POLICY CONTEXT

The State of Oregon is already actively combating climate change through targeted programs and policies, regulations and legislative initiatives, inter-agency coordination and collaboration with other western states. Some of these policies are related to freight and can be grouped into four areas:

77 EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006, Table 2-14

78 "Potential Impacts of Climate Change on U.S. Transportation" (TRB 290), Table B-2

- Legislative initiatives. Several statutes addressing climate change and GHG emissions have been implemented in Oregon. These laws include provisions aimed at reducing GHG emissions from transportation. In 2007 the Oregon Legislature passed the Climate Change Integration Act, establishing the Oregon Global Warming Commission and setting statewide greenhouse gas reduction goals which call for reducing Oregon's emissions 10 percent below 1990 levels by 2020 and 25 percent below 1990 by 2050. Chapter 865 Oregon Laws 2009 requires Portland Metro to develop transportation and land use scenarios designed to reduce greenhouse gas emissions while accommodating population and economic growth. Enacted during the 2010 Special Session, Chapter 85 Oregon Laws 2010 directs ODOT and the Oregon Department of Land Conservation and Development (DLCD) to develop a state-level strategy to reduce greenhouse gas emissions from transportation, develop a toolkit to assist local governments and metropolitan planning organizations in reducing greenhouse gases from transportation, and develop guidelines for scenario planning. As part of this process, the Land Conservation and Development Commission (LCDC) will set transportation-related greenhouse gas reduction targets for light-duty vehicles in major metropolitan areas.

  The statutes address freight emissions by regulating shipboard engine usage in ports and setting minimum requirements for the amount of biodiesel contained in diesel fuel sold in Oregon.

- Funding programs. *Connect*Oregon I, II and III are lottery-backed bond funded programs exclusively dedicated to non-highway modes. As such, they improve or preserve modal alternatives that may reduce GHG emissions, as compared to trucking. There are also tax credits available through the Oregon Department of Energy to encourage reduced fuel use and through the Oregon Department of Environmental Quality to promote truck engine replacement.

- Partnerships. Oregon participates in a variety of partnerships with other western states and nonprofits to advance its GHG reduction goals. The Western Climate Initiative, a partnership of western states and Canadian provinces that cooperate on climate change issues, is exploring a regional target for GHG emissions reduction, as well as a market-based, cap-and-trade system. Oregon is also active in the Climate Registry, the International Carbon Action Partnership and the Climate Trust.

5.2 TRENDS AFFECTING FREIGHT GHG EMISSIONS

A number of technological innovations and regulatory actions are affecting freight-sector GHG emissions. This section highlights some of these technological trends by mode as well as some of the major regulatory actions that will impact GHG emissions from the freight sector in the future.

New Technologies

Freight engine and vehicle technologies continue to improve fuel efficiency and reduce GHG emissions per ton-mile. Table 5.1 provides estimates of the changes in GHG per ton-mile that could be achieved as the freight vehicle fleet is replaced.

Table 5.1 Range of Near-Term GHG per Ton-Mile Emissions for Freight Modes by Technology

Technology Option	Description	Emissions ($g\ CO_2e$/Ton-Mile)[79]		Percentage Reduction in GHG/Ton-Mile from Existing Fleet	
		Low	High	Low	High
Heavy-Duty Diesel Trucks					
Existing	Existing truck fleet (2008)	313			
New	New truck	310	310	1%	1%
Best available	Best available new truck, aerodynamic and weight reduction only	266	282	10%	15%
	Best available new truck, engine improvements only	284	287	8%	9%
	Best available new truck, combined	242	259	17%	23%
Rail					
Existing	Existing rail fleet (2008)	28			
New	New locomotive	27	27	3%	3%
	New locomotive, Tier 4-compliant	27	27	2%	2%
Best available	Best available new locomotive	25	25	12%	12%
	Best available new locomotive and cars	22	23	16%	21%
Marine					
Existing	Existing domestic marine fleet	54			
New	New engine	53	53	1%	2%
	New engine, Tier 4-compliant	53	55	-1%	1%
Best available	Best available engine (diesel-electric)	43	49	10%	20%
	Best available propeller (nozzle or winglets)	51	52	4%	5%
	Best available technology, combined	41	47	13%	25%
Air					

[79] This unit is grams of CO_2e per each mile traveled per ton.

Technology Option	Description	Emissions (g CO_2e/Ton-Mile)[79]		Percentage Reduction in GHG/Ton-Mile from Existing Fleet	
		Low	High	Low	High
Existing	Existing commercial aircraft fleet	1,472			
New	New commercial aircraft	1,407	1,407	4%	4%
Best available	Best available commercial aircraft	1,178	1,178	20%	20%

Sources: Cambridge Systematics analysis of Annual Energy Outlook, 2009; U.S. DOT Report to Congress Transportation's Role in Reducing U.S. Greenhouse Gas Emissions, 2010; U.S. EPA RIA for Diesel Engines less than 30L; Boeing; and General Electric.

The following technological trends by mode can impact GHG emissions from freight sources:

- Trucks. Heavy-duty truck[80] fuel efficiency can be improved through a variety of options, including aerodynamic improvements, weight reduction and engine improvements such as electrified accessory systems. Evidence suggests a combination of the best available new truck technologies, along with engine improvements, weight reduction and aerodynamic enhancements, could achieve an overall truck GHG reduction of 17 to 23 percent per ton-mile per truck.[81]
- Rail. Rail locomotives have demonstrated improved fuel economy over the past few decades mostly because the development of larger, more powerful line-haul locomotives results in fewer locomotives required per train. Other railroad technological and operational improvements also contributed to this trend. The combination of best available new locomotives and lightweight aluminum railcars could potentially lead to a 16 to 21 percent reduction in freight rail GHGs per ton-mile over the existing fleet. However, locomotives typically remain in service for 30 to 40 years, so it will likely take many decades before these new technologies penetrate the market completely.
- Marine diesel. GHG emissions are hard to track over time, because it is hard to differentiate between domestic and international sources. However, various technologies can help reduce GHG emissions from water sources, including diesel-electric engines, propeller nozzles and winglets and shore power systems. The combination of these and other technologies could yield GHG emissions per ton-mile improvements in the 13 to 25 percent range.

80 As used in this report, the term 'heavy duty truck' refers to Class 8 tractor-trailer combination trucks (Class 8: gross weight greater than 33,000 lbs.).

81 Freight and Climate Change: Background Paper for the Oregon Freight Plan, 2010, ODOT.

- Aircraft. GHG emissions from aircraft continue to improve because air carriers have strong incentives to cut operating costs and increase payload capacity with fuel-efficient aircraft. On average, a new jet is 4 percent more fuel efficient than the existing fleet while the best available new aircraft can be up to 20 percent more fuel efficient. However, like locomotives, commercial and cargo aircraft have very long service lives (up to 40 years or so), so it will take a long time before the best new technologies completely penetrate the fleet.

Regulatory Changes

Several states are phasing in new regulations to reduce GHG emissions from truck, locomotive and marine diesel engines. For example, California has a truck idling law, which restricts idling to five minutes for all trucks within the state's border. In Oregon, Chapter 754 Oregon Laws 2009 requires DEQ to form a workgroup and study idling regulations. Direct federal regulation of truck GHG emissions and/or fuel economy is also a possibility.

- Trucks. The 2007 Energy Independence and Security Act gave the U.S. DOT authority to regulate fuel consumption in medium- and heavy-duty trucks, starting with the 2016 model year.[82]
- Rail and marine. New locomotives and remanufactured line-haul locomotive and heavy-duty engines, including those used in marine vessels, will be subject to stricter U.S. EPA emissions requirements beginning in 2012.[83]
- Aircraft. Aircraft GHG emissions are currently not regulated, but the International Civil Aviation Organization does promulgate standards which control jet engine emissions of nitrogen oxides (NO_{x}), which is a GHG at altitude.[84] This has led to world-wide improvements in both engines and fuels used in aircrafts.

5.3 POTENTIAL ACTIONS TO REDUCE FREIGHT-RELATED GHG EMISSIONS

Several opportunities exist to reduce transportation-related GHG emissions from freight movements in Oregon beyond technology and regulatory strategies. In this section, two general categories of GHG reduction strategies are described:

82 Energy Independence and Security Act: https://www.congress.gov/bill/110th-congress/house-bill/6

83 EPA Website: https://www.epa.gov/vehicles-and-engines.

84 International Civil Aviation Society Website: https://icao.int/about-icao/Pages/default.aspx

- Operations improvements and education; and
- Mode shift.

Operations Improvements and Education

Many states, including Oregon, have realized environmental and economic benefits through the implementation of promising new freight operations and education ideas. These include three possible methods to reduce GHG emissions from freight:

- Port operations and equipment improvements. Ports and intermodal terminals are major freight nodes. The presence of numerous mobile and stationary emissions sources at these facilities can often turn them into hot spots for emissions of GHG and other pollutants. This is particularly true because port equipment (e.g., drayage trucks and shunting locomotives) tends to be older and more polluting. A number of operational strategies can reduce emissions at ports. These include various strategies using computerized information systems to help spread port truck traffic into off-peak periods (reducing congestion and associated fuel usage), making more efficient use of trucking equipment in order to reduce empty trips, using electric and alternative fuel powered equipment within the marine terminals to reduce emissions from fossil fuels and using electronic tracking systems to more efficiently manage port-related trucking fleets to reduce trips and operations in congested conditions.
- Idling reduction strategies. Long-duration idling of trucks and trains in the U.S. consumes more than 1 billion gallons of diesel fuel annually and produces 11 million tons of CO_2, along with other emissions.[85] This estimate does not take into consideration short-term idling or marine vessel idling, which also contribute to freight GHG emissions. For each mode, several strategies can be implemented to reduce idling-related GHG emissions:
  - *Trucks.* Trucks tend to idle significantly at intermodal stations and at ports. Many of the strategies for reducing GHG emissions at ports are strategies that can be employed to reduce truck idling. Truck stop electrification and auxiliary power unit (APU) installations can create reductions in GHG emissions from idling of parked trucks. Efforts to electrify trucks stops are well underway in Oregon but could be expanded to increase emissions reductions benefits.
  - *Rail.* Emissions from locomotives can be reduced with newer locomotive technology, such as Genset locomotives. This technology uses multiple smaller engines to better match power output to demand and uses up to

85 EPA Website: https://www.epa.gov/air-pollution-transportation

37 percent less fuel than older locomotives.[86] Another strategy is to use idling limit devices, which automatically turn off a locomotive's engine if it is idle for a certain period.

– *Marine.* One solution is to install shore power systems that provide electricity to the ships while docking. This would result in less fuel consumed by the ships, which equates to lower GHG emissions.

- Improved driving and routing efficiency. Vehicle driving and routing efficiency improvements are important to reducing GHGs from the freight sector. Methods to improve operations efficiency include:

  – *Virtual weigh stations.* These utilize technology, such as weigh-in-motion (WIM) devices, to detect truck weight without requiring that the driver stop at an actual weigh station. This reduces idling and fuel consumption that would occur in the weigh station. Oregon currently utilizes WIM devices throughout the state.

  – *Speed reduction.* Freight operators will generally go as fast as the speed limits allow. While this may make sense from a time perspective, fuel economy usually decreases rapidly at speeds above 60 miles per hour.[87] The current maximum truck speed limit in Oregon is 55 miles per hour.

  – *Driver training efforts.* Driver training programs can be used to educate truck drivers on "eco-driving" techniques to reduce emissions and save fuel, such as effective trip planning, use of cruise control, avoiding rapid acceleration, and deceleration and up shifting as soon as practicable. This strategy is often implemented by freight carriers themselves, as they result in fuel cost savings and cost reduction for carriers.

  – *Signal optimization and signage.* Adjusting signal timing to optimize traffic flow on busy truck routes and improving signage near marine and intermodal facilities can improve emissions by freight. These are effective strategies to reduce freight emissions by reducing idling at signals and subsequent acceleration after the stop.

  – *Congestion relief and bottleneck mitigation.* Congestion on roadways requires trucks to accelerate and idle more frequently, increasing truck emissions. In fact, a 2010 study by Portland State University found that fluctuations in speed during congestion on freight routes in the

86 Union Pacific Railroad Website: https://www.uprr.com/newsinfo/releases/environment/2009/0611_genset.shtml

87 U.S. EPA Fuel Economy Guide: https://www.fueleconomy.gov/feg/driveHabits.jsp

Portland Metropolitan Area correlated to increased emissions compared to free-flow conditions—a 50% increase in carbon dioxide, 65% rise in nitrogen oxides, 49% more sulfur dioxide and 13% rise in particulate matter.[88] Thus, addressing congestion has the potential for long-term effects on GHG emissions and public health parameters. However, it is important to consider the impacts of induced travel demand from passenger vehicles when considering an increase in capacity or improving traffic flow.[89] Improved transit also may help reduce congestion on major truck routes, thereby potentially contributing to reduced truck emissions.

Mode Shift

As shown in Figure 5.1, moving cargo by air has by far the highest GHG emissions per ton-mile of freight moved on average, more than four times those of truck. Trucking, in turn, emits GHGs at more than five times the rate of marine or rail modes on average.

It follows, then, that shifting freight to modes with lower emission rates can reduce GHG emissions. The major mode shifts that could result in reduced energy usage and GHG emissions reductions include the following:

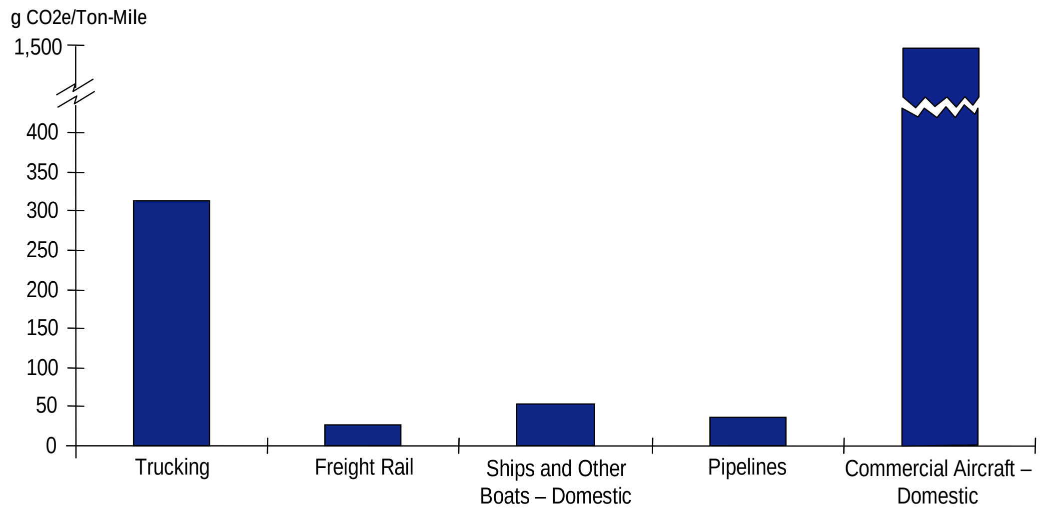
- Truck to rail;
- Truck to short-sea shipping; and
- Air cargo to truck.

These mode shifts are not easy to implement in practice. Trucks offer flexibility and time savings that make it difficult for other modes to compete. In addition, the limited locations of rail infrastructure and remote locations of certain industries make many goods dependent on truck movements. However, some commodities in certain locations may see benefits from mode shifts to more energy efficient modes. To make sure a project is economically viable, an economic analysis should be completed prior to public sector investments that are intended to cause a mode shift.

88 Wheeler and Figiliozzi, Portland State University, Multi-Criteria Trucking—Freeway Performance Measures in Congested Corridors, August 2010

89 Induced travel demand refers to the concept that increasing roadway capacity and reducing congestion will result in additional vehicle traffic as a result of mode choice decisions. For example, a commuter who might have selected transit with congested roadways may instead select to drive, therefore increasing emissions. This generally does not apply to trucks. However, when implementing congestion mitigation measures, it is important to consider all system users.

Figure 5.1 Average GHG Emissions per Freight Ton-Mile by Freight Transportation Mode in the United States
2006



Source: U.S. EPA, 2008, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 to 2006*; and Bureau of Transportation Statistics, National Transportation Statistics.

The following are examples of potential mode shift opportunities from truck to rail:

- Shipments arriving via water to the Port of Portland. The Port has on-dock rail and easy access to inland barges, so drayage emissions for transfers from ocean-going ships to rail or barge at Portland would be minimal, preserving the GHG benefits of rail and barge movements even within Oregon. However, there may still be a relatively high financial cost to the transfer that could discourage shippers. In addition, not all commodities are amenable to on-dock rail.
- Shipments moving between locations directly on the rail or waterway network. Where drayage moves are very short at both ends, it may be beneficial from both a financial and a GHG emissions point of view to shift to rail or water.

The following are examples of potential mode shifts from truck to short-sea shipping in Oregon:

- Container feeder service to Puget Sound. About one-half of the containers that arrive or depart the Columbia/Snake region by sea do so through Portland's Terminal 6,[90] but the remainder are sent by truck or rail to the

[90] Container service at Portland's Terminal 6 continued through 2014 as it had at the time this plan was adopted in 2011. However, by mid-2016, all container service had been discontinued.

Puget Sound's Ports of Seattle and Tacoma. Short-sea service has been suggested as a way to take some of those containers off the highways; however, the water route is almost double the distance of the overland route. Moreover, containers traveling down the Columbia by barge would need to be transshipped to an ocean-going barge to make the trip, adding significantly to the costs of such a move.[91]

- Coastal service to California. Coastal service to southern California could preserve some of the cost advantages of water transport due to the length of the haul. It could be most appropriate for movement of bulk agricultural and forest products from the Columbia River or southern Oregon. However, a suitable backhaul would also need to be found to make barge movement economically viable.
- Solid waste shipments. More than 500,000 tons of Portland area waste are trucked annually to the Columbia Ridge Landfill 140 miles east of Portland. Construction of a barge dock near the landfill could permit the waste to be sent by barge instead. It could also open up the possibility of taking waste by water from other areas, such as Seattle and California.[92] Rail service from Portland to the landfill with Oregon waste is also a possibility that should be explored to reduce emissions.

The public sector can play a role in encouraging the shifting of freight to less energy-intensive modes of transport. Possible strategies include investing in the rail and marine transportation systems, pricing and other incentives.

5.4 IMPACTS OF CLIMATE CHANGE ON FREIGHT

Climate change may have an impact on the freight sector in the following ways:

- Extreme temperatures. Climate change is expected to lead to an increase in the frequency of very hot days. As the number of very hot days rises, stress will increase on infrastructure. Infrastructure design changes may be required, pavement may wear faster and railroad tracks may be negatively impacted as a result of hotter weather. More information on the impact of extreme temperatures can be found in Freight and Climate Change: Background Paper for the Oregon Freight Plan.
- Changes in stream flow. The Northwest will experience major changes in stream flow patterns due primarily to changes in the timing of spring snowmelt in the mountains and an increase in winter precipitation falling as

91 Center for Economic Development Education and Research (CEDER), 2005, *Columbia Snake River System and Oregon Coastal Cargo Ports Marine Transportation System Study*, prepared by Pacific Northwest Waterways Association, June 2005.

92 Ibid.

rain instead of snow. In addition to earlier stream flow peaks, this will result in considerably lower summertime flows. A 30 percent reduction in warm season (April through September) runoff on the western slopes of the Cascades is projected by 2050. The marine freight system will be impacted by both higher and lower levels of stream flow; barge travel can be restricted as a result of either condition. During periods of low water levels, tonnage carried per barge may be limited.

- Increase in heavy precipitation. Between 1958 and 2007, there has been a 12 percent increase in days with very heavy precipitation in the Northwest; this trend is expected to continue.[93] In addition, increased winter rainfall instead of snowfall is expected to lead to more winter flooding on the west side of the Cascades. Increased heavy rainfall events may require redesign of stormwater management facilities for all transportation facilities. In addition, increased severe weather is correlated with increases in accidents and delays, impacting both freight safety and mobility.
- Sea level rise and coastal erosion. Global sea levels are projected to rise as little as 8 inches and as much as 4 feet by the end of this century. More southwesterly winter wind patterns, combined with higher sea levels, could accelerate erosion along the Pacific coast. Coastal port facilities and the roads and railways that serve them may be impacted by rising sea levels. Coastal areas may also become more vulnerable to surges from strong coastal storms, as these surges will now be overlaid onto higher water levels.
- Impacts to agriculture and forestry. Climate change also will impact demand for freight services by affecting agriculture and forestry production in Oregon. In the short run, high-elevation forests on the west side of the Cascades are expected to grow faster due to milder conditions, but in the long run all forests are projected to see decreased growth due to summertime soil moisture deficits. Agricultural production is likely to be negatively impacted by decreasing irrigation supplies during the summer growing season as well as increasing pests and weeds.

The likely impacts of climate change can be addressed in part through improved planning. The planning process should incorporate an understanding of expected future changes. For instance, future infrastructure might not be planned for locations such as floodplains and tsunami hazard zones. When designing new infrastructure, project managers will need to switch from designing with standards developed for historic climate trends to designing for future and uncertain climate projections. Operations are more easily adapted to a changing climate, but conditions should be monitored to plan for future operations in an effective manner rather than relying on past information.

93 Cambridge Systematics, Inc., 2007, *Cross Border Short-Sea Shipping Study: Phase II*, prepared for the International Mobility and Trade Corridor (IMTC) Project, January 2007.

Oregon has taken initial steps towards exploring climate change adaptation issues in *A Framework for Addressing Rapid Climate Change* (2008).[94] The Oregon Climate Change Research Institute administered by Oregon State University and the Oregon University System is charged with assessing the most current state of the science of the likely effects of climate change in Oregon every two years with the first report in December 2010.

In addition, in partnership with the Institute, the University of Oregon Climate Leadership Initiative is leading climate preparedness planning projects in regions throughout the state, including examinations of the impacts to built infrastructure such as transportation.[95]

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94 Governor's Climate Change Integration Group, 2008, *A Framework for Addressing Rapid Climate Change: Final Report to the Governor*, State of Oregon, January 2008.

95 The Resource Innovations Group Website: http://www.theresourceinnovationgroup.org/.

Funding

6.0 Funding

6.1 Introduction

Federal, state and local governments provide much of the funding for freight transportation system improvements including highways, airports and certain marine port facilities. The private sector provides funding for those elements of the transportation system that are privately owned and operated, including marine terminals, pipelines and rail lines. Governments and the private sector sometimes work together in public-private partnerships to fund freight transportation improvements. In order to ensure that freight transportation system needs are adequately funded, states are actively seeking new methods and sources of project funding and finance. These include a wide variety of federal grant and loan programs, expanded user-pay programs and further development of partnering arrangements between the public- and private-sector investors.

The following topics are covered in this chapter:

- Public-sector funding for transportation in Oregon, along with how this funding is distributed to meet transportation needs;
- Summary of transportation funding needs as forecasted in the 2006 OTP; and
- Review of selected existing and potential initiatives for helping to fill the gap between funding needs and anticipated revenues.[96]

6.2 ODOT's Transportation Funds

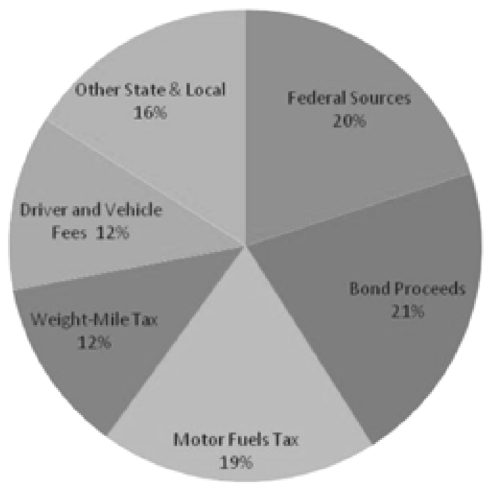
It is anticipated that ODOT will receive $5.16 billion in funding during the 2009 to 2011 biennium.[97] Roughly 20 percent of this funding ($1.03 billion) is from federal government sources, as shown in Figure 6.1. The other 80 percent ($4.13 billion) is from state sources. These include a tax on motor fuels (19 percent), weight-mile tax (12 percent), driver and vehicle licenses and fees (12 percent) and other state and local sources (16 percent). A very small amount of revenue is derived from tolls (0.2 percent).

96 Chapter 9, Section 9.6 includes updated information regarding funding related to the FAST Act as well as Freight Investment Plan.

97 Oregon Department of Transportation Budget Booklet 2009-2011: http://library.state.or.us/repository/2010/201002171155453/ODOT_COMM_docs_BudgetBooklet_09-11.pdf

The single largest category of state funding (21 percent or $1.065 billion) is from the sale of bonds through programs such as the Oregon Transportation Investment Act and *Connect*Oregon. Bonds sold through these programs are repaid from revenues generated by various sources such as lottery revenues, weight-mile taxes, fuel taxes and vehicle license, registration and title fees.

Figure 6.1 ODOT's Revenue Sources – 2009 to 2011



Source: ODOT Budget Booklet 2009 to 2011.

Oregon has a constitutionally dedicated Highway Fund that requires all taxes levied on motor vehicle fuel and ownership, operation or use to be used exclusively for construction, reconstruction, improvement, repair, maintenance, operation and use of public highways, roads, streets and roadside rest areas. Oregon's constitution also requires that the legislature ensure that cars and trucks pay their fair and proportionate share of state motor vehicle taxes described above. This latter provision is unique among states and is accomplished by completion of a comprehensive cost allocation study every two years that includes a report to the legislature for appropriate action.

The share of funding from various sources, as shown in Figure 6.1, is likely to change in the future. Federal, state and local sources, including bond proceeds and vehicle taxes and fees, are all subject to fluctuation. The next 20 years are anticipated to see dramatic improvements in the fuel efficiency of vehicles. As these new vehicles replace the current vehicle fleet, large reductions in fuel consumption are possible. This will translate into a decrease in the amount of revenue derived from fuel taxes, even as vehicle miles traveled are projected to increase.[98]

98 The Oregon Road User Fee task force researched possible alternatives to the fuel tax in their November 2007 report. Their findings show that many of the potential

About 16 percent of ODOT's total revenue is "passed through" to Oregon cities, counties and other agencies, as shown in Table 6.1. Per biennium, cities receive roughly $300 million and counties, roughly $450 million. These funds are derived from the state fuel tax, weight mile tax and licensing fees. Other state agencies, such as Oregon Parks and Recreation Department, Oregon Department of Aviation, and the Oregon State Marine Board, receive roughly $77 million. ODOT acts as a tax collector for these other agencies. ODOT itself is receiving approximately $4.3 billion for its 2009 to 2011 operating budget, from a total of $5.16 billion in revenue for the state.

Table 6.1 Distribution of ODOT's Pass-Through Revenue – 2009 to 2011

Recipient	Pass-Through Revenue
Cities	$ 303 Million
Counties	$ 452 Million
Other State Agencies	$ 77 Million
Total 2009-2011 Biennium	$ 832 Million

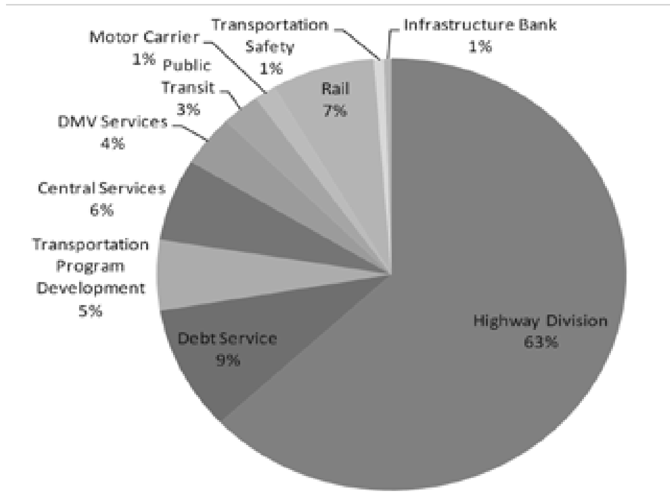
Source: Prepared by ODOT 2009

6.3 ODOT'S TRANSPORTATION BUDGET

Incoming revenues are used to support a wide variety of state and local transportation system needs. For the years 2009 to 2011, the Highway Division uses the largest portion ($2.63 billion or 63 percent), as shown in Figure 6.2 below, for programs such as the bridge program ($670 million), the highway maintenance and preservation programs ($789 million combined) and the highway modernization program ($348 million). The remaining 37 percent of expenses include debt servicing ($389 million or 9 percent) and the rail program ($296 million or 7 percent) and other smaller programs.

alternatives to the fuel tax are "not quite ready for broad scale implementation on a local, state, or national basis" (http://www.myorego.org/wp-content/uploads/2017/07/RUFPP_finalreport.pdf).

Figure 6.2 ODOT's Expenses 2009 to 2011



Source: ODOT Budget Booklet 2009 to 2011.

Table 6.3 summarizes 2030 transportation need forecasts from the 2006 OTP. By most estimates, trends such as a growing statewide population, industry activity and employment mean that the needs for the transportation system will likely grow in the future.

6.4 FREIGHT-SPECIFIC FUNDING OPPORTUNITIES

A variety of sources are necessary to fund Oregon freight projects, as shown in Table 6.2. These diverse funding sources are able to improve and maintain the freight system in many ways. However, as indicated in the table, the available revenue sources are not freight specific. Additionally, recent funding available for transportation in Oregon has been insufficient to meet all of the state's transportation needs. Public freight projects are funded from the same sources as all other public sector transportation programs.

To better understand why revenue sources are insufficient, funding needs and the impact of not meeting the state's freight funding needs are discussed in this section. The OFP does not develop specific freight funding needs forecasts. Instead, it relies on work completed for the OTP, the OHP and existing modal plans to develop a picture of future needs for selected components of the freight transportation system and funding gaps associated with these needs.

Table 6.2 Revenue Sources and Challenge for Freight Infrastructure

Freight Infrastructure	Revenue Sources	Challenges
Airports	Federal Airport and Airway Trust Fund	Programs are not freight specific
	Federal Airport Improvement Program	
	*Connect*Oregon funding	Program is not permanent and may fund non-freight programs
Connector Roads	Federal funds for connectors on the National Highway System	Connector projects compete for funding with freight and passenger projects on other local roads and highways; funding is insufficient to meet needs
	State funds for connectors that are state highways	
	Local funds for connectors that are local roads	
Highways (including bridges)	Federal and state (including OTIA and JTA) programs*	Programs are not freight specific
Natural gas and petroleum pipelines	Gas/petroleum companies' private funding	Private-sector priorities may differ from state priorities
Ports and waterways	Private-sector companies	Private-sector priorities may differ from state priorities
	Federal Inland Waterways Trust Fund and Harbor Maintenance Trust Fund	Funding is dependent on Congressional appropriations
	State business development programs	Programs are not freight specific
	*Connect*Oregon funding	Program is not permanent and may fund non-freight programs
Railroads (Class I and shortlines)	Private-sector companies	Private-sector priorities may differ from state priorities
	Federal Railroad Administration (FRA) programs	Programs are not freight specific
	*Connect*Oregon funding	Program is not permanent
Truck/rail transfer facilities	Private-sector companies	Private-sector priorities may differ from state priorities
	Federal and state business development (including brownfield) programs	Programs are not freight specific
	*Connect*Oregon state funding	Program is not permanent and may fund non-freight programs

* OTIA – Oregon Transportation Investment Act (2001, 2002 and 2003); JTA – Jobs and Transportation Act (2009).

Funding Needs as Identified in the OTP

The 2006 OTP identified feasible transportation needs of publicly and privately owned components of state, regional and local transportation systems from 2005 to 2030. These are summarized in Table 6.3. Though these are not freight-specific needs, they refer to components of the transportation system that are important for the movement of freight – the highways, intermodal connectors and other infrastructure that support efficient freight movement.

Table 6.3 OTP Investment Needs for Freight-Related Components of the Transportation System, 2005 to 2030[99]

Investment Needs	Current Annual Expenditures (in Millions Dollars)	Average Annual Realistic Needs* (in Millions Dollars)	Annual Gap (in Millions Dollars)	Forecasted Annual Growth Rate (Percentage)
State highway-related needs	787	1,278	491	1.4 (freight highway travel)
Intermodal connectors	n.a	11.3	n.a	1.35 (total highway travel)
Air freight and passenger				
Portland Intl	44.4	115.3	70.9	2.62 (freight tons)
Major modernization**	13.9	15.1	1.2	
Other airports	10.7	47.4	36.7	
Ports and waterways	51.3	56.2	4.9	0.97 (deep draft freight) 0.29 (shallow draft freight)
Natural gas and petroleum pipelines	n.a	n.a	n.a	n.a
Private rail facilities	More than 6.7	18.8	n.a	1.83 (freight tons)

Source: Oregon Transportation Plan, p. 83.

* "Realistic needs" referred to the amount of funding that would maintain the transportation system at a slightly more optimal level than 2005 levels, would replace infrastructure and equipment on a sensible and logical life cycle, and would bring facilities up to standard or add capacity in a prudent and practical way. The OFP references "realistic needs" in place of the OTP's "feasible needs".

** Needs identified for eight airports other than Portland International Airport where growth is expected to exceed capacity.

This assessment documents gaps in many of the investment categories. For example, state highway-related needs (including maintenance and capital improvements) are forecasted to face an annual shortfall of $491 million every year between 2005 and 2030.

99 Freight transportation needs and revenues are further described in Chapter 9.

Potential Impacts of Not Meeting State Needs

With these modal needs and gaps in mind, the OTP also provides an investment scenario analysis. The goal of this analysis was to gauge the response of Oregon's transportation infrastructure to three hypothetical scenarios. The scenarios reflected the needs of publicly-supported transportation infrastructure and services, though they did include limited information on funding for freight rail. Briefly, the three scenarios were defined as follows:

- Level 1. The impacts of "flat funding" on the state's transportation system, where inflation causes a 40 to 50 percent loss in purchasing power by 2030;
- Level 2. A situation where transportation funding, while not providing for major capacity enhancements, keeps up with inflation and results in maintaining current performance levels on existing facilities and services; and
- Level 3. Funding that expands facilities and services including making major investments in new infrastructure, maintains the system at a slightly more optimal level than current levels, replaces infrastructure and equipment on a reasonable life cycle, and brings facilities up to standard or adds capacity in a reasonable way.

The OTP's analysis of these different levels of funding, which are assumed to be applicable for the OFP, suggested the following results including possible freight-related impacts:

Table 6.4 OTP Funding Levels and Impacts

Results of Funding	Freight-Related Impacts
Level 1	
This level of funding could be devastating to Oregon's economy.	· The ability to get to places by all forms of transportation would decline because of declining infrastructure conditions and services and lack of funding for projects that relieve congestion. · Deterioration of the state and local road and bridge system could not be avoided and would increase user costs. If bridges deteriorated to the point of load limits, then commerce would be interrupted. · Traffic congestion would hurt the local, state, regional and national economy because of longer travel times, reduced market areas, the need for duplicate inventories at more locations and the need for additional delivery fleet and drivers. · Reduction of intercity bus, rail freight, aviation and ports all would leave rural communities at an economic disadvantage. · Failure of the jetties at the mouth of the Columbia could leave Columbia River ports, including the Port of Portland, without access to ocean shipping. This would be devastating to industries dependent on ocean shipping and to Oregon's transportation and

Results of Funding	Freight-Related Impacts
	warehousing industry.
Level 2	
This level of funding would preserve existing facilities and services and keep up with inflation, at an estimated rate of 3.2 percent annually. Investments that kept up with inflation would keep existing facilities and services at their current performance levels to the extent possible. Funding at this level thus would avoid economic disaster but would not result in a competitive advantage for Oregon businesses.	· Rail freight shipping costs would be reduced by elimination of some bottlenecks. Preservation of rail services would assist job retention in rural areas and outside the Willamette Valley. · Funding would prevent further cutbacks of shortline rail service and maintain rural air service, maintaining rural access to freight and passenger services. · Ports would have the opportunity to deepen channels, protect jetties, and address truck and rail congestion around marine terminals. But the economy would not grow to full potential because congestion at truck, rail and port facilities would prevent expansion and efficient handling of growing amounts of cargo. · Some congestion would be addressed through improvements to bottlenecks and through more aggressive implementation of operational improvements, such as Intelligent Transportation Systems (ITS). · Major capacity needs for roads and highways would still go unaddressed. Road users would continue to experience rising costs from increased travel delay due to congestion. Freight accessibility would be lessened by lack of capacity-adding projects. The inability of local areas to expand arterial roads would hurt their development opportunities.
Level 3	
This level of funding would mean that major investments would enable feasible needs to be met over the OTP planning period, resulting in positive impacts on Oregon’s economy.	· Statewide mobility would be enhanced by system-wide improvements. · Development of expanded road, transit, intercity passenger service, rail freight and airports would occur throughout the state. · Rural areas would be better able to retain air and rail services and related jobs. · Improved rail freight, marine port facilities and airports would enhance the economy in urban and rural areas. Truck congestion would not be eliminated, but it would no longer be a threat to the economy.

Following the results of this scenario analysis, the OTP recommended Oregon use traditional and new revenue sources to move toward funding at Level 3, using incremental steps over time.

Why Oregon Needs to Look for a Way to Close the Funding Gap

The OTP Investment Scenarios illustrate some of the potential dangers of continuing to under-invest in the state’s freight transportation system. In addition, other looming challenges will impact the performance of the state's freight transportation system and create a strong case for finding additional funding sources. Among these challenges are the following:

- Increasing wear and tear on the transportation infrastructure as Oregon's population and the economy grow;
- More congestion and crashes with growth in traffic volumes;
- Greater global competition, rising fuel prices and the need to have efficient, reliable and affordable freight transportation options so Oregon businesses can compete favorably with businesses in other states and nations;
- Global warming, greenhouse gas reduction and various other environmental issues and concerns;
- Community livability and land use issues and concerns; and
- Security issues and concerns.

These and other challenges suggest a compelling need to expand existing programs for financing freight transportation improvements, and to identify and implement new funding and finance sources, where feasible.

6.5 OPPORTUNITIES FOR ADDRESSING THE FUNDING GAP

Additional private- and public-sector funding is needed to address freight financing issues. Private-sector companies will continue to make transportation investments based on a variety of considerations to help maintain and improve their competitiveness regionally, nationally and internationally. Market conditions are a primary factor in private-sector decision-making, so efforts to strengthen economies at all geographic levels are critical to private-sector investments in the freight transportation system.

Private-sector companies also will continue to pay specific fees that governments, port authorities and other entities will use for a variety of purposes including freight infrastructure improvements. Opportunities may exist for enhancing existing fee structures or implementing additional fees to help reduce the funding gap. Federal, state and local governments, including port authorities, may identify ways to broaden or improve existing or establish new, freight financing programs. The following discussion summarizes some of the private- and public-sector opportunities for addressing the funding gap through user fees and government programs.

User Fees

Freight shippers and carriers currently pay user fees such as federal, state and local fuel taxes. In a few states, including Oregon, trucking companies pay a weight-distance tax based on mileage driven for various weight classifications of truck configurations. Shippers and carriers for other modes pay user fees specific to their type of freight haulage. Any Oregon-specific fees that do not produce transportation system improvements that would offset the costs to businesses that pay the fees could result in reduced competitiveness of Oregon businesses. In the most extreme case, businesses could choose to move to other states where costs are lower.

Airport and Port Fees

Airports and port authorities generate revenues in a variety of ways including grants, loans, tariffs, taxes and user fees. User fees for airports include passenger facility charges, aircraft registration fees, landing fees, terminal and gate lease fees, and parking fees. Most of these fees relate to passenger usage of airport facilities. User fees for port facilities include berthing fees, security fees, fees related to servicing vessels and fees for loading and unloading cargo. Fees may be dedicated to specific projects whereby the fees are used to repay the project costs.

Container Fees

Container fees represent a type of user fee sometimes used to help repay project-specific costs. These fees on import and export container movements at U.S. ports represent a potentially large source of revenue. Although the use of container fees or other direct user fees present promising opportunities to address the freight transportation funding gap, several institutional and operational challenges must be addressed before these strategies can be effectively implemented more broadly. There may be significant institutional resistance to levying new container or user fees or diverting existing user fees to fund freight transportation improvements. The private sector freight community, for instance, will want assurances that efficiency and reliability gains are proportional to the user fees that will be collected.

The regional, national and international nature of freight shipments also presents a challenge. Freight movements often affect the transportation systems of multiple states and metropolitan planning organizations, and it is critical to ensure that costs and benefits of container fees or other direct user fees are allocated appropriately across jurisdictional boundaries. Container fees rely on non-discretionary traffic levels that may not be generated through one state’s infrastructure. A regional or national approach may be necessary.

Infrastructure Surcharges

Infrastructure surcharges are special assessments that governments or businesses impose on taxpayers or customers to help pay for infrastructure improvements. Numerous utilities have assessed surcharges on their customers in order to recoup the costs of infrastructure investments such as pipelines and related equipment and facilities.

Similar types of surcharges may be used to pay for transportation improvements. An example would be a surcharge placed on the number of employees at businesses in a taxing district such as a county or city (see the Special Districts discussion below). Revenues generated from the surcharge would be used to help pay for transportation improvements within the taxing district. Another type of surcharge might be a fee on tonnage of cargo shipped through a terminal or other freight facility. Surcharges could be targeted to pay for transportation improvements that benefit the payers of the surcharge.

Special Districts

According to the 2007 U.S. Census of Governments, special district governments are "all organized local entities (other than counties, municipalities, townships or school districts) authorized by state law to provide only one or a limited number of designated functions, and with sufficient administrative and fiscal autonomy to qualify as separate governments, known by a variety of titles, including districts, authorities, boards and commissions."[100] A freight special district would focus on freight-related functions such as the provision of infrastructure to support freight movements. Special districts typically are financed through taxes on district properties, other taxes, special assessments, grants or loans from governmental entities, or fees for services imposed on property owners or service users within the district's boundaries. However, getting voters to approve increased taxes or fees associated with special districts would be a challenge, as higher taxes are rarely popular.

Oregon statutes authorize 28 types of special districts, including several that finance activities that may support freight improvements.[101] These include port districts,[102] road assessment districts and special road districts. Some states authorize local transportation improvement districts to identify planning, funding and other resources for local transportation projects, usually associated with roadway improvements. In Oregon, local improvement districts serve this purpose.

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100 https://www.census.gov/govs/definitions/index.html#s.

101 http://landru.leg.state.or.us/ors/198.html.

102 Legally in Oregon port districts are municipal corporations, like cities and counties.

Tolls

Tolling is a form of financing where transportation system users pay for using specific roads, bridges, tunnels or other facilities. The only tolled facilities in Oregon currently are two tolled bridges that together contribute 0.2 percent of the state's transportation revenue:

1. The Bridge of the Gods, operated by the Port of Cascade Locks and connecting Cascade Locks, Oregon, to Stevenson, Washington; and
2. The Hood River Bridge, operated by the Port of Hood River and connecting Hood River, Oregon, to White Salmon, Washington.

Both of these facilities are locally owned and operated. However, Oregon could consider other types of toll facilities including turnpikes and priced lanes. Many other states have instituted tolled facilities that are under either state or private operation.[103] Similar arrangements may be possible in Oregon in the future. For example, the I-5 Columbia River Crossing project's Tolling Study Committee reviewed the potential of several different tolling scenarios to help fund the project.[104] In addition, ODOT's Office of Innovative Partnerships and Alternative Funding has investigated the feasibility of several highway projects, where tolls are one of the potential funding mechanisms.[105] Tolls, though, increase costs to freight providers and have an impact on the economy as a result of increased transportation costs.

Congestion Pricing

Congestion pricing, closely related to tolls, involves offering incentives to use transportation facilities in off-peak hours or charging extra to use them during peak hours. Prices can vary based on a fixed schedule, or they can be dynamic, meaning that rates change depending on the level of congestion that exists at a particular time. A fixed-rate, off-peak congestion pricing strategy is currently being used to mitigate congestion and improve air quality as part of the Ports of Los Angeles and Long Beach PierPASS program. Use of congestion pricing strategies at freight facilities or corridors could represent a potential source of revenue to offset freight infrastructure investments. Though most commonly

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103 For more information on toll facility ownership in other states see: http://www.financingtransportation.org/funding_financing/funding/state_funding/tolls.aspx

104 Columbia River Tolling Study Website: https://web.archive.org/web/20111019064836/http://tolling.columbiarivercrossing.org/.

105 A series of tolling reports and white papers prepared for ODOT is available at https://web.archive.org/web/20100531214646/http://www.oregon.gov/ODOT/TD/TP/Tolling_Background.shtml.

used as a congestion mitigation tool, surplus revenue from congestion pricing programs could be used to support other freight improvements. However, this option is unlikely and would be politically difficult.

Selected Federal Opportunities

A number of financing mechanisms at the federal level represent existing and potential opportunities for funding freight transportation system improvements in Oregon. Several such mechanisms are summarized briefly below. It is important to note that while the programs presented below create opportunities for financing of critical transportation programs in Oregon, these options do come at a cost in the form of debt service. As a result, when these options are considered for funding transportation projects, it is necessary to weigh the implications and future costs of these alternatives.

Build American Bonds

Build American Bonds (BAB) are tax credit bonds that provide federally-subsidized debt financing to reduce borrowing costs for transportation investments. Authorized by the American Recovery and Reinvestment Act of 2009,[106] BABs allow state or local governments issuing bonds to elect to make the bond interest taxable in exchange for a federal interest subsidy. Bond proceeds must be used for governmental purposes, which include transportation investments.

In the spring of 2010, the State of Oregon completed the sale of $580 million of new bonds, 93 percent of which were BABs.Revenues from the sale will be used to fund projects identified through the Oregon Transportation Investment Act III program. Financing via BABs is reported to have enabled the state to save $56 million in financing costs. The BAB program expired on December 31, 2010, and has not been re-authorized.

CFR Title 23, Section 129 Loans

Section 129 of the Code of Federal Regulations Title 23 allows federal-aid highway apportionments to fund direct loans to projects with dedicated revenue streams. Dedicated revenues may include tolls, excise taxes, sales taxes, property taxes, motor vehicle taxes and other beneficiary fees. Proceeds from Section 129

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106 The American Recovery and Reinvestment Act of 2009, also known as the Recovery Act, utilized $787 billion to reduce unemployment and spur economic growth in the wake of the recession at this time. This bill included funding for transportation construction and maintenance projects.

loans can fund the costs of engineering, right-of-way acquisition and physical construction.

Any federal-aid highway project is a potential candidate for a Section 129 loan provided that the recipients pledge revenues from a dedicated source to repayment of the loan. Loans can be in any amount of up to 80 percent of the project cost, provided that a state has sufficient obligation authority to fund the loan.

Use of Section 129 loans for project financing has been very limited. One reason for this is that the Transportation Infrastructure Finance and Innovation Act program (described below) is generally available for the same kinds of projects that would likely use Section 129 loans. However, for projects that do not fit the profile of TIFIA projects, Section 129 loans remain a good alternative.

Transportation Infrastructure Finance and Innovation Act

The Transportation Infrastructure Finance and Innovation Act (TIFIA) of 1998 is a federal program through which the U.S. DOT provides credit assistance in the form of direct loans, loan guarantees and credit assistance to major surface transportation projects with dedicated revenue streams. In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) opened the TIFIA program to freight projects. Several states have received TIFIA credits for projects that could be significant to freight, such as the Maryland Intercounty Connector and the Reno Rail Corridor in Nevada.

TIFIA has provided credit assistance to state DOTs, transit operators, special authorities, local governments and private entities undertaking highway, transit, rail and intermodal improvements. Rather than providing grant funding, TIFIA provides projects with supplemental or subordinate debt in order to leverage available federal resources. As of March 2009, the TIFIA program had provided $5.8 billion in credit assistance, leveraging projects with a construction value of $21.8 billion nationally.[107]

Oregon has not yet taken advantage of the TIFIA program. This may be a consideration for ODOT in coming years, in particular, to fund those projects occurring on the Strategic Freight System.

Grant Anticipation Revenue Vehicles Bonds

Grant Anticipation Revenue Vehicles or "GARVEE" is the name given to the process where states utilize bond or other debt instrument financing mechanisms

[107] http://www.financingtransportation.org/funding_financing/financing/credit_assistance/tifia.aspx.

involving the payment of future federal-aid highway funds to retire debt. Therefore, GARVEE bonds are backed by a pledge of future federal-aid from the U.S. DOT. GARVEEs generate upfront funding for major capital projects that a state would likely be unable to construct in the near term using traditional funding approaches. Bond-related costs eligible for federal-aid reimbursement include interest payments, retirement of principal and any other cost incidental to the sale of an eligible bond issue. States, political subdivisions and public authorities have issued GARVEE debt, including Oregon neighbors California and Idaho.

Looking Ahead to the Future Surface Transportation Reauthorization[108]

Individual states can help influence federal policy by making freight funding and finance a top priority in their discussions with congressional representatives. The last surface transportation authorization in 2005, SAFETEA-LU, created several new opportunities for freight funding and finance. Early indications are that the future of surface transportation funding legislation will include an even greater focus on freight. Ongoing state agency coordination with Oregon's congressional delegation is critical in showing support for maintaining and expanding current programs for funding freight projects, as well as identifying potential new sources of freight funding in federal transportation and other legislation.

State and Multimodal Opportunities

At the state level, state gas taxes and a variety of fees have been used in support of freight infrastructure and other improvements. In recent years, these have been extended by other programs, such as the Oregon Transportation Investment Act, which has been instrumental in providing funding to fix or replace bridges important for truck freight movements. OTIA also has provided funding for road modernization improvements, preservation and maintenance.

More recently, the *Connect*Oregon program and the Jobs and Transportation Act have established funding for freight projects on and off roads. The following discussion summarizes opportunities associated with these and other selected state and multimodal programs.

108 Chapter 9, Section 9.6, includes updated information regarding funding related to the Fast Act as well as a Freight Investment Plan.

Oregon Multimodal Transportation Fund

The Multimodal Transportation Fund (also known as *Connect*Oregon) is a lottery-backed bond program that generates revenues to invest in air, marine, rail and transit infrastructure. Public road and highway projects that are eligible for funding through the State Highway Trust Fund are not eligible for funding through the Multimodal Transportation Fund. The *Connect*Oregon program received $100 million in the 2005 legislative session and another $100 million in the 2007 legislative session. In 2009, the Oregon Jobs and Transportation Act (JTA) authorized another $100 million for *Connect*Oregon. It is not a dedicated program, and each bond sale must be authorized by the state legislature. Proceeds from the Oregon State Lottery are used to pay back the bonds issued for the *Connect*Oregon program.

Establishing dedicated funding for *Connect*Oregon would help to provide a steady stream of funding that supports multimodal freight efficiency and mobility goals. Dedicated funding also might promote more cohesive statewide and regional freight planning, as regional governments could devote more time to working with their neighboring regions and the state to define projects that best support the movement of freight.

Oregon Jobs and Transportation Act

The Oregon Jobs and Transportation Act (JTA), enacted by the 2009 Oregon Legislature, represents an important source of new financing for investments in Oregon's transportation infrastructure. The legislation includes funding to relieve key bottlenecks, improve existing facilities and address safety concerns and deferred maintenance for roads and bridges.[109] Further, the JTA authorizes a third round of *Connect*Oregon funding, along with funding for city streets and county roads. Thirty-seven highway projects are to receive funding for addressing bottlenecks or improving safety; many of these projects are on major freight routes. Roadway improvements are financed through revenues generated by increases in various fees and in gasoline and diesel taxes. An estimated 40,000 jobs are expected to be created over 10 years through expenditures associated directly or indirectly with the JTA.

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109 https://www.oregon.gov/odot/pages/jta.aspx.

Public-Private Partnerships

Public-private partnerships (PPP) help accelerate development of critical transportation infrastructure, thereby, realizing benefits before the public or private sectors could do so on their own. From a goods movement perspective, rail PPP arrangements have thus far been the focus of many transportation PPP projects, possibly because of the frequent interaction between private railroads and government agencies. However, other types of projects also make potential PPPs, such as the development of intermodal centers or tolled/priced facilities.

ODOT's Office of Innovative Partnerships and Alternative Funding offers a unique support system to plan, fund and implement PPPs. In the past, the office has played a role in projects which brought together public and private partners, including the Road User Fee Pilot Program and Oregon's Solar Highway project. This office may be able to facilitate the development of freight-related projects using a combination of public and private sources of funding.

Implications for Future Freight Funding

While assumed values such as growth rates, the inflation rate and the like have changed since estimates and forecasts were made for the OTP, the general trends have not changed much. OTIA, *Connect*Oregon and the JTA have resulted in significant new state revenues to improve freight and passenger transportation facilities, but a major funding gap remains. Continuation of existing funding sources such as *Connect*Oregon and the creation of new state funding sources would help reduce the gap and support Oregon's economy. A similar effect may occur if reauthorization of federal surface transportation funding legislation or other freight-related federal legislation results in extending existing, and providing new, freight funding programs. Ongoing comparisons of freight funding needs to available revenues in relation to Oregon's economy and the demand for goods movement will be important to decision-makers when developing legislative proposals.

Alternative Scenarios

7.0 Alternative Scenarios

The strategies recommended to support the development of the Oregon freight system described in Chapter 8 are based on analysis of several possible future economic and policy scenarios. The Reference Case (discussed below) portrays the future Oregon freight system based on current expectations. It assumes economic conditions and policy directions that seem to be most likely in the future. Recognizing, however, that the future is sure to be different from what we can now foresee, the broad-brush implications for Oregon's freight system under a range of other plausible economic and policy conditions were also considered.

In order to understand the implications of different future economic scenarios for freight, Oregon's Statewide Integrated Model (SWIM2) was used to evaluate the spatial dimension of future economic and population growth and the commodity flow and travel patterns stemming from this future demand. The alternative scenarios presented below were selected using expert input from the Steering Committee and data from the Oregon Office of Economic Analysis. As a result of continued economic volatility, it is important to continue to monitor changes in economic projections and incorporate new economic data into future plans.

This chapter provides an overview of the modeling methods and results conducted by ODOT modeling staff. For more detail on the modeling results of the analysis, see Oregon Freight Plan *Modeling Analysis Technical Memorandum* on ODOT's website.[110]

7.1 Reference Case and Alternative Scenarios

The first step in analyzing the impact of alternative future scenarios on the freight system is to define the scenarios that need to be modeled, aside from a Reference Case which will serve as the baseline. Multiple factors could change economic conditions and markedly affect the demand for transportation, especially freight transportation. However, regardless of the future economic scenario, it is likely that the primary factors that will impact freight demand will be changing energy prices, greenhouse gas regulations, evolving business and carrier logistics strategies, international competition for resources, and state and national tax and transportation policies. Federal and state economic policies, U.S. trade programs and natural resource policies and legislation also will have a significant impact. The following scenarios were selected for analysis:

[110] ODOT website: https://www.oregon.gov/ODOT/Planning/Pages/Guidance.aspx

- Reference Case,
- Optimistic Scenario,
- Pessimistic Scenario,
- High Transportation Cost Scenario, and
- National Transportation Policy and Funding Shortfall Scenario (not a modeling scenario).

The Reference Case is consistent with the OTP, but uses the current economic forecast for Oregon. The five modeling analysis scenarios reflect different assumptions about future population, economic growth, land use and transportation trends. Alternative scenarios are generally considered less likely to occur than the OFP Reference Case. The alternative scenarios provide a framework to test the flexibility of OFP strategies in the event that the future is significantly different from that anticipated in the Reference Case. They also help evaluate possible unintended consequences of OFP strategies. More detail about these scenarios and how they were developed is presented below.

Despite expected economic growth under all scenarios; there are major differences in the levels of economic growth. If the Pessimistic Scenario were to become reality instead of the Optimistic Scenario, for example, Oregon's economy and freight system would feel the impacts. As previously noted, it is also important to recognize that the scenarios presented above are not all-encompassing. Future economic conditions, industry composition, and freight demand levels may differ substantially from those presented here. It is important, therefore, to monitor economic and policy developments for possible reevaluation of freight strategies in Oregon, and to feed this information on changing conditions back into the planning process.

The Reference Case

The Reference Case, or the business-as-usual scenario, highlights future freight movements consistent with current laws, most recent state economic forecasts, land use patterns and transportation system investments.[111] It is considered the most realistic future scenario with current information and has several key assumptions, including the following:

- Oregon's economy will grow as forecasted by the OEA, while the rest of the world economy will grow at rates consistent with national forecasts.
- Employment figures and forecasts are consistent with OEA values from March 2009.

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111 An example of another statewide scenario analysis can be found in the *Oregon Transportation Plan*, adopted September 20, 2006.

- Commodity flows are consistent with the data in the Oregon Commodity Flow Forecast, October 2009.
- Urban growth boundaries maintain 20-year land supplies.
- Transportation system maintenance, preservation and improvement assumptions are consistent with the current Statewide Transportation Improvement Program, Metropolitan Transportation Improvement Programs and local capital improvement plans. Longer-term investment assumptions are consistent with the OTP and transportation system plans.
- Transportation costs remain stable.
- The economy will suffer no major shocks over the next 25 years; it will grow at a stable rate and follow a similar pattern of long-run activity observed over the past 20 years. The dampening effects of the current recession are accounted for.

Many of the assumptions in the Reference Case include information discussed in the previous sections of this chapter, including the following:

- Oregon's population will grow and age,
- Consumption will increase with the increase in population,
- Workforce productivity will remain competitive, and
- Trade will increase.

In addition, the Reference Case assumes that there will be no major changes in statewide and metropolitan land use beyond those reflected in the local and state plans. Zoning decisions within urban growth boundaries are assumed to drive the location of businesses and major freight facilities, such as distribution centers, warehouses and terminals. Consistent with the OTP, the Reference Case assumes no major changes in national and Oregon transportation policies and funding programs.

Alternative Future #1: Optimistic Scenario

This alternative examines the condition and performance of the Oregon freight system, assuming that Oregon's total economy and population grow more rapidly than projected in the Reference Case.

The factors that might lead to higher economic and population growth in the state include the following:

- Improved productivity across a range of Oregon industries as a result of the introduction of new technologies,
- Changes in the value of the dollar that increase national and global demand for Oregon products,

- Changes in energy or transportation costs that make Oregon industries significantly more cost-competitive in national and global markets, and
- Climate changes that favor economic activity and settlement in Oregon.

Alternative Future #2: Pessimistic Scenario

This alternative examines the condition and performance of the Oregon freight system assuming that Oregon's total economy and population grow slower than projected in the Reference Case.

The factors that might lead to lower economic and population growth in the state include the following:

- Unfavorable trade policies;
- Slower gains in manufacturing productivity;
- Higher inflation rate, higher interest rates;
- Lower investment by companies in research and development or less technology innovation;
- Lower domestic and/or global consumption, leading to a decrease in exports of Oregon goods to trading partners; and
- Global wage equalization, which would raise the cost of imported goods and decrease the purchasing power of Oregon residents and their ability to consume goods.

Alternative Future #3: High Transportation Cost Scenario

This alternative examines the condition and performance of the Oregon freight system. It builds off the Pessimistic Scenario and adds the assumption that transportation costs are three times higher than projected in the Reference Case. This case assumes that the transportation cost increase is applied globally and does not put Oregon at an economic disadvantage.

The factors that might lead to considerably higher transport costs in Oregon include:

- High fuel cost for a variety of reasons;
- Global energy demand that outpaces supply, forcing higher prices;
- Greenhouse gas emissions regulations and/or carbon pricing regulations that force petroleum prices up and accelerate a shift to nonpetroleum energy sources (e.g., biofuels, hydroelectric, nuclear, etc.); and
- Fuel shortages caused by war or political crises.

Alternative Future #4: National Transportation Policy and Federal Funding Shortfall Scenario

This scenario is a policy scenario based on the modeled Reference Scenario. The alternative examines the condition and performance of the Oregon multimodal freight system assuming that national transportation policies in the future are significantly different from those of recent federal surface transportation programs. This alternative is the result of a policy analysis process and not a specific SWIM2 model run.

The factors that might lead to a change in national transportation policies affecting Oregon include:

- Greater devolution of highway funding responsibility to states and local governments;
- Declining federal and state revenue yields from motor fuel taxes;
- Shift from motor fuel taxes to state and local vehicle miles traveled (VMT) user fees because of national policies to "de-carbonize" transportation fuels;
- Failure to achieve national consensus on necessary investment in freight transportation facilities to support domestic and national trade;
- Preoccupation with metropolitan congestion at the expense of investments in interstate/global trade freight transportation services and facilities; and

Under the low funding levels examined in this scenario, a major shortfall in federal aid for highways will occur. Potentially, this shortfall in funding would have to be covered by increased taxes or other revenues. A shift in capital, maintenance and operations funding priorities may also be required under this scenario.

7.2 MODELING RESULTS

The results of running the SWIM2 model for each of the four analysis scenarios provided insight on how freight would be impacted when taking each of these alternate futures into consideration. This section contains a brief description of highlights from the modeling results. For a complete review of the modeling results, see Oregon Freight Plan *Modeling Analysis Technical Memorandum* on ODOT's website.[112] This technical memorandum provides substantial detail about the modeling analysis and results. Significant findings that relate to freight demand include the following:

[112] ODOT website: http://www.oregon.gov/ODOT/Planning/Pages/Guidance.aspx

Increased freight flows. Regardless of which scenario occurs in reality, Oregon is expected to see significant increases in freight flows in the future. The modeling results only highlight potential deviations from the Reference Case. Even under the Pessimistic Scenario described, freight demand will continue to increase and require a suitable freight network to move goods into, out of, within and through Oregon.

Highest freight demand under Optimistic Scenario. The Optimistic Scenario, which anticipates a period of higher than expected growth in the economy, will result in increased levels of freight demand. Freight demand will increase 21 percent more in terms of tonnage and 18 percent more in terms of value under the Optimistic Scenario when compared with the Reference Case. Under the Pessimistic Scenario, total freight demand will decrease when compared with the Reference Case. Value of goods moved could decrease by 22 percent while tonnage may decrease 26 percent. The High Transportation Cost Scenario creates results similar to the Pessimistic Scenario.

Less industry diversity make regions susceptible to economic risk. Some regions have dominant industries, making them more susceptible to economic risk associated with these industries. This is evident for the dominant urban industry of Machinery, Instruments, Transportation Equipment and Metals, and the Eastern Oregon dominance of Food or Kindred Products.

7.3 CONCLUSION

Using the Oregon Commodity Flow Forecast, October 2009, under all modeled scenarios, Oregon's economy and key industries will continue to grow, albeit at different rates. Many of Oregon's major freight dependent industries, such as Food Manufacturing, and Computers and Electronics are more susceptible to economic volatility because they are exported while Wholesale Trade and others are less susceptible. As a result of this relative stability in major Oregon industries, the OFP strategies can be expected to be applicable over the life of the plan. However, Oregon depends on federal funding for transportation system investment and maintenance. A reduction in federal funds, as described in Alternative Future #4, would be troubling for the freight system and Oregon's economy. In this case, core strategies discussed in Chapter 8 that focus on operations improvements would become even more relevant, as operations improvements require less investment to achieve travel time improvements and other benefits. As a result, where appropriate, operations improvements may be a method to keep freight moving effectively during times of reduced federal investment.

The primary indicators are derived from the assumptions that define the Reference Case and are listed here.

- Economic growth changes significantly. It is essential to continually evaluate economic growth, both past and future projections presented by the OEA. If actual and projected Oregon GSP and employment figures deviate significantly from those presented in this freight plan, reevaluation may be required.
- Long-term investment in the transportation system changes significantly. If investment in the transportation system increases or decreases substantially from what is presented in the OTP, re-evaluation may be required.
- Transportation costs increase or decrease significantly. If a large increase or decrease in freight provider transportation costs occurs over the long term, reevaluation may be required.
- Consumption and trade activity decreases over the long term. If total consumer consumption decreases over the long term (either as a result of declining population or for economic reasons), re-evaluation may be required. In addition, if trade activity decreases substantially, this would change some of the assumptions made.
- Projected demographics change significantly. Currently, Oregon's population is expected to age and increase. If forecasts change, re-evaluation may be required.

Freight Issues and Strategies

8.0 Freight Issues and Strategies

8.1 PURPOSE OF ISSUES AND STRATEGIES

Analysis and outreach efforts supporting the development of the OFP have identified a number of issues that need to be addressed in order to ensure that Oregon has an efficient and sustainable freight transportation system that continues to support economic growth and livability of Oregon communities. This chapter presents these issues and formulates strategies that ODOT, tribal governments and other governmental agencies and jurisdictions can implement in order to realize the state's freight transportation goals.

These strategies would do the following:

- Define a strategic freight system and establish a process for updating the definition of the system;
- Describe how the strategic system should be preserved;
- Periodically revisit existing processes and criteria for determining critical investment needs for the freight system;[113]
- Describe how ODOT can work with partner agencies and other states, local agencies and the private sector to ensure a coordinated approach to freight transportation system planning;
- Establish procedures to ensure the system operates safely and efficiently;
- Identify actions that can be taken to coordinate land use and freight transportation planning decisions;
- Describe how regulatory programs can be coordinated with freight transportation needs; and

[113] Section 9.5 evaluates freight mobility issues and includes strategies to address those issues as required by the FAST Act.

- Describe approaches to addressing long-term funding needs for the freight transportation system.

8.2 STRATEGY METHODOLOGY

Methodology to Create the OFP Issues and Strategies

The issues and strategies presented in this chapter were developed with input from two primary sources:

- Analysis described in a series of technical memoranda on freight transportation topics. Experts within the stakeholder community who participated in a series of Working Groups and the OFP Steering Committee reviewed these technical memoranda. The technical memoranda also provided extensive data that were used in subsequent analyses included in the preceding chapters of this plan. The technical memoranda prepared to support the OFP can be found in Freight Plan Publications on the ODOT website.[114]
- Discussions with the OFP Steering Committee. As described in Chapter 1, the OFP Steering Committee included executive-level freight industry, community and transportation professionals from around the state. The Steering Committee received all of the technical memoranda and then spent a number of meetings discussing issues and formulating strategies based on the technical information and their own expertise.

8.3 OFP ISSUES AND STRATEGIES

Freight Issue #1: *A clearly defined, multimodal "Strategic Freight System," is essential in order to focus freight system improvements, maintenance and protection on the freight corridors that play the most critical role in supporting the state's economy. Currently, this does not exist.*

Strategy 1.1:

Establish a Strategic Freight System building on the system defined by the commodity flows of Oregon's major industries. This system should include those elements of the transportation infrastructure that best support the state's key industries. This system should be multimodal, when viable, and exist in both urban and rural areas as appropriate.

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[114] Contact the ODOT Freight Planning Unit to obtain copies of the technical memos. [115] Refer to Chapter 9.3 for updated performance measures required by the FAST Act.

- Action 1.1.1. Monitor and maintain freight systems identified in modal plans. Update modal plans to meet identified strategic needs and incorporate analysis of current economy and economic forecasts periodically.
- Action 1.1.2. Use the methodology resulting from this plan to update the definition of the strategic freight infrastructure system. The methodology includes both quantifiable and qualitative data elements.
- Action 1.1.3. Develop performance measures and gather necessary data on an ongoing basis to support continued updating of identified freight routes as Oregon's economy evolves and the state reacts to changing economic conditions.[115]

Strategy 1.2:

Support freight access to the Strategic Freight System. This includes proactively protecting and preserving corridors designated as strategic.

- Action 1.2.1. Preserve freight facilities included as part of the Strategic Freight System from changes that would significantly reduce the ability of these facilities to operate as efficient components of the freight system unless alternate facilities are identified or a safety-related need arises.
- Action 1.2.2. When a change of use or classification of any facility on the Strategic Freight System is considered, seek to ensure that continuity of the Strategic Freight System is maintained.

Strategy 1.3:

Improve understanding of the economic benefits of freight improvement projects or programs to Oregon's residents and businesses. This means understanding both the direct benefits and secondary benefits such as induced job growth.

- Action 1.3.1. Develop mechanisms to measure the potential benefits of freight projects or programs. Measures should include quantifiable economic benefit as well as non-quantifiable benefits such as improvements to public health, safety and quality of life.
- Action 1.3.2. Establish mechanisms to measure appropriate comparative economic returns of different freight projects or programs. When multiple projects are reviewed, provide decision makers with information regarding return on investments.

[115] Refer to Chapter 9.3 for updated performance measures required by the FAST Act.

- Action 1.3.3. Use relevant freight benefit and freight mobility measures during project prioritization and selection. Use the economic benefit and economic return information to support freight projects to achieve project funding during the selection process.

Freight Issue #2: *Capacity constraints, congestion, unreliability and geometric deficiencies in key highway, rail, air and marine freight corridors cause inefficiencies in statewide freight movement.*

Strategy 2.1:

Define and establish criteria to identify freight constraints and deficiencies.

- Action 2.1.1. Create quantitative definitions for the types of constraints existing on the Oregon transportation system: capacity-related congestion points, operational chokepoints, deficient infrastructure conditions or geometry and weather-related closures. Define these constraints and deficiencies at a corridor level. Base performance and prioritization criteria on multiple factors, including delay, value of cargo and industries affected, degree of weather-related impacts, availability of alternate routes and OHP mobility standards.[116]

Strategy 2.2:

Develop a process for identifying, measuring and monitoring system constraints and deficiencies.

- Action 2.2.1. Develop and use performance measures/factors to identify corridor performance constraints, system deficiencies and affected industries. Apply the criteria to identify system constraints on an ongoing basis. Base performance measures on research conducted by ODOT and reported in "Freight Performance Measures: Approach Analysis."[117,118]

116 Chapter 9, Section 9.5, summarized the Freight Highway Bottlenecks Project that identified and prioritized truck delay areas in response to this strategy and FAST Act requirements.

117 Starr McMullen and Christopher Monsere, "Freight Performance Measures: Approach Analysis," prepared for the Oregon Department of Transportation and the Oregon Transportation Research and Education Consortium (OTREC), May 2010. https://www.oregon.gov/ODOT/Programs/ResearchDocuments/Freight_Performance_Measures.pdf

Strategy 2.3:

Identify and rank freight bottlenecks, corridor constraints or chokepoints, in particular those located on the strategic system. Update the ranked list periodically.[119]

- Action 2.3.1. Create a set of freight planning guidelines to use for developing transportation system plans. Recommend the adoption of ranking and prioritization procedures for evaluating freight system performance as part of TSPs. In the guidelines, recommend that the TSPs detail how plans will eliminate or significantly reduce bottlenecks and constraints.
- Action 2.3.2. Prioritize freight system needs on a regular basis. This list should include all modes and be flexible enough to be adaptable to different funding sources.

Strategy 2.4:

Coordinate freight improvements and system management plans on corridors comprising the Strategic Freight System with the intent to improve supply chain performance.

- Action 2.4.1. Define freight improvement projects specifically as those projects that support goods movement efficiency, using quantitative criteria as defined in Action 2.1.1.[120]

Strategy 2.5:

Enhance Intelligent Transportation Systems (ITS) applications (such as traveler information programs and transportation demand management systems) that are effective and useful to freight. Prioritize strategic

118 Chapter 9, Section 9.3, implements required performance measures and monitoring.

119 Chapter 9, Section 9.5, summarizes the Freight Highway Bottlenecks Project that identified and prioritized bottlenecks in response to this strategy and the FAST Act.

120 Refer to Chapter 9 for the freight investment plan required by the FAST Act.

locations for ITS applications. This should include intermodal connector facilities.

- Action 2.5.1. Evaluate the effectiveness of existing programs and explore opportunities to expand the programs to new facilities, in particular those that are part of the Strategic Freight System.
- Action 2.5.2. Target key intermodal connectors as well as possible alternate routes to those intermodal connectors that tend to be congested.
- Action 2.5.3. Interview freight users (motor carriers, private fleets and shippers) to determine types of travel information most useful to them and identify best methods of delivery. Conduct demonstrations of public-private information sharing partnerships linking public Traffic Management Centers (TMC)/Trip Check systems to private dispatch and scheduling systems.
- Action 2.5.4. Coordinate with local Transportation Demand Management (TDM) programs on or near congested freight corridors to reduce discretionary auto trips**.**

Strategy 2.6:

In order to increase modal alternatives on key freight corridors in the strategic system, encourage development of carload transload/consolidation facilities where there is market support for such facilities.

- Action 2.6.1. Since railroad business models have evolved to emphasize efficiency through unit train and expedited service models (for intermodal trains) that benefit shippers who can consolidate loads, consider developing programs to help shippers develop transload/consolidation facilities where there is market support for such facilities. Build this strategy on a compelling public benefits analysis and demonstration of potential market feasibility.

Freight Issue #3: *Congestion and unreliable travel time on roads to access major intermodal facilities can cause disruptions to freight movement and industry supply chains.*

Strategy 3.1:

Establish a procedure for monitoring the mobility, infrastructure conditions, and performance of intermodal connector roads on the National Highway System and other last-mile connections to important freight generation sites.

- Action 3.1.1. Develop and maintain measures monitoring intermodal connection performance at key intermodal facilities in terms of traffic volumes, delays and infrastructure conditions.

Strategy 3.2:

Partner with local government agencies and tribal governments to identify intermodal connectors that provide "last mile" connectivity to freight-generating businesses or locations and are not currently classified as NHS Connectors. Use this information to update the NHS connector list, when requested by the federal government, and to establish an additional list of secondary connector routes as appropriate. Highlight the importance to local governments of the role they have in making the freight system function effectively for businesses across the state.[121]

- Action 3.2.1. Working with local and regional jurisdictions, develop guidance documents for local agencies that identify how to define and designate local freight connectors.
- Action 3.2.2. Compile a list of local freight connectors once they have been identified by local and regional jurisdictions and tribal governments.
- Action 3.2.3. Request local governments to document how they have addressed last mile local freight connector needs in their TSPs.

Strategy 3.3:

Encourage inclusion of connector roads in local transportation system plans.

- Action 3.3.1. Review TSP guidelines and make recommendations about identifying connector roads including any NHS

[121] Chapter 9, Section 9.5, summarizes the Oregon Freight Intermodal Connector System Study that identified intermodal connectors in response to this strategy and the FAST Act.

and non-NHS, local freight connectors or secondary freight routes in the local TSP process. Place special emphasis on those facilities that serve as important links to businesses, industrial lands and freight generators of statewide economic importance.

Freight Issue #4: *Improvements to the efficiency, reliability and safety of long-haul freight corridors require collaboration between Oregon and neighboring states.*

Strategy 4.1:

Prioritize efforts to create and maintain strategic relationships with multistate coalitions and freight groups in neighboring states to identify freight transportation issues, concerns and needs of mutual interest. Continue to advocate for multistate planning opportunities. Work with trading partners and freight destinations and origins on identifying supply chain issues that affect whole industries.

- Action 4.1.1. Take a strong role in supporting the activities of established multistate coalitions as well as coordinating freight initiatives with transportation agencies in California, Idaho, Nevada and Washington. Build strong ties with Washington State and seek opportunities to work on cross-border planning initiatives, rail issues and capacity issues in the Columbia River Gorge and on the Columbia River Crossing. Build relationships with major trading partners to identify freight supply chain issues.
- Action 4.1.2 Coordinate with neighboring states to reduce discretionary auto trips in congested interstate corridors at peak hours.

Freight Issue #5: *Changes to the physical dimensions of a highway may either accommodate or restrict permitted loads throughout the entire state and can cause connectivity issues to key businesses and freight generating activities.*

Strategy 5.1:

Monitor, preserve and improve highway freight facilities that accommodate truckloads requiring a permit.

- Action 5.1.1. Preserve the ability of highway facilities and locations that are utilized by heavy and over-dimensional trucks to accommodate these loads. Identify freight mobility needs and avoid loss of physical capacity for these trips unless an existing feasible route is identified. If a conflicting policy limits the application of this action, seek to balance the transportation needs of all highway users while managing the statewide transportation system.[122]
- Action 5.1.2 Target highway facilities and locations that are utilized by heavy and over-dimensional loads for improvements through a systematic process that identifies centers of economic activity for industries generating these loads and the corridors in which they operate. Create connections between the motor carrier permitted load routes and project selection processes.
- Action 5.1.3 When applying Actions 5.1.1 and 5.1.2, engage in early public outreach to the affected communities, local governments, shippers of oversize and over-weight loads and motor carriers.

Strategy 5.2:

Identify routes that have length, weight, or height restrictions and include these routes, as appropriate, in the state's assessment of needed highway improvements.[123]

- Action 5.2.1. Use a data-driven process to identify highway improvement needs and to conduct an economic analysis of over-size, over-weight truck corridor improvement needs. Some criteria that could be considered as part of this identification and assessment process include:

122 Oregon Revised Statutes (ORS) 366.215 stipulates that the Oregon Transportation Commission (OTC) may not permanently reduce the vehicle-carrying capacity of an identified freight route when altering, relocating, changing, or realigning a state highway unless safety or access considerations require the reduction. Local governments may apply to the OTC for an exemption to prohibitions to reductions in capacity.

123 Chapter 9, Section 9.5, summarizes the needs related to highway over-dimensional load pinch points in response to this strategy and the FAST Act.

– The number of requests for permits on the route.

– Input from stakeholders and periodic shipper surveys to identify latent demand for commodity shipments requiring over-size, over-weight truck configurations.

– Analysis of corridor-level data and forecasts to determine where demand for over-size, over-weight loads is likely to increase.

– Analysis of emergency preparedness plans as certain events will require viable routes to deploy larger and heavier trucks that require a permit.

Strategy 5.3:

Consider targeting financial support to strategic non-highway modal infrastructure such as shortline rail and barge for shipment of nondivisible loads.

- Action 5.3.1. Identify other transportation modal options, including shortline rail service or barge, in each of the key corridors that need to be protected for over-size and over-weight commodity movements, as well as the "last mile" connections to industrial and freight–generating land uses. If rail or barge infrastructure is available, consider targeting financial support into upgrading or maintaining the infrastructure as an alternative to truck transportation.

In all cases, the state's participation in supporting infrastructure owned by private entities should only be contemplated if there is significant public interest or economic incentive to do so. Subsidies to the private sector should only be provided where there is an acceptable business plan for ongoing operation and maintenance of facilities and where a public benefit is clearly documented. Identified matching funds should also be considered as a necessary condition for state investment in private modal services.

Freight Issue 6: *Freight needs to be able to move throughout the state in a manner that is as safe as possible. Its movement may impact safety in Oregon communities and risk to the environment.*

Strategy 6.1:

Partner with local, statewide, tribal and federal partners to monitor and manage the safety performance of the statewide freight system.

- Action 6.1.1. Work with the ODOT Motor Carrier Transportation Division, Rail Division and other programs within state agencies to advance freight issues for consideration in safety plans. This should include continued monitoring of locations on state highways for high incidence of truck-involved crashes to identify any emerging safety issues and continued evaluation of rail grade crossing safety through the Oregon Operation Lifesaver program.
- Action 6.1.2. Continue leveraging the knowledge and support on safety matters offered by federal public agencies as well as private-sector freight partners.
- Action 6.1.3. Review programs and manuals offered by the state to include the most recent technological and operational freight and logistics developments.
- Action 6.1.4. Review existing hazardous transportation routes to determine whether their location is optimal to provide mobility while minimizing potential impacts to the environment and communities.

Strategy 6.2:

Use state-of-the-art crash statistics and data tracking methods to monitor the safety performance of the system and to track system performance over time.

- Action 6.2.1. The state will develop and use up-to-date local and national freight related crash data. Adjust the data types if necessary to respond to changes in logistics supply chains or transportation modes.

Strategy 6.3:

Build freight safety considerations into the system monitoring, project selection and prioritization processes.

Freight Issue #7: *Industrial land supply for freight-dependent land uses may be insufficient to meet future demand. Lack of necessary land use protections may threaten the viability of freight transportation systems.*

Strategy 7.1:

Work to better integrate freight into the land use planning process and to protect the existing supply of industrial (freight-dependent) land uses and freight terminals.

- § Action 7.1.1. Support better integration of freight into the regional and local land use planning processes. Encourage local governments to integrate industrial land use planning into comprehensive plans and all other plans and actions relating to land use controls.

- § Action 7.1.2 Work with regional and local land use planning agencies to protect existing industrial land from encroachment from incompatible land uses. This could be accomplished by including industrial-zoned lands adjacent to freight facilities (including such facilities as intermodal yards, freight terminals, marine and others) for future freight expansion. Encourage the development of buffers between freight facilities and incompatible uses. Transportation infrastructure connecting to terminals, ports, airports, and other freight-generating land uses should be included in these discussions.

- § Action 7.1.3 Work with local and regional governments to encourage that properties designated as industrial lands in a comprehensive plan are reasonably developable. Land selected for industrial uses should not have significant constraints that would make it unduly difficult or costly to develop.

- § Action 7.1.4 Encourage the development of freight transportation facilities and other industrial land uses at brownfield locations.

Strategy 7.2:

Work with local and regional agencies and tribal governments to develop best practices for integrating freight generating land uses into the urban fabric in a manner that minimizes the impact on surrounding communities and the environment.

- · Action 7.2.1. Support local and regional land use agency efforts to create a set of freight generating land use design standards including information to educate private sector developers and public sector planners. Distribute the standards to potential developers of freight-dependent businesses and local land use planners. Support adoption of strategies such as Cargo-Oriented Development (COD)[124] and Smart Industrial Growth in local and regional plans.

124 See Appendix E – Glossary for definition of Cargo-Oriented Development.

Freight Issue #8: *Freight emissions include pollutants such as greenhouse gases and particulate matter that contribute to climate change and health risk concerns.*

Strategy 8.1:

Research strategies to reduce pollutants and greenhouse gas emissions from freight sources that are active within Oregon, focus on strategies that have been implemented with success in regions that have similarities to Oregon.

- Action 8.1.1. Build on work completed in the OFP to research methods for emissions reduction. These methods may include behavioral changes, technology improvements or methods that increase the efficiency of freight supply chains.
- Action 8.1.2. Work in coordination with private sector freight stakeholders to identify the most cost-effective approaches to address climate change impacts from freight, in particular those strategies that also support and benefit shippers.

Strategy 8.2:

Consider climate change impacts in freight transportation planning activities.

- Action 8.2.1. Incorporate methods of considering greenhouse gas impacts in freight transportation planning and decision-making processes.
- Action 8.2.2. Support congestion relief and idling reduction activities such as weigh-in-motion technology and the provision of electricity at truck stops for parked trucks.

Freight Issue #9: *National Environmental Policy Act (NEPA) review procedures and permitting requirements for freight projects involve complexities that, if overlooked, can result in negative impacts to project development and implementation cycles.*

Strategy 9.1:

Reduce inefficiencies in the NEPA process as well as other environmental permitting processes by considering actions that encourage early consultation with federal, state, and local agencies.[125]

- Action 9.1.1. Review the state's natural resource and environmental permitting program for highway projects and assess its potential applicability for freight transportation projects for other modes. For all environmental review and NEPA projects, engage the necessary internal and external agency stakeholders early in the planning process in order to secure the required permits and speed project delivery. Work with resource agencies to arrange for concurrent reviews wherever possible.

Freight Issue #10: *New and emerging safety, security, and environmental regulations, though beneficial, can be confusing to shippers and carriers and be expensive to implement.*

Strategy 10.1:

Work with shippers, carriers and terminal operators to increase the knowledge of the costs, consequences and requirements of new safety, security and environmental regulations.

Freight Issue #11: *The freight system in Oregon lacks system redundancy in several key locations. This leaves it vulnerable to disruptions that threaten freight system continuity, especially during emergencies.*

Strategy 11.1:

Create a statewide emergency management plan that identifies critical vulnerable points from a freight mobility perspective and places where there is a lack of

[125] To review major transportation projects, ODOT and federal and state natural resource-related agencies use the Collaborative Environmental and Transportation Agreement for Streamlining (CETAS) process. CETAS relies on its agency representatives working together early in project development to collaboratively solve problems, potentially resulting in quicker permitting decisions than the traditional environmental review process.

system redundancy. Create freight movement emergency plans for disruptions at these locations that include information about possible alternatives routes.

- Action 11.1.1. Create an emergency transportation system map that includes alternative route identification as well as transportation modal alternative information. The map should be flexible enough to be used when single transportation components are compromised or when entire portions of the system have suffered a disruption.
- Action 11.1.2. Identify and track those places where disruptions would be most acutely felt. This includes those places where there are no, or few, parallel route options, so a disruption means a lack of connectivity. This also means places that tend to be subject to natural or weather-related disruptions including mountain passes, single-lane infrastructure, rail tracks that tend to be affected by heavy rains and snows, and inland waterway passages that are heavily influenced by water levels and drought.
- Action 11.1.3. Create plans that facilitate the movement of goods on alternative routes.

Strategy 11.2:

Develop and maintain transportation models that account for freight logistics and routing behavior in order to evaluate effects of disruptions on freight movement at the state, regional and urban levels.

Strategy 11.3:

Retain critical existing redundancy elements (for example, rail lines currently not in use, but parallel to a highway facility). Infrastructure that is currently under-utilized may become the primary link in the case of serious disruption on the primary facility.

Freight Issue #12: *Lack of a sustained source of statewide freight funding decreases the ability of the public sector to plan for long- and medium-term freight needs in a comprehensive manner.*

Strategy 12.1:

Work with elected officials, carriers, shippers and other stakeholders to study the potential for, and implications of, a statewide freight fund. The fund would have a selective, criteria-driven process to prioritize and fund projects in all modes of freight transportation. The process would be needs-based and focus on projects located on the Strategic Freight System.

Strategy 12.2:

On a regular basis, create a package of statewide freight improvements that best support efficient statewide freight movement. Share this statewide package with local and regional governments and agencies to assist them in selecting projects to forward through the multimodal transportation improvement selection processes.

Strategy 12.3:

Advocate establishing sources of funding for improvements on intermodal connectors.

- Action 12.3.1. Explore establishing mechanisms to maintain and improve intermodal connectors, focusing on publicly owned infrastructure such as the roads and railways that connect private intermodal warehouse/industrial facilities. This could include options for those problem intermodal connectors that are not NHS designees or for supplementing the funds available through the NHS program. Funding could be provided through an existing or new state funding source.

Freight Issue #13: *Limited availability of state transportation funds means that use of existing sources of funding must be effectively optimized.*

Strategy 13.1:

Before embarking on capital improvement projects, explore lower cost solutions, including operational upgrades or institutional changes, consistent with least cost planning principles.

- Action 13.1.1. Investigate freight operational upgrades or institutional changes prior to engaging in a capital improvement project, particularly during times of significant economic hardship.

Strategy 13.2:

When a public benefit can be achieved, work together with private sector multimodal freight stakeholders to pool resources and optimize funding efficiencies. This may include investing in transportation improvements that are multimodal and privately owned, and include improvements to all freight modal infrastructures.

- Action 13.2.1. Develop the tools necessary to incorporate the breadth of transportation modes into the state transportation planning process. Develop an understanding of criteria such as multimodal transportation performance measures, costs and benefits for all transportation modes if they are to be considered as part of the transportation planning process.

Strategy 13.3:

Seek projects to advance as potential public-private partnerships through the planning and programming process.

- Action 13.3.1. Actively pursue public-private partnerships, where appropriate, and use capabilities already developed to help manage them, such as the Office of Innovative Partnerships Program.

Freight Issue #14: *The lack of a continuous federal freight funding source makes it very challenging for Oregon to implement the ongoing planning and programming of freight projects. Those projects that are of regional or national significance should be eligible for federal participation and funding.*

Strategy 14.1:

Work through Oregon's congressional delegation to urge the federal government to develop a coherent national freight strategy.[126]

- Action 14.1.1. Work toward influencing national policy by stressing the urgency of freight funding and financing in discussions with congressional representatives.

Strategy 14.2:

Work with partner states to identify projects that are of national significance to elevate to the federal level for funding consideration.[127]

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126 Chapter 9 describes the steps taken in the FAST Act and with the National Highway Freight Program to develop a national freight strategy and funding source.

127 Section 9.6 lists projects in an investment plan that describes how formula freight funding will be expended and matched during federal fiscal years 2016-2020.

- Action 14.2.1. Continue to work with partner agencies and other states to identify projects that are important to regional and statewide economies and also important at the national scale. State or local contributions may also be needed for these projects to the extent that they benefit the state or local communities.

Freight Issue #15: *The economic importance of freight is not always understood or appreciated by the public.*

Strategy 15.1:

Continue to create opportunities for positive interaction between freight industry representatives and community stakeholders, including long-range planning or other community planning activities.

- Action 15.1.1. Continue to include shippers, carriers and private-sector developers in regional and statewide outreach efforts and on advisory groups such as the one created for this OFP to promote an understanding of the needs of freight-related businesses.
- Action 15.1.2. Explore additional opportunities for promoting the understanding of freight issues, such as the participation of ODOT freight staff, carriers and shippers in Area Commission on Transportation meetings.
- Action 15.1.3. Educate the public about the importance of statewide freight issues through increased coverage on the ODOT website and through other forums.

8.4 IMPLEMENTATION

Implementation of the OFP strategies and actions will build on the planning framework established in the OTP and other modal and topic plans. This will include working with a variety of public agencies and private sector stakeholders through existing and new partnerships. Implementation of some of the strategies and actions can be accomplished in the short term while others will require commitments over the longer term. Some may require legislative action or action by other governmental entities. Implementation will occur in phases and will require coordination with efforts to update other plans such as the modal and topic plans as well as regional and local transportation system plans. Funding availability will be important to implementing many of the strategies and associated actions.

OTP Key Initiatives

The OTP implementation identifies a set of Key Initiatives that provide implementation guidance for the OTP and the modal and topic plans. These key initiatives include directions related to system optimization, integration of transportation modes, integration of transportation, land use, the environment and the economy, and the need to make strategic investments using a sustainable funding structure.

The purpose of the key initiatives is to frame plan implementation, along with updating the modal/topic plans, not to override the direction of the goals and policies. Implementation of the OFP will be consistent with all OTP Key Initiatives and advance several of them. These are the OTP Key Initiatives:

- Maintain the existing transportation system to maximize the value of the assets. If funds are not available to maintain the system, develop a triage method for investing available funds.
- Optimize system capacity and safety through information technology and other methods.
- Integrate transportation, land use, economic development and the environment.
- Integrate the transportation system across jurisdictions, ownerships and modes.
- Create a sustainable funding plan for Oregon transportation.
- Invest strategically in capacity enhancements.

Implementation Steps

Implementation of the OFP will require coordination between and within governments, agencies, and the private sector, integration of the OFP strategies into subsequent planning efforts and public involvement in discussions of freight needs.

Coordination

Implementation will require involvement and coordination among a variety of ODOT business units. This includes the ODOT modal divisions and the Transportation Development Division. The involvement of ODOT Region staff will be critical to the implementation of some strategies and actions.

Implementation also will require involvement and coordination with other state agencies such as the Department of Aviation, Business Development Department, Department of Land Conservation and Development and various resource and other agencies as well as the Federal Highway Administration, Federal Aviation Administration and other federal modal administrations and agencies.

Coordination with transportation and other agencies in neighboring states can further implementation of several strategies and actions.

Planning

Oregon's statutes and administrative rules promote planning consistency among state, regional and local governments. The Transportation Planning Rule (TPR) requires state, regional and local governments to address goods movement issues in the development of transportation system plans. The TPR also requires regional and local government transportation system plans to be consistent with the state transportation system plan. Since the OFP is part of the state transportation system plan, its strategies will provide guidance to regional and local freight planning and system management.

The OFP supports several elements of planning and system management including:

- State transportation facility plans such as specific area plans, interchange area management plans, expressway management plans and corridor plans;
- Regional and local transportation system plans developed through MPO, city or county processes;
- Plans developed by tribal governments;
- Plans developed by ports or special districts; and
- System management by ODOT, other state agencies, MPOs, cities and counties that may include management of roadway pavement, bridges, safety, operations, maintenance, congestion and public transportation.

Public Involvement

Public involvement and coordination will be critical to OFP implementation. This will include seeking input from a variety of community and freight stakeholders, such as the Oregon Freight Advisory

Committee as well as other tribal, state, regional and local advisory committees.

Input from various public agencies and freight stakeholders will help guide preparation of a more detailed analysis of the work needed to implement specific OFP strategies and actions. Completion of the analysis is expected to result in a guidance document identifying short-term priorities, medium-term priorities and long-term priorities, similar to the way these are identified in the OTP Implementation Work Program. Implementation of OFP priorities will need to be consistent with implementation of priorities in the OTP work program as well as other planning work programs.

Steps Following Plan Adoption

Some implementation actions can start soon after the OFP is adopted.[128] These include the following:

- Develop an Implementation Plan using the OTP Key Initiatives and Freight Plan purpose statement to provide a framework.
- Continue discussions to update Oregon's transportation finance structure with stakeholders and the public.
- Develop performance measures and analytical tools for plan implementation.
- Develop freight stakeholder input on bottlenecks or choke points on the Strategic Freight System.
- Communicate the bottlenecks or choke point locations to infrastructure owners and stewards.

128 Refer to Chapter 9 for an update on implementation activities related to system needs, performance, network designations, and funding.

Federal Compliance

9.0 Federal Compliance

9.1 BACKGROUND

Moving Ahead for Progress in the 21st Century Act, or MAP-21[129], was signed into law on July 6, 2012. Among other things, it contained a number of provisions related to freight and performance management. It required the U.S. Department of Transportation (USDOT) to establish a national freight network to help states strategically direct resources toward improved freight system performance. It also required the USDOT to develop a National Freight Strategic Plan. It continued the Projects of National and Regional Significance program and, in order to encourage investment in freight projects, allowed for reduced non-federal matching share for freight projects.

MAP-21 encouraged each state to develop a comprehensive state freight plan that would:

- identify significant freight system trends, needs and issues;
- include freight policies, strategies and performance measures to guide the state's investment decisions;
- improve the ability of the state to meet national freight goals;
- consider innovative technologies and operational strategies, including intelligent transportation systems, that improve the safety and efficiency of freight movement;
- describe improvements that may be required to reduce or impede the deterioration, where travel by heavy vehicles is projected to substantially deteriorate the condition of roadways; and
- inventory facilities with freight mobility issues, such as truck bottlenecks, and identify strategies to address those mobility issues.

MAP-21 also encouraged each state to establish a freight advisory committee containing a representative cross section of public- and private-sector freight stakeholders.

The Oregon Freight Plan (OFP) was developed in parallel with MAP-21 and is consistent with much of the impetus behind the law. However, the OFP was adopted prior to the finalization of MAP-21. Additionally, on December 4, 2015,

[129] Public Law No. 112-114

President Barack Obama signed the Fixing America's Surface Transportation (FAST) Act into law.

The FAST Act builds on MAP-21's freight requirements. At a national level, it clarified and amended the national freight network and planning requirements. It brings a greater focus on multimodal freight planning by establishing a National Multimodal Freight Policy (NMFP) and requiring the creation of a National Multimodal Freight Network (NMFN). It requires the USDOT to establish both an interim and final network.

It also established a new funding program, the National Highway Freight Program (NHFP), and provided formula funds over Federal FY 2016 to 2020 for states to invest in freight projects on the National Highway Freight Network (NHFN).

The FAST Act further requires that states develop a freight plan that comprehensively covers short- and long-term freight planning activities and investments. The plan must:

- Cover a five-year forecast period
- Be fiscally constrained
- Include a freight investment plan with a list of priority projects
- Describe how the state will invest and match its NHFP funds.

The FAST Act continues to encourage states to form freight advisory committees and clarifies their role. It requires the USDOT to develop new tools to support an outcome-oriented, performance-based approach to evaluating proposed projects, and continues the requirement to report on the NHFN's condition and performance.

This chapter has been developed to meet the federal freight provisions under MAP-21 and FAST Act. The FAST Act lists 10 required elements that all state freight plans must address.[130] Many of these requirements (including freight trends, needs and issues, policies, strategies, innovative technologies and State of Good Repair) are addressed in the previous chapters of the OFP, the Oregon Transportation Plan (OTP), and other modal/topic policy plans. This chapter will cover the outstanding requirements that relate to:

- Freight-related performance measures
- Designation of critical rural and urban freight corridors

[130] 49 U.S.C. 70202: State freight plans

- A description of how the OFP will improve the State's ability to meet the NMFP goals and the NHFP goals
- An inventory of facilities with freight mobility issues and a description of the strategies the State is employing to address those issues
- Consideration of any significant congestion or delay caused by freight movements and strategies to mitigate those impacts
- A freight investment plan
- A description of the consultation with the Oregon Freight Advisory Committee (OFAC)

These requirements and how the plan addresses them are detailed in the sections that follow. The extensive consultation used to develop both the original plan and this chapter is detailed in a revised Appendix A.

9.2 COMPARISON WITH NATIONAL FREIGHT GOALS

The FAST Act established the NMFP, which includes national goals to guide decision-making. The NHFP also includes goals to guide investment in freight. While one is geared to drive decision-making for all modes and the other focused on highway investments, there is a great deal of similarity in their goals.

The national highway freight program goals are—

1. *To invest in infrastructure improvements and to implement operational improvements on the highways of the United States that—*
    a. *strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States;*
    b. *reduce congestion and bottlenecks on the National Highway Freight Network;*
    c. *reduce the cost of freight transportation;*
    d. *improve the year-round reliability of freight transportation; and*
    e. *increase productivity, particularly for domestic industries and businesses that create high-value jobs;*
2. *To improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;*
3. *To improve the state of good repair of the National Highway Freight Network;*
4. *To use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network;*
5. *To improve the efficiency and productivity of the National Highway Freight Network;*
6. *To improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address highway freight connectivity; and*
7. *To reduce the environmental impacts of freight movement on the National Highway Freight Network.*

Source: 23 U.S.C. 167: National highway freight program

The national multimodal freight policy goals are:

1. *To identify infrastructure improvements, policies, and operational innovations that—*
    a. *strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States;*
    b. *reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and*
    c. *increase productivity, particularly for domestic industries and businesses that create high-value jobs;*
2. *To improve the safety, security, efficiency, and resiliency of multimodal freight transportation;*
3. *To achieve and maintain a state of good repair on the National Multimodal Freight Network;*
4. *To use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network;*
5. *To improve the economic efficiency and productivity of the National Multimodal Freight Network;*
6. *To improve the reliability of freight transportation;*
7. *To improve the short- and long-distance movement of goods that—*
    a. *travel across rural areas between population centers;*
    b. *travel between rural areas and population centers; and*
    c. *travel from the Nation's ports, airports, and gateways to the National Multimodal Freight Network;*
8. *To improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address multimodal freight connectivity;*
9. *To reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network; and*
10. *To pursue the goals described in this subsection in a manner that is not burdensome to State and local governments.*

Source: 49 U.S.C. 70101 (b)

Appendix G contains a matrix that cross-references the national goals to the specific Oregon state plan policies, strategies and actions. In general, there is strong correlation and connection between the OFP strategies and the actions and the goals outlined in the NHFP and NMFP. Additionally, the OFP is one of several statewide transportation plans that implement the OTP's goals and define the state's multimodal transportation system.[131] Several of these other statewide plans, including the Oregon State Rail Plan and the OTP, have numerous connections to the federal goals as further set forth, below.

In keeping with the national goals, the OFP purpose statement strongly connects the reliability, safety and efficiency of the multimodal freight system with economic competitiveness. This plan and the OTP contain numerous strategies and actions related to increasing economic competitiveness, and addressing reliability and safety. In addition, OFP implementation strategies include the recently completed inventory of needs for all modes, including the recent freight highway delay areas and intermodal connectors studies, along with similar inventories for other freight modes. These inventories of mobility issues are further discussed in Section 5 of this chapter (Freight Mobility Issues), which outlines specific areas of need that are critical to the strategic freight system.

Preserving and maintaining a state of good repair is a foundational element of the OFP. Numerous actions and strategies address this goal, relying on data processes to identify the most critical areas on the strategic freight system. The plan also recognizes the importance of multi-state and multi-agency coordination to improve freight system efficiency. Further, the OFP underscores the impact of the freight system on the environment and provides many actions to reduce this impact.

Security is a key topic in the OTP. Strategy 5.2.1 addresses the need for security plans for all transportation modes. Strategy 5.2.4 specifically addresses the potential impact of security measures on managing transportation facilities to minimize delays in the movement of people, goods and services. The OFP also has several actions related to improving connections between urban and rural areas.

While goals directed to using innovation and technology are less abundant in the OFP, technology is a strong theme, consistent with the national freight goals. The OFP outlines several key strategies and actions directed at implementing advanced technology to improve freight system efficiencies. And the OFP's focus on cost-effectiveness and use of the best opportunities available to maximize system efficiency encourages the use of innovative technologies to achieve these goals. ODOT has completed many ITS projects that benefit truck freight. The State will continue to capitalize on opportunities for using innovation and technology to develop applications such as Oregon's Green Light Program. Over the course of the last 15 years, Green Light has saved operators of commercial vehicles some 1.5 million hours of travel time and $180 million in operating costs as they cleared Oregon weigh stations without having to slow or

131 The relationship between the OFP, the OTP and the various statewide modal and topic plans is further explained in Section 1.2.

stop. In addition, the increase in operational capacity afforded by Green Light has reduced the need to build new weigh station facilities or expand existing ones.

The strategies and actions outlined in the OFP and the OTP formalize Oregon's commitment to multimodal freight system improvement by helping define system needs. Nearly every strategy and action in the OFP supports multiple national freight goals. Extensive implementation efforts have led to the identification of critical areas of need and will provide Oregon with the information necessary to meet to the OFP and national freight goals.

More detail on how the specific strategies and actions in Oregon plans line up with the federal freight goals is contained in Appendix G.

9.3 PERFORMANCE MEASURES

MAP-21 established seven national performance goals and a performance management system. It required the Federal Highway Administration (FHWA), in consultation with the states, to establish measures and required each state to establish performance targets in the following areas:

- Pavement condition on the Interstate System and on the remainder of the National Highway System (NHS)
- Performance of the Interstate System and the remainder of the NHS
- Bridge condition on the NHS
- Fatalities and serious injuries—both number and rate per vehicle mile traveled (VMT)—on all public roads
- Traffic congestion
- On-road mobile source emissions
- Freight movement on the Interstate System

The FAST Act continued this program with some limited adjustments. If the USDOT Administrator determines that a state has failed to make significant progress toward meeting its freight performance targets within two years after establishing the targets, the state must describe the actions it will take to achieve these targets in its next performance report to USDOT.[132]

USDOT has established national performance measures in response to the requirements of MAP-21 and the FAST Act.[133] The performance measure to

[132] FAST Act § 1116; 23 U.S.C. 167(j)

[133] 23 CFR Part 490 – Subpart F

assess freight movement on the Interstate is Percentage of the Interstate System Mileage providing for Reliable Truck Travel Times, or Truck Travel Time Reliability (TTTR) Index (the Freight Reliability measure). This measure is calculated using the National Performance Management Research Data Set (NPMRDS), which was developed by the FHWA to provide a comprehensive picture of travel times throughout the National Highway System, for both passenger vehicles and trucks. It is a ratio of the median to the 95th percentile travel time and is calculated for each segment throughout the state system for five time periods. The worst time period for each segment is selected and then an average developed for the entire system based on the segment length.

In addition to this federally required performance measure, Oregon will track and report on three safety performance indicators. All three of these indicators are included as part of the Oregon Transportation Safety Action Plan and are currently measured and reported through the ODOT Safety Division and the Rail and Public Transit Division. These indicators are:

- Large truck at-fault crashes: number of large truck at-fault crashes per million VMT[134]
- Rail crossing incidents: number of highway-railroad at-grade incidents
- Derailment incidents: number of train derailments caused by human error, track, or equipment.

ODOT will continue to work with the OFAC to evaluate and explore other potential freight performance measures and indicators that may help inform future system needs and priorities.

9.4 FREIGHT NETWORK DESIGNATIONS

Existing Federal Networks

The FAST Act requires FHWA to establish a NHFN. This network is the focus of funding under the NHFP and the FASTLANE Grants program. The NHFN consists of four subsystems:

1. The Primary Highway Freight System (PHFS)
2. Portions of the Interstate System that are not part of the PHFS
3. Critical Rural Freight Corridors (CRFCs), and
4. Critical Urban Freight Corridors (CUFCs)[135]

[134] Trucks with five or more axles are commonly considered large.

[135] 23 U.S.C. 167(c)

The FAST Act limited the PHFS to 41,518 centerline miles nation-wide. FHWA designated these in October 2015. Including the portions of the interstate system that are not part of the PHFS, the current NHFN for Oregon is shown in Figure 9.1. The State is responsible for designating CRFCs. The FAST Act allows states to designate CUFCs, in consultation with metropolitan planning organizations (MPOs), for urbanized areas with populations more than 50,000, but less than 500,000. MPOs may designate CUFCs, in consultation with the state, in urbanized areas with populations of 500,000 or more. The federal legislation allows Oregon to designate 155 miles as CRFC and 77 miles of CUFC. Once designated, ODOT can ask FHWA to remove or add segments within the total mileage limit. The rules also provide a mechanism for state mileage to increase over time.

Adding mileage to the NHFN allows the state to expand the facilities it can strategically direct federal resources toward. ODOT has worked with stakeholders to develop recommended CUFCs and CRFCs, which are discussed later in this section.

Figure 9.1 Existing National Highway Freight Network in Oregon

The FAST Act also required the USDOT to develop a National Freight Strategic Plan within two years of enactment that would identify and assess the demands on, and the condition and performance of, the nation's multimodal freight system. The draft plan, released in early 2016, identified barriers and opportunities as well as best practices for improving multimodal freight network performance. It also contained strategies for mitigating the impacts of freight on communities and for improving multistate and multimodal connectivity.

The FAST Act required the USDOT to establish a NMFN to inform stakeholders where major freight flows occur and where special attention to freight issues may be most warranted. The NMFN will include the following elements:

- The NHFN
- The Class 1 railroads as well as other freight rail systems
- U.S. public ports
- U.S. inland and intra-coastal waterways
- The Great Lakes, the St. Lawrence Seaway, and coastal and ocean domestic freight routes
- The 50 largest U.S. airports by landed weight
- Other strategic freight assets, including intermodal facilities

In May 2016, USDOT released an interim NMFN for comment. ODOT provided comments and asked that a number of facilities be added.

Beyond that, FAST Act allows the addition of up to 20% of mileage to the NMFN. Designation on the NMFN is not required for freight funding under the Act. Further, the State of Oregon and others are seeking clarification as to the process for identifying and apportioning between modes. Finally, these designations are not required to be part of the state freight plan under the FAST Act. Therefore, this section does not contain recommended additions to the NMFN, but ODOT will consider additional designations as a part of future processes.

State Networks

Chapter 4 describes the freight networks for all modes in Oregon. It examined commodity flows and identified a network of highways and other modal facilities that provide critical connections to centers of freight-dependent economic activity in the state. The designated Strategic Freight Corridors comprise four primary (trunk) corridors and multimodal connecting routes:

- The Western Corridor (I-5);
- Columbia River Corridor (I-84);
- U.S. 20 Corridor; and
- The Central Oregon corridor (U.S. 97).

The Strategic Freight Corridors are shown in Figure 4.13.

OHP Freight Routes

The Oregon Highway Plan (OHP) contains policies and actions to balance the need for efficient movement of goods and support of the economy with the movement of other modes. In order to facilitate efficient and reliable interstate, intrastate and regional truck movement, the OHP designated a freight system: the State Highway Freight System.[136] This system comprises interstate highways and certain statewide, regional and district highways, the majority of which are on the NHS, and includes routes that carry significant tonnage of freight by truck and serve as the primary interstate and intrastate highway freight connection to ports, intermodal terminals, and urban areas. The State Highway Freight System designation does not guarantee additional state investment in these routes. However, the OHP outlines special management strategies that are available.[137]

The 2003 Oregon Legislature adopted changes to Oregon Revised Statutes (ORS) 366.215. In order to protect the routes that are necessary for the movement of freight, it limited the situations in which the state could reduce the carrying capacity (defined as the horizontal or vertical clearance) on these routes. Oregon Administrative Rule (OAR) 731-012-0010 implements ORS 366.215 and details the review of potential reductions of vertical and horizontal clearance and the process for stakeholder involvement. The Reduction Review Routes where the Department will apply the rule are depicted in Figure 10c of the OHP.

Critical Urban Freight Corridors

CUFCs must be a public road in an urbanized area (more than 50,000 population) that either:

- Connects an intermodal facility to the PHFS, the Interstate System, or an intermodal freight facility;
- Is located within a corridor on the PHFS and provide an alternative highway option important to goods movement;
- Serves a major freight generator, logistic center or manufacturing and warehouse industrial land; or
- Is important to freight movement within the region as determined by the MPO or the state.

The FHWA encourages the consideration of first or last mile connector routes from high-volume freight corridors to freight-intensive land and key freight facilities, including ports, rail terminals and other industrially zoned land.

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136 1999 OHP (including amendments November 1999 through May 2015), Figure 10

137 1999 OHP, p. 61

Based upon federal legislation, USDOT allotted 77 miles to Oregon for CUFCs. As a result of the limited mileage, USDOT encourages states to focus strategically on segments in which improvement projects in need of federal funding are anticipated in the near term.

The recommended designations are listed in Appendix H.

Critical Rural Freight Corridors

Based upon federal legislation, USDOT has allocated 155 miles to Oregon for CRFCs. CRFCs must be a public road that is not within an urbanized area and meets one or more of the following criteria:

- Is a rural principal arterial roadway with a minimum of 25% of the annual average daily traffic of the road measured in passenger vehicle equivalent units from trucks
- Provides access to energy exploration, development, installation, or production areas
- Connects the PHFS or the Interstate System to facilities that handle more than:
  - 50,000 20-foot equivalent units per year; or
  - 500,000 tons per year of bulk commodities;
- Provides access to a grain elevator, an agricultural facility, a mining facility, a forestry facility, or an intermodal facility
- Connects to an international port of entry
- Provides access to significant air, rail, water, or other freight facilities
- Is a corridor that is vital to improving the efficient movement of freight that is important to the state's economy

ODOT developed the list of potential segments based on the inventories of need that are further described in the next section of this chapter. Locations outside of urbanized areas and not already on the NHFN were considered from the following inventories:

1. Freight Highway Delay Areas
2. Freight Intermodal Connectors – Tier 1
3. Highway Over-dimension Load Pinch Points – High Priority
4. Regional Highway System Needs
5. Seismic Bridges – Phase 1 & 2 Unfunded
6. Seismic Landslides – Phase 1 Tier 1 Selection

ODOT then considered state designations. Segments that are on the following routes were prioritized as follows:

1. OFP Strategic Freight System
2. OHP Freight Routes
3. Seismic Phase 1 & 2 Routes
4. ORS 366.215 Reduction Review Routes

The CRFC designations are listed in Appendix H.

9.5 FREIGHT MOBILITY ISSUES

The OFP identifies “significant freight system trends, needs and issues with respect to the State” as required by the FAST Act. The OFP and the OTP contain numerous strategies and actions to address those needs. In 2011, the OFP incorporated a strategic implementation initiative 2.3, which directs the state to “identify and rank freight bottlenecks…in particular those located on the strategic system. Update the ranked list periodically.”[138] The FAST Act also calls for an “inventory of facilities with freight mobility issues, such as bottlenecks, within the State, and for those facilities that are State owned or operated, a description of the strategies the State is employing to address those freight mobility issues.”

This section describes the inventories of facilities with freight mobility issues, particularly bottlenecks, and generally outlines the strategies in the OFP and OTP that address the needs identified in those inventories.

Freight Needs

Highway Freight Needs

Freight Highway Delay Areas: Studies of existing freight highway conditions in Oregon identified that congestion from bottlenecks is a major issue, impacting Oregon’s economy with variations in travel time reliability and rising travel costs. The 2017 Freight Highway Bottlenecks Project (FHBP) was initiated to identify locations on Oregon’s highway network that were experiencing significant freight truck delay, unreliability and increased transportation costs. The FHBP looked at a variety of key measureable indicators to identify locations on the state freight highway network, specifically those routes identified as ORS 366.215 restriction review routes. The project identified areas that imposed higher than usual transportation costs on the freight user. The FHBP identified

[138] ODOT, 2011 Oregon Freight Plan

where impacts are felt but does not diagnose the cause of the freight delay area or prescribe the solution.

Indicators were primarily elements such as:

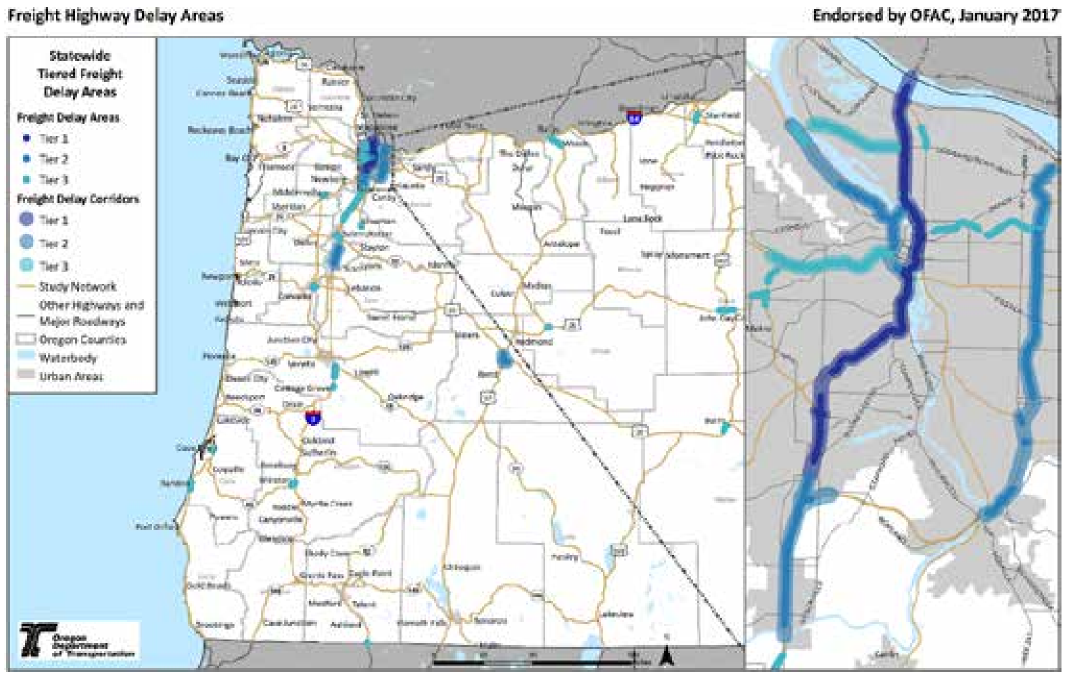
- Delay – The annual hours of delay that trucks accumulate on each segment.
- Unreliability – The unreliability of shipment travel times.
- Geometric Issues – Percent grade, degree curvature or shoulders.
- Volume – Volume-to-capacity ratio and percentage of travel in congested conditions.
- Incident-Related – Frequency, and clearance times, of various collision types.
- Cost – Transportation delay costs, inventory delay costs, and unreliability costs.

This project was supported by a significant stakeholder process, which included the Project Management Team (PMT), the Technical Advisory Committee (TAC) and OFAC, as well as ODOT regional managers and staff.

There were clear series of delay areas, particularly in the Portland metro area, that should be considered as corridors rather than individual delay areas. This reflects the cumulative impact that longer segments have on freight movements. It also acknowledges the need to consider the entire corridor when developing solutions.

Tiers were established to identify the severity of the problem. The total transportation costs, along with the freight designation on the corridor or segment, were key factors used to determine the tiers for the delay areas and corridors. The final tiered freight highway delay area map is presented in Figure 9.2. These tiers, together with costs, available funding, feasibility and other factors, can help inform decision-makers when considering project investments.

Figure 9.2 Freight Highway Delay Areas



Intermodal Connectors: The 2017 Oregon Freight Intermodal Connector System (OFICS) study was developed by ODOT to help implement strategies in the OFP related to identification of connectors that provide "last mile" connectivity to freight locations that are not currently classified as NHS connectors.[139] NHS connectors are the public roads leading to major intermodal terminals. Although they account for less than 1% of NHS mileage, NHS connectors are key conduits for the timely and reliable delivery of goods. [140]

NHS intermodal connectors that primarily service freight terminals are designated as NHS freight intermodal connectors. Marine terminals, truck-rail facilities, pipeline terminals, and airports are the primary types of intermodal freight facilities operating in Oregon. The OFICS study identified additional freight intermodal connectors in the state besides the existing designated NHS freight intermodal connectors.

Intermodal connectors are important because they are critical components of the state and national intermodal freight system that enable more efficient use of all

139 OFP Strategy 3.2.

140 Intermodal connectors are roads that provide access between major intermodal facilities and the other four subsystems making up the National Highway System. https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/

freight modes. These intermodal connectors serve as the first and last mile for many of the state's manufacturing and industrial businesses. In order for Oregon to remain competitive, the connectors must be able to efficiently move raw materials, partially assembled products and finished goods to and from all areas of the state for national and international markets.

In order to identify intermodal connectors beyond the existing NHS Intermodal Connectors, it was necessary to locate intermodal terminals/businesses (ITB) first. Freight intermodal terminals are defined as facilities, which provide for the transfer of freight from one mode to another. The study identified approximately 200 ITBs. A majority of these are in Portland, the Willamette Valley and along the Columbia River. After the ITB were identified, the new intermodal connectors were located by identifying the public street segments that connect to the closest state highway. The full list of intermodal connectors, including those currently designated as NHS freight intermodal connectors, is in Appendix I.

The intermodal connectors were tiered. Tier 1 connectors are considered primary intermodal connectors and meet all of the NHS intermodal connector criteria for volume of traffic and need. Tier 2 roads are secondary intermodal connectors, which generally serve an important state need. They must be a public road that serves as a primary access between an intermodal terminal and a state highway or NHS connector and carry a certain amount of truck traffic or serves significant intermodal terminal or air cargo business. The Tier 3 minor intermodal connectors serve more of a regional need. They serve fewer than 50 trucks a day in each direction and typically serve only one smaller ITB.

Over-Dimensional Load Pinch Points: The 2016 Highway Over-dimensional Load Pinch Points (HOLPP) study was developed by ODOT to help implement strategies in the OFP pertaining to the efficient movement of over-dimensional (OD) loads. The study identified highway pinch points that restrict the movement of OD loads. OD load pinch points are due to height, width, weight or length constraints, and can include low overpasses, narrow roadways or intersections, sharp curves, weight-restricted bridges, bridges with low overhead clearance, sign bridges, tunnels and other features.

The study prioritized pinch points based on the degree to which resolving a pinch point would open up an entire corridor for OD loads. The study identified 381 pinch points statewide, with 92 of them classified as high-priority pinch points and 289 low-priority pinch points.

Seismic: ODOT undertook an analysis of the seismic resiliency of the Oregon Highway System to address OFP strategies that called for creation of a statewide emergency management plan that identifies critical vulnerable points from a freight mobility perspective. That analysis identified key lifeline routes and established a strategic program to prioritize and systematically retrofit all seismically vulnerable bridges and address unstable slopes on key lifeline routes.

This would allow for rescue and recovery following a major earthquake. Seismic resiliency is critical to freight mobility.[141]

The top-priority bridge and landslide locations identified through this effort are listed in Appendix I. These include the Phase 1 and 2 bridges and the High-Priority Phase 1 and 2 landslides. More information is contained in the 2014 Seismic Plus Report.

Regional Needs to Address Freight Impacts: The FAST Act also requires states to identify areas where freight may be creating performance issues for other users, such as mobility, reliability, and safety. ODOT regions helped prepare a list of these freight issues based upon past planning actions and operational knowledge. Projects include climbing and through lanes, pavement condition, intersection widening, additional or longer turning lanes, truck parking, shoulder improvements, grade separation and signage.

The full list of regional highway system needs identified by ODOT region staff related to freight impacts is contained in Appendix I.

Non-Highway Freight Needs

Chapter 4 provides an overview of the multimodal freight transportation network and systems that support industries that depend on efficient freight movement. This section provides an inventory of the non-highway facilities and components of the multimodal freight system that have demonstrated freight mobility issues. Specifically, this section includes needs inventories for facilities associated with the rail and marine systems[142] that contribute to the state's multimodal freight transportation network.

Rail: The 2014 Oregon State Rail Plan (SRP) contains a description of the key needs and opportunities for freight rail, including the physical needs of the freight rail system relating to capacity constraints and bottlenecks. ODOT's Rail and Public Transit Division and Freight Planning Program used information from the needs assessment conducted for the SRP and identified facilities with current freight mobility issues. The improvements to address capacity constraints and bottlenecks on the mainline rail network include siding and track upgrades, signal system upgrades, and speed increases. For the Class III railroads (short lines) in Oregon, needs include track upgrades to serve increased train weight and speed, infrastructure improvements such as bridge upgrades, and consideration of the carload volume and vulnerability of short-line railroads to

141 ODOT, Oregon Highways Seismic Report, October 2014.

142 Aviation needs are currently being updated as part of the Aviation Plan and were not available at time of publication. Access to airports was addressed as part of the OFICS study.

abandonment. Generally, freight rail system preservation priorities include maintenance of rail functionality to current operating standards, preservation or improvements of critical bridge, tunnel or other structures, maintenance of rail lines serving key intermodal terminals and that provide significant economic value, and protection of critical rail infrastructure from seismic vulnerability. The prioritized list of rail facilities with freight mobility issues in Oregon is contained in Appendix J.

Marine: Marine system components of the freight transportation network include marine highways, marine ports, and intermodal terminals. System preservation priorities include maintenance and improvement of marine highway channel depth, preservation of docks and piers to support cargo activity or deep draft shipping, maintenance of intermodal connections to port facilities (e.g., rail or highway), preservation of equipment, and improvements that address seismic resilience. Enhancement priorities beyond system preservation include improvements to deep water ports, intermodal connections, port operations, port accessibility, and port safety. ODOT Freight Planning Program staff coordinated with the Oregon Public Ports Association, the Oregon Business Development Department, and marine port district representatives to develop a prioritized list of marine facilities with freight mobility issues. The marine transportation system needs list is contained in Appendix J.

Strategies to Address Freight Needs

Chapter 8 lists a number of actions and strategies to address freight system needs. Strategies that are relevant to the identified mobility issues above include preserving freight facilities; reducing capacity constraints, congestion, unreliability and geometric deficiencies in all modes; and improving safety. There are specific actions and strategies targeted to improving the efficiency, reliability and safety of long-haul freight corridors and preserving capacity for over-dimensional loads. Finally, the OFP recognizes the significant funding needs for addressing freight issues, and includes strategies and actions geared toward maximizing and leveraging funding for freight, including establishing a statewide freight fund.

The OTP includes policies and strategies that will guide freight related investment. Under Goal 1, Mobility and Accessibility, Policy 1.1 calls for an integrated transportation system with modal choices and related strategies and specifically mentions individual freight modes. Goal 2, Management of the System, Policy 2.1, calls for improving transportation capacity and operational efficiency. Related strategies include incident management and reducing bottlenecks and geometric constraints. Under Goal 3, Economic Vitality, Policy 3.1 addresses creating an integrated efficient and reliable freight system. It includes developing strategies around innovative technology; addressing barriers to efficient truck movements; giving priority to projects on identified freight routes; and supporting strategic investment in marine, air cargo and pipeline transportation.

The OHP contains policies and associated actions to consider a broad range of intelligent transportation system (ITS) solutions: improving safety, reducing conflicts between rail and highways, improving the efficient movement of freight, and managing congestion through managing access and using transportation demand management (TDM) techniques.

Prioritization is needed because limited funding prohibits the ability to address all of the freight needs at once; most inventories are tiered or prioritized in some way. However, the planning and scheduling of transportation improvements is complex and involves a variety of funding sources, scheduling issues and jurisdictional interests. Additionally, there are multiple lists of needs that represent a variety of modes, issues and prioritization processes. While investments should generally be focused on addressing higher tier or priority needs, investment in projects that address lower tier needs may be justified depending on opportunities to leverage public or private funds, readiness, benefits, costs and other factors.

9.6 FREIGHT INVESTMENT PLAN

Purpose and Requirements

The FAST Act instituted a new requirement for state freight plans to include a freight investment plan. The plan must list priority projects and describe how funds made available to carry out Section 167 of Title 23 (the National Highway Freight Program[143]) would be invested and matched over a five year period. The freight investment plan must be fiscally constrained.[144] In addition, these federal funds may be obligated for projects on the NHFN, which is described in greater detail in Section 9.4 of this chapter and consists of the PHFS, portions of the interstate system not designated as part of the PHFS, CUFCs, and CRFCs.

It is anticipated that ODOT will receive approximately $75.7 million in federal formula freight funds for federal fiscal years 2016-2020 authorized and allocated by USDOT via the FAST Act. Such funds have been authorized by Congress

143 23 U.S.C. 167: https://www.gpo.gov/fdsys/pkg/USCODE-2015-title23/html/USCODE-2015-title23-chap1-sec167.htm

144 49 U.S.C. 70202(c)(2) states "the freight investment plan component of a freight plan shall include a project, or an identified phase of a project, only if funding for completion of the project can reasonably be anticipated to be available for the project within the time period identified in the freight investment plan."

through fiscal year 2020 with an annual allocation to the states delineated for fiscal years 2016-2020.

Table 9.1 represents the state investment plan for freight funds from the FAST Act. Projects listed in the freight investment plan are expected to contribute to the efficient movement of freight on the NHFN and may address one or more of the following: development phase activities, construction and rehabilitation of facilities, property and equipment acquisition, operational improvements, ITS, environmental and community impacts of freight movement, transportation system and work zone management systems, and several additional issues listed in the NHFP.

Investment Plan

Table 9.1 FAST Act Formula Freight Funds Investment Plan (federal fiscal year 2016–2020)

Project Name	Freight Funds	Freight Funds Match	Phase	Work Type	Fed Fiscal Year	Project Total
I-205 Stafford Rd - OR99E - Planning	$2,305,500.00	$194,500.00	Planning	Modernization	2016	$2,500,000.00
I-5 Delaney Rd to Albany - Third lane	$2,766,600.00	$233,400.00	Preliminary Engineering	Modernization	2017	$3,000,000.00
I-5 Kuebler Blvd to Delaney Rd Widening	$4,607,311.20	$388,688.80	Preliminary Engineering	Modernization	2017	$4,996,000.00
	$16,630,295.00	$1,402,989.54	Right of Way	Modernization	2018	$18,033,284.54
I-5 Roberts Mtn-S Umpqua R Paving & Climbing Lane	$6,455,400.00	$544,600.00	Construction	Preservation	2018	$22,139,516.00*
I-205 corridor bottleneck project Powell Blvd to I-84	$15,500,000.00	$1,307,633.92	Construction	Operations	2019	$16,807,633.92
I-205 active traffic management project	$15,200,000.00	$1,282,324.88	Construction	Operations	2019	$16,482,324.88
Total	$70,289,386.20					

Note: Federal freight fund total shown in Table 9.1 is an estimate subject to annual federal authorization and is not a guaranteed amount for programming. Additional details on project funding are included in Oregon's Statewide Transportation Improvement Program. Remaining National Highway Freight Program funds allocated in 2020 that are not shown in Table 9.1 will go towards projects planned for fiscal years 2021 and 2022.

**Project total shown is for all project phases.*

Appendix A – Stakeholder Consultation

Freight Plan Steering Committee and Working Group members for the development of the 2011 OFP are listed below. Following that is an overview of the stakeholder process for the 2017 amendment.

A.1 Freight Plan Steering Committee

- Dave Lohman, OTC Commissioner
- Mike Burton, Director - Affiliated Tribes of NW Indians
- Scott Cantonwine, President and CEO - Cascade Warehouse
- Mike Card, President, Combined Transport
- Gary Cardwell, Divisional Vice President - Northwest Containers, Inc.
- Peter Kratz, Executive Vice President of Operations - Harry & David's
- David Kronsteiner, Port Commission President, Int'l Port of Coos Bay
- Susie Lahsene, Manager, Transportation and Land Use Policy - Port of Portland
- Robin McArthur, Director of Planning and Development, Metro
- Linda Modrell, County Commissioner - Benton County
- Mike Montero, Partner - Montero & Associates
- Brock A. Nelson, Director of Public Affairs - Union Pacific Railroad
- Mike Noonan, President - Oregon Wheat Grower's League
- John Porter, President - AAA Oregon-Idaho
- Bob Russell, President - Oregon Trucking Associations
- Tom Zelenka, Vice President, Environmental and Public Affairs - Schnitzer Steel Industries, Inc.

A.2 Freight Infrastructure and Traffic Issues Working Group

- Mike Montero, Partner - Montero & Associates
- Bob Russell, President - Oregon Trucking Associations
- Kim B. Puzey, General Manager - Port of Umatilla
- Dan Clem, Director - Oregon Department of Aviation
- Terry Finn, Director of Government Affairs - BNSF Railway
- Steve Bates, Vice President -Redmond Heavy Hauling
- Jon Oshel, County Road Program Manager - Association of Oregon Counties
- Terry Tallman, Judge – Morrow County
- Joel Halloran, Senior Transportation Manager - Fred Meyers Inc.
- Ric Young, District Manager - ODOT

A.3 Policy and Process Working Group

- Linda Modrell, County Commissioner - Benton County
- Susie Lahsene, Manager, Transportation and Land Use Policy - Port of Portland
- Steve Greenwood, Environmental and Public Policy Consultant - Oregon Solutions
- Glenn Vanselow, Executive Director - Pacific NW Waterways Association
- Dan Lovelady, Manager - City of Prineville Railroad
- Robin McArthur, Director of Planning and Development - Metro
- Richard W. Schmid, Transportation Program Director - Mid-Willamette Valley Council of Governments (COG)
- Rob Hallyburton, Planning Services Division Manager – DLCD
- Nick Fortey, Traffic Safety Engineer - FHWA Oregon Division
- Erik Havig, Region 2 Planning Manager - ODOT

A.4 Freight and the Economy Working Group

- Mike Burton, Director - Affiliated Tribes of NW Indians
- Martin Callery, Director of Communications & Freight Mobility - International Port of Coos Bay
- Gary Cardwell, Divisional Vice President - Northwest Containers, Inc.
- Tammy Dennee, Executive Director - Oregon Wheat Growers League
- Monte Grove, Region 5 Manager - ODOT
- Dave Harlan, Ports Program Manager – Business Oregon
- Shirley Kalkhoven, Mayor - City of Nehalem
- Peter Kratz, Executive VP Operations - Harry & David's
- Carrie Novick, Airport Manager - Redmond Municipal Airport
- Jonathan Schlueter, Executive Director - Westside Economic Alliance
- Brad Winters, Commissioner - South Central Oregon ACT

The Oregon Freight Advisory Committee served as the primary advisory committee during the development of the 2017 OFP amendment. A number of stakeholder and advisory groups were consulted as part of the 2017 amendment. The following is a description of those groups and processes.

A.5 Oregon Freight Advisory Committee (2017)

- David Anzur - Anzur Logistics, LLC
- Wayne Bauer – WH Pacific and Westside Economic Alliance
- Jonathon Berndt - Expeditors Portland
- Gary Cardwell - Northwest Container Services
- Martin Callery - Citizen at large
- Timothy Collins - Metro
- Kevin Downing - Oregon Department of Environmental Quality
- Scott Drumm - Port of Portland
- Michael Eliason - Association of Oregon Counties
- Terry Fasel - Oregon Department of Agriculture
- Kristal Fiser - United Parcel Service
- Nick Fortey - Federal Highway Administration
- Greg Gilmer - NORPAC
- Jerry Grossnickle - Bernert Barge Lines, Inc.
- Dave Harlan - Oregon Business Development Department
- Brodie Harvey - Knife River Corporation
- Salvador Hernandez - Oregon State University
- Robert Hillier - City of Portland Bureau of Transportation
- Jana Jarvis - Oregon Trucking Associations
- Susie Lahsene - Port of Portland
- Mark Landauer - Oregon Public Ports Association
- Michael Montero - Montero & Associations, LLC
- Scott Parkinson - ARG Transportation Services
- Deena Platman - DKS Associates
- Mike Quilty - Rogue Valley Metropolitan Planning Organization
- Jeff Stone - Oregon Association of Nurseries
- Mitch Swecker - Oregon Department of Aviation
- Colleen Weatherford - Burlington Northern Santa Fe Railway
- Lonny Welter - Columbia County Road Department

A.6 Critical Rural Freight Corridor (CRFC) Working Group

ODOT established the Working Group to provide review and advice on the Critical Rural Freight Corridor (CRFC) designation process. The group met twice in spring 2017 to review the federal requirements, proposed criteria and evaluation. It endorsed the recommended list of CRFCs at its final meeting. The group included the following members:

- Martin Callery - Oregon Freight Advisory Committee (OFAC)
- Mike Eliason - Association of Oregon Counties

- Tom Fellows - Umatilla County
- Thomas Gennarelli - Roseburg Forest Products
- Kevin Haugh - Portland & Western (Genessee & Wyoming)
- Gary Neal - Port of Morrow
- Bob Russell - Oregon Trucking Association
- Diane Schyler - Lowes
- Mitch Swecker - Oregon Department of Aviation
- Pia Welch - FedEx

A.7 Consultation with MPOs regarding Critical Urban Freight Corridors (CUFCs)

ODOT provided information about the FAST Act requirements for designation of CUFCs to the metropolitan planning organizations (MPOs) at a meeting and distributed fact sheets in the fall of 2016. ODOT consulted with Metro several times as Metro developed its recommendation.[1] ODOT hosted a meeting in winter 2017 of all of the MPOs, at which it reviewed the FAST Act requirements, obtained input on potential criteria for designation and discussed MPO proposed route designations. Based on feedback from the MPOs, ODOT assigned mileage targets to each MPO based primarily on OHP Freight Route miles. It then worked individually with the various MPOs to finalize their recommendations.

A.8 Freight Highway Bottleneck Project Technical Advisory Committee (TAC)

This group met three times to provide input and guidance to the Freight Highway Bottleneck Project. It provided input on the approach and results, and endorsed the tiered bottleneck list at its final meeting. Membership was as follows:

- Emily Ackland - Association of Oregon Counties
- Steve Akre - OIA Global Logistics
- Steve Bates - V. Van Dyke Incorporated
- Shelly Boshart Davis - Boshart Trucking
- Martin Callery – OFAC
- Scott Drumm - Port of Portland
- Charlie Every - Every Trucking
- Jeremy Foreman – Walmart
- Nick Fortey - FHWA

1 Under the FAST Act, MPOs in urban areas with populations of 500,000 or more may designate CUFCs, in consultation with the state.

- Chuck Ireland - Ireland Trucking
- Don McGinn -McGinn Brothers Trucking
- Amy Ramsdell - ODOT Motor Carrier Division
- Bud Reiff – Metro
- Bob Russell - Oregon Trucking Association
- Diane Schyler - Lowes

A.9 Oregon Freight Intermodal Connector System Technical Advisory Committee (OFICS TAC)

The OFICS TAC met throughout the course of the OFICS study to provide advice and guidance on methodology, review results and make recommendations. The group included the following members:

- Shelly Boshart Davis - Boshart Trucking
- Martin Callery - OFAC
- Kelly Clarke - Central Lane MPO
- Mike Eliason - Union Pacific Railroad
- Jeremy Foreman - Walmart
- Nick Fortey - FHWA
- Phil Healy - Port of Portland
- Bob Hillier - City of Portland
- Jim Irvin - Portland & Western Railroad Inc
- Karl MacNair - City of Medford
- Gary Neal - Port of Morrow
- Bob Russell - Oregon Trucking Association
- Matt Wiederholt - City of Prineville Railway

A.10 Highway Over-dimension Load Pinch Points (HOLPP) Study

The primary source of data for the HOLPP study came from ODOT maintenance district staff as they coordinate the daily routing of over-dimension (OD) loads with the Motor Carrier Transportation Division.

A.11 Marine Needs Inventory

ODOT consulted with the Oregon Business Development Department and Oregon Public Ports Association (OPPA) to develop the list of marine needs. In January 2017, a questionnaire was distributed through the OPPA that provided an opportunity for port districts and other marine transportation stakeholders to submit information about specific facilities with freight mobility issues or that are forecast to have issues or constraints in the near future. Responses included information drawn from port district Strategic Business Plans and Capital Facilities Plans. The questionnaire responses, combined with the expertise of agency staff, led to the development of the marine transportation needs list, which was shared with the OFAC in June 2017.

A.12 Rail Needs Inventory

ODOT staff received input from the Oregon Rail Advisory Committee and subsequently presented the list to OFAC. OFAC members provided feedback to help refine the description of needs for both the marine and rail transportation systems and it is expected that comments received during the public review period may also be incorporated into the needs lists, as appropriate.

Appendix B – ACTs and MPOs

B.1 ACTs

Area Commissions on Transportation (ACT) are advisory bodies chartered by the Oregon Transportation Commission. ACTs address all aspects of transportation (surface, marine, air, and transportation safety) with primary focus on the state transportation system.

B.1.1 Oregon ACTs

- Northwest Oregon ACT
- Mid-Willamette Valley ACT
- Lane ACT
- Cascades West ACT
- South West ACT
- Rogue Valley ACT
- Lower John Day ACT
- Central Oregon ACT
- South Central Oregon ACT
- North East ACT
- South East ACT

The Portland metropolitan region elected not to establish an ACT for the urban portion of Multnomah, Washington and Clackamas counties that is governed by Metro. Outside Metro's boundaries, ODOT works with various county coordinating committees to coordinate transportation project planning and construction.

B.2 MPOs

Metropolitan Planning Organizations are responsible for planning, programming and coordination of federal highway and transit investments in urbanized areas.

The six Oregon MPOs are:

- Portland Metropolitan Planning Organization
- Salem/Keizer Metropolitan Planning Organization
- Eugene/Springfield Metropolitan Planning Organization
- Rogue Valley Metropolitan Planning Organization
- Corvallis Area Metropolitan Planning Organization
- Bend Area Metropolitan Planning Organization

Appendix C – Consistency Analysis

C.1 OFP Consistency with the OTP and Statewide Mode and Topic Plans

The Oregon Freight Plan (OFP) is a multimodal topic plan called for in the 2006 Oregon Transportation Plan (OTP). The OTP requires mode and topic plans to show consistency with the OTP, which along with mode and topic plans comprises the state transportation system plan (see Figure 1.3). The discussion below shows how the OFP is consistent with the OTP and the following statewide mode and topic plans: 1999 Oregon Highway Plan, 2001 Oregon Rail Plan, 2004 Oregon Transportation Safety Action Plan, 2007 Oregon Aviation Plan, and 2010 Oregon Statewide Port Strategic Plan.

C.2 Oregon Transportation Plan

The 2006 Oregon Transportation Plan identifies seven goals:

- Mobility and Accessibility,
- Management of the System,
- Economic Vitality,
- Sustainability,
- Safety and Security,
- Funding the Transportation System, and
- Coordination, Communication, and Cooperation.

The OTP develops policies and strategies to further define each goal. A number of these policies and strategies address freight or goods movement. The OFP builds on this discussion by identifying strategies and actions that further define policies and strategies in the OTP. Together, the OFP strategies and actions address all seven OTP goals and many of its policies and strategies. Table C-1 provides a crosswalk between OFP strategies and selected OTP policies and strategies. For several OFP strategies, more than one OTP policy or strategy applies. Similarly, several OTP policies or strategies apply to multiple OFP strategies. The table establishes consistency between strategies in the OFP and selected strategies and policies in the OTP.

Table 9-2 OFP Strategies and Selected OTP Policies and Strategies

Oregon Transportation Plan (OTP)	Oregon Freight Plan (OFP)
Policy 1.1 – Development of an Integrated Multimodal System	Strategy 3.2 Strategy 3.3 Strategy 4.1 Strategy 13.1
Policy 1.2 – Equity, Efficiency and Travel Choices	No freight Plan Strategy. The State will apply the applicable OTP strategies.
Policy 1.3 – Relationship of Interurban and Urban Mobility	No freight Plan Strategy. The State will apply the applicable OTP strategies.
Policy 2.1 – Capacity and Operational Efficiency	Strategy 2.4 Strategy 2.5 Strategy 6.1 Strategy 6.2 Strategy 11.1 Strategy 11.2 Strategy 11.3
Policy 2.2 – Management of Assets	Strategy 5.3 Strategy 10.1
Policy 3.1 – An Integrated and Efficient Freight System	Strategy 1.1 Strategy 1.2 Strategy 2.1 Strategy 2.2 Strategy 2.3 Strategy 2.6 Strategy 3.1 Strategy 5.1 Strategy 5.2 Strategy 5.3 Strategy 6.1 Strategy 7.1 Strategy 7.2 Strategy 11.1 Strategy 11.2 Strategy 11.3
Policy 3.2 – Moving People to Support Economic Vitality	No freight Plan Strategy. The State will apply the applicable OTP strategies.

Oregon Transportation Plan (OTP)	Oregon Freight Plan (OFP)
Policy 3.3 – Downtowns and Economic Development	No freight Plan Strategy. The State will apply the applicable OTP strategies.
Policy 3.4 – Development of the Transportation Industry	Strategy 8.1 Strategy 8.2
Policy 4.1 – Environmentally Responsible Transportation System	Strategy 8.1 Strategy 8.2 Strategy 9.1
Policy 4.2 – Energy Supply	No freight Plan Strategy. The State will apply the applicable OTP strategies.
Policy 4.3 – Creating Communities	No freight Plan Strategy. The State will apply the applicable OTP strategies.
Policy 5.1 – Safety	Strategy 6.1 Strategy 6.2 Strategy 6.3 Strategy 10.1

Oregon Transportation Plan (OTP)	Oregon Freight Plan (OFP)
Policy 5.2 – Security	Strategy 10.1 Strategy 11.1 Strategy 11.2 Strategy 11.3
Policy 6.1 – Funding Structure	Strategy 12.1 Strategy 12.2 Strategy 12.3
Policy 6.2 – Achievement of State and Local Goals	Strategy 1.1 Strategy 1.2 Strategy 2.1 Strategy 2.2 Strategy 2.3 Strategy 12.1 Strategy 12.2 Strategy 12.3 Strategy 13.2 Strategy 13.3
Policy 6.3 – Public Acceptability and Understanding	Strategy 15.1
Policy 6.4 – Beneficiary Responsibilities	Strategy 12.3
Policy 6.5 – Triage in the Event of Insufficient Revenue	Strategy 13.2 Strategy 13.3
Policy 7.1 – A Coordinated Transportation System	Strategy 14.1 Strategy 14.2
Policy 7.2 – Public/Private Partnerships	Strategy 13.2 Strategy 13.3
Policy 7.3 – Public Involvement and Consultation	Strategy 15.1
Policy 7.4 – Environmental Justice	No freight Plan Strategy. The State will apply the applicable OTP strategies.

C.3 Oregon Highway Plan

The 1999 Oregon Highway Plan (OHP) and subsequent amendments to the plan reference five goals and a number of policies and actions for each goal. The goals are System Definition, System Management, Access Management, Travel Alternatives, and Scenic and Environmental Resources. The OFP identifies Strategies and Actions that further define policies and actions for four of the five OHP goals. Specifically, Strategies within OFP address the OHP goals as follows: System Definition (OFP Strategies 1.1, 1.2, 2.2, 6.1, 6.2, 6.3, 11.1, 12.1), System Management (OFP Strategies 2.5, 4.1, 13.2, 13.3, and 15.1), Travel Alternatives (OFP Strategies 2.1, 2.2, 2.3, 3.1, 3.2, 5.1, 5.2, 5.3 12.1, 12.2 and 12.3), and Scenic and Environmental Resources (OFP Strategies 8.1, 8.2 and 9.1).

C.4 Oregon Rail Plan

The 2001 Oregon Rail Plan (ORP) references four policies and several actions for each policy. The policies are as follows:

- Policy 1: Increase economic opportunities for the State by having a viable rail system,
- Policy 2: Strengthen the retention of local rail service where feasible,
- Policy 3: Protect abandoned rights-of-way for alternative or future use; and
- Policy 4: Integrate rail freight considerations into the States land use planning process.

The OFP identifies strategies that further define actions for all ORP policies.

C.5 Oregon Transportation Safety Action Plan

The 2004 Oregon Transportation Safety Action Plan (OTSAP) reinforces OTP safety goals, policies, and actions through 69 actions. Two actions address truck safety; five actions address rail safety, and one action addresses navigational conflicts. The OFP discusses safety in various issues, strategies and actions of the Chapter 8 “Freight Issues and Strategies” including:

Freight Issue #4: Improvements to the efficiency, reliability and safety of long-haul freight corridors require collaboration between Oregon and neighboring states.

Freight Issue #6: Freight needs to be able to move throughout the state in a manner that is as safe as possible. Its movement may impact safety in Oregon communities and risk to the environment.

Freight Issue #10: New and emerging safety, security, and environmental regulations, though beneficial, can be confusing to shippers and carriers and be expensive to implement.

The strategy and action for Issue #4 primarily focuses on coordinating freight initiatives, multistate coalitions, and freight groups in neighboring states. Strategies and actions in Issue #6 concern the safe movement of goods and future actions to monitor and enhance freight safety considerations throughout Oregon’s planning efforts. The strategy for Issue #10 focuses on understanding the costs, unintended consequences, and requirements of new safety, security, and environmental regulations. These strategies and actions are peripherally related to freight-related actions in the OTSAP.

C.6 Oregon Aviation Plan

The 2007 Oregon Aviation Plan (OAP) identifies 15 policies intended to guide state-level aviation related actions and to provide assistance to local airport sponsors, Oregon Department of Aviation staff, and the State Aviation Board with future decisions regarding the state's aviation system. Various actions are identified for each OAP policy. The OFP identifies 9 strategies that correspond to 6 of the OAP's 15 policies. OAP policies and corresponding actions further defined by OFP strategies include Preservation (OFP Strategy 13.1), Protection (OFP Strategy 7.1), Safety (OFP Strategies 6.1, 6.2, 11.1, 11.3), Intermodal Accessibility (OFP Strategies 1.1,1.2), Funding (OFP Strategy 12.1), and Advocacy and Technical Assistance (OFP Strategy 2.3, 15.1).

C.7 Oregon Statewide Port Strategic Plan

The purpose of the 2010 Oregon Statewide Port Strategic Plan, also known as *A New Strategic Business Plan for Oregon's Statewide Port System*, is to

> *"Define the State of Oregon's future role, interest and investment in the statewide port system based on a realistic assessment of port markets, and economic and business development opportunities. It will identify infrastructure, equipment, administrative, regulatory and governance needs of the ports, and also identify ways that Oregon's port system can best serve the interest of the State of Oregon and its residents."*

The strategic plan defines the framework for a new business relationship between the Oregon Business Development Department (OBDD) and each Oregon port. The plan recommends a number of changes to Oregon's state government institutional structure as it relates to ports, a change in how the ports and state agencies interact and coordinate, a new centralized infrastructure finance program, and a new marine transportation modal program. Regarding the later, the plan recommends the creation of a Marine Transportation Mode Program within state government. One of the responsibilities of program staff would be to prepare a Marine Transportation Modal Plan similar to modal plans noted above for freight, highway, rail, and air. The port strategic plan includes a set of goals and objectives but does not include policies, strategies, and actions similar to those noted above for mode and topic plans.

C.8 OFP Compliance with Federal and State Regulations

The Oregon Freight Plan is required to comply with various federal and state regulations. At the Federal level, requirements include those in the Safe, Accountable, Flexible Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and the Code of Federal Regulations. Other freight-related requirements at the Federal level include those stipulated in the Passenger Rail Investment and Improvement Act of 2008, and Federal Aviation Administration policy and guidance for aviation system planning.

At the state level, the OFP is an element of the statewide transportation plan, and is subject to requirements that apply to the statewide planning process. This includes meeting requirements of the State Agency Coordination (SAC) agreement and with statewide land use planning goals, particularly Goal 12, and the Transportation Planning Rule (TPR).

OFP compliance with Federal and state regulations is discussed in more detail below.

C.9 Federal Planning Regulations

C.9.1 SAFETEA-LU and the Code of Federal Regulations

SAFETEA-LU, in Section 6001.135, requires states to develop statewide transportation plans. In developing these plans, states are required to conduct a transportation planning process that addresses a number of considerations, several of which are freight related as follows:

- Increase the accessibility and mobility of people and freight; and
- Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight.

Additionally, SAFETEA-LU requires that various groups are provided with a reasonable opportunity to comment on the proposed plan. Included in these groups are freight shippers and providers of freight transportation services.

The Code of Federal Regulations implements SAFETEA-LU provisions for statewide planning in Title 23, Part 450, which includes freight-related planning requirements identical to those stated above for SAFETEA-LU.

Neither SAFETEA-LU nor the Code of Federal Regulations requires the development of a statewide stand-alone freight or goods movement transportation plan. As an element of the statewide transportation plan, however, the Oregon Freight Plan is required to meet the above federal regulations.

> *FINDING: Accessibility and mobility of freight, along with integration and connectivity of the transportation system, are discussed in numerous parts of the OFP, including various strategies and actions in Chapter 8. See the OFP discussion on plan consistency for more detail. The public involvement process for the plan has provided opportunities for freight shippers and providers of freight transportation services to provide comments on the proposed OFP. The Oregon Freight Advisory Committee, comprised of shippers, transportation providers, and other freight stakeholders, is among the groups providing comments on the plan.*
>
> *The OFP is in compliance with and supportive of federal transportation planning regulations as stated in SAFETEA-LU and the Code of Federal Regulations.*

C.9.2 MAP-21 and the FAST Act

Moving Ahead for Progress in the 21st Century Act, or MAP-21,[1] was signed into law on July 6, 2012. Among other things, it contained a number of provisions related to freight and performance management. MAP-21 encouraged each state to develop a comprehensive state freight plan. The Oregon Freight Plan (OFP) was developed in parallel with MAP-21 and is consistent with much of the impetus behind the law. However, the OFP was adopted prior to the finalization of MAP-21.

Additionally, on December 4, 2015, President Barack Obama signed the Fixing America's Surface Transportation (FAST) Act into law. The FAST Act builds on MAP-21's freight requirements. At a national level, it clarified and amended the national freight network and planning requirements. It brings a greater focus on multimodal freight planning by establishing a National Multimodal Freight Policy (NMFP) and requiring the creation of a National Multimodal Freight Network (NMFN). It requires the USDOT to establish both an interim and final network.

It also established a new funding program, the National Highway Freight Program (NHFP), and provided formula funds over Federal FY 2016 to 2020 for states to invest in freight projects on the National Highway Freight Network (NHFN). The FAST Act further requires that states develop a freight plan that comprehensively covers short- and long-term freight planning activities and investments.[2] The plan must:

- Cover a five-year forecast period;
- Be fiscally constrained;
- Include a freight investment plan with a list of priority projects; and
- Describe how the state will invest and match its NHFP funds.

> *FINDING: ODOT developed Chapter 9 Federal Compliance, to meet the federal freight provisions under MAP-21 and FAST Act. Section 9.1 describes the federal requirements and the rest of the Chapter (sections 9.2-9.6) details how those requirements were met. Chapter 9 was adopted by the OTC in November 2017.*
>
> *The OFP is in compliance with and supportive of federal transportation planning regulations as stated in MAP-21 and the FAST Act.*

C.9.3 Passenger Rail Investment and Improvement Act of 2008

The PRIIA of 2008 includes a provision that states may prepare and maintain a State rail plan in accordance with provisions of the PRIIA of 2008. The purposes of such a plan would be to:

- *Set forth State policy involving freight and passenger rail transportation, including commuter rail operations, in the State.*

[1] Public Law No. 112-114.

[2] 49 U.S.C. 70202: State freight plans.

- *Establish the period covered by the State rail plan.*
- *Present priorities and strategies to enhance rail service in the State that benefits the public.*
- *Serve as the basis for Federal and State rail investments within the State.*

The State of Oregon has prepared several state rail plans, the most recent of which is the 2001 Oregon Rail Plan. In 2010 an Oregon Rail Study was conducted and an update of the Oregon Rail Plan is scheduled to begin in 2011.

> *FINDING: Various strategies and actions in the OFP are consistent with the existing rail plan policies and actions, as shown in the OFP discussion on plan consistency. As an effort separate from the Oregon Rail Plan, the OFP is not subject to provisions in the PRIIA of 2008.*

C.9.4 Federal Aviation Policy and Guidance for Aviation System Planning

The Federal Aviation Administration coordinates and partners with airport authorities on various planning activities. This includes the provision of funding for planning activities, such as the preparation of statewide aviation plans addressing the mobility of people and freight, funding needs, and a variety of other topics. In Oregon, coordination occurs primarily through the Oregon Department of Aviation. The 2007 Oregon Aviation Plan is the latest statewide aviation plan.

> *FINDING: Various strategies and actions in the OFP are consistent with the existing aviation plan policies and actions, as shown in the OFP discussion on plan consistency. The OFP is an effort separate from the Oregon Aviation Plan.*

C.10 Oregon State Planning Regulations

C.10.1 State Agency Coordination Agreement

ODOT's State Agency Coordination (SAC) Agreement requires that the Oregon Transportation Commission (OTC) adopt findings of fact when adopting long-range policy plans (OAR 731-015). Pursuant to these requirements, the following findings support OTC adoption of the Oregon Freight Plan (OFP). The SAC program describes what agencies will do to comply with Oregon's land use planning program. Specifically, it describes how an agency will meet its obligations under ORS 197.180 to carry out its programs affecting land use in compliance with the statewide planning goals and in a manner compatible with acknowledged comprehensive plans.

C.10.2 Coordination Procedures for Adopting Final Modal Systems Plans, OAR 731-015-0055

(1) Except in the case of minor amendments, the Department shall involve DLCD, metropolitan planning organizations, and interested cities, counties, state and federal agencies, special districts and other parties in the development or amendment of a modal systems plan. This involvement

may take the form of mailings, meeting, or other means that the Department determines are appropriate for the circumstances. The Department shall hold at least one public meeting on the plan prior to adoption.

> *FINDING: The development of the OFP used an open and ongoing public and agency involvement process which included the Department of Land Conservation and Development (DLCD), the metropolitan planning organizations (MPOs), Area Commissions on Transportation (ACTs), cities, counties, state and federal agencies, stakeholder interest groups, and interested citizens.*

(2) The Department shall evaluate and write draft findings of compliance with all applicable statewide planning goals.

> *FINDING: The OFP discussion below on "Oregon's Statewide Planning Goals" contains draft findings of compliance.*

(3) If the draft plan identifies new facilities which would affect identifiable geographic areas, the Department shall meet with the planning representatives of affected cities, counties and metropolitan planning organization to identify compatibility issues and the means of resolving them. These may include:

(a) Changing the draft plan to eliminate the conflicts;

(b) Working with the affected local governments to amend their comprehensive plans to eliminate the conflicts; or

(c) Identifying the new facilities as proposals which are contingent on the resolution of the conflicts prior to the completion of the transportation planning program for the proposed new facilities.

> *FINDING: The draft OFP does not identify new facilities.*

(4) The Department shall present to the Transportation Commission the draft plan, findings of compatibility for new facilities affecting identifiable geographic areas, and findings of compliance with all applicable statewide planning goals.

> *FINDING: The draft findings were presented to the Commission for review at the December 15, 2010 OTC meeting.*

(5) The Transportation Commission, when it adopts a final modal systems plan, shall adopt findings of compatibility for new facilities affecting identifiable geographic areas and findings of compliance with all applicable statewide planning goals.

FINDING: Final findings were presented at the June 15, 2011 OTC meeting for Commission consideration for adoption. The OFP does not identify any new facilities.

(6) The Department shall provide copies of the adopted final modal systems plan and findings to DLCD, the metropolitan planning organizations, and others who request to receive a copy.

FINDING: The final Oregon Freight Plan and final findings will be available on the OFP web page and will be distributed to DLCD, the metropolitan planning organizations, and others who request a copy following adoption.

C.11 Oregon's Statewide Planning Goals

The State of Oregon has established 19 statewide planning goals to guide state, local and regional land use planning. The goals express the state's policies on land use and related topics. The findings are based on the content of the Oregon Freight Plan (OFP). Included in the OFP are background information, issues, strategies, and actions. The OFP policies are expressed by the strategies and actions. The discussion for Goal 12 includes findings of compliance with the applicable provisions of the Transportation Planning Rule (TPR), OAR 660-012.

1. **Citizen Involvement** - Goal 1 calls for "the opportunity for citizens to be involved in all phases of the planning process." The purpose of Goal 1 (OAR 660-015-0000(1)) is "To provide a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process."

FINDING: The development and review of the OFP provided a variety of opportunities for citizen involvement as described in the "Plan Development" section of Chapter 1. OFP Strategy 15.1 and associated actions support Goal 1 by calling for ongoing interaction between freight industry representatives and community stakeholders in long-range planning and other community planning activities.

OFP Strategy 15.1: Continue to create opportunities for positive interaction between freight industry representatives and community stakeholders, including long-range planning or other community planning activities.

The OFP is in compliance with and supportive of Goal 1, Citizen Involvement.

2. **Land Use Planning** - The purpose of Goal 2 (OAR 660-015-0000(2)) is "To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions." Goal 2 outlines the basic procedures of Oregon's statewide planning program.

FINDING: OFP Strategy 7.1 and Action 7.1.1 address the integration of freight into the land use planning process. This includes protecting industrial (freight-dependent) land uses and freight terminals.

> *Strategy 7.2: Work with local and regional agencies and tribal governments to develop best practices for integrating freight land uses into the urban fabric in a manner that minimizes the impact on surrounding communities and the natural environment.*

The OFP is in compliance with and supportive of Goal 2, Land Use Planning.

3. **Agricultural Lands** - The purpose of Goal 3 (OAR 660-015-0000(3)) is "To preserve and maintain agricultural lands." It requires counties to inventory such lands and to "preserve and maintain" them through exclusive farm use (EFU) zoning (per ORS Chapter 215).

FINDING: The OFP does not plan for uses on EFU lands. Oregon agricultural goods move by barge, rail, ship, truck, and airplane. The OFP includes a number of strategies and actions supporting development and improvement of a multimodal transportation system for the movement of agricultural goods as well as other commodities. Strategy 1.1 below is an example of OFP policy support pertaining to a multimodal transportation system.

> *Strategy 1.1: Establish a Strategic Freight System building on the system defined by the commodity flows of Oregon's major industries. This system should include those elements of the transportation infrastructure that best support the state's key industries. This system should be multimodal, when viable, and exist in both urban and rural areas as appropriate.*

The OFP is in compliance with and supportive of Goal 3, Agricultural Lands.

4. **Forest Lands –** The purpose of Goal 4 (OAR 660-015-0000(4)) is "To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture."

FINDING: The OFP does not propose specific uses to be located on forest lands. Oregon forest products move primarily by barge, rail, ship, and truck. The OFP includes a number of strategies and actions supporting development and improvement of a multimodal transportation system for the movement of timber products as well as other commodities. Strategy 1.1 below is an example of OFP policy support pertaining to a multimodal transportation system.

> *Strategy 1.1: Establish a Strategic Freight System building on the system defined by the commodity flows of Oregon's major industries. This system should include those elements of the transportation infrastructure that best support the state's key industries. This system should be multimodal, when viable, and exist in both urban and rural areas as appropriate.*

The OFP is in compliance with and supportive of Goal 4, Forest Lands.

5. **Open Spaces, Scenic and Historic Areas, and Natural Resources** - The purpose of Goal 5 (OAR 660-015-0000(5)) is "To protect natural resources and conserve scenic and historic areas and open spaces." Goal 5 encompasses 12 different types of resources, including wildlife habitats, mineral resources, wetlands, and waterways.

FINDING: The OFP does not plan for specific uses that would be located on lands protected by Goal 5. In Strategy 7.1 and Action 7.1.1, the OFP recognizes the need to protect the existing supply of industrial land and preserve undeveloped land adjacent to freight facilities. Action 7.1.1 also calls for comprehensive plans to include actions to prevent the encroachment of incompatible land uses. The uses may include lands protected by Goal 5.

> *OTP Action 7.1.1: Support better integration of freight into the regional and local land use planning processes. Encourage local governments to integrate industrial land use planning into comprehensive plans and all other plans and actions relating to land use controls.*

The OFP is in compliance with and supportive of Goal 5, Open Spaces, Scenic and Historic Areas, and Natural Resources

6. **Air, Water and Land Resources Quality** - The purpose of Goal 6 (OAR 660-015-0000(6)) is "To maintain and improve the quality of the air, water and land resources of the state."

FINDING: The OFP addresses Goal 6 primarily through Strategy 8.1, 8.2, and associated actions, which deal with climate change and pollutants from freight emissions, as shown below.

> *Strategy 8.1: Research strategies to reduce pollutants and greenhouse gas emissions from freight sources that are active within Oregon. Focus on strategies that have been implemented with success in regions that have similarities to Oregon.*

> *Action 8.1.1: Build on work completed in the OFP to research methods for emissions reduction. These methods can include*

behavioral changes, technology improvements or methods that increase the efficiency of freight supply chains.

Action 8.1.2: Work in coordination with private sector freight stakeholders to identify the most cost-effective approaches to address climate change impacts from freight, in particular those strategies that also support and benefit shippers.

Strategy 8.2: Consider climate change impacts in freight transportation planning activities.

Action 8.2.1: Incorporate methods of considering greenhouse gas impacts in freight transportation planning and decision-making processes.

Action 8.2.2: Support congestion relief and idling reduction activities such as weigh-in-motion technology and the provision of electricity at truck stops for parked trucks.

The OFP is in compliance with and supportive of Goal 6, Air, Water and Land Resources Quality.

7. **Areas Subject to Natural Disasters and Hazards** - The purpose of Goal 7 (OAR 660- 015-0000(7)) is “To protect people and property from natural hazards.” This goal deals with development in places subject to natural hazards such as floods or landslides.

FINDING: While the OFP does not specifically address natural hazards, it recognizes the need for transportation system redundancy when disruptions occur, for example, during emergencies. Natural hazards may be a cause of such disruptions. Strategies 11.1 and associated actions address the need to identify critical locations that are vulnerable from a freight mobility perspective, and the identification of alternative routes where disruptions would be most acutely experienced.

Strategy 11.1: Create a statewide emergency management plan that identifies critical vulnerable points from a freight mobility perspective and places where there is a lack of system redundancy. Create freight movement emergency plans for disruptions at these locations that include information about possible alternative routes.

Action 11.1.1: Create an emergency transportation system map that includes alternative route identification as well as transportation modal alternative information. The map should be flexible enough to be used when single transportation components *are compromised or when entire portions of the system have suffered a disruption.*

Action 11.1.2: Identify and track those places where disruptions would be most acutely felt. This includes those places where there are no, or few, parallel route options, so a disruption means a lack of connectivity. This also means places that tend to be subject to natural or weather-related disruptions including mountain passes, single-lane infrastructure, rail tracks that tend to be affected by heavy rains and snows, and inland waterway passages that are heavily influenced by water levels and drought.

Action 11.1.3: Create plans that facilitate the movement of goods on alternative routes.

The OFP is in compliance with and supportive of Goal 7, Areas Subject to Natural Disasters and Hazards.

8. **Recreational Needs** - The purpose of Goal 8 (OAR 660-015-0000(8)) is “To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.” This goal calls for each community to evaluate its areas and facilities for recreation and develop plans to deal with the projected demand for them.

FINDING: The OFP does not address Goal 8, Recreational Needs.

9. **Economic Development** - The purpose of Goal 9 (OAR 660-015-0000(9)) is “To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon’s citizens.” This goal calls for diversification and improvement of the economy. Under this goal communities are required to inventory commercial and industrial lands, project future needs for such lands, and plan and zone enough land to meet those needs.

FINDING: The OFP includes several strategies and actions that recognize the importance of an efficient transportation system for helping Oregon businesses to more effectively compete in the world economy. This includes helping increase the public’s understanding of freight’s economic importance. Several of these policies and actions are as follows.

Action 1.1.1: Monitor and maintain freight systems identified in modal plans. Update modal plans to meet identified strategic needs and incorporate analysis of current economy and economic forecasts periodically.

> *Action 1.1.3: Develop performance measures and gather necessary data on an ongoing basis to support continued updating of identified freight routes as the Oregon's economy evolves and the state reacts to changing economic conditions.*
>
> *Strategy 7.1: Work to better integrate freight into the land use planning process and to protect the existing supply of industrial (freight-dependent) land uses and freight terminals.*
>
> *Strategy 15.1: Continue to create opportunities for positive interaction between freight industry representatives and community stakeholders, including long-range planning or other community planning activities.*

The OFP is in compliance with and supportive of Goal 9, Economic Development.

10. **Housing** - The purpose of Goal 10 (OAR 660-015-0000(10)) is "To provide for the housing needs of citizens of the state." This goal specifies that each city inventory its buildable residential lands, project future needs for such lands, and plan and zone enough buildable land to meet those needs.

FINDING: The OFP does not address Goal 10, Housing.

11. **Public Facilities and Services** - Goal 11 calls for efficient planning of public services such as sewer, water, law enforcement and fire protection. The stated purpose of Goal 11 (OAR 660- 015-0000(11)) is "To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development."

FINDING: The OFP does not include project proposals for public facilities and services as addressed in Goal 11. The OTP does, however, include a strategy for better integrating freight into the land use planning process. This could include integration with planning for public facilities and services.

> *Strategy 7.1: Support better integration of freight into the regional and local land use planning process. Encourage local governments to integrate industrial land use planning into comprehensive plans and all other plans and actions relating to land use controls.*

The OFP is in compliance with and supportive of Goal 9, Economic Development.

12. **Transportation** - The purpose of Goal 12 (OAR 660-015-0000(12)) is "To provide a safe, convenient and economic transportation system."

FINDING: The OFP addresses the provision of a safe, convenient, and economic freight transportation system through a number of OFP strategies and actions. The OFP does not include project proposals for specific transportation improvements.

> *Administrative Rule 660-012, also known as the Transportation Planning Rule (TPR), implements Goal 12, Transportation. Much of the TPR applies to regional and local transportation planning, planning for transportation facilities, or planning for people movements. One of the purposes of the TPR is specifically freight related:*
>
> *(1)(d): Facilitate the safe, efficient and economic flow of freight and other goods and services within regions and throughout the state through a variety of modes including road, air, rail and marine transportation.*

The following discussion shows how the OFP addresses applicable sections of the TPR.

> Section *660-012-0015 calls for the preparation and coordination of Transportation System Plans. This includes the preparation and coordination of a state Transportation System Plan (TSP). The OTP and statewide mode and topic plans comprise the statewide TSP. The Oregon Freight Plan is a multimodal topic plan that is an element of the state TSP.*
>
> *Section 660-012-0030 calls for determining transportation needs, including needs for movement of goods and services to support industrial and commercial development. Chapter 6 of the OFP addresses freight-related funding needs as developed for the 2006 OTP. The OFP also addresses needs in terms of freight demand, as discussed in Chapter 2.*

The OFP is in compliance with and supportive of Goal 12, Transportation, including applicable sections of the Transportation Planning Rule.

13. **Energy Conservation** - Goal 13 declares that “land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles.” The purpose of Goal 13 (OAR 660-015- 0000(13)) is “To conserve energy.”

FINDING: The OFP does not specifically address Goal 13. The OFP does, however, discuss reducing freight-related greenhouse gas (GHG) emissions and adverse climate change impacts, which may result in reduced energy consumption *for goods movement. The following OFP strategies and actions address GHG emissions and climate change impacts.*

> *Strategy 8.1: Research strategies to reduce pollutants and greenhouse gas emissions from freight sources that are active within Oregon. Focus on strategies that have been implemented with success in regions that have similarities to Oregon.*
>
> *Action 8.1.1: Build on work completed in the OFP to research methods for emissions reduction. These methods can include behavioral changes, technology improvements or methods that increase the efficiency of freight supply chains.*
>
> *Action 8.1.2: Work in coordination with private sector freight stakeholders to identify the most cost-effective approaches to address climate change impacts from freight, in particular those strategies that also support and benefit shippers.*
>
> *Strategy 8.2: Consider climate change impacts in freight transportation planning activities.*
>
> *Action 8.2.1: Incorporate methods of considering greenhouse gas impacts in freight transportation planning and decision-making processes.*
>
> *Action 8.2.2: Support congestion relief and idling reduction activities such as weigh-in-motion technology and the provision of electricity at truck stops for parked trucks.*

The OFP is in compliance with and supportive of Goal 13, Energy Conservation.

14. **Urbanization –** *The purpose of Goal 14 (*OAR 660-015-0000(14)) is "To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities."

    FINDING: The OFP does not address Goal 14, Urbanization.

15. **Willamette Greenway** - Goal 15 sets forth procedures for administering the 300 miles of greenway that protects the Willamette River. The purpose of Goal 15 (OAR 660-015-0005) is "To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway."

    FINDING: The OFP does not address Goal 15, Willamette Greenway.

16. **Estuarine Resources** - The purpose of Goal 16 (OAR 660-016-0010(1)) is "To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and to protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon's estuaries."

    FINDING: The OFP does not address Goal 16, Estuarine Resources.

17. **Coastal Shorelands** - The purpose of Goal 17 (OAR 660-017-0010(2)) is "To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and to reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon's coastal shorelands."

    FINDING: The OFP does not address Goal 17, Coastal Shorelands.

18. **Beaches and Dunes** - The purpose of Goal 18 (OAR 660-015-0010(3)) is "To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and to reduce the hazard to human life and property from natural or man induced actions associated with these areas." Goal 18 sets planning standards for development on various types of dunes. It prohibits residential development on beaches and active foredunes, but allows other types of development if they meet key criteria.

    FINDING: The OFP does not address Goal 18, Beaches and Dunes.

19. **Ocean Resources** - The purpose of Goal 19 (OAR 660-015-0000(19)) is "To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations." It deals with matters such as dumping of dredge spoils and discharging of waste products into the open sea.

    FINDING: The OFP does not address Goal 19, Ocean Resources.

C.12 Conclusion

Based on the findings in this appendix, the Oregon Freight Plan complies with the applicable statewide planning goals.

Appendix D – Public Involvement Process

D.1 Outreach Strategy Goal

The Oregon Freight Plan Outreach Strategy has four primary purposes. First, to share the draft Oregon Freight Plan (OFP) with stakeholders and citizens in order to gain their ideas, concerns and comments and incorporate, as appropriate. Second, to coordinate plan elements with federal, state and local government partners. Third, to document compliance with federal and state public involvement requirements. Fourth, to publicize plan contents and information about the value of freight operations, services and infrastructure to Oregon businesses and citizens.

D.2 Outreach Strategy Timetable

Timeline	Outreach Activity
Nov. 2010	Create stakeholder communication loops through electronic media
Nov. 2010	Prepare public meeting materials—executive summary, freight fact sheets, visual displays, and power point presentation
Nov.-Dec. 2010	Organize two public meetings in each ODOT region coordinating with Metropolitan Planning Organizations and Area Commissions on Transportation; Craft multiple avenues to receive comments
Dec. 2010	Update Freight Plan website—post draft Oregon Freight Plan (OFP) upon Oregon Transportation Commission approval; use multiple social media avenues to point people to the draft plan on the website
Dec. 2010-Feb. 2011	Communicate with stakeholders and the public through electronic media
Dec. 2010	Send hard copy of plan by mail to stakeholders that do not have reliable access to computer service
Dec. 2010 – Feb. 2011	Media news releases- Work with statewide, local and foreign language media outlets to announce availability of draft Oregon Freight Plan for comment and to advertise public meetings
Jan. – Feb. 2011	Conduct public meetings in coordination with Metropolitan Planning Organizations (MPOs), Area Commissions on Transportation (ACTs), and local officials
Jan. – May 2011	Perform interagency consultation and coordination
Feb. - April 2011	ODOT staff and consultants review and respond to public comments; Share comments and responses with Freight Plan Steering Committee; Develop recommendations to revise Freight Plan based on comments
May 2011	Submit comment summaries, responses and plan revision recommendations to the Oregon Transportation Commission
June 2011	Oregon Transportation Commission action to adopt Oregon Freight Plan
July 2011	Implement Oregon Freight Plan
Summer/Fall 2016	Prepare and distribute informational materials regarding amendment to Oregon Freight Advisory Committee (OFAC), MPOs, ACTs and other stakeholders through electronic media and briefings
Winter/Spring 2017	Hold meetings with MPOs, Working Group and OFAC to obtain input on amendment.
July 2017	Oregon Transportation Commission briefing on amendment
July-Sept. 2017	Public Comment Period on amendment, including public hearing at September Oregon Transportation

Timeline	Outreach Activity
	Commission meeting
Sept.-Oct. 2017	ODOT staff and consultants review and respond to public comments, share comments and responses with OFAC; develop recommendations to revise amendment based on comments
Nov. 2017	Oregon Transportation Commission action to adopt Oregon Freight Plan amendment

D.3 Outreach Authorities, Policies and Requirements

The Oregon Freight Plan is a topic plan under the statewide Oregon Transportation Plan that must be developed in accordance with state and federal laws, administrative rules, Oregon Transportation Commission policies and Oregon Department of Transportation (ODOT) guidance. Below is a brief description of public involvement policies and regulations followed during development of the Oregon Freight Plan.

Under ODOT policies (Oregon Transportation Plan, Public Involvement and Consultation – Policy 7.3 and Public Involvement Policy, Oregon Transportation Commission-11), the Department must develop statewide transportation plans in consultation and cooperation with affected state and federal agencies, local jurisdictions, transportation system owners, advisory committees and other stakeholders. These policies further call for holding at least two public meetings in each of ODOT's five regions, providing a minimum of 45 days for public comment, and compels the Oregon Transportation Commission to consider and respond to written comments prior to plan adoption.

The *Oregon Transportation Planning Rule (OAR 660-012)* links the Oregon Freight Plan as a component of transportation system plans that identify a network of facilities and services to meet overall transportation needs. In turn, transportation system plans must be compatible with acknowledged local comprehensive plans. Further, under the rule governing *Coordination Procedures for Adopting the Final Modal System Plan* (*OAR 731-015-055)*, an evaluation and findings of compliance with applicable statewide planning goals is required. Finally, federal *Title IV* requirements to evaluate the plan's impact on and proactively seek involvement from minority, disadvantaged and low income groups as well as *SAFETEA-LU engagement requirements* must be documented. The ODOT Freight Mobility Unit relied upon guidance provided in the *Public Involvement Policy Resources Handbook for Statewide Planning and STIP Development, ODOT Planning Section, August 2009* in performing outreach activities.

D.4 Outreach Activity Framework

- Post draft Oregon Freight Plan on ODOT Freight Plan website
- Notify stakeholders of draft Oregon Freight Plan availability; publicize comment process
- Use ODOT Freight Plan website, electronic media and news releases—including foreign language media outlets—to advertise public meetings and encourage public comment
- Hold at least two meetings in each ODOT region in consultation with Metropolitan Planning Organizations, Area Commissions on Transportation and local officials

- Confirm public meeting rooms are ADA accessible; Offer interpreters at public meetings upon advance request
- Record and respond to each comment received; Review comments and responses with Freight Plan Steering Committee; Recommend plan revisions, as appropriate
- Perform internal ODOT consistency review with the Oregon Transportation Plan
- Work with DLCD to evaluate and write draft findings of compliance with Statewide Planning Goals
- Retain public meeting sign-in sheets and cards designed to document compliance with federal Title IV and SAFETEA-LU requirements
- Report compliance with state and federal regulations
- Implement Oregon Freight Plan upon final OTC adoption
- Amend and update, as necessary

Appendix E – Glossary of Freight Transportation Terms

The definitions below are intended to provide clarification on freight-specific terms used throughout the Oregon Freight Plan (OFP). Many of the definitions used here were taken from the FHWA.[1]

Barge – The cargo-carrying vehicle that inland water carriers primarily use. Basic barges have open tops, but there are covered barges for both dry and liquid cargoes.

Bottleneck – A section of a highway or rail network that experiences operational problems such as congestion. Bottlenecks may result from factors such as reduced roadway width or steep freeway grades that can slow trucks.

Bulk shipments – Cargo that is unbound as loaded; it is without count in a loose unpackaged form. Examples of bulk cargo include coal, grain, and petroleum products.

Capacity – The physical facilities, personnel and process available to meet the product of service needs of the customers. Capacity generally refers to the maximum output or producing ability of a machine, a person, a process, a factory, a product, or a service.

Cargo-oriented development (COD) – The development of manufacturing and distribution businesses in select locations that benefit from access to multiple types of freight transportation, proximity to complimentary businesses, and a large local industrial workforce.

Carrier – An organization engaged in transporting goods for hire.

Class I railroad – A large freight railroad company having annual carrier operating revenues of $250 million or more.

Class II railroad – A (regional) mid-sized freight-hauling railroad having annual carrier operating revenues between $20 million and $250 million.

Class III railroad – A (local or shortline) small-scale freight hauling railroad with an annual operating revenue of less than $20 million.

Commodity – An Item that is traded in commerce. The term usually implies an undifferentiated product competing primarily on price and availability.

Commodity flow – the movement of commodities within a region or between regions.

Container – A "box'" typically ten to forty feet long, which is used primarily for ocean freight shipment. For travel to and from ports, containers are loaded onto truck chassis' or on railroad flatcars.

[1] FHWA website: https://ops.fhwa.dot.gov/freight/fpd/glossary/index.htm#u

Critical Rural Freight Corridors (CRFCs) – These are public roads not in an urbanized area that provide access and connection to the PHFS and the interstate with other important ports, public transportation facilities, or other intermodal freight facilities.

Critical Urban Freight Corridors (CUFCs) – These are public roads in urbanized areas (more than 50,000 population), which provide access and connection to the PHFS and the interstate with other ports, public transportation facilities, or other intermodal transportation facilities.

Distribution center (DC) – The warehouse facility that holds inventory from manufacturing pending distribution to the appropriate stores.

Dock – A space used or receiving merchandise at a freight terminal.

Drayage – Transporting of rail or ocean freight by truck to an intermediate or final destination; typically a charge for pickup/delivery of goods moving short distances (e.g., from marine terminal to warehouse).

Durables – Generally, any goods whose continuous serviceability is likely to exceed three years.

Freight Highway Bottlenecks Project (FHBP) – Initiated by ODOT to identify locations on Oregon's highway network that were experiencing significant freight truck delay, unreliability and increased transportation costs.

Freight movements – The transportation of goods between particular locations.

GSP – Gross State Product, a measure of the value added to products and services by all businesses within the state

GPS – Global Positioning System, is a radio navigation system that allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world.

Highway Over-dimensional Load Pinch Points Study (HOLPP Study) – A study developed by ODOT to identify highway "pinch points" or facilities that restrict movement of over-dimensional (OD) loads due to height, length, width, or weight constraints.

Hub – A common connection point for devices in a network. Referenced for a transportation network as in "hub and spoke" which is common in the airline and trucking industry.

Intermodal – Transferring from mode to another or between two modes.

Intermodal connectors – The links that facilitate transfers between modes, such as local roads between a designated freight route and a port or rail reload facility.

Intermodal terminal – A location where links between different transportation modes and networks connect. Using more than one mode of transportation in moving persons and goods. For example, a shipment moved over 1,000 miles could travel by truck for one portion of the trip, and then transfer to rail at a designated terminal.

Inventory – The number of units and/or value of the stock of good a company holds.

Just-in-Time (JIT) – Cargo or components that must be at a destination at the exact time needed. The container or vehicle is the movable warehouse.

Last Mile (Connectors) – The local streets that connect a designated freight route with a freight generating or receiving facility.

Line haul – The movement of freight over the road/rail from origin terminal to destination terminal, usually over long distances.

Lock – A channel where the water rises and falls to allow boats to travel a dammed river.

Logistics – All activities involved in the management of product movement; delivering the right product from the right origin to the right destination, with the right quality and quantity, at the right schedule and price.

Multimodal trip – Employing various modes of transport within a single trip.

National Freight Strategic Plan (NFSP) – Established by the U.S. Department of Transportation under MAP-21 requirements, the intent of the NFSP is to describe the existing U.S. freight transportation system and future demands on it, identify major corridors and gateways, assess barriers to improving the system, and specify best practices for enhancing it.

National Highway Freight Network (NHFN) – Established by the U.S. Department of Transportation under MAP-21 requirements, the NHFN comprises four subsystems of roadways intended to help states strategically direct resources toward improving performance of highway portions of the U.S. freight transportation system: the PHFS, portions of the interstate system not part of the PHFS, CRFCs and CUFCs.

National Highway Freight Program (NHFP) – Established by the FAST Act, the NHFP provides $6.3 billion in formula funds over five years for states to invest in freight projects on the NHFN.

National Multimodal Freight Network (NMFN) – Building upon the NHFN created by MAP-21, the FAST Act required the creation of an interim and final NMFN to bring greater focus on multimodal freight planning for the U.S.

National Multimodal Freight Policy (NMFP) – Established by the FAST Act, the NMFP sets national goals to guide decision-making to ensure the safe, efficient and reliable movement of freight in the U.S.

North American Industry Classification System (NAICS) – standard used by Federal statistical agencies in classifying business establishments.

Node – A fixed point in a firm's logistics system where goods come to rest; includes plants, warehouses, supply sources, and markets.

Nondivisible load – A load which is unable to be divided into smaller parts- like a piece of equipment or a steel beam.

Oregon Freight Plan (OFP) – Developed in parallel with MAP-21 and adopted in 2011 as an element of the Oregon Transportation Plan, the OFP is a resource designed to guide freight-related operation, maintenance and investment decisions.

Oregon Freight Advisory Committee (OFAC) – Formalized in 2001 through the passage of House Bill 3364 (now ORS 366.212), the OFAC advises the director of the Oregon Department of Transportation and the Oregon Transportation Commission on issues, policies and programs that impact multimodal freight mobility in the state.

Oregon Freight Intermodal Connector System (OFICS) Study– Identified additional freight intermodal connectors in the state besides the existing designated National Highway System freight intermodal connectors.

On-dock rail – Direct shipside rail service. Includes the ability to load and unload containers/breakbulk directly from rail car to vessel.

Primary Highway Freight System (PHFS) –The network of highways identified as the most critical highway portions of the U.S. freight transportation system determined by measurable and objective national data. The network consists of 41,518 centerlines miles, including 37,436 centerline miles of interstate and 4,082 centerline miles of non-interstate roads.

Rail carload – Quantity of freight (in tons) required to fill a railcar; amount normally required to qualify for a carload rate.

Rail mainline – The principal artery of a railway system.

Reliability – Refers to the degree of certainty and predictability in travel times on the transportation system. Reliable transportation systems offer some assurance of attaining a given destination within a reasonable range of an expected time. An unreliable transportation system is subject to unexpected delays, increasing costs for system users.

Shipper – An entity that prepares goods for shipment, by packaging, labeling, and arranging for transit, or who coordinates the transport of goods.

Short-sea shipping – Also known as coastal or coastwise shipping, describes marine shipping operations between ports along a single coast or involving a short sea crossing.

Shunting – Sorting rail cars into complete train sets.

State Highway Freight System – Freight system designated by the Oregon Highway Plan to facilitate efficient and reliable interstate, intrastate and regional truck movement. This system comprises interstate highways and certain statewide, regional and district highways, and includes routes that carry significant tonnage of freight by truck and serve as the primary interstate and intrastate highway freight connection to ports, intermodal terminals, and urban areas.

Supply Chain – Starting with unprocessed raw materials and ending with final customer using the finished goods.

Throughput – Total amount of freight imported or exported through a seaport measured in tons or TEUs.

"Through" tonnage – The amount (by weight) of goods transported that have neither an origin nor a destination within the state or region.

Ton-mile – A measure of output for freight transportation; reflects weight of shipment and the distance it is hauled; a multiplication of tons hauled by the distance traveled.

Transit time – The total time that elapses between a shipment's delivery and pickup.

Transloading - Transferring bulk shipments from the vehicle/container of one mode to that of another at a terminal interchange point.

Truck Travel Time Reliability Index (TTTR Index) – National performance measure established by the U.S. Department of Transportation to assess freight movement on interstate highways.

Truckload (TL) – Quantity of freight required to fill a truck, or at a minimum, the amount required to qualify for a truckload rate.

Rail unit trains – A train of a specified number of railcars handling a single commodity type which remain as a unit for a designated destination or until a change in routing is made.

Vehicle Miles Traveled (VMT) – A measurement of miles traveled by vehicles within a specified region for a specified time period..

Warehouse – Storage place for commodities. Principal warehouse activities include receipt of commodity, storage, shipment and order picking.

Winglets – Blade tip devices attached to the back doors of tractor-trailers that reduce drag, and improve fuel efficiency of heavy trucks in this context.

Appendix F – Commodity to NAICS Bridge

The table below is meant to highlight the commodities[1] used in production by certain industries, the volume results of which are presented in OFP Figure 3.1.

Table 9-3. Commodity to NAICS Table

Commodity	NAICS Industry Code (Manufacturing in NAICS3, Others in NAICS2)	Percent Distribution
Farm products	Agriculture, Forestry, Fishing (11)	79.8%
	Food Manufacturing (311)	17.9%
	Beverage and Tobacco Product Manufacturing (312)	0.2%
	Textile Mills (313)	1.7%
	Chemical manufacturing (325)	0.4%
Forest Products	Agriculture, Forestry, Fishing (11)	20.8%
	Textile Mills (313)	20.8%
	Chemical manufacturing (325)	58.3%
Fresh Fish	Agriculture, Forestry, Fishing (11)	100.0%
Metallic Ores	Mining, Quarrying, and Oil and Gas Extraction (211 & 212)	79.2%
	Nonmetallic Mineral Product Manufacturing (327)	1.4%
	Primary Metal Manufacturing (331)	19.4%
Coal	Mining, Quarrying, and Oil and Gas Extraction (211 & 212)	85.7%
	Petroleum and Coal Products Manufacturing (324)	14.3%
Crude Petroleum, Natural Gas	Mining, Quarrying, and Oil and Gas Extraction (211 & 212)	8.8%
	Petroleum and Coal Products Manufacturing (324)	91.2%
Nonmetallic Ores, Minerals	Mining, Quarrying, and Oil and Gas Extraction (211 & 212)	66.7%
	Beverage and Tobacco Product Manufacturing (312)	2.0%
	Chemical manufacturing (325)	7.1%
	Nonmetallic Mineral Product Manufacturing (327)	2.0%
	Primary Metal Manufacturing (331)	1.0%
	Fabricated Metal Product Manufacturing (332)	9.1%
	Computer and Electronic Product Manufacturing (334)	5.1%
	Miscellaneous Manufacturing (339)	7.1%
Ordnance or Accessories	Fabricated Metal Product Manufacturing (332)	79.5%
	Machinery Manufacturing (333)	11.5%
	Computer and Electronic Product Manufacturing (334)	1.3%
	Transportation Equipment Manufacturing (336)	7.7%
Food and Kindred Products	Agriculture, Forestry, Fishing (11)	14.6%
	Food Manufacturing (311)	76.6%
	Beverage and Tobacco Product Manufacturing (312)	4.8%
	Textile Mills (313)	0.2%
	Chemical manufacturing (325)	3.9%
Tobacco Products	Beverage and Tobacco Product Manufacturing (312)	100.0%

[1] Commodities are classified according to the Standard Transportation Commodity Code.

Commodity	NAICS Industry Code (Manufacturing in NAICS3, Others in NAICS2)	Percent Distribution
Textile Mill Products	Agriculture, Forestry, Fishing (11)	0.5%
	Textile Mills (313)	67.5%
	Textile Product Mills (314)	17.4%
	Paper Manufacturing (322)	2.6%
	Chemical manufacturing (325)	6.3%
	Plastics and Rubber Products Manufacturing (326)	5.0%
	Machinery Manufacturing (333)	0.2%
	Furniture and Related Product Manufacturing (337)	0.5%
Apparel/Finished Textile Products	Textile Mills (313)	3.5%
	Textile Product Mills (314)	1.4%
	Apparel Manufacturing (315)	62.3%
	Leather and Allied Product Manufacturing (316)	6.3%
	Wood Product Manufacturing (321)	0.4%
	Paper Manufacturing (322)	4.2%
	Plastics and Rubber Products Manufacturing (326)	1.8%
	Fabricated Metal Product Manufacturing (332)	3.9%
	Machinery Manufacturing (333)	4.9%
	Transportation Equipment Manufacturing (336)	7.4%
	Miscellaneous Manufacturing (339)	3.9%
Lumber or Wood Products	Agriculture, Forestry, Fishing (11)	15.3%
	Textile Product Mills (314)	0.4%
	Wood Product Manufacturing (321)	66.0%
	Chemical manufacturing (325)	0.4%
	Fabricated Metal Product Manufacturing (332)	1.5%
	Computer and Electronic Product Manufacturing (334)	4.2%
	Furniture and Related Product Manufacturing (337)	12.2%
Furniture or Fixtures	Apparel Manufacturing (315)	1.0%
	Leather and Allied Product Manufacturing (316)	2.0%
	Plastics and Rubber Products Manufacturing (326)	29.6%
	Nonmetallic Mineral Product Manufacturing (327)	4.1%
	Fabricated Metal Product Manufacturing (332)	1.0%
	Computer and Electronic Product Manufacturing (334)	28.6%
	Transportation Equipment Manufacturing (336)	22.4%
	Furniture and Related Product Manufacturing (337)	1.0%
	Miscellaneous Manufacturing (339)	10.2%
Pulp, Paper or Allied Products	Leather and Allied Product Manufacturing (316)	1.3%
	Paper Manufacturing (322)	60.5%
	Printing and Related Support Activities (323)	8.4%
	Petroleum and Coal Products Manufacturing (324)	1.3%
	Chemical manufacturing (325)	8.4%
	Plastics and Rubber Products Manufacturing (326)	2.1%
	Nonmetallic Mineral Product Manufacturing (327)	7.1%
	Computer and Electronic Product Manufacturing (334)	5.5%
	Transportation Equipment Manufacturing (336)	1.7%
	Miscellaneous Manufacturing (339)	3.4%
	Publishing Industries (except internet) (511)	0.4%

Commodity	NAICS Industry Code (Manufacturing in NAICS3, Others in NAICS2)	Percent Distribution
Printed matter	Printing and Related Support Activities (323)	7.0%
	Chemical manufacturing (325)	51.2%
	Machinery Manufacturing (333)	20.9%
	Transportation Equipment Manufacturing (336)	1.2%
	Publishing Industries (except internet) (511)	19.8%
Chemicals or Allied Products	Mining, Quarrying, and Oil and Gas Extraction (211 & 212)	25.6%
	Food Manufacturing (311)	4.8%
	Leather and Allied Product Manufacturing (316)	0.1%
	Paper Manufacturing (322)	0.7%
	Petroleum and Coal Products Manufacturing (324)	2.3%
	Chemical manufacturing (325)	61.1%
	Nonmetallic Mineral Product Manufacturing (327)	1.8%
	Primary Metal Manufacturing (331)	0.6%
	Electrical Equipment, Appliance, and Component Manufacturing (335)	2.8%
	Miscellaneous Manufacturing (339)	0.1%
Petroleum, natural gas and other petroleum-based products	Mining, Quarrying, and Oil and Gas Extraction (211 & 212)	4.2%
	Paper Manufacturing (322)	29.2%
	Petroleum and Coal Products Manufacturing (324)	25.0%
	Chemical manufacturing (325)	31.3%
	Nonmetallic Mineral Product Manufacturing (327)	10.4%
Rubber/Plastics Products	Food Manufacturing (311)	0.4%
	Textile Mills (313)	8.3%
	Leather and Allied Product Manufacturing (316)	21.4%
	Paper Manufacturing (322)	0.7%
	Plastics and Rubber Products Manufacturing (326)	20.3%
	Machinery Manufacturing (333)	14.1%
	Computer and Electronic Product Manufacturing (334)	22.8%
	Electrical Equipment, Appliance, and Component Manufacturing (335)	10.5%
	Transportation Equipment Manufacturing (336)	0.7%
	Miscellaneous Manufacturing (339)	0.7%
Leather or Leather Products	Leather and Allied Product Manufacturing (316)	100.0%
Clay, Concrete, Glass, Stone	Mining, Quarrying, and Oil and Gas Extraction (211 & 212)	4.0%
	Textile Mills (313)	1.8%
	Textile Product Mills (314)	0.4%
	Nonmetallic Mineral Product Manufacturing (327)	65.2%
	Fabricated Metal Product Manufacturing (332)	2.6%
	Machinery Manufacturing (333)	13.7%
	Computer and Electronic Product Manufacturing (334)	8.8%
	Electrical Equipment, Appliance, and Component Manufacturing (335)	3.1%
	Miscellaneous Manufacturing (339)	0.4%

Commodity	NAICS Industry Code (Manufacturing in NAICS3, Others in NAICS2)	Percent Distribution
Primary Metal Products	Paper Manufacturing (322)	0.7%
	Petroleum and Coal Products Manufacturing (324)	34.5%
	Primary Metal Manufacturing (331)	36.7%
	Fabricated Metal Product Manufacturing (332)	20.3%
	Machinery Manufacturing (333)	6.8%
	Computer and Electronic Product Manufacturing (334)	0.2%
	Electrical Equipment, Appliance, and Component Manufacturing (335)	0.2%
	Transportation Equipment Manufacturing (336)	0.7%
Fabricated Metal Products	Textile Product Mills (314)	1.0%
	Printing and Related Support Activities (323)	0.4%
	Nonmetallic Mineral Product Manufacturing (327)	0.2%
	Primary Metal Manufacturing (331)	1.6%
	Fabricated Metal Product Manufacturing (332)	60.1%
	Machinery Manufacturing (333)	27.9%
	Computer and Electronic Product Manufacturing (334)	5.3%
	Electrical Equipment, Appliance, and Component Manufacturing (335)	1.4%
	Transportation Equipment Manufacturing (336)	0.8%
	Furniture and Related Product Manufacturing (337)	0.8%
	Miscellaneous Manufacturing (339)	0.4%
Non-electrical Machinery	Textile Product Mills (314)	6.7%
	Leather and Allied Product Manufacturing (316)	0.1%
	Paper Manufacturing (322)	0.3%
	Chemical manufacturing (325)	0.9%
	Primary Metal Manufacturing (331)	0.6%
	Fabricated Metal Product Manufacturing (332)	11.4%
	Machinery Manufacturing (333)	55.3%
	Computer and Electronic Product Manufacturing (334)	14.6%
	Electrical Equipment, Appliance, and Component Manufacturing (335)	2.5%
	Transportation Equipment Manufacturing (336)	6.9%
	Furniture and Related Product Manufacturing (337)	0.1%
	Miscellaneous Manufacturing (339)	0.6%
Electrical Machinery	Leather and Allied Product Manufacturing (316)	0.5%
	Printing and Related Support Activities (323)	0.3%
	Chemical manufacturing (325)	0.3%
	Nonmetallic Mineral Product Manufacturing (327)	0.3%
	Fabricated Metal Product Manufacturing (332)	0.8%
	Machinery Manufacturing (333)	7.7%
	Computer and Electronic Product Manufacturing (334)	48.1%
	Electrical Equipment, Appliance, and Component Manufacturing (335)	39.8%
	Transportation Equipment Manufacturing (336)	2.2%
Transportation Equipment	Textile Mills (313)	1.4%
	Wood Product Manufacturing (321)	0.7%
	Paper Manufacturing (322)	0.7%
	Fabricated Metal Product Manufacturing (332)	4.3%
	Machinery Manufacturing (333)	2.8%
	Computer and Electronic Product Manufacturing (334)	0.7%
	Transportation Equipment Manufacturing (336)	89.4%

Commodity	NAICS Industry Code (Manufacturing in NAICS3, Others in NAICS2)	Percent Distribution
Precision instruments	Paper Manufacturing (322)	8.1%
	Chemical manufacturing (325)	27.3%
	Primary Metal Manufacturing (331)	1.0%
	Fabricated Metal Product Manufacturing (332)	17.2%
	Machinery Manufacturing (333)	10.1%
	Computer and Electronic Product Manufacturing (334)	21.2%
	Electrical Equipment, Appliance, and Component Manufacturing (335)	1.0%
	Furniture and Related Product Manufacturing (337)	1.0%
	Miscellaneous Manufacturing (339)	13.1%
Misc. Manufactured Products	Textile Product Mills (314)	0.6%
	Leather and Allied Product Manufacturing (316)	24.5%
	Wood Product Manufacturing (321)	0.6%
	Paper Manufacturing (322)	3.2%
	Chemical manufacturing (325)	1.9%
	Plastics and Rubber Products Manufacturing (326)	1.9%
	Nonmetallic Mineral Product Manufacturing (327)	0.6%
	Fabricated Metal Product Manufacturing (332)	1.9%
	Machinery Manufacturing (333)	11.6%
	Furniture and Related Product Manufacturing (337)	0.6%
	Miscellaneous Manufacturing (339)	52.3%
Waste/Scrap Materials	Agriculture, Forestry, Fishing (11)	8.3%
	Textile Mills (313)	22.2%
	Petroleum and Coal Products Manufacturing (324)	5.6%
	Chemical manufacturing (325)	11.1%
	Nonmetallic Mineral Product Manufacturing (327)	25.0%
	Primary Metal Manufacturing (331)	19.4%
	Machinery Manufacturing (333)	8.3%
Miscellaneous Freight Shipments	Textile Product Mills (314)	8.1%
	Fabricated Metal Product Manufacturing (332)	1.0%
	Machinery Manufacturing (333)	90.9%

Appendix G – Oregon Plan Implementation Support for Federal Freight Goals

National Multimodal Freight Policy Goals 49 USC 70101	OFP strategy and action that satisfies	National Highway Freight Program Goals 23 USC 167	OFP strategy and action that satisfies
1. To identify infrastructure improvements, policies, and operational innovations that: a) Strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States; b) Reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and c) Increase productivity, particularly for domestic industries and businesses that create high-value jobs	Action 1.1.1 Action 1.1.2 Action 1.1.3 Action 1.3.2 Action 2.1.1 Action 2.2.1 Action 2.3.1 Action 2.4.1 Action 2.5.2 Action 4.1.2 Action 5.1.2 Action 8.2.2 Action 11.1.3 Action 12.3.1 Strategy 2.3	1. To invest in infrastructure improvements and to implement operational improvements on the highways of the United States that: a) Strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States; b) Reduce congestion and bottlenecks on the National Highway Freight Network; c) Reduce the cost of freight transportation; d) Improve the year-round reliability of freight transportation; and e) Increase productivity, particularly for domestic industries and businesses that create high-value jobs	Action 1.1.1 Action 1.1.2 Action 1.1.3 Action 1.3.2 Action 2.1.1 Action 2.2.1 Action 2.3.1 Action 2.4.1 Action 2.5.2 Action 4.1.2 Action 5.1.2 Action 8.2.2 Action 11.1.3 Action 12.3.1 Strategy 2.3
2. To improve the safety, security, efficiency, and resiliency of multimodal freight transportation	Action 2.1.1 Action 5.2.1 Action 6.1.1 Action 6.1.2 Action 6.2.1 Action 11.1.1 Strategy 6.1 Strategy 11.1 Strategy 11.3	2. To improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas	Action 2.1.1 Action 5.2.1 Action 6.1.1 Action 6.1.2 Action 6.2.1 Action 11.1.1 Strategy 6.1 Strategy 11.1 Strategy 11.3
3. To achieve and maintain a state of good repair on the National Multimodal Freight Network	Action 1.2.1 Action 2.1.1 Action 5.2.1 Action 6.1.1 Action 7.1.2 Action 12.3.1 Strategy 1.2 Strategy 5.1 Strategy 5.2	3. To improve the state of good repair of the National Highway Freight Network	Action 1.2.1 Action 2.1.1 Action 5.2.1 Action 6.1.1 Action 7.1.2 Action 12.3.1 Strategy 1.2 Strategy 5.1 Strategy 5.2
4. To use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network	Action 6.1.3 Action 8.2.2 Strategy 2.5	4. To use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network	Action 6.1.3 Action 8.2.2 Strategy 2.5

National Multimodal Freight Policy Goals 49 USC 70101	OFP strategy and action that satisfies	National Highway Freight Program Goals 23 USC 167	OFP strategy and action that satisfies
5. To improve the economic efficiency and productivity of the National Multimodal Freight Network	Action 1.1.1 Action 1.1.2 Action 1.1.3 Action 1.3.2 Action 2.1.1 Action 2.4.1 Action 2.5.2 Action 4.1.2 Action 5.1.1 Action 5.1.2 Action 12.3.1 Strategy 5.3	5. To improve the efficiency and productivity of the National Highway Freight Network	Action 1.1.1 Action 1.1.2 Action 1.1.3 Action 1.3.2 Action 2.1.1 Action 2.4.1 Action 2.5.2 Action 4.1.2 Action 5.1.1 Action 5.1.2 Action 12.3.1 Strategy 5.3
6. To improve the reliability of freight transportation	Action 2.1.1		
7. To improve the short- and long-distance movement of goods that- a) Travel across rural areas between population centers; b) Travel between rural areas and population centers; and c) Travel from the Nation's ports, airports, and gateways to the National Multimodal Freight Network	Action 1.1.1 Action 1.1.2 Action 1.1.3 Action 2.5.2 Action 3.1.1 Action 3.2.2 Action 3.2.3 Action 3.3.1 Action 5.2.1 Action 5.3.1 Action 6.1.4 Action 7.1.2 Action 11.1.3 Action 12.3.1 Strategy 3.1		
8. To improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address multimodal freight connectivity	Action 3.2.1 Action 3.2.2 Action 4.1.1 Action 4.1.2 Action 14.2.1 Strategy 2.4 Strategy 3.3 Strategy 4.1	6. To improve the flexibility of States to support multi-State corridor planning and the creation of multi-state organizations to increase the ability of States to address highway freight connectivity	Action 4.1.1 Action 4.1.2 Action 14.2.1 Strategy 2.4 Strategy 4.1
9. To reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network	Action 2.5.4 Action 2.6.1 Action 4.1.2 Action 6.1.4 Action 8.1.1 Action 8.1.2 Action 8.2.1 Strategy 2.6 Strategy 8.1 Strategy 8.2	7. To reduce the environmental impacts of freight movement on the National Highway Freight Network	Action 2.5.4 Action 2.6.1 Action 4.1.2 Action 6.1.4 Action 8.1.1 Action 8.1.2 Action 8.2.1 Strategy 2.6 Strategy 8.1 Strategy 8.2

National Multimodal Freight Policy Goals 49 USC 70101	OFP strategy and action that satisfies	National Highway Freight Program Goals 23 USC 167	OFP strategy and action that satisfies
10. To pursue the goals described in this subsection in a manner that is not burdensome to State and local governments	Action 1.3.1 Action 1.3.2 Action 2.3.1 Action 2.5.4 Action 3.2.1 Action 3.2.2 Action 3.2.3 Action 3.3.1		

Appendix H – Critical Freight Corridors

Table 9-4. Critical Rural Freight Corridors

State	Route[1]	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	U.S. 97	84.00	84.50	0.50	Guardrail too close to travel lane with frequent strikes by trucks.
OR	U.S. 97	118.25	118.75	0.50	Trans-shipment facility located 1/2 mile east of U.S. 97 on O'Neil Highway. O'Neil Highway Junction with U.S. 97 has exceeded statewide average crash rates. The 2015 crash rate was two times the statewide average. A closer review of the crash data suggested that it is concentrated at the intersection of U.S. 97 and O'Neil Highway. Side street approaches must wait for gaps in highway traffic. The volume-to-capacity ratio was over 1.0, which is significantly above the 0.70 to 0.75 standard for this area and causes delay to freight movement.
OR	U.S. 97	124.40	133.39	8.99	During the 10 years between 2009 and 2013, 12 serious injury and fatal crashes occurred on U.S. 97 between Bend and Redmond. Many of these were lane departure crashes, sometimes resulting in high-speed head on collisions. In addition, there are a number of driveways on U.S. 97 between Bend and Redmond, and as traffic volumes grow, there are fewer gaps in traffic to facilitate motorists entering and exiting the highway at driveways. These conflicting movements can result in crashes, and probably are responsible for the many of the 25 rear end crashes reported between 2009 and 2013. Significant delay to freight and passenger vehicles associated with crashes.
OR	U.S. 97	155.00	156.00	1.00	Highway U.S. 97 is the main north-south transportation corridor through Central Oregon and a critical part of the state's transportation system. Demand continues to increase along U.S. 97, with average traffic rates of over 12,000 vehicles per day. Safety is a concern due to limited passing opportunities, leading to lengthy following times that sometimes result in drivers making passing maneuvers with high speeds and limited sight distances.
OR	U.S. 97	173.70	172.70	1.00	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement. Widen roadway to extend existing passing lanes from 1 mile to 2 miles.
OR	U.S. 97	192.20	193.20	1.00	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement. Widen roadway to extend existing passing lanes from 1 mile to 2 miles.

[1] Routes without mile start and end points in this table are intermodal connectors

State	Route[1]	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	U.S. 97	200.40	199.30	1.10	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement. Widen roadway to extend existing passing lanes from 1 mile to 2 miles.
OR	U.S. 97	211.10	212.10	1.00	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement. Widen roadway to extend existing passing lanes from 1 mile to 2 miles.
OR	U.S. 97	220.90	221.90	1.00	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement. Widen roadway to extend existing passing lanes from 1 mile to 2 miles.
OR	U.S. 97	237.00	239.00	2.00	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement. Widen roadway to extend existing passing lanes from 1 mile to 2 miles.
OR	U.S. 97	244.20	244.70	0.50	Wide/Long
OR	U.S. 97	256.50	255.40	1.10	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement. Widen roadway to extend existing passing lanes from 1 mile to 2 miles.
OR	U.S. 97	259.32	262.77	3.45	Rockfall location above the highway
OR	U.S. 97	264.00	266.91	2.91	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement. Widen roadway to extend existing passing lanes from 1 mile to 2 miles. Rockfall location above highway at south end of segment.
OR	U.S. 97	272.69	272.89	0.20	Vertical Clearance
OR	U.S. 97	280.40	281.80	1.40	Wide/Long
OR	U.S. 730	168.20	168.30	0.10	Wide/Long
OR	U.S. 730	184.77	184.97	0.20	Wide/Long
OR	U.S. 730	197.65	198.10	0.45	Wide/Long
OR	U.S. 395	1.57	1.77	0.20	Two pinch points
OR	U.S. 395	0.00	0.50	0.50	Wide/Long
OR	U.S. 30	21.38	21.58	0.20	Vulnerable seismic bridge
OR	U.S. 30	36.30	37.15	0.85	Narrow bridge regional need/seismic bridge/wide/long pinch point/seismic landslide
OR	U.S. 30	40.64	40.84	0.20	Vulnerable seismic bridge
OR	U.S. 30	52.95	53.15	0.20	Vulnerable seismic bridge
OR	U.S. 30	55.20	55.40	0.20	Potentially Vulnerable seismic bridge

State	Route[1]	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	U.S. 30	60.80	61.25	0.45	Two vulnerable seismic bridges
OR	U.S. 30	70.50	71.00	0.50	Vulnerable seismic bridge
OR	U.S. 30	77.10	77.40	0.30	Vulnerable seismic bridge
OR	U.S. 30	82.50	83.00	0.50	Vulnerable seismic bridge and wide/long pinch point
OR	U.S. 30	85.25	86.50	1.25	Three vulnerable seismic bridges
OR	U.S. 30	92.40	92.65	0.25	Potentially Vulnerable seismic bridge
OR	U.S. 30	94.00	99.00	5.00	Downtown Astoria heavy truck volumes on Commercial Street creates operational and safety problems; John Day Bridge to Astoria City Limits/high truck volumes creates safety and mobility problems for non-freight traffic.
OR	U.S. 30	72.50	73.00	0.50	Vulnerable seismic bridge
OR	U.S. 26	57.30	54.30	3.00	Existing truck climbing lane ends before crest of the hill. Slow trucks impede/disrupt laminar flow. Extend climbing lane.
OR	U.S. 26	18.00	19.00	1.00	Freight delay area at junction with OR 126 and OR 370
OR	U.S. 26	18.00	21.00	3.00	Elsie, near junction with OR 103, area freight activity conflicts with uncontrolled roadside environment
OR	U.S. 26	21.93	22.13	0.20	Vertical Clearance
OR	U.S. 20	18.70	21.00	2.30	Narrow shoulders on steep grade in Horse Ridge fails to provide a safe recovery zone for vehicles which crash or spin out. Lack of operating room makes vehicle recovery difficult and leads to significant delays to freight movement.
OR	U.S. 20	127.75	131.75	4.00	Freight delay area
OR	U.S. 20	193.70	201.00	7.30	Curves and narrow spots restrict over-dimension loads between Burns and Vale. U.S. 20 is the paired route to I-84 and frequently is used for over-dimensional loads when work is occurring on I-84.
OR	U.S. 20	202.70	210.45	7.75	Curves and narrow spots restrict over-dimension loads between Burns and Vale. U.S. 20 is the paired route to I-84 and frequently is used for over-dimensional loads when work is occurring on I-84.
OR	U.S. 20	211.88	214.10	2.22	Curves and narrow spots restrict over-dimension loads between Burns and Vale. U.S. 20 is the paired route to I-84 and frequently is used for over-dimensional loads when work is occurring on I-84.
OR	U.S. 20	216.20	216.90	0.70	Curves and narrow spots restrict over-dimension loads between Burns and Vale. U.S. 20 is the paired route to I-84 and frequently is used for over-dimensional loads when work is occurring on I-84.
OR	U.S. 20	258.00	258.20	0.20	High accident intersection at Cairo Junction makes through freight and local agricultural freight movements dangerous.
OR	U.S. 20	266.30	266.50	0.20	Vertical Clearance
OR	U.S. 20	30.47	30.67	0.20	Vertical Clearance
OR	U.S. 199	28.75	29.00	0.25	Vertical Clearance

State	Route[1]	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	U.S. 101	0.00	3.71	3.71	Wide/Long, Vertical Clearance
OR	U.S. 101	63.90	64.70	0.80	Wide/Long
OR	U.S. 101	196.83	197.03	0.20	Vulnerable seismic bridge
OR	U.S. 101	202.62	202.82	0.20	Vulnerable seismic bridge
OR	U.S. 101	211.10	213.25	2.15	Three vulnerable seismic bridges
OR	U.S. 101	223.11	223.31	0.20	Vulnerable seismic bridge
OR	U.S. 101	229.33	229.53	0.20	Vulnerable seismic bridge
OR	U.S. 101	232.70	236.40	3.70	Incorporates pinch point, intermodal connectors, and seismic bridges in Coos Bay/North Bend
OR	U.S. 101	238.30	239.80	1.50	Incorporates pinch point, bottleneck, intermodal connectors, and seismic bridges in Coos Bay/North Bend
OR	U.S. 101	241.50	244.31	2.81	Incorporates pinch point and seismic bridges in Coos Bay/North Bend
OR	R3T1P03			3.14	Congestion, roadway designation upgrade, impacts from train movements
OR	OR 99W	20.00	23.00	3.00	Newberg-Dundee Bypass - unfunded project phases
OR	OR 99W	24.20	24.50	0.30	Vulnerable seismic bridge
OR	OR 99W	27.00	31.00	4.00	Newberg-Dundee Bypass - unfunded project phases
OR	OR 99W	34.05	34.25	0.20	Wide/Long, Vertical Clearance
OR	OR 99W	40.90	41.20	0.30	Wide/Long, Vertical Clearance
OR	OR 99E	28.90	29.70	0.80	Vertical Clearance
OR	OR 99E	24.55	24.80	0.20	Wide/Long, Vertical Clearance
OR	OR 7	50.45	50.65	0.20	Wide/Long, Vertical Clearance
OR	OR 6	0.42	0.62	0.20	Vertical Clearance
OR	OR5P			0.38	Pavement condition improvement, congestion relief
OR	OR 58	14.30	14.66	0.36	Multiple roll-over and other crashes at this location. Many have involved freight trucks, some carrying hazardous materials. Trestle crossing is at an oblique angle and is too narrow. Tight/blind corners on both sides.
OR	OR 58	23.30	23.80	0.50	Rockfall location above the highway
OR	OR 58	31.64	32.38	0.74	There are only a few passing lanes on OR 58. The problem will be compounded if ODOT implements a lane reduction in Oakridge.
OR	OR 58	37.26	38.47	1.21	There are only a few passing lanes on OR 58. The problem will be compounded if ODOT implements a lane reduction in Oakridge.
OR	OR 58	44.10	44.80	0.70	Two landslide locations below the highway.
OR	OR 58	49.03	50.45	1.42	Steep terrain along this segment causes trucks and RVs to slow. This in turn causes other driver to make risky passing maneuvers.

State	Route[1]	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	OR 58	55.50	56.05	0.55	The chain-up area becomes congested with commercial vehicles which spill into the travel lane, causing a safety concern and a mobility issue.
OR	OR4P_2			0.22	Pavement condition improvement, wider roadway, improved safety at rail crossing, improved turning movements for one-way portion, improved pedestrian facilities
OR	OR4P_1			0.16	Pavement condition improvement, wider roadway, improved safety at rail crossing, improved turning movements for one-way portion, improved pedestrian facilities
OR	OR 47	83.60	83.85	0.25	Vertical Clearance
OR	OR 47	86.25	86.50	0.25	Wide/Long
OR	OR 42	38.00	45.00	7.00	Tight curves result in truck turnovers on OR 42
OR	OR 42	73.20	76.70	3.50	
OR	OR 39	3.30	3.70	0.40	Wide/Long, Vertical Clearance
OR	OR 38	4.00	4.20	0.20	Vulnerable seismic bridge
OR	OR 38	5.66	5.86	0.20	Vulnerable seismic bridge
OR	OR 38	13.14	13.34	0.20	Vulnerable seismic bridge
OR	OR 38	16.25	16.60	0.35	Vulnerable seismic bridge
OR	OR 38	28.18	28.38	0.20	Vulnerable seismic bridge
OR	OR 38	56.35	56.70	0.35	Vulnerable seismic bridge
OR	OR 35	72.66	76.86	4.20	Wide/Long
OR	OR 34	56.17	56.79	0.62	
OR	OR 34	0.17	1.50	1.33	
OR	OR 331	4.34	4.54	0.20	Wide/Long
OR	OR2P			2.93	
OR	OR22P			1.72	Pavement condition improvement, congestion relief, improved pedestrian facilities, turning movement improvement for safety
OR	OR 22	0.20	0.40	0.20	Wide/Long
OR	OR 214	38.50	38.70	0.20	Wide/Long
OR	OR 201	30.00	31.83	1.83	High accident intersection at OR 201/SW 18th and OR 201 at Railroad Avenue (OR 201 connects U.S. 20 to I-84 and is on the I-84 paired route for over-dimensional loads) is a safety issue. Additionally, this location is a key transportation pinch point that complicates industrial development in the adjacent vacant lands.
OR	OR1P			0.33	
OR	OR 18	-0.22	0.20	0.42	Vulnerable seismic bridge
OR	OR 18	3.90	4.05	0.15	Vulnerable seismic bridge

State	Route[1]	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	OR 18	5.30	6.50	1.20	Two vulnerable seismic bridges and a wide/long pinch point
OR	OR 18	18.65	18.95	0.30	Vulnerable seismic bridge
OR	OR 18	21.45	21.65	0.20	Vulnerable seismic bridge
OR	OR 18	23.67	23.87	0.20	Vulnerable seismic bridge and wide/long pinch point
OR	OR 18	27.15	30.40	3.25	Four seismic bridges
OR	OR 18	33.60	33.85	0.25	Two seismic bridges
OR	OR 18	36.00	38.00	2.00	Two vulnerable seismic bridges
OR	OR 18	44.00	46.40	2.40	Five seismic bridges
OR	OR 18	51.30	51.80	0.50	Two seismic bridges and a heavy load pinch point
OR	OR 140	18.10	18.30	0.20	Wide/Long
OR	OR 138	17.85	18.05	0.20	Wide/Long, Vertical Clearance
OR	OR 138	12.30	12.45	0.15	Wide/Long
OR	OR 126	3.00	3.20	0.20	Wide/Long, Vertical Clearance
OR	OR 126	0.22	0.32	0.10	Wide/Long
OR	OR 126	18.09	18.29	0.20	Wide/Long
OR	OR 11	0.01	0.21	0.20	Vertical Clearance
OR	OR 11	19.52	19.72	0.20	Vertical Clearance

Table 9-5. Critical Urban Freight Corridors

State	Route	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	OR 99E	OR 34 Interchange	Albany City Limits	1.68	This is a first/last segment linking industrial and distribution facilities to I-5. Segment is on the NHS. Lack of pedestrian facilities create safety concerns and opportunities for conflict with fast moving traffic and freight. Sidewalk infill projects as in the AAMPO RTP constrained project list will facilitate safe freight travel.
OR	Albany Ave SE	Old Salem Rd NE	OR 99E / Albany	0.30	Albany Ave SE and Old Salem Rd is a first/last segment connecting manufacturing and freight logistics facilities. It is also within a corridor of a route on the PHFS and is an alternate route.
OR	Old Salem Rd NE (At RR Trestle, junction with Century Drive)	South of I-5 MP 236	North of I-5 MP 235	0.30	Albany Ave SE and Old Salem Rd is a first/last segment connecting manufacturing and freight logistics facilities. It is also within a corridor of a route on the PHFS and is an alternate route.
OR	U.S. 20	Willamette River	North Albany Rd.	0.50	This is a first/last segment on U.S. 20 between Albany's urban downtown and the Coast. This segment is on an NHS route.
OR	U.S. 97	Bend north City Limits (MP 133.39)	Empire Ave (MP 135.46)	2.07	Important segment of the U.S. 97 Statewide freight corridor on the north end of Bend that connects U.S. 97 to the City's largest industrial area on Empire Ave. This area experiences congestion, delay and safety issues.
OR	Empire Avenue	U.S. 20 Connection	U.S. 97 NB ramps	0.25	Important freight corridor that connects U.S. 20 and U.S. 97 to the largest concentration of industrial land in Bend. This is a key first/last mile connection to distribution and industrial facilities.
OR	U.S. 20	Cooley Road (MP 17.40)	U.S. 97 SB on-ramp at Division (MP 19.76)	2.36	Important segment of the U.S. 20 Statewide freight corridor. Important connection to distribution and industrial facilities along Empire Ave in Bend. Additionally, there will be significant land use development (light industrial and mixed employment) along this highway segment.
OR	U.S. 20	Webster Street (MP 20.19)	Greenwood Ave (MP 20.99)	0.80	Important segment of the U.S. 20 Statewide freight corridor that experiences congestion and delay.

State	Route	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	U.S. 20	3rd Street (MP 0.51)	8th Street (MP 0.94)	0.43	Important segment of the U.S. 20 Statewide freight corridor that experiences congestion and delay.
OR	U.S. 20	Old Bend-Redmond Highway intersection (MP 16.70)	Old Bend-Redmond Highway intersection (MP 16.79)	0.09	Important segment of the U.S. 20 Statewide freight corridor that experiences safety and congestion issues.
OR	Randy Pape Beltline	Prairie Road	Delta Hwy	3.60	Supports regional mobility, freight movement and access to the NHFS.
OR	OR 126	I-5	OR 126 WB off-ramp	1.30	Supports regional mobility, freight movement and access to the NHFS.
OR	OR 126 at 52nd Ave	West of 52nd Ave	East of 52nd Ave	0.20	Supports regional mobility, freight movement and access to the NHFS.
OR	42nd St (Springfield)	OR126	Rail line	1.10	Connects Lane Forest Product to NHS.
OR	OR 126 at Mohawk Blvd	West of OR126 WB on/off-ramp	East of OR126 EB on/off-ramp	0.40	Supports freight movement and access to the NHFS.
OR	OR 99 (Franklin Blvd) in Goshen	Franklin Blvd north of 30th Ave (at point of its east/west alignment)	I-5 NB off ramp at MP 188	1.20	Supports industrial land in Goshen and access to the NHFS.
OR	Eugene Airport	Airport Rd between Old Airport Rd and OR 99	Airport Rd between Old Airport Rd and OR 99	0.60	Connects Mahlon Sweet Municipal Airport to NHS. Currently a NHS Intermodal Connector and identified as a proposed Tier 1 Intermodal Connector in the ODOT Intermodal Connector Study.
OR	Eugene Airport	Green Hill Rd/Northrop Rd between Airport Rd and Lockheed Rd, Lockheed Dr between Greenhill Rd/Northrop Rd and the Passenger Terminal	Green Hill Rd/Northrop Rd between Airport Rd and Lockheed Rd, Lockheed Dr between Greenhill Rd/Northrop Rd and the Passenger Terminal	0.80	Connects Mahlon Sweet Municipal Airport to NHS. Currently a NHS Intermodal Connector and identified as a proposed Tier 1 Intermodal Connector in the ODOT Intermodal Connector Study.
OR	Irving Rd/Prairie Rd	OR 99 to Prairie on Irving; Irving Rd to OR 99 on Prairie	OR 99 to Prairie on Irving; Irving Rd to OR 99 on Prairie	1.50	Connects Kinder Morgan Eugene, Lane Forest Products, Jerry Brown Co. and Paktech intermodal facilities to the NHS. Identified as a proposed Tier 2 Intermodal Connector in the ODOT Intermodal Connector Study.

State	Route	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	U.S. 20/OR 34 Interchange with OR 99W over Marys River	U.S. 20/OR 34 Inter Change over Mary's River	U.S. 20/OR 34 Interchange over Marys River	0.10	Add an off ramp to the existing interchange for eastbound traffic turning to south OR 99W. The Interchange is on FAU system and is a major missing link on the existing Freight Routes.
OR	U.S. 20/OR 34 (Philomath Blvd)	35th Street	Separation point of U.S. 20/OR 34 west of Philomath	4.50	The link is in FAU and is a major Freight Route for lumber trucks. Improve intersections and install dedicated truck signal (ITS).
OR	OR 199	MP 0.69	MP 4.29	3.60	Freight corridor serving industrial/commercial areas with connection to I-5. This project is ODOT RTP # 510, Key 20104 and is currently in the TIP. Grind out existing pavement and replace with asphalt. Note: Project 510 extends from MP 0.69 in Grants Pass, west along OR 199 to MP 6.92.
OR	Table Rock Road	Table Rock Road	Vilas Road	0.10	Freight corridor that connects major industrial area to OR62, a connector to I-5. This project is Central Point RTP # 219, widen and add turn lanes.
OR	OR 62	OR 62	Dahlia Terrace	0.50	Freight route that connects industrial/commercial area to OR 62, a connector to I-5. This project is Eagle Point RTP # 339, Urban upgrade (collector) with bike lanes and sidewalks.
OR	North Phoenix/Foothills Road	Dry Creek	Vilas Road	1.10	Identified as a regional priority as an alternative North/South route to I-5. Provides a connection from the south valley to OR 140. Identified by ODOT as part of a resiliency plan in case of a major disaster (i.e. Cascadia quake.) This project is Jackson County RTP # 859. Widen to rural major collector standards.
OR	North Phoenix/Foothills Road	Vilas Road	Corey Road	1.70	Identified as a regional priority as an alternative North/South route to I-5. Provides a connection from the south valley to OR 140. Identified by ODOT as part of a resiliency plan in case of a major disaster (i.e. Cascadia quake.) This project is Jackson County RTP # 860. Widen to rural major collector standards.

State	Route	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	North Phoenix/Foothills Road	McAndrews	Delta Waters	1.30	Identified as a regional priority as an alternative North/South route to I-5. Provides a connection from the south valley to OR 140. Identified by ODOT as part of a resiliency plan in case of a major disaster (i.e. Cascadia quake.) This project is the City of Medford RTP # 5043. Widen to 3 lanes with bike lanes and sidewalks.
OR	OR 99	OR 99	I-5	0.50	Freight corridor serving industrial areas with connection to I-5. This project is ODOT project RTP #951. Realigns and widens Bear Creek Bridge, adds turn lanes to S.Valley View Rd.
OR	Salem Rivercrossing aka “3rd Bridge”	Liberty St	Wallace Rd	1.13	Proposed bridge will provide a route for freight movement between I-5, the Willamette Valley and the Oregon Coast that does not go through downtown Salem, reducing travel time.
OR	OR 22E	I-5	25th St	1.18	OR 22 is designated as an Oregon Highway Plan Freight Route and intersects with I-5 in Salem. OR 22 is also one of the major routes for freight between central Oregon, the Willamette Valley and the Oregon Coast. Part of this segment is identified as a corridor with high freight delay (#57 in the Freight Highway Bottlenecks List as part of the Oregon Freight Plan). ODOT has completed a Facility Plan that includes recommendations along OR 22E part of the proposed CUFC segment.
OR	Center St Bridge	Commercial St	Murlark Dr	0.70	The Center St bridge provides the main freight route between the Willamette Valley and the Oregon Coast. OR 22 is designated as an Oregon Highway Plan Freight Route. The SKATS MPO is funding a study by ODOT to determine the seismic upgrades (and the cost) needed on this regional and statewide significant bridge.
OR	25th St	OR 22E	Madrona Av	0.84	Connects a major industrial area (Fairview Industrial) and the airport (which includes industrial uses as well as air freight trans-shipment) to OR 22E, which then connects to the Primary Highway Freight System (PHFS).

State	Route	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	McGilchrist St	12th St	25th St	1.00	Provides access to the surrounding industrial area, which is an enterprise and electronic commerce zone. Adding capacity and providing complete facilities is a high priority for the city of Salem, which is in the process of completing a street design for McGilchrist Street; the draft FY 2018-2023 SKATS TIP includes $3.6 million of federal and local match funds for right-of-way purchasing in 2018.
OR	Kuebler Blvd	I-5	Aumsville Hwy	2.12	Connects a major industrial area (Fairview Industrial) and a major logistic and industrial area (Mill Creek Corporate Center – a 500+ acre major logistic area and the largest "shovel ready" industrial site on I-5) to the Primary Highway Freight System (PHFS).
OR	Cordon Rd/OR 22E Interchange	Aumsville Hwy	Gaffin Rd	0.97	Proposed interchange will provide access to traffic from/to central Oregon and the Mill Creek Corporate Center, a 500+ acre major logistic area and the "largest shovel ready" industrial site on I-5 between Seattle and Sacramento. OR 22 is designated as an Oregon Highway Plan Freight Route. OR 22 is also one of the major routes for freight between central Oregon, the Willamette Valley and the Oregon Coast. Also, would provide a bypass to the OR 22E / I-5 interchange to reduce travel distance.
OR	Cordon Rd	Gaffin Rd	State St	1.34	Provides for an alternate route around Salem if I-5 is closed. Also, provides connections to central Marion County (via Hazelgreen Rd and Silverton Rd) and central Oregon (via proposed OR 22E/Cordon Rd interchange).
OR	OR 217	U.S. 26	I-5	7.20	On Regional Freight Network as a Main Roadway Route and is on the NHS. Included on an earlier draft of National Multimodal Freight Network. Origins and destinations of freight; corridor that MPO and state identify as important.

State	Route	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	U.S. 26 (Sunset Hwy.)	I-405	Brookwood Parkway	12.70	On Regional Freight Network as a Main Roadway Route, is on the NHS, and connects to the region's high tech industries. Included on an earlier draft of National Multimodal Freight Network. Origins and destinations of freight; volume, value and strategic importance of freight; economic factors, including balance of trade.
OR	U.S. 30	NW Kittridge	St. Johns Bridge	2.80	U.S. 30 is on the National Highway System (NHS). U.S. 30 is the main freight highway to energy pipelines and installations. Access to seaports and pipelines; intermodal links that promote connectivity; access to energy installation and production areas.
OR	NW Kittridge Road	NW Front Ave	U.S. 30	0.20	Access to seaports and pipelines; Intermodal links that promote connectivity; access to energy installation and production areas.
OR	NW 26th Drive	NW Front Ave	Terminal 2 Access	0.10	Terminal 2 has direct ship to rail transfers and ships forest products, steel and bulk cargo. Economic factors including balance of trade; Volume, value, tonnage, and strategic importance of freight; Inland intermodal facilities, and first and last mile facilities
OR	OR 99E	SE Holgate Blvd.	SE Harold St	0.80	On Regional Freight Network as a Main Roadway Route and is on the NHS. Important connection to Brooklyn Rail Yard and other intermodal connections. Intermodal link that promotes connectivity; major distribution centers and first/last mile links; corridor that MPO and State of Oregon identify as important.
OR	OR 212/224	I-205	SE Foster Road	5.70	On Regional Freight Network as a Main Roadway Route and is on the NHS. Key last mile connection to distribution and industrial facilities along OR 212. Origins and destinations of freight; major distribution centers and first/last mile links; corridor that MPO and State of Oregon identify as important.

State	Route	Start Point	End Point	Length (Miles)	Description of Importance (Other Comments)
OR	NE Alderwood Road	NE Cornfoot Road	NE Columbia Blvd.	0.40	On Regional Freight Network as a road connector route. Provides freight connectivity to Portland International Airport and air cargo facility. Volume, value and strategic importance of freight; access to Portland International Airport and air cargo facility; intermodal link that promotes connectivity.
OR	Marine Drive	I-84 (west end of frontage road)	Sundial Road	1.00	Connects a major freight route and interstate highway (I-84) to major a distribution center and Troutdale Airport. Origins and destinations of freight; distribution centers and first/last mile links.
OR	238th/242nd/Hogan Road	I-84	Burnside Road	2.80	On Regional Freight Network as a road connector route and is on the NHS. Provides key north/south freight connection between U.S. 26 and I-84, Troutdale Airport, and key distribution centers in the Columbia Corridor. Intermodal link that promotes connectivity; origins and destinations of freight; corridor that MPO identifies as important.
OR	Boones Ferry Road/ Basalt Creek	Grahams Ferry Road	I-5 via Boones Ferry Road	1.00	

Appendix I – Highway Inventories of Need

Table 9-6. Freight Highway Delay Areas

Route	Beg MP	End MP[1]	City/County	ODOT Region	Needs	Tier
I-405	0.0	0.8	Portland	1	Delay and unreliability at I-5 interchange	1
I-5	292.9	290.2	Tigard/Lake Oswego	1	Delay and unreliability at OR 217	1
I-5	294.1	297.3	Portland	1	Delay and unreliability at SW Multnomah Blvd	1
I-5	297.3	300.2	Portland	1	Delay and unreliability at I-405 interchange	1
I-5	299.3	299.5	Portland	1	Delay and unreliability at I-405 interchange	1
I-5	299.6	301.6	Portland	1	Delay and unreliability at the Marquam Bridge	1
I-5	302.3	303.1 (Connection 001TO)	Portland	1	Delay and unreliability at Eliot (between I-405 and I-84)	1
I-5	302.7	304.7	Portland	1	Delay and unreliability at Boise (between U.S. 30B and I-405)	1
I-5	302.7	0.5 (I-84)	Portland	1	Delay and unreliability at Eliot (between I-405 and about 0.5 mi. onto I-84)	1
I-5	304.5	305.4	Portland	1	Delay and unreliability at Boise (between U.S. 30B and I-405)	1
I-5	305.3	306.5	Portland	1	Delay and unreliability between OR 99E and U.S. 30B	1
I-5	306.2	307.4	Portland	1	Delay and unreliability between OR 99E and U.S. 30B	1
I-5	307.2	308.0	Portland	1	Delay and unreliability at the Interstate Bridge	1
OR 217	7.0	7.5	Tigard/Lake Oswego	1	Delay and unreliability at I-5 interchange	1
OR 99E	6.03	6.5	Portland	1	Delay and unreliability at I-5 interchange	1

1 Beginning and ending mile points indicate the approximate location of freight delay but do not indicate the direction of delay and may not include the cause of delay. More details can be found in Freight Highway Bottlenecks Project Final Report, March 14, 2017, prepared for ODOT by WSP.

Route	Beg MP	End MP[1]	City/County	ODOT Region	Needs	Tier
SW Kelly Ave	0.0	0.2	Portland	1	Delay at I-5 access	1
I-205	0.5	0.0	Tualatin	1	Delay and unreliability at I-5 interchange	2
I-205	9.3	10.7	Clackamas County	1	Delay and unreliability at OR 213	2
I-205	14.6	18.1	Clackamas County	1	Unreliability on I-205 at Sunnyside	2
I-205	18.1	21.4	Portland	1	Delay and unreliability south of I-84	2
I-205	21.3	24.3	Portland	1	Delay and unreliability north of I-84	2
I-405	0.8	1.0	Portland	1	Delay and unreliability at SW Broadway	2
I-405	1.9	2.9	Portland	1	Delay and unreliability through downtown Portland	2
I-405	2.5	2.7	Portland	1	Delay and unreliability through downtown Portland	2
I-405	2.8	3.7	Portland	1	Delay and unreliability at the Fremont Bridge	2
I-5	283.5	289.7	Tualatin/Wilsonville	1	Unreliability on I-5 south of I-205 to Wilsonville	2
OR 212	4.9	5.0	Clackamas County	1	Delay at I-205 interchange	2
OR 224	4.13	4.4	Clackamas County	1	Delay at OR 213 interchange	2
U.S. 30	0.9	1.3	Portland	1	Delay and unreliability at the I-405 interchange	2
U.S. 30	0.95	1.3	Portland	1	Delay and unreliability at the I-405 interchange	2
U.S. 30	1.6	1.9	Portland	1	Delay and unreliability at NW Industrial	2
U.S. 30	2.0	3.9	Portland	1	Delay at BNSF Lake Yard	2
I-84	1.0	3.0	Portland	1	Delay and unreliability at NE 33rd Avenue	3
I-84	3.4	6.3	Portland	1	Delay and unreliability west of I-205	3
OR 217	0.4	1.0	Beaverton	1	Unreliability on OR 217 in Beaverton	3
OR 217	1.4	2.0	Beaverton	1	Delay on OR 217 at SW Canyon Rd interchange	3
OR 8	2.9	3.5	Beaverton	1	Delay at OR 217	3
OR 99E	-4.6	-3.8	Portland	1	Delay east of I-5	3
U.S. 26	68.8	71.5	Beaverton	1	Delay and unreliability at OR 217	3
U.S. 26	71.5	73.9	Portland	1	Delay at Washington Park	3

Route	Beg MP	End MP[1]	City/County	ODOT Region	Needs	Tier
U.S. 30	0.1	0.4	Portland	1	Delay at U.S. 30B (St. Johns Bridge - ramp north of bridge)	3
U.S. 30	0.1	0.5	Portland	1	Delay at U.S. 30B (St. Johns Bridge - ramp south of bridge)	3
U.S. 30B	1.3	3.0	Portland	1	Delay at University Park	3
U.S. 30B	3.0	5.1	Portland	1	Delay at Arbor Lodge	3
I-5	240.7	241.8	Marion County	2	Delay and unreliability on I-5 south of Salem	2
I-5	242.5	243.7	Linn County/Marion County	2	Unreliability on I-5 south of Salem	2
I-5	244.4	248.6	Marion County	2	Unreliability on I-5 south of Salem	2
Ferry St. SE	5.3	5.5	Salem	2	Delay on Ferry St. SE in Salem	3
I-5	177.1	178.3	Lane County	2	Unreliability on I-5 near Saginaw	3
I-5	182.9	188.4	Lane County	2	Unreliability on I-5 near Goshen/OR 58 interchange	3
I-5	263.2	282.3	Marion County	2	Unreliability on I-5 south of Wilsonville	3
OR 214	49.4	50.6	Silverton	2	Delay on OR 214 in Silverton	3
OR 22	1.2	7.9 (OR-22/ OR-99E)	Salem	2	Delay on OR 22 west of I-5 in Salem	3
OR 34	1.2	56.1[2]	Corvallis/Linn County	2	Delay in Corvallis near the Van Buren Bridge and to the south and east on OR 34	3
OR 99E	4.7	4.9	Salem	2	Delay on OR 99E in Salem	3
OR 99W	34.8	37.0	McMinnville	2	Delay on OR 99W in McMinnville	3
I-5	0.0	0.9	Jackson County	3	Delay on I-5 near the border with California	3
OR 42	73.4	76.2	Winston	3	Delay at Dillard/Winston connection to I-5	3
U.S. 101	239.1	239.5	Coos Bay	3	Delay on U.S. 101 at Bunker Hill	3
U.S. 101	273.9	277.5	Bandon	3	Delay on U.S. 101 through Bandon	3
U.S. 20/U.S. 97 Business Route	17.9	2.6	Bend	4	Delay and unreliability on U.S. 20/U.S. 97 Business Route north of downtown Bend and on U.S. 20 east of downtown Bend	2
U.S. 26	18.3	18.7	Crook County	4	Delay on U.S. 26 at Prineville/OR 126	3

[2] The length of this need is approximately two miles but looks longer based on MP due to changes in route name.

Route	Beg MP	End MP[1]	City/County	ODOT Region	Needs	Tier
U.S. 97	-0.2	7.5	Sherman County	4	Delay at Biggs Junction/I-84 interchange and to the south on U.S. 97	3
OR 207	8.7	12.6	Hermiston	5	Delay north of I-84 interchange in Hermiston*	3
U.S. 20	128.1	131.5	Burns	5	Delay on U.S. 20 at Hines/Burns	3
U.S. 26	154.0	162.3	Grant County	5	Delay on U.S. 26 at John Day/Mt. Vernon	3

*Delay may have been due to construction project during 2015 when data was captured.

Table 9-7. Freight Intermodal Connectors

Intermodal Connector Roads	Connecting Highway or Intermodal Connector	City/County	ODOT Region	Needs[3]	Tier
Front Avenue between Kittridge Avenue and 61st Street, 61st Street between Culebra Avenue and Front Avenue, Culebra Avenue between Balboa Avenue and 61st Street.	U.S. 30	Portland	1	Poor pavement condition (2015 data)	1
Front Avenue between Kittridge and Nicolai, Nicolai Street between Yeon Avenue and Front Street.	U.S. 30	Portland	1	Poor pavement condition (2015 data)	1
Interstate Avenue between Going Street and Larrabee Avenue, Russell Street between Interstate Avenue and Rail Facility, Going Street between Basin and I-5 , Larrabee Avenue between Broadway Street and Interstate Avenue.	I-5, U.S. 30	Portland	1	Congestion relief, reduced mixing of traffic, poor pavement condition (2015 data), intersection improvements	1
Terminal 5 Access Road between Lombard Street and Terminal 5.	OR13P	Portland	1	Impacts of train movements, poor pavement condition (2015 data)	1
U.S. 30 BY between U.S. 30 and Ivanhoe St, Ivanhoe St between U.S. 30 BY and N Saint Louis, N Saint Louis between Lombard Blvd and Ivanhoe St, Burgard St and Lombard St between Columbia Blvd and N Saint Louis, Lombard St and Marine Dr between Columbia Blvd and Hwy 120, Hwy 120 between beginning (now Portland Rd) and I-5 connection, Columbia Blvd between I-5 and Lombard St, OR99E between Columbia Blvd and I-5, Columbia Way between Columbia Blvd and leg of Hwy 120.	I-5	Portland	1	Bridge issues, congestion, queueing, impacts of train movements, safety, weight restrictions, height restrictions, interchange improvements, mixing with traffic, poor pavement condition between I-5 and NE Lombard (2015 data)	1
North Pacific Gateway Boulevard between North Marine Drive and Terminal 6.	OR13P	Portland	1	Poor pavement condition (2015 data)	1
North Terminal Road between Lombard Street and Terminal 4.	OR13P	Portland	1	Poor pavement condition (2015 data)	1
Going Street between Basin Street and I-5 (See Albina Yards UP Portland).	I-5	Portland	1	Intersection improvements, poor pavement condition OR 99W to I-5 (2015 data)	1

[3] Where information was not available, cell was left blank.

Intermodal Connector Roads	Connecting Highway or Intermodal Connector	City/County	ODOT Region	Needs[3]	Tier
Greely Avenue between I-5 connection to Going Street.	I-5	Portland	1	Intersection improvements	1
Port Access Road between Yeon Street and Front Avenue (NW 26th Dr).	U.S. 30	Portland	1	Poor pavement condition (2015 data)	1
Holgate Boulevard between McLoughlin Boulevard, OR 99E and UPRR Track.	OR 99E	Portland	1	Queueing outside of the gate and poor pavement condition (2015 data)	1
Columbia Boulevard between U.S. 30 (Killingsworth Street) and I-5, U.S. 30 BY (Killingsworth St) between Columbia Blvd and I-205 connection.	I-5, I-205	Portland	1	Congestion, turning movement, poor pavement condition (2015 data) on Columbia Blvd from 82nd Ave to NE Killingsworth (U.S. 30 BY)	1
47th Avenue between Columbia Boulevard and Cornfoot Road, Cornfoot Road between 47th and Alderwood Road, Alderwood Road between Cornfoot Road and 82nd Avenue, Airtrans Road between Cornfoot Road and Air Freight Terminals.	OR8A	Portland	1	Expansion constraints, poor pavement on Cornfoot Rd, 47th Ave and Airtrans Way (2015 data), needs sidewalks and bike lanes	1
82nd Avenue between Airport Way and Columbia Boulevard.	OR8A	Portland	1	Congestion, safety	1
Airport Way between I-205 and Portland International Airport Terminal.	I-205	Portland	1	Congestion, safety	1
Balboa Avenue between Culebra Avenue and U.S. 30.	I-205	Portland	1	Poor pavement condition (2015 data)	1
North Rivergate Blvd	OR13P_02	Portland	1		1
North Leadbetter Road to North Marine Drive.	OR13P_02	Portland	1		1
Northeast Alderwood Road between NE Columbia Blvd and NE Cornfoot Rd.	OR8A	Portland	1		1
Northwest Street Helens Road to NW Yeon Ave (U.S. 30).	U.S. 30	Portland	1		2
Northwest Doane Avenue Between NW St Helens Rd (U.S. 30) and Front Ave.	OR10L	Portland	1		2
North River Street to North Albina Avenue to North Loring Street to N Lewis Avenue to North Tillamook Street.	OR 99W	Portland	1		2
Thunderbird Way to N. Crosby Ave.	OR12R_01	Portland	1		2

Intermodal Connector Roads	Connecting Highway or Intermodal Connector	City/County	ODOT Region	Needs[3]	Tier
Southeast Mailwell Drive to Southeast Main Street.	OR 99E	Milwaukie	1	Pavement condition improvement, congestion relief, more truck parking,	2
North Force Avenue.	OR13P	Portland	1	Pavement condition improvement, congestion relief, safety issues	2
N. Bybee Lake Rd	OR13P_02	Portland	1		2
Northeast Sundial Road to Northwest Marine Drive to NE Marine Dr to NE 223rd Ave.	I-84	Fairview	1		3
North Port Center Way	OR23P_01	Portland	1		3
Southeast Capps Road to Southeast 130th Avenue.	OR 224	Clackamas	1		3
Southwest Wood Street.	OR 219	Hillsboro	1		3
Northwest Commercial Street to Northwest Glencoe Road.	U.S. 36	North Plains	1		3
N. Columbia Frontage Rd. to N. Peninsular Avenue	OR13P_02	Portland	1		3
NE Marx Dr. to NE 87th Ave.	OR8A_01	Portland	1		3
N. Suttle Rd.	OR 120	Portland	1	Poor pavement (Google Streetview Mar 2017)	3
Lockheed Drive between Passenger Terminal and Nortrup Dr. Nortrup Dr between Lockheed Dr and Airport Rd, Airport Rd between Lockheed Dr and OR 99.	OR 99	Eugene	2		1
Garfield Street between 7th Avenue and Cross Street, Cross Street between Garfield Street and Cleveland Street, Cleveland Street between Cross and Roosevelt, Roosevelt Boulevard between Cleveland Street and OR 99.	OR 99	Eugene	2		1
Hamburg Street between U.S. 101 and Industry Street, Industry Street between Hamburg Street and Portway Street, Portway Street between U.S. 101 and Pier 1.	U.S. 101	Astoria	2	Poor pavement on Portway St south of Gateway Ave, Industry St and Hamburg Ave (2015 data)	1
25th Street Southeast.	OR 22	Salem	2		2
Southeast Marine Scenic Drive.	U.S. 101	Newport	2		2

Intermodal Connector Roads	Connecting Highway or Intermodal Connector	City/County	ODOT Region	Needs[3]	Tier
Dike Road to Rockcrest Street.	U.S. 30	Rainier	2	Congestion, turning movements	2
SW Altree Ln to Bay Blvd, SE Butler Bridge Rd to NW 1st St to NW A St to W Highway 20.	U.S. 20	Toledo	2	Congestion, truck length restrictions, safety improvements, signage improvements, pedestrian issues	2
Kallunki Road to Quincy Mayger Road to Beaver Falls Road to Northwest 5th Street to Nehalem Street.	U.S. 30	Clatskanie	2		2
Prairie Road and Irving Road between OR99.	OR 99	Eugene	2		2
Salem Industrial Drive Northeast to Cherry Avenue.	OR 99E BUS	Salem	2		2
Southwest Scoggins Valley Road.	OR 47	Washington County	2		2
Tongue Point Road to Old Columbia River Highway to Maritime Road.	U.S. 30	Astoria	2	Pavement condition	3
Westport Ferry Road.	U.S. 30	Clatskanie	2		3
Northwest 13th Street.	OR 104	Warrenton	2		3
Old Portland Road to Millard Road.	U.S. 30	St. Helens	2		3
E Street.	U.S. 30	Columbia City	2		3
Crabtree Drive to Cold Springs Road.	OR 226	Crabtree	2		3
Oak Street Northeast to Butteville Road to Ehlen Road Northeast.	I-5	Donald	2		3
Foch Street to Roosevelt Boulevard.	OR17R	Eugene	2		3
Brooklake Road Northwest.	I-5	Brooks	2		3
West 1st Avenue.	OR 99	Junction City	2	Congestion, truck parking, impacts from train movements	3
Milliron Road.	OR 99	Junction City	2		3
Industrial Way.	U.S. 20	Lebanon	2	Survey response completed - no issues identified	3
North 15th Street to College Street to North 19th Street.	U.S. 20	Philomath	2		3
Fayetteville Drive.	OR 99E	Shedd	2		3
1st Street to Boston Mill Road.	OR 99E	Shedd	2		3
B Street to Young Street.	OR 99E	Woodburn	2		3

Intermodal Connector Roads	Connecting Highway or Intermodal Connector	City/County	ODOT Region	Needs[3]	Tier
Northeast Sunset Street.	OR 47	Banks	2		3
Green Hill Road	OR 126	Eugene	2		3
Pine Street and Biddle Road between I-5 (Hwy 001) and OR 62 (Hwy 22), Airport Road between Biddle Road and Biddle Road.	I-5, OR 62	Medford	3	Poor pavement Airport Rd and Terminal Loop (2015 data)	1
Transpacific Pkwy between U.S. 101 and Jordan Cove Road, Jordan Cove Road between Transpacific Parkway and Private Road.	U.S. 101	North Bend	3	Congestion relief, improved pedestrian facilities, turning movement improvement for safety, poor pavement midsection of Transpacific Highway (2015 data)	1
California Avenue between Sherman Avenue U.S. 101 and the Dock Facility.	U.S. 101	North Bend	3	Poor pavement condition (2015 data), wider roadway, improved safety at rail crossing, improved turning movements for one-way portion, improved pedestrian facilities	1
Sheridan Avenue between U.S. 101 Port Facility.	U.S. 101	North Bend	3	Poor pavement condition (2015 data), wider roadway, improved safety at rail crossing, improved turning movements for one-way portion, improved pedestrian facilities	1
Newport Avenue between U.S. 101 and Edwards Street, Mullen Street between U.S. 101 and the Nickle and Chip Terminals, Edwards Street between U.S. 101 and Newport Avenue.	U.S. 101	Coos Bay	3	Poor pavement condition (2015 data), congestion relief	1
Trans Pacific Parkway to Jordan Cove Road.	OR22P	North Bend	3	Congestion, roadway designation upgrade, impacts from train movements	1
Airport Way to West Airport Way to Maple Leaf Street to Maple Street to Virginia Avenue.	OR 540	North Bend	3	Pavement condition, safety, striping, mixing with bike traffic	2
14th Street to Avenue G.	OR 140	White City	3		2

Intermodal Connector Roads	Connecting Highway or Intermodal Connector	City/County	ODOT Region	Needs[3]	Tier
6th Street to Avenue C to 7th Street to Antelope Road.	OR 140	White City	3		2
Sage Road.	OR 238	Medford	3	Congestion, overpass with no bike lanes or sidewalks	2
South Cedar Point Road.	OR 42	Coquille	3		2
Lower Harbor Road.	U.S. 101	Brookings	3	Congestion, safety, signage, mixing with traffic	3
Boat Basin Road.	OR 540	Coos Bay	3	Survey response completed - no issues identified	3
Dock Road to Harbor Drive.	U.S. 101	Port Orford	3	Pavement condition, roadway width, parking, striping, signage, turning movements, mixing with pedestrians	3
Avenue F to 8th Street.	OR 140	White City	3		3
5th Street.	OR 140	White City	3		3
Pacific Avenue.	OR 140	White City	3		3
South Fir Street to Barnett Road.	OR 99	Medford	3	Impacts from train movements	3
South Stage Road.	OR 99	Medford	3		3
North River Road to Classick Drive to Depot Street.	I-5	Rogue River	3		3
Northeast Beacon Drive.	U.S. 199	Grants Pass	3		3
Southeast M Street.	U.S. 199	Grants Pass	3		3
Hauser Depot Road.	U.S. 101	North Bend	3		3
East Hall Avenue.	U.S. 101	Coos Bay	3		3
Airport Way to Joe Wright Road to Washburn Way.	OR 140/ U.S. 97	Klamath Falls	4	Congestion, shoulder and roadway width, safety, signage, turning movements, impacts from train movements, not designed for truck traffic.	2
Southeast Veterans Way to Southeast Airport Way.	U.S. 97	Redmond	4		2
Northwest Bus Evans Lane.	U.S. 26	Prineville	4		2
Port Island Road.	I-84	Arlington	4		3

Intermodal Connector Roads	Connecting Highway or Intermodal Connector	City/County	ODOT Region	Needs[3]	Tier
Bargeway Lane.	I-84	Biggs Junction	4		3
Bargeway Road to Webber Street.	U.S. 30	The Dalles	4		3
Northwest Lamonta Road to Northwest Gumpert Road.	U.S. 26	Prineville	4		3
Memorial Drive	OR 140	Klamath Falls	4		3
Boardman-Irrigon Road (Ullman to Coyote State Road), Ullman Boulevard (Boardman Road to Port Facility), Marine Drive (Ullman to Tier 3 Access Road), connection, Laurel Road (Boardman-Irrigon Road to I-84 connection).	I-84	Boardman	5		1
Airport Road.	U.S. 30	Pendleton	5	Survey response completed - no issues identified	2
Roxbury Road to Beach Access Road to Launch Lane to Bud Draper Lane	U.S. 730	Umatilla	5	Pavement condition	2
Olson Road to Columbia Avenue Northeast.	OR2P	Boardman	5		2
Rail Loop Drive to Lewis and Clark Drive to Columbia Boulevard to Dewey West	OR2P	Boardman	5		2
Patterson Ferry Road.	U.S. 730	Irrigon	5		3

Table 9-8. High-Priority Over-Dimensional Load Pinch Points

Route	Beg MP	End MP	County	Region	Needs
I-205	11.05	11.05	Clackamas	1	Wide/Long
I-205	18.61	18.61	Multnomah	1	Vertical Clearance
I-405	0.95	0.95	Multnomah	1	Wide/Long
I-405	3.20	3.20	Multnomah	1	Vertical Clearance
I-405	3.84	3.84	Multnomah	1	Wide/Long
I-5	295.042	295.042	Multnomah	1	Vertical Clearance, Heavy Loads
I-5	303.93	303.93	Multnomah	1	Wide/Long
I-5	304.48	304.48	Multnomah	1	Wide/Long
I-5	306.86	306.86	Multnomah	1	Wide/Long, Vertical Clearance
I-5	308.18	308.18	Multnomah	1	Vertical Clearance
I-84	0.20	0.20	Multnomah	1	Wide/Long
I-84	6.74	6.74	Multnomah	1	Vertical Clearance
I-84	24.99	24.99	Multnomah	1	Vertical Clearance
I-84	46.35	46.35	Hood River	1	Vertical Clearance
OR 217	1.50	1.50	Washington	1	Wide/Long
OR 217	3.82	3.82	Multnomah	1	Vertical Clearance
OR 35	72.70	73.30	Hood River	1	Wide/Long
OR 99E	1.55	1.55	Clackamas	1	Wide/Long
OR 99W	12.20	12.20	Multnomah	1	Heavy Loads
U.S. 26	17.55	17.55	Clackamas	1	Vertical Clearance
U.S. 26	62.45	62.45	Multnomah	1	Vertical Clearance
U.S. 30	1.04	1.04	Multnomah	1	Vertical Clearance
I-105	0.90	0.90	Lane	2	Wide/Long
I-105	3.36	3.36	Lane	2	Wide/Long
I-105	3.72	3.72	Lane	2	Wide/Long
I-105	3.78	3.78	Lane	2	Wide/Long
I-5	184.24	184.24	Lane	2	Vertical Clearance
OR 126	3.10	3.10	Lane	2	Wide/Long, Vertical Clearance
OR 126	11.43	11.43	Lane	2	Wide/Long
OR 18	6.25	6.25	Lincoln	2	Wide/Long
OR 18	23.77	23.77	Polk	2	Wide/Long
OR 18	51.77	51.77	Yamhill	2	Heavy Loads
OR 214	38.60	38.60	Marion	2	Wide/Long

Route	Beg MP	End MP	County	Region	Needs
OR 22	0.33	0.33	Polk	2	Wide/Long
OR 22	5.01	5.01	Marion	2	Vertical Clearance
OR 34	0.13	0.13	Linn/Benton	2	Vertical Clearance, Heavy Loads
OR 47	83.72	83.72	Washington	2	Vertical Clearance
OR 47	86.34	86.34	Washington	2	Wide/Long
OR 6	0.53	0.53	Tillamook	2	Vertical Clearance
OR 99E	24.67	24.67	Marion	2	Wide/Long, Vertical Clearance
OR 99E	29.09	29.09	Linn/Lane	2	Vertical Clearance
OR 99W	17.82	17.82	Yamhill	2	Vertical Clearance
OR 99W	34.15	34.15	Yamhill	2	Wide/Long, Vertical Clearance
OR 99W	41.00	41.00	Yamhill	2	Wide/Long, Vertical Clearance
U.S. 101	0.00	3.71	Clatsop	2	Wide/Long, Vertical Clearance
U.S. 101	64.22	64.22	Tillamook	2	Wide/Long
U.S. 20	10.44	10.44	Linn/Benton	2	Vertical Clearance
U.S. 20	30.57	30.57	Linn	2	Vertical Clearance
U.S. 20	23.38*	23.38*	Lincoln	2	Heavy Loads
U.S. 30	36.48	36.48	Columbia	2	Wide/Long
U.S. 30	48.67	48.67	Columbia	2	Vertical Clearance
U.S. 30	82.84	82.84	Clatsop	2	Wide/Long
I-5	119.18	119.18	Douglas	3	Vertical Clearance
I-5	124.17	124.17	Douglas	3	Wide/Long
I-5	125.08	125.08	Douglas	3	Vertical Clearance
I-5	136.51	136.51	Douglas	3	Wide/Long
I-5	139.12	139.12	Douglas	3	Wide/Long
OR 138	12.36	12.36	Douglas	3	Wide/Long
OR 138	17.95	17.95	Douglas	3	Wide/Long, Vertical Clearance
OR 140	-4.52	-4.52	Jackson	3	Wide/Long
OR 140	-1.16	-1.16	Jackson	3	Wide/Long
OR 140	-0.20	-0.20	Jackson	3	Wide/Long
U.S. 101	236.28	236.28	Coos	3	Vertical Clearance
U.S. 101	238.40	238.40	Coos	3	Vertical Clearance
U.S. 101	244.31	244.31	Coos	3	Vertical Clearance
U.S. 199	0.22	0.22	Josephine	3	Vertical Clearance
U.S. 199	28.85	28.85	Josephine	3	Vertical Clearance

Route	Beg MP	End MP	County	Region	Needs
OR 140	18.23	18.23	Klamath	4	Wide/Long
OR 39	3.44	3.44	Klamath	4	Wide/Long, Vertical Clearance
OR 126	0.22	0.22	Deschutes	4	Wide/Long
OR 126	18.19	18.19	Crook	4	Wide/Long
U.S. 26	22.03	22.03	Crook	4	Vertical Clearance
U.S. 395	0.00	0.50	Lake	4	Wide/Long
U.S. 97	134.93	134.93	Deschutes	4	Vertical Clearance
U.S. 97	244.20	244.70	Klamath	4	Wide/Long
U.S. 97	272.79	272.79	Klamath	4	Vertical Clearance
U.S. 97	280.40	281.80	Klamath	4	Wide/Long
I-82	10.61	10.61	Umatilla	5	Wide/Long
I-84	187.24	187.24	Umatilla	5	Vertical Clearance
I-84	347.84	347.84	Baker	5	Vertical Clearance
I-84	376.98	376.98	Malhuer	5	Vertical Clearance
OR 11	0.14	0.14	Umatilla	5	Vertical Clearance
OR 11	19.62	19.62	Umatilla	5	Vertical Clearance
OR 207	11.45	11.45	Umatilla	5	Wide/Long, Vertical Clearance
OR 331	4.44	4.44	Umatilla	5	Wide/Long
OR 7	50.56	50.56	Baker	5	Wide/Long, Vertical Clearance
U.S. 20	266.40	266.40	Malhuer	5	Vertical Clearance
U.S. 395	1.66	1.66	Umatilla	5	Vertical Clearance
U.S. 395	1.68	1.68	Umatilla	5	Wide/Long
U.S. 730	168.23	168.23	Morrow	5	Wide/Long
U.S. 730	184.87	184.87	Umatilla	5	Wide/Long
U.S. 730	197.65	198.10	Umatilla	5	Wide/Long

*Pinch point addressed through the completion of the Pioneer Mountain - Eddyville highway alignment project.

Table 9-9. Phase 1 and 2 Seismic Bridges

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
09743B	Hwy 64 SB Conn to Hwy 1 SB over Hwy 1	I-205	1.04	Washington	1	Retrofit
09740	Hwy 64 NB over Prosperity Park Road	I-205	2.08	Clackamas	1	Retrofit
09740A	Hwy 64 SB over Prosperity Park Road	I-205	2.10	Clackamas	1	Retrofit
09738A	Hwy 64 SB over Borland Road	I-205	3.81	Clackamas	1	Rehab+
09738	Hwy 64 NB over Borland Road	I-205	3.82	Clackamas	1	Rehab+
09737A	Tualatin River, Hwy 64 SB	I-205	4.08	Clackamas	1	Retrofit
09737	Tualatin River, Hwy 64 NB	I-205	4.10	Clackamas	1	Retrofit
09735	Hwy 64 NB over Woodbine Road	I-205	5.14	Clackamas	1	Rehab+
09735A	Hwy 64 SB over Woodbine Road	I-205	5.19	Clackamas	1	Rehab+
09734	Hwy 64 NB over Blankenship Road	I-205	5.84	Clackamas	1	Retrofit
09734A	Hwy 64 SB over Blankenship Road	I-205	5.90	Clackamas	1	Retrofit
09728	Hwy 64 NB over 10th Street (West Linn)	I-205	6.40	Clackamas	1	Retrofit
09728A	Hwy 64 SB over 10th Street (West Linn)	I-205	6.42	Clackamas	1	Retrofit
13514D	Hwy 64 over Hwy 2 WB Conn to Hwy 64 SB	I-205	6.64	Clackamas	1	Rehab+
09403	Willamette R & Hwys 1E & 3, Hwy 64 (Geo Abernethy)	I-205	9.03	Clackamas	1	Rehab+
09702	Hwy 64 over Main St (Oregon City)	I-205	9.51	Clackamas	1	Retrofit
N8837B	Clackamas River, Hwy 64 NB (Park Place)	I-205	10.72	Clackamas	1	Retrofit
S8837A	Clackamas River, Hwy 64 SB (Park Place)	I-205	10.72	Clackamas	1	Retrofit
09717	Hwy 64 NB over UPRR	I-205	13.76	Clackamas	1	Retrofit
09717A	Hwy 64 SB over UPRR	I-205	13.76	Clackamas	1	Retrofit
09711	Hwy 64 NB over SE 92nd Ave	I-205	16.80	Multnomah	1	Retrofit
09711A	Hwy 64 SB over SE 92nd Ave	I-205	16.80	Multnomah	1	Retrofit
13541	Johnson Cr & Mt Scott Blvd (Flavel St), Hwy 64 NB	I-205	17.22	Multnomah	1	Retrofit
13541A	Johnson Cr & Mt Scott Blvd (Flavel St), Hwy 64 SB	I-205	17.22	Multnomah	1	Retrofit
13540	Hwy 64 NB over Portland Traction RR (Abandoned)	I-205	17.43	Multnomah	1	Retrofit
13540A	Hwy 64 SB over Portland Traction RR (Abandoned)	I-205	17.43	Multnomah	1	Retrofit
13538	Hwy 64 NB over SE Woodstock Blvd & SE Foster Rd	I-205	17.80	Multnomah	1	Rehab+
13538A	Hwy 64 SB over SE Woodstock Blvd & SE Foster Rd	I-205	17.80	Multnomah	1	Rehab+

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
13537	Hwy 64 over SE Harold St	I-205	18.11	Multnomah	1	Retrofit
13531	Hwy 64 over Hwy 26 (SE Powell Blvd)	I-205	19.12	Multnomah	1	Retrofit
16302	Hwy 64 over MAX LRT	I-205	19.82	Multnomah	1	Retrofit
13516A	Hwy 64 over Hwy 2	I-205	21.57	Multnomah	1	Retrofit
13514I	Hwy 64 NB over Light Rail	I-205	22.24	Multnomah	1	Retrofit
13514C	Hwy 64 over Hwy 64 SB Conn to Hwy 2 EB	I-205	22.71	Multnomah	1	Rehab+
16055A	Columbia Slough & NE Alderwood Rd, Hwy 64 SB	I-205	24.27	Multnomah	1	Retrofit
16055	Columbia Slough & NE Alderwood Rd., Hwy 64 NB	I-205	24.34	Multnomah	1	Retrofit
13507A	Hwy 64 SB over NE Airport Way	I-205	24.67	Multnomah	1	Retrofit
13507	Hwy 64 NB over NE Airport Way	I-205	24.75	Multnomah	1	Retrofit
09555	Columbia River N Channel, Hwy 64 (Glenn Jackson)	I-205	26.32	Multnomah	1	Rehab+
08591F	Hwy 1 NB Conn to Hwy 61 NB over Conns	I-405	0.48	Multnomah	1	Retrofit
08591E	Hwy 61SB Conn to Hwy 1 SB over SW Water Ave	I-405	0.53	Multnomah	1	Rehab+
08591A	Hwy 61 SB to Hwy 1 NB over Hwy 1 (W Marquam Int)	I-405	1.07	Multnomah	1	Retrofit
09254E	Hwy 61 NB Conn #2 to Hwy 47 WB over Hwy 61 & Conns	I-405	1.57	Multnomah	1	Rehab+
09268N	Hwy 61 NB over City Streets	I-405	2.84	Multnomah	1	Rehab+
09268S	Hwy 61 SB over City Streets	I-405	2.84	Multnomah	1	Rehab+
09268	Hwy 61 over NW Front Ave & RR (W Fremont Approach)	I-405	3.10	Multnomah	1	Retrofit
09268W	Hwy 61 SB Conn to Hwy 2W WB	I-405	3.24	Multnomah	1	Rehab+
08958G	Ivy St Conn to Hwy 61 SB over Hwy1 (E Fremont Int)	I-405	3.29	Multnomah	1	Retrofit
02529	Willamette River, Hwy 61 (Fremont)	I-405	3.32	Multnomah	1	Retrofit
08958	Hwy 61 over City Streets (E Fremont Approach)	I-405	3.58	Multnomah	1	Retrofit
08958B	Hwy 61 over City Strs & RR (E Fremont Bridge Appr)	I-405	3.72	Multnomah	1	Rehab+
08958D	Hwy 61 NB to Hwy 1 SB over Strs (E Fremont Intchg)	I-405	3.77	Multnomah	1	Retrofit
08958H	Hwy61 NB Conn to Hwy1 NB over Hwy1 (E Fremont Int)	I-405	3.88	Multnomah	1	Rehab+

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
08958I	Hwy1 SB Conn to Hwy61 SB over Conn (E Fremont Int)	I-405	3.88	Multnomah	1	Retrofit
08958F	Hwy 61 NB Conn (Kerby) over Hwy 1 (E Fremont Int)	I-405	3.89	Multnomah	1	Retrofit
02254A	Willamette River, Hwy 1 (Boone Bridge)	I-5	283.11	Clackamas	1	Retrofit
09743C	Hwy 1 NB Conn to Hwy 64 NB over Hwy 1 SB Conn	I-5	288.48	Washington	1	Retrofit
09743	Hwy 1 NB over Hwy 1 SB Conn to Hwy 64 NB	I-5	288.51	Washington	1	Retrofit
09743A	Hwy 1 SB over Hwy 1 SB Conn to Hwy 64 NB	I-5	288.51	Washington	1	Retrofit
07494B	Beaver Dam Creek (Nyberg Creek), Hwy 1 SB	I-5	289.38	Washington	1	Reconstruct
07494C	Beaver Dam Creek (Nyberg Creek), Hwy 1 NB	I-5	289.38	Washington	1	Reconstruct
08882	Hwy 1 over N Columbia Blvd & UPRR	I-5	305.92	Multnomah	1	Retrofit
08883	Columbia Slough & Hwy 1 Conn, Hwy 1	I-5	306.27	Multnomah	1	Retrofit
09316A	Hwy 1 over N Victory Blvd	I-5	306.70	Multnomah	1	Retrofit
16526	Oregon Slough & N Jantzen Dr, Hwy 1 & 120	I-5	307.59	Multnomah	1	Retrofit
13514F	Hwy 2 WB over Hwy 2 WB Conns to Hwy 64	I-84	6.94	Multnomah	1	Retrofit
07043A	Hwy 2 over NE 122nd Ave	I-84	10.08	Multnomah	1	Retrofit
07044A	Hwy 2 over NE 148th Ave	I-84	11.43	Multnomah	1	Retrofit
07088A	Hwy 2 over NE 162nd Ave	I-84	12.13	Multnomah	1	Retrofit
07089A	Hwy 2 over NE 181st Ave	I-84	13.03	Multnomah	1	Rehab+
06945	Hwy 2 EB over Conn #2 (Jordan Rd)	I-84	17.82	Multnomah	1	Reconstruct
06945A	Hwy 2 WB over Conn #2 (Jordan Rd)	I-84	17.82	Multnomah	1	Reconstruct
02176	Hwy 2 WB over Hwy 100 & UPRR (Dodson)	I-84	35.12	Multnomah	1	Reconstruct
02176A	Hwy 2 EB over Hwy 100 & UPRR (Dodson)	I-84	35.12	Multnomah	1	Rehab+
08692	Hwy 2 over Conn to Warrendale	I-84	37.12	Multnomah	1	Retrofit
02193B	McCord Creek, Hwy 2 EB	I-84	37.83	Multnomah	1	Retrofit
02194A	Moffett Creek, Hwy 2 WB	I-84	38.98	Multnomah	1	Reconstruct
02062A	Tanner Creek, Hwy 2 WB	I-84	40.14	Multnomah	1	Rehab+
02062B	Tanner Creek, Hwy 2 EB	I-84	40.14	Multnomah	1	Retrofit
06924	Hwy 2 over Bonneville Dam Conn	I-84	40.27	Multnomah	1	Retrofit
09382	Eagle Creek Viaduct, Hwy 2 WB	I-84	41.31	Multnomah	1	Rehab+

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
02063	Eagle Creek, Hwy 2 EB	I-84	41.55	Multnomah	1	Rehab+
09377	Ruckel Creek & UPRR, Hwy 2	I-84	41.96	Multnomah	1	Rehab+
08609	Hwy 2 over Hwy 100 EB	I-84	43.66	Hood River	1	Retrofit
08610	Hwy 2 EB over Moody St (Cascade Locks)	I-84	43.93	Hood River	1	Retrofit
08610W	Hwy 2 WB over Moody St (Cascade Locks)	I-84	43.93	Hood River	1	Retrofit
08611	Hwy 2 EB over Hazel St (Cascade Locks)	I-84	44.40	Hood River	1	Retrofit
08611W	Hwy 2 WB over Hazel St (Cascade Locks)	I-84	44.40	Hood River	1	Retrofit
07403A	Herman Creek, Hwy 2	I-84	46.10	Hood River	1	Retrofit
08623	Hwy 2 over Herman Creek Conn	I-84	47.31	Hood River	1	Retrofit
08604	Hwy 2 over Conn (Wyeth Intchg)	I-84	50.99	Hood River	1	Retrofit
08534	Hwy 2 over Conn Viento Intchg	I-84	56.04	Hood River	1	Retrofit
07496	Hwy 2 WB overJaymar Rd (Westcliff Dr)	I-84	63.02	Hood River	1	Retrofit
07496A	Hwy 2 EB over Jaymar Rd (Westcliff Dr)	I-84	63.02	Hood River	1	Retrofit
02443	Hwy 2 WB over UPRR	I-84	63.41	Hood River	1	Rehab+
08662	Hwy 2 EB over UPRR	I-84	63.41	Hood River	1	Retrofit
02444	Hood River, Hwy 2 EB	I-84	64.15	Hood River	1	Rehab+
02444A	Hood River, Hwy 2 WB	I-84	64.15	Hood River	1	Retrofit
09519	Hwy 1W over Hwy 144	OR99W	8.65	Washington	1	Retrofit
02532	Hwy 1W over PNWR (Tigard)	OR99W	9.21	Washington	1	Reconstruct
02533	Fanno Creek, Hwy 1W	OR99W	9.37	Washington	1	Reconstruct
01417N	Tualatin River, Hwy 1W NB	OR99W	12.18	Washington	1	Rehab+
01417S	Tualatin River, Hwy 1W SB	OR99W	12.20	Washington	1	Reconstruct
01578	Rock Creek, OR 99W SB (Onion Flat)	OR99W	13.82	Washington	1	Reconstruct
01578A	Rock Creek, OR 99W NB (Onion Flat)	OR99W	13.83	Washington	1	Retrofit
09268B	Hwy 2W EB Conn to Hwy 61 SB	U.S. 30	1.24	Multnomah	1	Rehab+
09268A	NB Hwy 61 Conn to Hwy 2W WB	U.S. 30	1.26	Multnomah	1	Rehab+
09268E	Hwy 2W EB Conn to Hwy 61 NB	U.S. 30	1.46	Multnomah	1	Rehab+
01740	McCarty Creek, Hwy 2W	U.S. 30	13.19	Multnomah	1	Retrofit
07861A	Martin Creek, Hwy 1 NB	I-5	169.58	Lane	2	Retrofit
07865A	Hwy 1 over Taylor Ave	I-5	173.40	Lane	2	Rehab+
07864A	Hwy 1 over 16th Street (Landess Rd)	I-5	173.84	Lane	2	Retrofit
07830	Hwy 1 SB over OP&ERR (Abandoned)	I-5	174.41	Lane	2	Retrofit
07830A	Hwy 1 NB over OP&ERR (Abandoned)	I-5	174.41	Lane	2	Retrofit

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
07833A	Hwy 1 SB over Row River Rd (Cottage Grove)	I-5	174.74	Lane	2	Retrofit
07833B	Hwy 1 NB over Row River Rd (Cottage Grove)	I-5	174.74	Lane	2	Retrofit
07828A	Creek, Hwy 1 NB at MP 175.84	I-5	175.84	Lane	2	Rehab+
07828B	Creek, Hwy 1 SB at MP 175.84	I-5	175.84	Lane	2	Retrofit
07793A	Brown Creek, Hwy 1 NB	I-5	177.89	Lane	2	Retrofit
07743B	Tunnel Mill Race, Hwy 1 NB	I-5	180.49	Lane	2	Retrofit
07740A	Hill Creek, Hwy 1 SB	I-5	182.63	Lane	2	Retrofit
07740C	Hill Creek Hwy 001KR NB at MP 182.63	I-5	182.63	Lane	2	Retrofit
07738A	Old Lane Creek (Hill Slough), Hwy 1 SB	I-5	183.04	Lane	2	Retrofit
07738D	Old Lane Creek (Hill Slough), Hwy 1 NB	I-5	183.04	Lane	2	Retrofit
07736A	Camas Swale, Hwy 1 NB	I-5	185.46	Lane	2	Retrofit
08870	Hwy 1 over Hwy 225 Conn (McVay Access)	I-5	190.76	Lane	2	Retrofit
08180N	McKenzie Oflow, Hwy 1 NB at MP 196.19	I-5	196.19	Lane	2	Retrofit
08180S	McKenzie Oflow, Hwy 1 SB at MP 196.19	I-5	196.19	Lane	2	Rehab+
08178N	McKenzie Oflow, Hwy 1 NB at MP 196.69	I-5	196.69	Lane	2	Retrofit
08178S	McKenzie Oflow, Hwy 1 SB at MP 196.69	I-5	196.69	Lane	2	Retrofit
08171N	Muddy Creek, Hwy 1 NB	I-5	200.50	Lane	2	Retrofit
08171S	Muddy Creek, Hwy 1 SB	I-5	200.50	Lane	2	Retrofit
08251N	Small Creek, Hwy 1 NB at MP 205.34	I-5	205.34	Linn	2	Retrofit
08251S	Small Creek, Hwy 1 SB at MP 205.34	I-5	205.34	Linn	2	Retrofit
08246N	Muddy Creek, Hwy 1 NB	I-5	210.39	Linn	2	Retrofit
08246S	Muddy Creek, Hwy 1 SB	I-5	210.39	Linn	2	Rehab+
08245N	Little Muddy Creek, Hwy 1 NB	I-5	210.92	Linn	2	Retrofit
08245S	Little Muddy Creek, Hwy 1 SB	I-5	210.92	Linn	2	Retrofit
08241N	Courtney Creek, Hwy 1 NB	I-5	216.97	Linn	2	Retrofit
08241S	Courtney Creek, Hwy 1 SB	I-5	216.97	Linn	2	Retrofit
08240N	Courtney Creek Oflow, Hwy 1 NB	I-5	217.20	Linn	2	Retrofit
08240S	Courtney Creek Oflow, Hwy 1 SB	I-5	217.20	Linn	2	Retrofit
08239N	Sodom Ditch Oflow, Hwy 1 NB	I-5	217.39	Linn	2	Retrofit
08239S	Sodom Ditch Oflow, Hwy 1 SB	I-5	217.39	Linn	2	Retrofit
08238N	Calapooia Oflow, Hwy 1 NB at MP 217.85	I-5	217.85	Linn	2	Retrofit
08238S	Calapooia Oflow, Hwy 1 SB at MP 217.85	I-5	217.85	Linn	2	Retrofit

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
08236N	Calapooia River, Hwy 1 NB	I-5	218.79	Linn	2	Rehab+
08236S	Calapooia River, Hwy 1 SB	I-5	218.79	Linn	2	Rehab+
08235N	Calapooia Oflow, Hwy 1 NB at MP 220.04	I-5	220.04	Linn	2	Rehab+
08235S	Calapooia Oflow, Hwy 1 SB at MP 220.04	I-5	220.04	Linn	2	Rehab+
08234N	Sodom Ditch Oflow, Hwy 1 NB	I-5	220.37	Linn	2	Rehab+
08234S	Sodom Ditch Oflow, Hwy 1 SB	I-5	220.37	Linn	2	Rehab+
08232N	Butte Creek, Hwy 1 NB	I-5	222.42	Linn	2	Rehab+
08232S	Butte Creek, Hwy 1 SB	I-5	222.42	Linn	2	Rehab+
08227N	Oak Creek, Hwy 1 NB	I-5	230.48	Linn	2	Rehab+
08227S	Oak Creek, Hwy 1 SB	I-5	230.48	Linn	2	Rehab+
08226N	Hwy 1 NB over AERC (Tallman Branch)	I-5	230.86	Linn	2	Rehab+
08226S	Hwy 1 SB over AERC (Tallman Branch)	I-5	230.86	Linn	2	Rehab+
08225N	Albany Ditch, Hwy 1 NB	I-5	231.55	Linn	2	Retrofit
08225S	Albany Ditch, Hwy 1 SB	I-5	231.55	Linn	2	Retrofit
08222N	Cox Creek, Hwy 1 NB	I-5	233.65	Linn	2	Rehab+
08222S	Cox Creek, Hwy 1 SB	I-5	233.65	Linn	2	Rehab+
08221B	Hwy 1 NB over Hwy 58 NB (North Albany Intchg)	I-5	234.16	Linn	2	Rehab+
08221D	Hwy 1 SB over Hwy 58 NB (North Albany Intchg)	I-5	234.16	Linn	2	Retrofit
08221A	Hwy 1 NB over Knox Butte Rd (North Albany Intchg)	I-5	234.23	Linn	2	Rehab+
08221C	Hwy 1 SB over Knox Butte Rd (North Albany Intchg)	I-5	234.23	Linn	2	Rehab+
08218A	Hwy 1 NB over Murder Creek Rd	I-5	235.67	Linn	2	Rehab+
08218B	Hwy 1 SB over Murder Creek Rd	I-5	235.67	Linn	2	Rehab+
08217	Murder Creek, Hwy 1 SB	I-5	235.71	Linn	2	Retrofit
08124	Santiam Oflow No 4, Hwy 1 SB at MP 240.42	I-5	240.42	Linn	2	Rehab+
08123D	Santiam River, Hwy 1 SB	I-5	240.66	Marion/Linn	2	Retrofit
08122	Santiam Oflow No 3, Hwy 1 SB at MP 241.12	I-5	241.12	Marion	2	Rehab+
17352	Santiam Oflow No 3, Hwy 1 NB at MP 241.12	I-5	241.12	Marion	2	Rehab+
08121	Santiam Oflow No 2, Hwy 1 SB at MP 241.35	I-5	241.35	Marion	2	Rehab+

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
17351	Santiam Oflow No 2, Hwy 1 NB at MP 241.35	I-5	241.35	Marion	2	Rehab+
16161	Hwy 1 NB over Hwy 1E NB (Commercial St SE)	I-5	249.35	Marion	2	Retrofit
07524B	Hwy 1 SB over Hwy 1E NB (Commercial St SE)	I-5	249.38	Marion	2	Rehab+
07854C	Hwy 1 over UPRR Main Line	I-5	259.10	Marion	2	Rehab+
07855C	Hwy 1 NB over Hwy 72 NB	I-5	259.95	Marion	2	Retrofit
07855D	Hwy 1 SB over Hwy 72 NB	I-5	259.95	Marion	2	Retrofit
16086	Labish Bottom, Hwy 1 NB	I-5	261.12	Marion	2	Retrofit
16086A	Labish Bottom, Hwy 1 SB	I-5	261.12	Marion	2	Retrofit
07799A	Hwy 1 NB over Fellers Road NE	I-5	276.40	Marion	2	Retrofit
07799B	Hwy 1 SB over Fellers Road NE	I-5	276.40	Marion	2	Retrofit
07796A	Hwy 1 NB over Ehlen Road NE	I-5	278.67	Marion	2	Retrofit
07796B	Hwy 1 SB over Ehlen Road NE	I-5	278.67	Marion	2	Retrofit
07795A	Hwy 1 NB over Arndt Road NE	I-5	280.67	Marion	2	Retrofit
07795B	Hwy 1 SB over Arndt Road NE	I-5	280.67	Marion	2	Retrofit
13491	Hwy 39 over Hwy 9	OR18	0.04	Lincoln	2	Retrofit
04190	Bear Creek, Hwy 39	OR18	3.96	Lincoln	2	Reconstruct
01211A	Slick Rock Creek, Hwy 39	OR18	5.34	Lincoln	2	Reconstruct
04192	Salmon River, Hwy 39	OR18	6.23	Lincoln	2	Reconstruct
04573	Rogue River, Hwy 39	OR18	18.78	Polk	2	Reconstruct
01612A	South Yamhill River, Hwy 39 at MP 21.55	OR18	21.55	Polk	2	Reconstruct
00745	South Yamhill River, Hwy 39 at MP 23.77	OR18	23.77	Polk	2	Reconstruct
08320	South Yamhill River & Hwy 157, Hwy 39 at MP 27.17	OR18	27.17	Polk	2	Rehab+
08321	Hwy 39 over Hwy 30	OR18	27.28	Polk	2	Rehab+
0M022	Culvert, Hwy 39 at MP 28.38	OR18	28.38	Polk	2	Retrofit
08060	Mill Creek, Hwy 39	OR18	30.38	Yamhill	2	Rehab+
08063	South Yamhill River, Hwy 39 at MP 33.64	OR18	33.64	Yamhill	2	Rehab+
08064	Hwy 39 over Hwy 157 EB	OR18	33.82	Yamhill	2	Rehab+
03114	Deer Creek, Hwy 39	OR18	36.06	Yamhill	2	Reconstruct
02404A	Muddy Creek, Hwy 39	OR18	37.98	Yamhill	2	Retrofit
08950	Hwy 39 EB Conn to Hwy 1W over Hwy 39 WB	OR18	44.06	Yamhill	2	Rehab+
08688	Hwy 39 over WPRR	OR18	44.79	Yamhill	2	Retrofit

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
08490	South Yamhill River, Hwy 39 at MP 45.63	OR18	45.63	Yamhill	2	Rehab+
08492	Yamhill River Oflow, Hwy 39	OR18	45.76	Yamhill	2	Rehab+
08013	Hwy 39 over Hwy 150	OR18	51.38	Yamhill	2	Retrofit
08003	Yamhill River, Hwy 39 (Dayton)	OR18	51.57	Yamhill	2	Rehab+
08951	Hwy 483 McMinnville Spur over Hwy 39	OR483	46.35	Yamhill	2	Rehab+
02054A	Chehalem Creek, Hwy 1W	OR99W	24.29	Yamhill	2	Retrofit
07224	Drainage Ditch, Hwy 9 at MP 66.36	U.S. 101	66.36	Tillamook	2	Reconstruct
07147	Trask River, Hwy 9	U.S. 101	67.98	Tillamook	2	Reconstruct
04642A	South Prairie Creek, Hwy 9	U.S. 101	68.45	Tillamook	2	Reconstruct
04643A	Anderson Creek, Hwy 9	U.S. 101	68.67	Tillamook	2	Reconstruct
07181	Fawcett Creek, Hwy 9	U.S. 101	71.18	Tillamook	2	Reconstruct
00877	Simmons Creek, Hwy 9	U.S. 101	71.85	Tillamook	2	Retrofit
04654	Beaver Creek, Hwy 9 at MP 79.61	U.S. 101	79.61	Tillamook	2	Reconstruct
02762	Beaver Creek, Hwy 9 at MP 80.32	U.S. 101	80.32	Tillamook	2	Reconstruct
00555B	Big Nestucca River, Hwy 9 (Condor)	U.S. 101	84.08	Tillamook	2	Retrofit
04660A	Three Rivers, Hwy 9	U.S. 101	85.01	Tillamook	2	Reconstruct
00870	Clear Creek, Hwy 9	U.S. 101	88.68	Tillamook	2	Reconstruct
02508A	Little Nestucca River, Hwy 9	U.S. 101	91.79	Tillamook	2	Retrofit
13490	Neskowin Creek, Hwy 9	U.S. 101	98.94	Tillamook	2	Retrofit
09463	Salmon River, Hwy 9	U.S. 101	104.70	Lincoln	2	Retrofit
00922A	Devils Lake Outlet, Hwy 9 (D River)	U.S. 101	114.88	Lincoln	2	Reconstruct
00924A	Schooner Creek, Hwy 9	U.S. 101	118.17	Lincoln	2	Reconstruct
00925A	Drift Creek, Hwy 9	U.S. 101	119.27	Lincoln	2	Reconstruct
09906	Siletz River, Hwy 9	U.S. 101	120.16	Lincoln	2	Retrofit
04141A	Sijota Creek & Golf Access, Hwy 9	U.S. 101	121.61	Lincoln	2	Retrofit
04143A	Fogarty Creek, Hwy 9	U.S. 101	125.19	Lincoln	2	Rehab+
02459	Depoe Bay, Hwy 9	U.S. 101	127.61	Lincoln	2	Reconstruct
00982	Siltcoos River, Hwy 9	U.S. 101	196.93	Lane	2	Reconstruct
02670A	South Fork Scappoose River, Hwy 2W	U.S. 30	21.48	Columbia	2	Retrofit
00338A	Tide Creek, Hwy 2W	U.S. 30	36.47	Columbia	2	Retrofit
00191A	Goble Creek, Hwy 2W	U.S. 30	40.74	Columbia	2	Rehab+
00146A	Beaver Creek, Hwy 2W	U.S. 30	53.05	Columbia	2	Retrofit
07722	Lost Creek, Hwy 2W	U.S. 30	55.29	Columbia	2	Retrofit
07715	Hwy 2W over Swedetown County Rd	U.S. 30	60.82	Columbia	2	Rehab+

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
07519	Clatskanie River, Hwy 2W	U.S. 30	61.21	Columbia	2	Rehab+
00185A	Plympton Creek, Hwy 2W	U.S. 30	70.71	Clatsop	2	Retrofit
09598	Hwy 2W Conn over Hwy 2W (Wauna Intchg)	U.S. 30	72.75	Clatsop	2	Rehab+
00921	Gnat Creek, Hwy 2W	U.S. 30	77.25	Clatsop	2	Reconstruct
07417	Big Creek, Hwy 2W	U.S. 30	82.52	Clatsop	2	Retrofit
09546	Ferris Creek, Hwy 2W	U.S. 30	85.27	Clatsop	2	Retrofit
09544	Bear Creek, Hwy 2W	U.S. 30	86.21	Clatsop	2	Retrofit
09543	Marys Creek, Hwy 2W	U.S. 30	86.43	Clatsop	2	Retrofit
01827B	John Day River, Hwy 2W	U.S. 30	92.50	Clatsop	2	Rehab+
09260A	Hwy 1 over Hwy 273 at MP 4.63	I-5	4.63	Jackson	3	Rehab+
09259	Hwy 1 SB over Hwy 273	I-5	5.32	Jackson	3	Rehab+
09259A	Hwy 1 NB over Hwy 273	I-5	5.36	Jackson	3	Rehab+
08746N	Hwy 1 NB over Crowson Rd	I-5	13.29	Jackson	3	Retrofit
08746S	Hwy 1 SB over Crowson Rd	I-5	13.29	Jackson	3	Rehab+
08891N	Bear Creek, Hwy 1 NB at MP 22.42	I-5	22.42	Jackson	3	Retrofit
08891S	Bear Creek, Hwy 1 SB at MP 22.42	I-5	22.42	Jackson	3	Retrofit
08890N	Bear Creek, Hwy 1 NB at MP 23.07	I-5	23.07	Jackson	3	Retrofit
08890S	Bear Creek, Hwy 1 SB at MP 23.07	I-5	23.07	Jackson	3	Retrofit
08851	Hwy 1 over McAndrews Rd	I-5	29.64	Jackson	3	Retrofit
08771N	Bear Creek, Hwy 1 NB at MP 30.69	I-5	30.69	Jackson	3	Retrofit
08771S	Bear Creek, Hwy 1 SB at MP 30.69	I-5	30.69	Jackson	3	Retrofit
0M220	Griffin Creek, Hwy 1	I-5	34.28	Jackson	3	Retrofit
0M221	Jackson Creek, Hwy 1	I-5	35.24	Jackson	3	Retrofit
08383N	Hwy 1 NB over Hwy 60	I-5	45.47	Jackson	3	Rehab+
08383S	Hwy 1 SB over Hwy 60	I-5	45.47	Jackson	3	Rehab+
08381N	Rogue River, Hwy 1 NB (Homestead)	I-5	45.61	Jackson	3	Rehab+
08381S	Rogue River, Hwy 1 SB (Homestead)	I-5	45.61	Jackson	3	Rehab+
08378	Ward Creek, Hwy 1	I-5	48.71	Jackson	3	Retrofit
08377	Hwy 1 over Depot St	I-5	48.82	Jackson	3	Rehab+
08376	Evans Creek, Hwy 1	I-5	49.07	Jackson	3	Rehab+
08375	Creek & County Rd + CORP, Hwy 1 at MP 49.46	I-5	49.46	Jackson	3	Rehab+
08335N	Hwy 1 NB over Foothill Blvd	I-5	54.10	Josephine	3	Rehab+

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
08335S	Hwy 1 SB over Foothill Blvd	I-5	54.10	Josephine	3	Rehab+
08333	Hwy 1 over Foothill Blvd	I-5	55.40	Josephine	3	Rehab+
08338	Hwy 1 over Hillcrest Dr	I-5	57.50	Josephine	3	Rehab+
08501	Hwy 1 over Hwy 25 NB	I-5	58.06	Josephine	3	Retrofit
08500	Hwy 1 over Scoville Rd	I-5	58.18	Josephine	3	Retrofit
08094N	Jumpoff Joe Creek, Hwy 1 NB	I-5	65.74	Josephine	3	Retrofit
08094S	Jumpoff Joe Creek, Hwy 1 SB	I-5	65.74	Josephine	3	Retrofit
08093B	Monument Dr. (Jumpoff Joe Conn) Over Hwy 001	I-5	66.22	Josephine	3	Rehab+
09439	Hwy 1 NB & Conn over Sunny Valley Rd	I-5	71.39	Josephine	3	Retrofit
09439A	Hwy 1 SB & Conn over Sunny Valley Rd	I-5	71.39	Josephine	3	Retrofit
09440	Hwy 1 NB over Leland Rd	I-5	71.93	Josephine	3	Retrofit
09440A	Hwy 1 SB over Leland Rd	I-5	71.93	Josephine	3	Retrofit
09339	Hwy 1 over S Wolf Creek Conn	I-5	76.03	Josephine	3	Retrofit
09337	Hwy 1 over N Wolf Creek Conn	I-5	76.60	Josephine	3	Retrofit
09352	Hwy 1 NB & Conn over Conn (Glendale Intchg)	I-5	80.76	Douglas	3	Retrofit
09352A	Hwy 1 SB & Conn over Conn (Glendale Intchg)	I-5	80.80	Douglas	3	Retrofit
06784	Swamp Creek, Hwy 1	I-5	82.34	Douglas	3	Retrofit
06785	Woodford Creek, Hwy 1	I-5	83.08	Douglas	3	Retrofit
07324	Hwy 1 over First St (Canyonville)	I-5	98.51	Douglas	3	Retrofit
07952A	Hwy 1 SB over CORP (Weaver)	I-5	107.52	Douglas	3	Rehab+
07950	Hwy 1 over Myrtle Creek Conn (Myrtle Creek Intchg)	I-5	108.31	Douglas	3	Retrofit
07841A	S Umpqua R & CORP & Cnty Rd, Hwy1 SB (Booth Ranch)	I-5	112.57	Douglas	3	Retrofit
07839	Hwy 1 SB over Clarks Branch Rd Conn #2	I-5	113.44	Douglas	3	Rehab+
07839A	Hwy 1 NB over Clarks Branch Rd Conn #2	I-5	113.44	Douglas	3	Retrofit
07804N	Hwy 1 over Speedway Rd	I-5	120.03	Douglas	3	Retrofit
07670A	Hwy 1 over Portland Ave (Fairgrounds Intchg)	I-5	123.01	Douglas	3	Rehab+
07669A	Hwy 1 & Conn over Harvard Ave	I-5	124.15	Douglas	3	Retrofit
07668A	Hwy 1 over Bellows St	I-5	124.22	Douglas	3	Rehab+
07668B	Hwy 1 Conn over Bellows St	I-5	124.24	Douglas	3	Retrofit
07404	South Umpqua River, Hwy 1 SB (Vets)	I-5	124.54	Douglas	3	Retrofit

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
07404A	South Umpqua River, Hwy 1 NB (Vets)	I-5	124.54	Douglas	3	Retrofit
07663A	N Umpqua R & CORP & Co Rd, Hwy 1 SB (Winchester)	I-5	128.92	Douglas	3	Retrofit
07663C	N Umpqua R & CORP & Co Rd, Hwy 1 NB (Winchester)	I-5	128.92	Douglas	3	Rehab+
07629A	Hwy 1 SB over Wilbur-Umpqua Rd	I-5	132.00	Douglas	3	Retrofit
07718	Culvert, Hwy 1 at MP 132.28	I-5	132.28	Douglas	3	Retrofit
07627A	Hwy 1 SB over Rogers Rd Conn	I-5	133.25	Douglas	3	Retrofit
07627B	Hwy 1 NB over Rogers Rd Conn	I-5	133.25	Douglas	3	Retrofit
07644A	Hwy 1 over Rice Hill Frtg Rd	I-5	148.21	Douglas	3	Rehab+
07641	Yoncalla Creek, Hwy 1 Conn	I-5	149.71	Douglas	3	Retrofit
07640	Hwy 1 NB over CORP (Yoncalla)	I-5	150.76	Douglas	3	Retrofit
07640A	Hwy 1 SB over CORP (Yoncalla)	I-5	150.79	Douglas	3	Retrofit
07567A	Elk Creek, Hwy 1 SB	I-5	156.03	Douglas	3	Rehab+
07567B	Elk Creek, Hwy 1 NB	I-5	156.03	Douglas	3	Rehab+
07572A	Curtis Creek, Hwy 001 SB at MP 156.49	I-5	156.49	Douglas	3	Retrofit
07594A	Hwy 1 over Scotts Valley Conn	I-5	159.28	Douglas	3	Retrofit
07569A	Hwy 1 over Buck Creek Rd	I-5	162.06	Douglas	3	Retrofit
01683	Koepke Slough, Hwy 45	OR38	4.11	Douglas	3	Reconstruct
01685A	Dean Creek, Hwy 45	OR38	5.76	Douglas	3	Retrofit
01688A	Mill Creek, Hwy 45	OR38	13.24	Douglas	3	Retrofit
01318	Umpqua River, Hwy 45 (Scottsburg)	OR38	16.43	Douglas	3	Reconstruct
01697	Paradise Creek, Hwy 45	OR38	28.28	Douglas	3	Reconstruct
07471B	Pass Creek, Hwy 45	OR38	56.45	Douglas	3	Retrofit
01602	Tahkenitch Creek, Hwy 9	U.S. 101	202.72	Douglas	3	Reconstruct
01822	Umpqua River & McIntosh Slough, Hwy 9	U.S. 101	211.11	Douglas	3	Rehab+
00983	Scholfield Creek, Hwy 9	U.S. 101	212.27	Douglas	3	Rehab+
09559	Hwy 9 over Ranch Rd	U.S. 101	213.23	Douglas	3	Retrofit
00949A	Tenmile Creek & CBRL, Hwy 9 & Frtg Rd (Lakeside)	U.S. 101	223.21	Coos	3	Retrofit
07493	North Slough, Hwy 9	U.S. 101	229.43	Coos	3	Retrofit
01950	Hwy 9 over CBRL (North Bend)	U.S. 101	234.76	Coos	3	Reconstruct
02478C	Coalbank Slough, Hwy 9	U.S. 101	239.20	Coos	3	Retrofit
03166B	Shinglehouse Slough, Hwy 9 SB	U.S. 101	241.81	Coos	3	Retrofit
06514A	Shinglehouse Slough, Hwy 9 NB	U.S. 101	241.81	Coos	3	Retrofit

Bridge No.	Bridge Name	Route	Mile Point	County	ODOT Region	Needs
07392	Rock Creek, Hwy 2	I-84	69.62	Wasco	4	Rehab+
07552A	Hwy 2 over Rowena Conn	I-84	76.64	Wasco	4	Rehab+
08775	Hwy 2 over Hwy 292 at MP 84.15	I-84	84.15	Wasco	4	Retrofit
08603	Hwy 2 EB over UPRR	I-84	84.28	Wasco	4	Retrofit
08603W	Hwy 2 WB over UPRR	I-84	84.28	Wasco	4	Retrofit
08924	Hwy 2 WB over UPRR (Big Eddy WB)	I-84	89.89	Wasco	4	Retrofit
08923	Hwy 2 over UPRR (WB Celilo)	I-84	95.76	Wasco	4	Retrofit
08933	Hwy 2 over UPRR (W Celilo Junction)	I-84	96.04	Wasco	4	Rehab+
08934	Hwy 2 over Hwy 301	I-84	97.14	Wasco	4	Retrofit
08831	Hwy 2 over UPRR	I-84	97.45	Wasco	4	Retrofit
00332C	Deschutes River, Hwy 2	I-84	99.85	Wasco	4	Retrofit
01750B	Fulton Canyon, Hwy 2 EB	I-84	101.68	Sherman	4	Retrofit
W1750B	Fulton Canyon, Hwy 2 WB	I-84	101.68	Sherman	4	Retrofit
02133A	Spanish Hollow Creek, Hwy 2	I-84	104.76	Sherman	4	Retrofit
00849A	Columbia River, Hwy 42 (Biggs Rapids, Sam Hill)	U.S. 97	-0.43	Sherman	4	Rehab+

Table 9-10. High-Priority Phase 1 and 2 Seismic Landslide Locations

Route	Begin MP	End MP	Mid MP	County	ODOT Region	Need Type
I-5	294.17	294.18	294.18	Multnomah	1	Fill Failure Below
I-5			297.55	Multnomah	1	Landslide Above
I-5			298.50	Multnomah	1	Landslide Below
I-5	298.44	298.60	298.52	Multnomah	1	Landslide Above
I-84	30.06	30.08	30.07	Multnomah	1	Fill Failure Below
I-84	32.36	32.37	32.37	Multnomah	1	Fill Failure Below
I-84	37.66	37.79	37.72	Multnomah	1	Rockfall Above
I-84	38.49	38.53	38.51	Multnomah	1	Fill Failure Below
I-84	47.90	48.10	48.00	Hood River	1	Landslide Below
U.S. 30	11.90	11.92	11.91	Multnomah	1	Fill Failure Below
U.S. 30	17.92	17.94	17.93	Multnomah	1	Fill Failure Below
U.S. 30	18.16	18.20	18.18	Multnomah	1	Fill Failure Below
OR 18	13.60	13.74	13.67	Tillamook	2	Fill Failure Below
OR 18	14.25	14.28	14.26	Tillamook	2	Landslide Below
OR 18	17.20	17.28	17.24	Polk	2	Fill Failure Below
OR 58			23.36	Lane	2	Rockfall Above
OR 58			25.95	Lane	2	Landslide Below
OR 58			44.30	Lane	2	Landslide Below
OR 58			44.70	Lane	2	Landslide Below
OR 58			56.00	Lane	2	Rockfall Above
U.S. 101	69.61	69.63	69.62	Tillamook	2	Landslide Below
U.S. 101	81.05	81.06	81.06	Tillamook	2	Fill Failure Below
U.S. 101	83.20	83.24	83.22	Tillamook	2	Landslide Above
U.S. 101	87.83	87.91	87.87	Tillamook	2	Fill Failure Below
U.S. 101	99.52	99.56	99.54	Tillamook	2	Fill Failure Below
U.S. 101	102.19	102.20	102.20	Tillamook	2	Fill Failure Below
U.S. 101	102.91	102.93	102.92	Lincoln	2	Landslide Above
U.S. 101	133.07	133.27	133.17	Lincoln	2	Landslide Both
U.S. 101	133.53	133.57	133.55	Lincoln	2	Landslide Both
U.S. 101	134.88	134.89	134.88	Lincoln	2	Landslide Below
U.S. 101	135.26	135.30	135.28	Lincoln	2	Landslide Below
U.S. 101	135.35	135.39	135.37	Lincoln	2	Landslide Below
U.S. 101	135.80	136.26	136.03	Lincoln	2	Landslide Both

Route	Begin MP	End MP	Mid MP	County	ODOT Region	Need Type
U.S. 101	136.04	136.26	136.15	Lincoln	2	Landslide Both
U.S. 101	191.29	191.35	191.32	Lane	2	Landslide Below
U.S. 101	197.27	197.29	197.28	Lane	2	Fill Failure Below
U.S. 101	198.53	198.57	198.55	Lane	2	Fill Failure Below
U.S. 30	36.20	36.22	36.21	Columbia	2	Fill Failure Both
U.S. 30	37.01	37.15	37.09	Columbia	2	Fill Failure Below
U.S. 30	41.39	41.47	41.43	Columbia	2	Rockfall Above
U.S. 30	44.13	44.17	44.15	Columbia	2	Fill Failure Below
U.S. 30	46.01	46.07	46.04	Columbia	2	Fill Failure Below
U.S. 30	46.49	46.59	46.54	Columbia	2	Rockfall Above
U.S. 30	46.72	46.76	46.74	Columbia	2	Fill Failure Below
U.S. 30	60.25	60.31	60.28	Columbia	2	Fill Failure Both
U.S. 30	63.09	63.25	63.17	Columbia	2	Rockfall Above
U.S. 30	69.25	69.29	69.27	Columbia	2	Landslide Above
U.S. 30	81.04	81.14	81.09	Clatsop	2	Fill Failure Below
U.S. 30	87.63	87.73	87.68	Clatsop	2	Fill Failure Below
U.S. 30	88.49	88.53	88.51	Clatsop	2	Fill Failure Below
U.S. 30	88.97	89.03	89.00	Clatsop	2	Landslide Both
U.S. 30	91.65	91.79	91.72	Clatsop	2	Fill Failure Below
U.S. 30	93.46	93.52	93.49	Clatsop	2	Fill Failure Below
U.S. 30	94.11	94.15	94.13	Clatsop	2	Fill Failure Below
U.S. 30	94.17	94.25	94.21	Clatsop	2	Landslide Below
U.S. 30	94.31	94.39	94.35	Clatsop	2	Landslide Below
U.S. 30	94.57	94.59	94.58	Clatsop	2	Landslide Below
U.S. 30	95.58	95.60	95.59	Clatsop	2	Landslide Below
U.S. 30	95.67	95.71	95.69	Clatsop	2	Landslide Below
U.S. 30	96.91	96.95	96.93	Clatsop	2	Landslide Below
I-5			4.00	Jackson	3	Rockfall Above
I-5			7.00	Jackson	3	Rockfall Above
I-5			9.50	Jackson	3	Landslide Below
I-5			9.50	Jackson	3	Rockfall Above
I-5	112.84	112.88	112.86	Douglas	3	Landslide Above
I-5	140.59	140.61	140.60	Douglas	3	Landslide Below
I-5	141.12	141.13	141.12	Douglas	3	Fill Failure Below

Route	Begin MP	End MP	Mid MP	County	ODOT Region	Need Type
I-5	141.65	141.74	141.70	Douglas	3	Landslide Below
I-5	142.65	142.81	142.73	Douglas	3	Landslide Above
I-5	161.16	161.22	161.19	Douglas	3	Rockfall Above
OR 38	1.32	1.35	1.34	Douglas	3	Fill Failure Below
OR 38	1.53	1.55	1.54	Douglas	3	Fill Failure Below
OR 38	2.33	2.35	2.34	Douglas	3	Fill Failure Below
OR 38	2.47	2.53	2.50	Douglas	3	Fill Failure Below
OR 38	3.67	3.68	3.68	Douglas	3	Fill Failure Below
OR 38	4.06	4.07	4.07	Douglas	3	Fill Failure Below
OR 38	4.09	4.10	4.10	Douglas	3	Fill Failure Below
OR 38	4.12	4.13	4.13	Douglas	3	Fill Failure Below
OR 38	17.83	18.37	18.10	Douglas	3	Landslide Above
OR 38	19.32	19.33	19.33	Douglas	3	Fill Failure Below
OR 38	26.93	26.97	26.95	Douglas	3	Rockfall Above
OR 38	27.80	27.82	27.81	Douglas	3	Fill Failure Below
OR 38	31.16	31.20	31.18	Douglas	3	Fill Failure Below
OR 38	31.27	31.29	31.28	Douglas	3	Fill Failure Below
OR 38	31.39	31.43	31.41	Douglas	3	Fill Failure Below
OR 38	32.43	32.47	32.45	Douglas	3	Fill Failure Below
OR 38	44.37	44.39	44.38	Douglas	3	Fill Failure Below
U.S. 101	199.44	199.46	199.45	Douglas	3	Fill Failure Below
U.S. 101	205.26	205.29	205.28	Douglas	3	Fill Failure Below
U.S. 101	205.44	205.46	205.45	Douglas	3	Fill Failure Below
U.S. 101	213.26	213.28	213.27	Douglas	3	Fill Failure Below
U.S. 101	217.62	217.65	217.64	Douglas	3	Fill Failure Below
U.S. 101	220.43	220.51	220.47	Douglas	3	Fill Failure Below
U.S. 101	220.84	220.86	220.85	Coos	3	Fill Failure Below
U.S. 101	244.45	244.49	244.47	Coos	3	Fill Failure Below
I-84	74.76	74.84	74.80	Wasco	4	Rockfall Above
I-84	74.90	75.06	74.98	Wasco	4	Rockfall Above
I-84	75.09	75.19	75.14	Wasco	4	Rockfall Above
I-84	90.47	90.71	90.59	Wasco	4	Rockfall Above
I-84	91.14	91.34	91.24	Wasco	4	Rockfall Above
I-84	92.57	93.95	93.26	Wasco	4	Rockfall Above

Route	Begin MP	End MP	Mid MP	County	ODOT Region	Need Type
U.S. 97	0.71	0.85	0.78	Sherman	4	Rockfall Above
U.S. 97	0.86	1.07	0.96	Sherman	4	Rockfall Above
U.S. 97	76.35	76.39	76.37	Jefferson	4	Landslide Above
U.S. 97	259.32	259.48	259.40	Klamath	4	Rockfall Above
U.S. 97	260.39	260.53	260.46	Klamath	4	Rockfall Above
U.S. 97	260.61	261.25	260.93	Klamath	4	Rockfall Above
U.S. 97	261.45	262.25	261.85	Klamath	4	Rockfall Above
U.S. 97	262.26	262.56	262.41	Klamath	4	Rockfall Above
U.S. 97	262.57	262.77	262.67	Klamath	4	Rockfall Above
U.S. 97	265.68	266.46	266.07	Klamath	4	Rockfall Above
U.S. 97	266.59	266.91	266.75	Klamath	4	Rockfall Above

Table 9-11. Freight Impacts on Highways

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
I-205 NB	2.90	9.50	Clackamas County	1	Trucks bound for Clackamas Industrial Area and points north exacerbate bottleneck between Stafford and Oregon City.
I-205 NB	6.80	7.80	Clackamas County	1	Slow climbing trucks disrupt laminar traffic flow.
I-205 NB/ U.S. 30 BY WB	10.90	11.20	Portland	1	Grade and geometry of I-205 off-ramp plus signal on U.S. 30 BY challenges trucks to maintain speed.
I-205 NB/ U.S. 30 BY WB	23.60	23.90	Portland	1	Grade and geometry of I-205 off-ramp plus signal on U.S. 30 BY challenges trucks to maintain speed.
I-205 SB (and I-205 NB)	6.60	9.00	Clackamas County	1	Slow climbing trucks disrupt laminar traffic flow.
I-405/U.S. 30	2.60	2.90	Portland	1	Heavy truck volume from industrial NW Portland makes this short interchange interval very dangerous for weaving.
I-5 NB	294.20	295.50	Portland	1	Existing truck climbing lane ends before crest of the hill. Slow trucks impede/disrupt laminar flow.
I-5 NB	307.40	308.30	Portland	1	Extremely high truck volumes, poor ramp geometry, inadequate interchange spacing, narrow lanes, lack of shoulders, vertical curves all facilitate conflicts (safety, mobility and operational) between trucks and other users.
I-5 NB Off	300.70	301.00	Portland	1	Water Avenue exit is affected by at-grade rail in the Central Eastside, causing dangerous backups onto freeway with speed differential danger.
I-5 SB	296.60	299.60	Portland	1	Flow trucks on curving ascent disrupts even flow of traffic.
I-5 SB	301.90	302.60	Portland	1	Lane drop and weaving section with high truck volumes creates extremely high crash rate with mobility impacts.

4 Beginning and ending mile points indicate the approximate location of the need but do not indicate the direction of the need.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
I-84 EB frontage	16.90	17.40	Troutdale	1	Overflow truck stop parking impacts frontage road and sometimes main line, causing safety risks and sometimes mobility problems.
I-84 EB frontage	49.30	49.60	Hood River County	1	Trucks park in a gravel shoulder of the interstate, creating a safety risk.
I-84 WB	53.90	54.50	Hood River County	1	Weigh station located in clear zone presents a safety risk; trucks merging also pose an operational risk.
OR 212	5.00	8.20	Clackamas County	1	Truck volume contributes to local congestion. Growth in distribution industry expected.
OR 217	0.00	7.52	Washington County	1	Trucks carrying hazardous materials must avoid Vista Ridge Tunnels.
OR 281	0.00	0.50	Hood River	1	Truck route on a steep city street is disruptive to car traffic and local businesses.
OR 281	1.60	2.00	Hood River County	1	Curve radius requires lane departure for trucks, with mobility and safety risks to other users.
U.S. 26 (Powell)	5.80	10.00	Portland	1	Compatibility between high truck volumes and other modes on this "main street" facility in Portland.
U.S. 26 WB (Mt. Hood)	54.30	57.30	Clackamas County	1	Existing truck climbing lane ends before crest of the hill. Slow trucks impede/disrupt laminar flow.
U.S. 26 WB (Sunset)	70.30	73.30	Portland	1	Slow climbing trucks disrupt laminar traffic flow.
U.S. 30 BY	0.50	1.20	Portland	1	Narrow lanes and vertical grade cause trucks to slow relative to car traffic on the bridge and also, risk to cyclists using the right lane on the bridge (St. Johns Bridge).
U.S. 30 BY	1.30	5.30	Portland	1	Compatibility between high truck volumes and other modes on this "main street" facility in Portland.
OR 99E	3.00	5.60	Albany	2	Manufacturing facilities create high freight volumes in the area.
I-5	233.00	238.00	Linn County	2	Truck movement causes delay and congestion.
I-5	245.00	250.00	Marion County	2	South Salem Hills, esp. SB/Heavy freight vehicle volumes creates impediment to non-freight vehicles.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
I-5	263.20	263.80	Marion County	2	Brooklake Interchange/outdated interchange design and heavy freight volumes creates safety issues with all vehicles entering/exiting I-5 and increases the potential for all vehicles to backup onto I-5.
I-5	278.50	278.80	Marion County	2	Aurora Donald Interchange/outdated interchange design and heavy freight volumes creates safety issues with all vehicles entering/exiting I-5 and increases the potential for all vehicles to backup onto I-5.
OR 58	14.30	14.66	Lane County	2	Multiple roll-over and other crashes at this location. Many have involved freight trucks, some carrying hazardous materials. Trestle crossing is at an oblique angle and is too narrow. Tight/blind corners on both sides.
OR 58	31.64	32.38	Lane County	2	There are only a few passing lanes on OR 58. The problem will be compounded if ODOT implements a lane reduction in Oakridge.
OR 58	37.26	38.47	Lane County	2	There are only a few passing lanes on OR 58. The problem will be compounded if ODOT implements a lane reduction in Oakridge.
OR 58	49.03	50.45	Lane County	2	Steep terrain along this segment causes trucks and RVs to slow. This in turn causes other driver to make risky passing maneuvers.
OR 58	55.60	55.60	Lane County	2	The chain-up area becomes congested with commercial vehicles which spill into the travel lane, causing a safety concern and a mobility issue.
U.S. 101	39.90	43.00	Tillamook County	2	Manzanita to Neakahnie Mountain/freight vehicles are impediments to non-freight vehicles.
U.S. 26	18.00	21.00	Clatsop County	2	Elsie area/freight activity conflicts with uncontrolled roadside environment.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
U.S. 20/ OR 34	53.00	55.60	Corvallis	2	Log trucks and other heavy freight cause delays at signalized intersections near OSU – including 15th St., 26 Street, 35th St. and 53rd.
U.S. 30	36.30	36.60	Columbia County	2	Tide Creek Bridge/narrow bridge creates safety hazard for freight and non-freight vehicles.
U.S. 30	48.00	49.00	Rainier	2	Lewis and Clark interchange/low clearance and heavy truck volumes.
U.S. 30	94.00	98.50	Astoria	2	Downtown Astoria/heavy truck volumes on Commercial Street creates operational and safety problems.
U.S. 30	98.00	99.00	Astoria	2	John Day Bridge to Astoria City Limits/high truck volumes create safety and mobility problems for non-freight traffic.
I-5	16.70	16.70	Ashland	3	Mountain Avenue vertical height does not meet ODOT or trucking standards, requiring truck detours.
I-5	27.00	30.00	Medford	3	Medford Viaduct has narrow shoulders that are insufficient for vehicles to pull over onto in the event of a breakdown or crash, creating through lane blockage. Emergency Vehicle access restricted as a result.
I-5	68.90	71.30	Josephine County	3	Sexton Summit: Curves and slow trucks leads to quick deceleration; steep grades create congestion due to significant speed reductions by trucks. Safety/Operational problems due to these speed reductions and speed differentials between lanes.
I-5	72.00	75.80	Josephine County	3	Smith Hill: Curves and slow trucks leads to quick deceleration. Steep grades create congestion due to significant speed reductions by trucks. Safety/Operational problems due to these speed reductions and speed differentials between lanes.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
I-5	77.70	80.80	Josephine/Douglas County	3	Stage Rd Pass: Curves and slow trucks leads to quick deceleration. Steep grades create congestion due to significant speed reductions by trucks. Safety/Operational problems due to these speed reductions and speed differentials between lanes.
I-5	88.40	95.40	Douglas County	3	Canyon Creek Pass: Curves and slow trucks leads to quick deceleration. Steep grades create congestion due to significant speed reductions by trucks. Safety/Operational problems due to these speed reductions and speed differentials between lanes.
I-5	119.00	125.00	Roseburg	3	Congestion partially due to high truck % and weaving from closely spaced interchanges.
OR 140	-6.42	0.00	White City	3	Road built to narrow county standards. Jurisdiction transferred to ODOT.
OR 42	38.00	45.00	Coos County	3	Tight curves result in truck turnovers on OR 42.
OR 42	Various	various	Coos County	3	Lack of westbound passing lanes leads to crashes as people seek areas to maneuver (pass) trucks.
U.S. 199, OR 99, OR 238	Junction	Junction	Grants Pass	3	Intersection of highways creates confusion, capacity constraints and is difficult for freight to traverse.
OR 370 & U.S. 97	118.25	118.75	Redmond	4	Trans-shipment facility located 0.5 mile east of U.S. 97 on O'Neil Highway. O'Neil Highway Junction with U.S. 97 has exceeded statewide average crash rates. The 2015 crash rate was two times the statewide average. A closer review of the crash data suggested that it is concentrated at the intersection of U.S. 97 and O'Neil Highway. Side street approaches must wait for gaps in highway traffic. The volume-to-capacity ratio was over 1.0, which is significantly above the 0.70 to 0.75 standard for this area and causes delay to freight movement.
U.S. 20	13.22	103.02	Deschutes/Lake/ Harney County	4	Superload route with limited pull-outs. Freight and passenger vehicles delayed up to 20 minutes waiting for superloads to clear area.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
U.S. 20	18.70	21.00	Deschutes County	4	Narrow shoulders on steep grade in Horse Ridge fails to provide a safe recovery zone for vehicles which crash or spin out. Lack of operating room makes vehicle recovery difficult and leads to significant delays to freight movement.
U.S. 97	0.20	4.07	Sherman County	4	This section of highway is south of Biggs Junction. It is approximately 4 miles long and has rock walls, steep banks, sharp curves, narrow shoulders and guardrails.
U.S. 97	84.00	84.50	Jefferson County	4	Guardrail too close to travel lane with frequent strikes by trucks.
U.S. 97	124.40	133.39	Deschutes County	4	During the 10 years between 2009 and 2013, 12 serious injury and fatal crashes occurred on U.S. 97 between Bend and Redmond. Many of these were lane departure crashes, sometimes resulting in high-speed head on collisions. In addition, there are a number of driveways on U.S. 97 between Bend and Redmond, and as traffic volumes grow, there are fewer gaps in traffic to facilitate motorists entering and exiting the highway at driveways. These conflicting movements can result in crashes, and probably are responsible for the many of the 25 rear end crashes reported between 2009 and 2013. Significant delay to freight and passenger vehicles associated with crashes.
U.S. 97	155.00	156.00	Deschutes County	4	Highway U.S. 97 is the main north-south transportation corridor through Central Oregon and a critical part of the state's transportation system. Demand continues to increase along U.S. 97, with average traffic rates of over 12,000 vehicles per day. Safety is a concern due to limited passing opportunities, leading to lengthy following times that sometimes result in drivers making passing maneuvers with high speeds and limited sight distances.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
U.S. 97	172.70	173.70	Klamath County	4	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement.
U.S. 97	192.20	193.20	Klamath County	4	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement.
U.S. 97	199.30	200.40	Klamath County	4	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement.
U.S. 97	211.10	212.10	Klamath County	4	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement.
U.S. 97	220.90	221.90	Klamath County	4	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement.
U.S. 97	237.00	239.00	Klamath County	4	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement.
U.S. 97	255.40	256.50	Klamath County	4	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement.
U.S. 97	264.00	265.10	Klamath County	4	Primarily a 2-lane highway with lack of passing opportunities resulting in platooning of traffic, unsafe passing, which contributes to crashes, and delay of freight movement.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
I-82	0.00	10.00	Umatilla County	5	Motorist rely on cameras and weather reporting stations to provide real time information during winter travel. When trucks are able to access real time information, they are able to make decisions about proceeding in the corridor or installing chains before entering into an area with inclement weather. Access to real time information allows them to avoid getting trapped in or contributing to an incident on the freeway.
I-82	1.00	1.00	Umatilla	5	Proximity of Port of Entry to I-82 EB off ramp creates truck stacking that blocks Hwy 2 and backs traffic up the I-82 EB off ramps onto the freeway.
I-84	160.00	378.00	Morrow/Umatilla/Union/Baker/ Malheur County	5	There are a number of bridges crossing over the freeway that create vertical clearance issues by having less than 17' 6".
I-84	160.00	378.00	Morrow/Umatilla/Union/Baker/ Malheur County	5	Motorists rely on cameras and weather reporting stations to provide real time information during winter travel. When trucks are able to access real time information, they are able to make decisions about proceeding in the corridor or installing chains before entering into an area with inclement weather. Access to real time information allows them to avoid getting trapped in or contributing to an incident on the freeway.
I-84	165.00	165.00	Boardman	5	WB interchange ramp congestion during peak usage with traffic backing onto interstate.
I-84	188.00	188.00	Stanfield/Echo	5	Interchange congestion during winter events and peak agricultural harvest traffic.
I-84	205.00	207.00	Umatilla County	5	The westbound grade between MP 205 and 207 is steep, dropping truck speeds and creating localized congestion on the freeway and safety issues. There is a large differential in speed between commercial traffic and light vehicles.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
I-84	209.00	210.00	Pendleton	5	The grade between MP 209 and 210 is steep, dropping truck speeds and creating localized congestion between the two interchange ramps that many locals use to access different parts of Pendleton. There is a large differential in speed between commercial traffic and light vehicles.
I-84	209.00	209.00	Pendleton	5	The U.S. 395/I-84 Interchange ramps no longer meet intersection function criteria. Traffic backs up the ramps to the freeway regularly. This affects the primary entrance to Pendleton's commercial district.
I-84	213.00	216.00	Umatilla County	5	Winter congestion/truck stacking blocking through traffic during winter events on freeway mainline. Highest District 12 priority for congestion.
I-84	216.00	252.00	Umatilla/Union County	5	Commercial vehicles failing to comply with chain restriction and resultant spin outs frequently closes the freeway.
I-84	268.00	268.00	Union County	5	Lack of chain sorting/compliance enforcement allows unchained commercial vehicles to proceed into Ladd Canyon, leading to spin out related closures in the winter.
I-84	374.00	378.00	Malheur County	5	During winter freeway closures, the Ontario area becomes congested as trucks run out of space to park. Traffic backs ups and blocks the freeway lanes preventing people from exiting during closures.
OR 201	30.00	30.00	Ontario	5	High accident intersection at OR 201/SW 18th and OR 201 @ RR Avenue (OR 201 connects U.S. 20 to I-84 and is on the I-84 paired route for over-dimensional loads) is a safety issue. Additionally, this location is a key transportation pinch point that complicates industrial development in the adjacent vacant lands.

Route	Beg MP[4]	End MP	City/County	ODOT Region	Needs (Facilities - Mobility Issues)
OR 237	17.20	28.80	Union County	5	Closures in Ladd Canyon due to weather related crashes, unchained trucks or visibility interrupts all travel in NE Oregon as there are no alternate routes available for freeway traffic.
OR 78	26.80	27.00	Harney County	5	When using this route as an alternate to I-84 during freeway construction projects, super loads back up traffic and have difficulty finding places to park or stage on this route.
OR 78	90.90	91.10	Malheur County	5	When using this route as an alternate to I-84 during freeway construction projects, super loads back up traffic and have difficulty finding places to park or stage on this route.
U.S. 20	193.74	216.87	Malheur County	5	Curves and narrow spots restrict over-dimension loads between Burns and Vale. Hwy 7 is the paired route to I-84 and frequently is used for over-dimensional loads when work is occurring on I-84.
U.S. 20	258.00	258.00	Malheur County	5	High accident intersection at Cairo Junction makes through freight and local agricultural freight movements dangerous.
U.S. 95	0.00	0.20	Malheur County	5	When using this route as an alternate to I-84 during freeway construction projects, super loads back up traffic and have difficulty finding places to park or stage on this route.

Appendix J – Non-Highway Inventories of Need

Table 9-12. Marine

Location	ODOT Region	Needs
Port of Portland	1	Grade separations: Marine Drive at BNSF Ford/Ramsey Lead in Rivergate. UPRR Kenton Line grade separations and double tracking from North Portland to Troutdale.
Port of Portland	1	Willamette River Channel Deepening of the portion of the Willamette River with deep draft infrastructure to -43 feet to take advantage of the Columbia River's controlling depth.
Port of Portland	1	Bonneville Rail Yard Build Out: Construct two interior yard tracks and complete the double track lead from Barnes Yard to add rail staging capacity for South Rivergate.
Port of Portland	1	Terminal 2: Terminal 2 Yard and Rail Improvements to increase rail and yard operating efficiencies at T2, reconstruct rail and yard pavement.
Port of Portland	1	Terminal 4 Pier 1 Site Preparation: Remove Berths 405 and 408, the grain leg platform and tower, and the grain elevator in the Pier 1 area of T4. This will facilitate redevelopment of approximately 30 acres of marine industrial property in the Portland Harbor.
Port of Portland	1	Terminal 4: T4 Capacity Expansion and Modernization needed to allow increase in rail capacity at T4, includes second entrance, rail at Berth 410-411, a third rail lead to Barnes Yard, and replacement of Lombard Bridge.
Port of Portland	1	Time Oil Road Reconstruction to provide improved access to the South Rivergate Industrial Area.
Portland	1	BNSF Columbia River Rail Bridge: change from swing span to lift span and align lift span location with I-5 Bridge high span and wide span to align barge traffic between the two bridges, reduce I-5 Bridge lifts needed for barge traffic, and reduce marine impacts to I-5 highway traffic.
Port of Portland	1	Marine Drive Interchange at Interstate 5: This interchange is an existing constraint and will need to be redesigned with or without a larger Columbia River Crossing project. This is a key bottleneck for access to and from Rivergate, the largest industrial district in Oregon. Possible solution is westbound Marine Drive to northbound I-5 flyover ramp.
Port of Portland	1	Cathedral Park Quiet Zone to address rail switching noise by improving multiple public rail crossings in the St. Johns Cathedral Park area.
Port of Portland	1	Terminal 6 Development Project includes additional scour protection, T6 entrance overcrossing, two new PPMX cranes, electrical upgrades, yard gantry cranes, and 6,800 and 8,500 departure tracks. Necessary to expand capacity to 1 million TEUs.
Port of Hood River	1	Replacement of Hood River Interstate Bridge.
Lower Columbia River	2	Lower Columbia River shipping channel: Anchorage deepening to allow loaded ships to anchor while waiting to time their arrival at the Columbia River Bar.
Lower Columbia River	2	Lower Columbia River shipping channel: Stern buoys for Lower Columbia River anchorages.
Port of Astoria	2	Major repairs needed at all port shipping docks.

Location	ODOT Region	Needs
Port of Newport	2	Port Dock 5 Pier Access, located at 210 Bay Blvd., Newport, OR. The sole connector between the commercial fishing fleet and shoreside services is via a 75-year-old access pier. Recent preliminary engineering study has shown that this critical infrastructure connector is in danger of failing and needs reconstruction.
Port of St. Helens	2	Portland & Western rail improvements - sidings, track improvements.
Port of St. Helens	2	Port Westward dock improvements and water system improvements.
Lower Columbia River	2	Jetties at the mouth of the Columbia River.*
Port of Astoria	2	Rail and truck access at Tongue Point.
Port of Newport	2	International Terminal Shipping Facility, located at 1510 Bay Blvd., Newport, OR. Construction of a laydown facility to consolidate imports and exports using U.S. 20/U.S. 101 and the Federal Marine Highway system. There is a demand for logging/wood products exports and waste paper imports from barges and handysized vessels onto the state highway system.
Port of Toledo	2	Boat yard expansion and upgrade.
Port of Newport	2	Channel deepening.*
Port of Astoria	2	Pier 3 (east) rebuild: Resurface docks and adjoining lay-down areas.
Port of Newport	2	Add new hoist to support commercial fishing fleet.
Port of St. Helens	2	Columbia City at-grade rail crossings with U.S. 30 and industrial site developments.
Port of Astoria	2	Stormwater management of all port pier structures: Expansion of new stormwater treatment facility, address future stormwater management and DEQ requirements.
Port of Astoria	2	Improve terminal lights and security fencing.
Port of Toledo	2	Intermodal rail connection improvement.
Port of Toledo	2	Additional transient and permanent moorage on the Downtown Waterfront.
Oregon International Port of Coos Bay	3	Coos Bay Rail Link improvements to bridges, spurs, tracks, transload sidings, at grade crossings and tunnels are needed to create or improve multi-modal business opportunities.
Oregon International Port of Coos Bay	3	Charleston boatyard (dock, travel lift etc.) improvements that include the Marine Ways.
Oregon International Port of Coos Bay	3	Oregon Gateway: North Spit improvements (ocean outfall, access roads etc.) to accommodate a multi-modal marine facility to handle bulk cargo, containers and an LNG export facility.
Oregon International Port of Coos Bay	3	Federal channel widening and deepening to accommodate larger ships and ensure safer operations.*
Oregon International Port of Coos Bay	3	Charleston dock replacements.
Port of Morrow	5	Current Port facilities need additional rail trackage to utilize transload opportunities - rail improvements in East Beach area.
Port of Morrow	5	Barge Terminals need additional expansion, both new and existing to accommodate multi cargo use, or dedicated new use.

Location	ODOT Region	Needs
Port of Morrow	5	Additional mainline access will be needed: Port of Morrow West Beach area does not have rail intermodal access because of constraints related to siding access and the only way to add rail to 4 Barge terminal locations is to have another mainline access.
Port of Morrow	5	Interconnecting roads need priority for freight.
Port of Umatilla	5	Rail access improvements to existing industrial lands and to U.S. Army Depot lands.
Port of Morrow	5	Access improvements.

*Federal agencies are responsible for maintenance and enhancements of federal channels and jetties

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Table 9-13. Rail

Line Segment	Start	End	Miles	Operator	Owner	ODOT Region	Description of Need/Freight Mobility Issue with the Facility
Lakeview Branch	Lakeview	Alturas	55.5	Lake Railway	Lake County	4	Small rail and restricted-weight bridges preclude moving standard 286K GVW railcars critical for new industrial development; tie condition generally poor. The county acquired it 30 years ago to keep it from being abandoned.
Coos Bay Branch	W. Eugene	Coquille	133.4	Coos Bay Rail Link	Port of Coos Bay	3	This 100-year-old line is dealing with a significant backlog of deferred maintenance on tunnels, bridges and track, and an inadequate traffic base. Preservation of rail service is essential to support economic development at the Port of Coos Bay and south coast.
Astoria Branch	Port Westward	Wauna	15.7	Portland & Western	Portland & Western	2	Rail on this segment requires upgrading for efficient, long-term usage of this line in support of industrial development in Columbia and Clatsop counties. A hand-cranked drawbridge over the Clatskanie River needs to be electrified.
Union Pacific (Kenton line)	MP 0.32	MP 1.0	0.68	Union Pacific	Union Pacific	1	When long freight trains are navigating two 6 mph curves just north of the Steel Bridge, other trains, including passenger trains, can be delayed. Straightening track and easing curvature would permit more optimum speeds. This location has long been recognized as a significant Portland-area bottleneck.
Union Pacific (Kenton line)	Peninsula Jct.	Peninsula Jct.	0.5	Union Pacific	Union Pacific	1	Track upgrades and signal work is necessary at Peninsula Jct., for which preliminary plans, funded by a federal ARRA grant, were completed.
Fallbridge Subdivision	S. Lake Yard	N. Lake Yard	1.5	Burlington Northern Santa Fe	Burlington Northern Santa Fe	1	Install remotely controlled power switches and signals at both ends of Portland's Lake Yard to expedite ability of freight trains to arrive and depart the facility, reducing delays and interference between passenger and freight trains.
Fallbridge Subdivision	Willbridge	Willbridge	0.5	Burlington Northern Santa Fe	Burlington Northern Santa Fe	1	Using ARRA funding, ODOT completed 30% plans for replacing 10 mph crossovers at this junction with 30 mph crossovers for improving fluidity and reducing delays for passenger and freight trains.

Line Segment	Start	End	Miles	Operator	Owner	ODOT Region	Description of Need/Freight Mobility Issue with the Facility
Oregon Trunk Subdivision	Bend	Chemult	67.8	Burlington Northern Santa Fe	Burlington Northern Santa Fe	4	Between Bend and Chemult is "dark territory" with no signal system, whereas north of Bend has block signals. Ultimately installation of Centralized Traffic Control from the Columbia River to Chemult will significantly increase the capacity of this line.
Brooklyn Subdivision	Eugene	Eugene	0.5	Union Pacific/AMTRAK	Union Pacific/City	2	The ability to house state-supported Cascades passenger trains at Eugene's passenger depot between runs by building a layover track there (instead of moving trains to UP's freight yard as is current practice) would reduce operating costs and improve on-time performance. A federal ARRA grant has permitted ODOT to complete 30% preliminary plans and NEPA work for this two-phase project.
Brooklyn Subdivision	Brooks MP 725.8	Brooks MP 727.6	1.8	Union Pacific/AMTRAK	Union Pacific	2	Build 8,950-foot controlled siding between Quinaby Road and Tacoma Street crossings at Brooks to facilitate more efficient movement of freight and passenger trains between Salem and Portland. Siding will cross Brooklake Road at MP 726.9.
Astoria Branch	Wauna	Tongue Point	23.2	Portland & Western	Portland & Western	2	This segment has not been operated since the fall of 2005 and requires a tie program and surfacing to reopen. To efficiently carry 286K cars and significant volumes smaller rail must be replaced and hand-cranked drawbridges at Blind Slough and John Day River automated with electric motors. ODOT owns the right of way from Linnton to Tongue Point.
Dallas Branch	OR 99W	Dallas	4.3	Portland & Western	Union Pacific	2	The western 4 miles of this line serving the industrial section of Dallas has seen no traffic for several years, yet availability of rail is cited by the city in marketing the district. To resume service a tie and surfacing program would be necessary; longer term, the smaller rail would need to be replaced.
Klamath Northern Railway	Gilchrist	Gilchrist Jct.	11.0	Klamath Northern Railway	Klamath Northern Railway	4	Although KNOR handles 286K shipments, a significant portion of the railroad's trackage is comprised of small rail generally considered to be inadequate for safely carrying 286K.

Line Segment	Start	End	Miles	Operator	Owner	ODOT Region	Description of Need/Freight Mobility Issue with the Facility
Gateway Subdivision	Bieber Line Jct.	Bieber Line Jct.	0.5	Burlington Northern Santa Fe/Union Pacific	Burlington Northern Santa Fe/Union Pacific	4	This project signalizes and remotely controls the junction switch in Klamath Falls where BNSF trains leave/enter Union Pacific's line, eliminating the need to stop and manually handle switches there, thus reducing train delays. BNSF trains operate over UP for 74 miles from Klamath Falls to Chemult where the junction between the two railroads already is signalized and remotely controlled.
Woodburn-Stayton Line	Silverton	Stayton	21.0	Willamette Valley Railway	Union Pacific	2	Short line Willamette Valley Railway leases this 31-mile line, but has not operated the 21 miles from Silverton to Stayton since January of 2012. There is some unrepaired flood damage and there are bridge issues and some concern about tie condition. This segment is at risk of eventual abandonment, although there are customers along the disused track that would like to have service.
Weston Branch	Spofford	Weston	19.0	Palouse River & Coulee City	Union Pacific	5	Short line Palouse River & Coulee City Railroad operates this line which begins in Walla Walla, WA and passes through Milton-Freewater en route to Weston. In 2012, PCC's parent said they were considering abandoning this line from Spofford, 2 miles south of the state line, to Weston. The line is laid with light rail and has poor tie condition as well.
Joseph Branch	Elgin	Joseph	63.0	Wallowa Union Railroad Authority	Wallowa & Union Counties	5	This line has no freight traffic but does host sporadic seasonal tourist trains and a rail pedal car operation. However, these activities do not generate revenue sufficient to sustain the long-term maintenance needs of the railroad, so the line is slowly deteriorating.
Oregon Eastern Division	MP 20.2	MP 26.2	6.0	Wyoming Colorado	Wyoming Colorado	5	Replace 75-lb. rail with heavier rail to increase carrying capacity of entire line to GVW of 286,000.
Oregon Trunk Subdivision	Moody	Gateway	89.0	Burlington Northern Santa Fe	Burlington Northern Santa Fe	4	Vertical clearance in 5 tunnels between the Columbia River and Madras preclude passage of double-stack containers.

Line Segment	Start	End	Miles	Operator	Owner	ODOT Region	Description of Need/Freight Mobility Issue with the Facility
Fort Hill Line	Willamina	Fort Hill	5.30	Portland & Western	Hampton Railway	2	The Hampton Railway is operated by PNWR under a haulage agreement, but there has been no active customers on the line since 2013; thus, it is at risk of abandonment. Hampton Railway is a subsidiary of Hampton Lumber Co.
Railcars Fleet Modification	N/A	N/A	N/A	Northwest Container Services	Northwest Container Services	1	Increase loading capacity of 23 five-platform double-stack intermodal cars from 115,300 lbs. per well to 120,500 lbs. per well by reducing their length from 312 feet to approximately 270 feet each.
Brooklyn Subdivision	North end Brooklyn Yard	North end Brooklyn Yard		Union Pacific	Union Pacific		Trains entering and exiting Brooklyn Intermodal Terminal have to navigate a series of hand throw switches at north end of the yard.
Rogue Valley Terminal (RVT) Railroad	White City	White City	9.5	Rogue Valley Terminal Railroad	Rogue Valley Terminal Railroad	3	Although RVT handles 286,000 lb. shipments, a significant portion of the railroad's trackage is comprised of small rail generally considered to be inadequate for safely carrying 286,000 lbs. on this first/last mile rail delivery facility.
Union Station Track 6	Fremont Bridge	Steele Bridge	1.0	Burlington Northern Santa Fe/Union Pacific	Burlington Northern Santa Fe/Union Pacific	1	Add Track 6 to increase rail car storage capacity at Union Station. Move freight from Track 4 to Track 5 and Track 6.