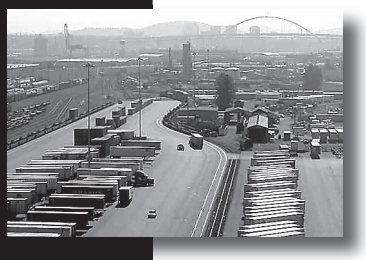

CITY OF PORTLAND

FREIGHT MASTER PLAN

Recommended Draft

June 30, 2005

CITY OF PORTLAND
OFFICE OF TRANSPORTATION

For more information about the City of Portland Freight Master Plan, contact:

Deena Platman
Portland Office of Transportation
1120 SW Fifth Ave, Room 800
Portland OR 97225

Phone: 503-823 - 5185 (use our main line)
Fax: 503-823-7609
TDD: 503-823-6868

Website: www.portlandtransportation.org
click on Freight Master Plan under Projects and Planning

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Cover photos: Courtesy of the Port of Portland and Tidewater Barge Lines

City of Portland

FREIGHT MASTER PLAN

Recommended Draft

CITY OF PORTLAND OFFICE OF TRANSPORTATION

Acknowledgements

Portland City Council
Tom Potter, Mayor
Sam Adams, Commissioner
Randy Leonard, Commissioner
Dan Saltzman, Commissioner
Erik Sten, Commissioner
Gary Blackmer, City Auditor

City of Portland Planning Commission
Ingrid Stevens, President
Paul R. Schlesinger, Vice President
Timothy W. Smith, Vice President
Christine Caruso
Don Hanson
Larry Hilderbrand
Gail Shibley

City of Portland Office of Transportation
Sam Adams, Commissioner of Public Utilities
Brant Williams, Director
Laurel Wentworth, Program Manger, Transportation Planning

Office of Transportation Project Staff
John Gillam, Policy Section Manger
Deena Platman, Project Manager
Lewis Wardrip, Senior Engineer
Peter Mason, Traffic Engineering Associate
Joseph Neilson, GIS Technician
Samy Fouts, Graphics Support
Sumi Malik, Staff Assistant
Judith Fouts, Administrative Support

Previous Staff
Steve Gerber, Senior Transportation Planner

Consultant Team
Sorin Garber, Garber Consulting
PB Consulting

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The contents of this document do not necessarily reflect views or policies of the State of Oregon.

The Freight Master Plan was developed with the dedicated and valuable assistance from the following people:

Portland Freight Committee

Committee Members

Steve Bates
William D. Burgel
Tom Dechenne
David Eveson
Ann Gardner, Committee Chair
Jerry Grossnickle
Chris Hammond
Wayne Kingsley
Bill Maris
Thomas Rowe
Bob Short
Dick Swennes
Charles Tindall
Elizabeth Wainwright
Tracy Ann Whalen

Linda Braden
Corky Collier
Gary Eichman, Committee Vice Chair
Jan M. Frost
Peter George
Bruce Halperin
Marion Haynes
Lee Johnson
Greg Miller
Robert Russell, President
Marsden Smith
Dan Spahr
John Trumbull
Howard Werth

Associate Members

Nick Fortey
Federal Highway Administration

Steve Kountz
Portland Planning Bureau

Susie Lahsene
Port of Portland

Bridget Wieghart
Metro

Shelli Romero
Multnomah County

Colin Sears
Portland Development Commission

Thomas Picco
Oregon Department of Transportation

Laurel Wentworth
Portland Office of Transportation

Technical Advisory Committee

Rob Barnard, Project Management
Rob Burchfield, Traffic Operations
Ramon Corona, Parking Control
John Gray, Metro
Bill Kloos, Signals and Street Lighting
Mark Lear, Traffic Investigations
David O'Longaigh, Bridges and Structures
Lewis Wardrip, Traffic Design

April Bertelsen, Interim Pedestrian Coordinator
Mike Coleman, Traffic Design
Roger Geller, Bicycle Coordinator
Dave Hutson, Bureau of Maintenance
Steve Kountz, Bureau of Planning
Lidwien Rahman, ODOT
Ning Zhou, Transportation Planning

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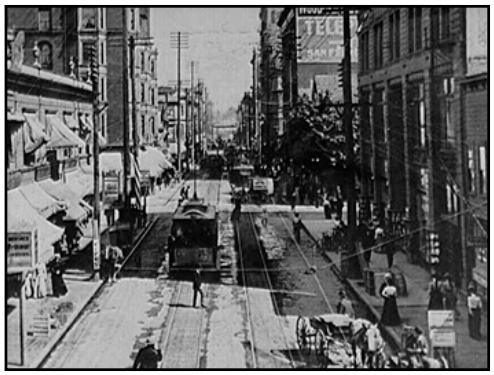


From its early days, Portland has been a center of trade and commerce in the Pacific Northwest. The city's growth has been driven by its role in the movement of commodities. As we enter the 21st century, Portland has established strong international trade connections. Our regional economy has shifted from one focused on processing and shipping raw materials to one that builds consumer electronics, designs apparel, and serves as a gateway for imported automobiles. Our river commerce has grown into a network of intermodal terminals connected to the Pacific Northwest and rest of the nation by a superior rail and interstate highway network. Our international airport is used to ship high value cargo to Asia and is poised for substantial growth.

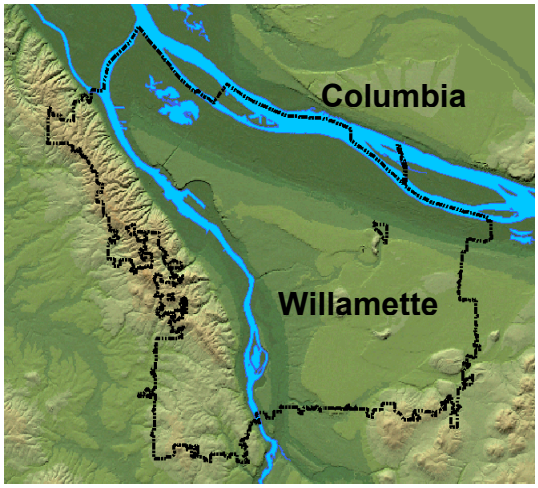
Today, Portland is a competitive gateway for international and domestic trade. Portland is a "trans-shipment" center, where freight is handled on the way to somewhere else. In fact, more goods move through our transportation network to national and international destinations than are consumed here in the region.

The economy of the Portland metropolitan region relies on the movements of goods, ideas and people. The ability to move these goods efficiently is critical to our regional competitiveness and affordability, not only for businesses but also for all citizens.

RIVERS, RAILS, RUNWAYS, RODS AND ROADS

A combination of geography and multimodal freight infrastructure assures Portland's role as a center for goods distribution to and from the Pacific Northwest and throughout the world. Portland's freight system is comprised of waterborne, rail, air, pipeline, and truck transportation networks.

Figure 1.1 Marine Terminals



The city lies at the confluence of the navigable waters of the Columbia and Willamette rivers. The Columbia River links Portland to both Pacific Rim trade opportunities and the rich agriculture and resource lands of the interior Northwest. The 40' channel allows ocean-going vessels to navigate upstream to Portland's deep-water port. Barges carry agricultural and wood products, metals, and containers from upriver ports as far east as Lewiston Idaho to our marine terminal facilities.
(Add terminal locations to map)

The Willamette River is home to Portland Harbor, a six-mile stretch of river that provides maritime access for the industrial uses sited along its banks.

The Port of Portland operates several deep-water marine terminal facilities along the Columbia and Willamette rivers.

Two Class I railroads, the Burlington Northern & Santa Fe Railroad (BNSF) and the Union Pacific Railroad, connect Portland with national rail services and markets along the west coast and to major Midwest and Eastern US markets. The city is also served by several branch rail lines, which distribute freight to and from the Class I railroads, as well as between local customers.

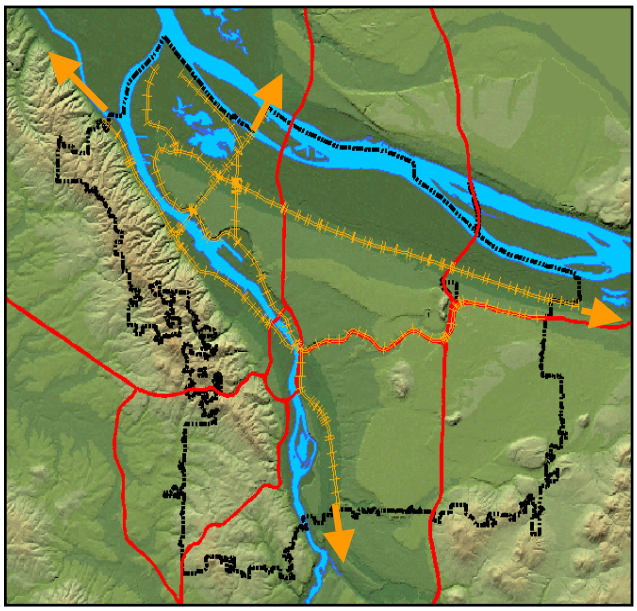
The North Portland Junction is where Union Pacific trains enter and leave the BNSF main line bound for Vancouver WA, Kalama/Longview WA, and the Puget Sound area. The BNSF Columbia Rail Bridge provides the only river crossing in the region. The nearest Columbia River crossing for trains is in The Dalles, Oregon.

Four main line rail routes converge in Portland:

- BNSF north to Seattle and Vancouver BC;
- BNSF east to Chicago via Kansas City;
- Union Pacific south to Oakland and Los Angeles, then across the Southwest to New Orleans;
- Union Pacific east to Chicago via Salt Lake City and Denver.

For travel to and from the east, the BNSF and Union Pacific routes through the Columbia Gorge are the preferred route for transcontinental trains as the tracks run at-grade with the Columbia River through the Cascade Range avoiding the steep grades of the Stampede Pass and Stevens Pass routes in Washington state.
(Add rail yards to map)

Figure 1.2 Railroad Network



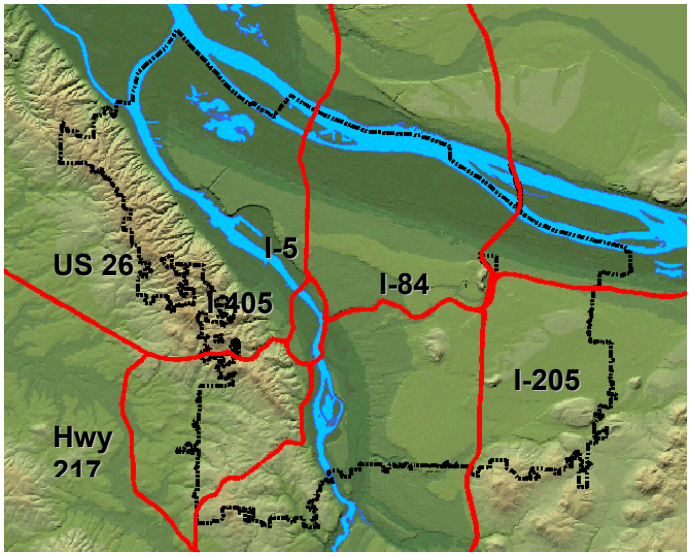
Union Pacific operates two large rail yards in the City – Brooklyn Yard in Southeast Portland and Albina Yard in North Portland. BNSF operates two rail yards in Portland, Lake Yard and Willbridge Yard in the Northwest Industrial district, as well as its Vancouver Yard in Vancouver WA.

Portland International Airport, located entirely within the city of Portland, provides passenger and air cargo service for the Portland metropolitan area, including southwest Washington. Many air carriers provide domestic and international cargo transport in and out of region.

The Olympic pipeline is one of the primary modes for transporting gasoline, diesel and jet fuel to the Portland region. Because the Portland/Vancouver area has no petroleum refineries, all gasoline and oil must be imported from Puget Sound refineries. This common carrier pipeline handles much of the petroleum shipments to our area. The Kinder Morgan pipeline carries gasoline and fuel oil from Portland through the Willamette Valley.

The link to all these modes is the network of streets, highways, freeways that connect the City's various modes of freight transport to their destinations. Two interstate freeways intersect in the heart of Portland. I-5 is the primary West Coast truck freight route linking urban centers between Canada and Mexico. Portland is the terminus for I-84, a primary freight route between the Pacific Northwest and Salt Lake City, where it merges with I-80 to the East Coast. I-205, US 26, US 30, and McLoughlin Blvd (OR 99E) are highways that facilitate intra-regional truck freight movement. (Add US30 and McLoughlin/224 to map)

Figure 1.3 Freeway and Highway Network



Portland's streets are the first and last mile connections for trucks moving freight to and from marine facilities, rail yards, the airport, and industrial businesses.
Trucks also use city streets to deliver goods and services to local businesses and residents.

WHAT IS FREIGHT?

The term "freight" is used generically throughout this plan to mean the commercial transport of goods. "Freight" encompasses different types of movement from the transport of bulk items such as grain, lumber, and fuel to delivery to of products and services to local businesses and residences.

The term "goods" is also generically used in the plan to refer to all of items, expect services, the can be moved commercially.

"Goods" are transported by multiple and often interconnected freight modes – waterborne, air, rail, pipeline, and truck – as they move between origin and destination. While goods and services can also be moved on foot, by bike and by car, this plan is focused on the transport of goods by large vehicles.

FREIGHT MOVES PORTLAND'S ECONOMY

Portland's investments in transportation infrastructure have contributed directly to our importance as a transportation distribution center and have provided access to jobs in the region

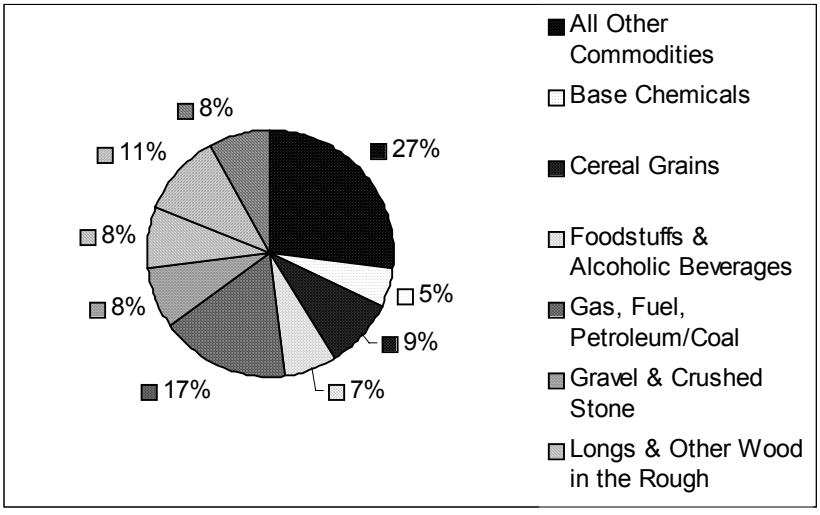
More than most U.S. cities, Portland's economy is dependent on freight movement. Table 1.1 illustrates that Portland's regional employment in transportation-related industries far exceeds the US average for these sectors. According to the Oregon Department of Employment data, the transportation sector accounted for one out of every nine jobs in the Portland metro region in 2000.

Table 1.1 Industry Share of Employment in Portland Region as Percent of Average Share in U.S.

Air Transportation	120%
Trucking and Warehousing	128%
Wholesale Trade	138%
Water Transportation	169%
Source: Planning Bureau, Portland Harbor Industrial Lands Study, 2003	

The Figure 1.4 identifies the type of goods moved in our region by tonnage levels. Eight commodity categories account for 74% of all tons shipped on all freight modes. This is only part of the story. As Portland's economy grows in the high-tech manufacturing sector, more high valued - low weight goods are being shipped. These types of commodities tend to move by truck and air.

Figure 1.4 Commodity Share in Portland Region as % of Tonnage



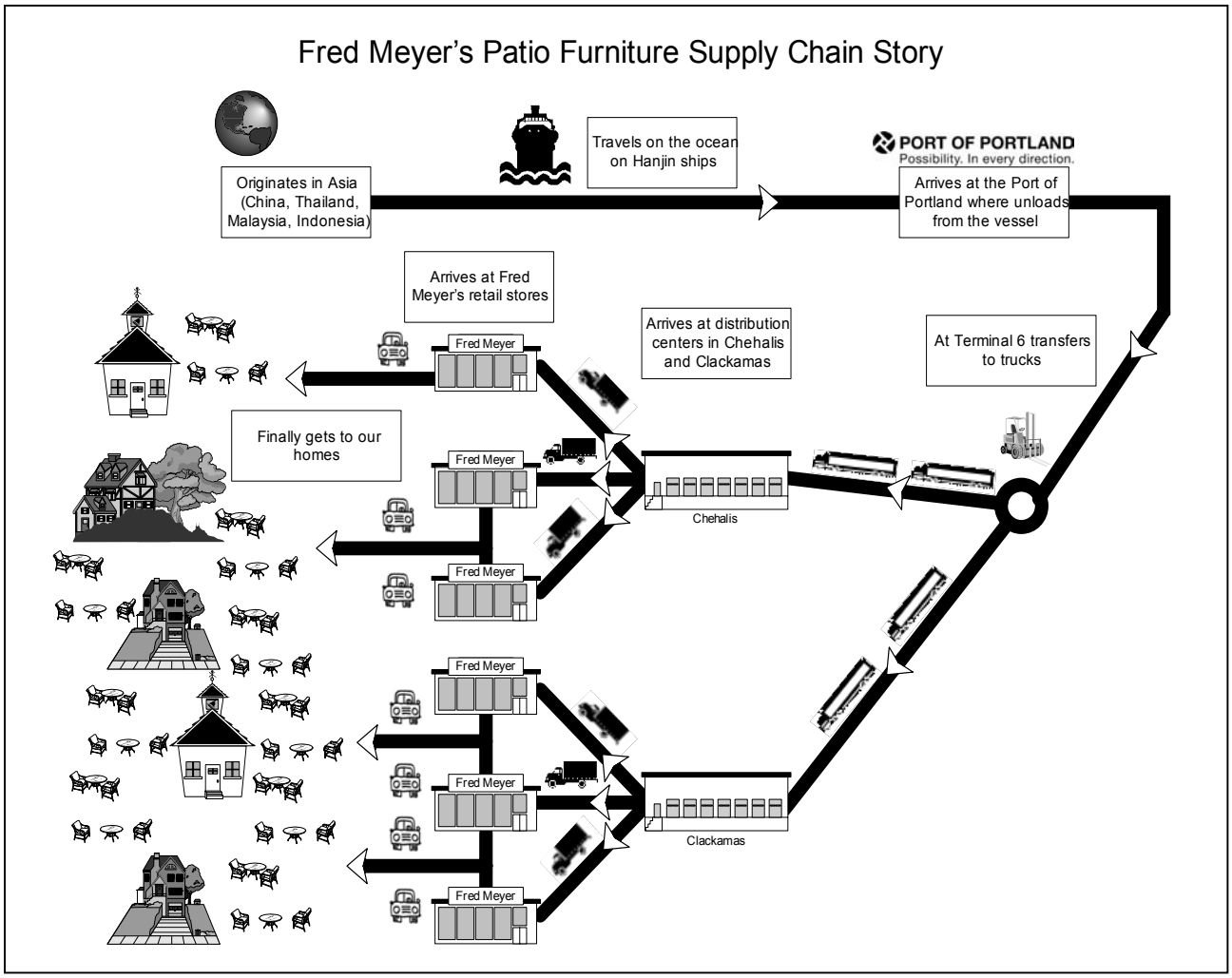
Source: *Commodity Flow Forecast Update and Lower Columbia River Cargo Forecast*, Port of Portland, Figure 2.1, 2002

TRENDS INFLUENCING FREIGHT MOVEMENT

Changes in our national economy and business practices are triggering shifts in how goods are moved. With fewer industries storing goods and materials on-site, and the global demand for goods changing at a dramatic rate, we are witnessing a growing emphasis in the use of logistics strategies to bring supplies to manufacturers for assembly, packaging and delivery. These strategies are linked to "supply chains" connected to a reliable and efficient transportation network that links origins and destinations, in many cases using multiple combinations of transport.

The "global supply chain" includes all of the activities associated with the flow and transformation of goods from raw materials to the end consumer. The diagram of Fred Meyer' patio furniture supply chain, in Figure 1.5, is an example of the complexity of the global movement of goods.

Figure 1.5 Fred Meyer's Patio Furniture Story



PLANNING AHEAD FOR FREIGHT

According to the Commodity Flow Forecast,[1] freight tonnage into, out of, and within the Portland region will grow from 260 million tons with a total value of $352 billion in 1997 to 522 million tons with a combined value of $827 billion.[2] Overall, tonnage volume will grow at an annual compound rate of 2.1%, led by the increase (in percentage terms) in use of air cargo (3.77%/year), trucks (2.53%/year), and rail (2.47%/year). The share of tonnage carried by truck will increase from 64% in 1997 to 73% in 2030; while tonnage by water modes (ocean and barge) will decline from a combined 15% to 10%, and tonnage by pipeline will decline from 11% to 6% over the 1997-2030 timeframe. Tons carried by rail will increase by 1% and by 0.5% for air cargo.

Table 1.2 1997 – 2030 Growth in Freight Tonnage

	Millions of Short-Tons			
	1997	***2030***	***Annual Change***	***2030 Share***
Truck	166.6	380.0	2.53%	73%
Pipeline	28.1	31.2	0.31%	6%
Ocean	25.3	34.8[3]	0.97%	7%
Rail	26.4	59.2	2.47%	11%
Barge	14.1	15.5	0.29%	3%
Intermodal	11.8	N/A	N/A	N/A
Air	0.3	1.1	3.77%	>1%
	260.8	***521.8***	***2.12%***	***100.0%***

Source: *Commodity Flow Forecast Update and Lower Columbia River Cargo Forecast*, Port of Portland, June 2002.

Freight movement is expected to continue to be a central element of Portland's economy. Increasing freight volumes will put pressure on all elements of our freight transportation system – roads, rail, pipelines, and marine and air terminals. Many parts of the freight transportation system in Portland are managed by other public agencies and private operators. Coordination and partnership of efforts to accommodate the growth in freight movement will include individuals and organizations in both the public and private sectors.

The Freight Master Plan covers the broad range of freight transport modes but has a primary focus on truck freight mobility due to the City's jurisdiction over the street network. Trucks use our roads to transport goods and services to throughout our community. The share of trucks on our roads is anticipated to increase in the future, particularly in Freight Districts and on freeways and highways. Strategies for efficient, safe, and reliable movement of trucks will help us manage this growth in a way that maintains Portland's community livability.

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[1] *Commodity Flow Forecast Update and Lower Columbia River Cargo Forecast Final Report*, prepared for the Port of Portland, Metro, Oregon Department of Transportation, Port of Vancouver, Regional Transportation Council, prepared by DRI-WEFA, BST Associates and Cambridge Systematics, Inc., June 30, 2002 http://www.portlandairportpdx.com/pdfpop/MTMP_LCR_Cargo_Forecast_Final_Report.pdf.

[2] Ibid., page 44.

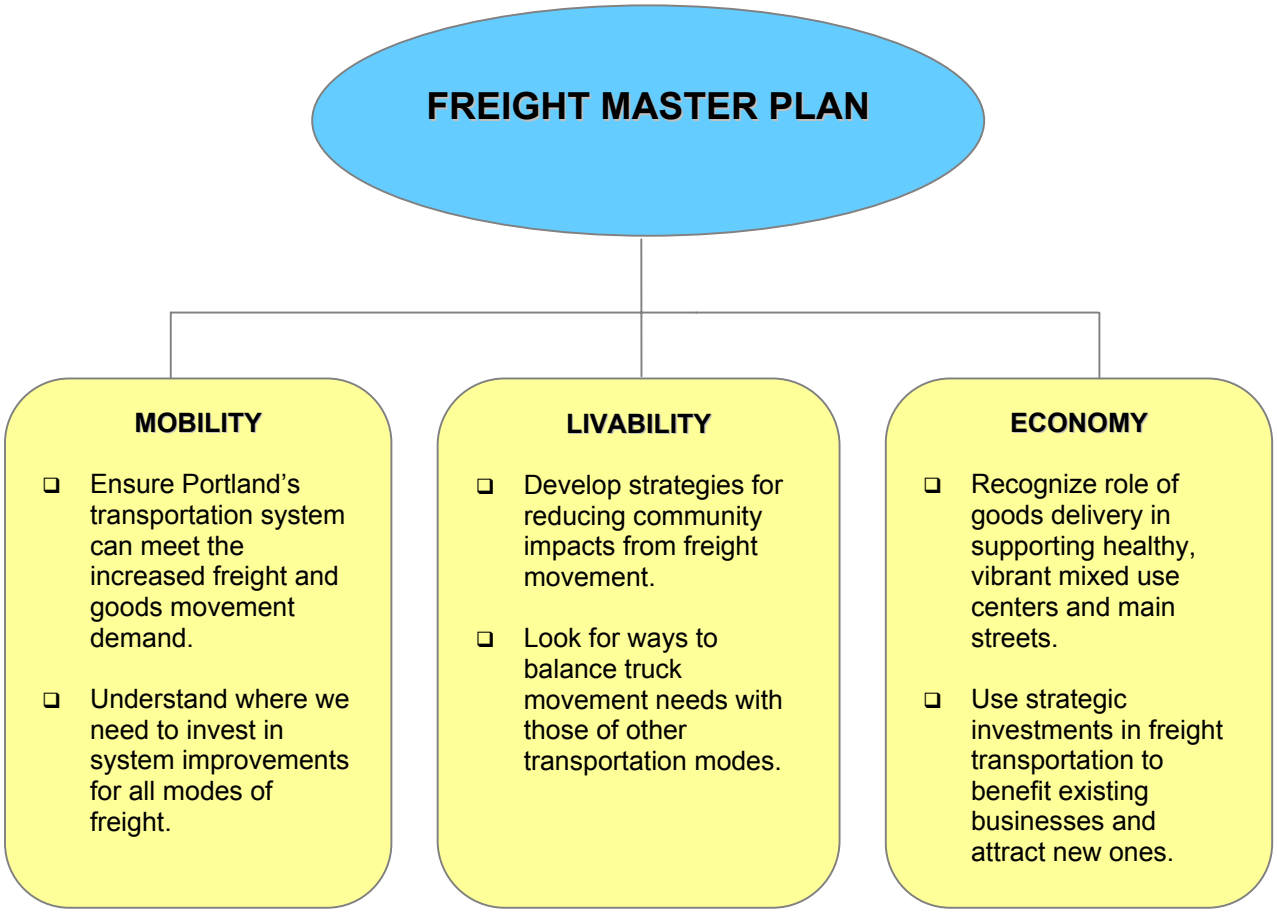
[3] Commodity Flow Forecast combined freight tons and values using ocean and barge modes into one single "Water" mode.

PORTLAND'S FREIGHT MASTER PLAN

Plan Objectives

The Freight Master Plan provides a road map for managing freight movement and delivery of goods and services in our City, today and into the future. The goal is to foster a freight system that works for the community.

The Freight Master Plan objectives center around three main themes: mobility, livability, and healthy economy.



Preparing the Plan

Add section that describes the technical and public process used to develop the plan – include list of public meetings in Appendix.

Organization of Document
The Freight Master Plan is organized around five major elements: freight-related policies and objectives, freight system classifications, implementation actions and strategies, freight system infrastructure improvements, and design guidelines for trucks.

Chapter Two summarizes the assessment of freight system needs and the Plan's approach for addressing the needs.

Chapter Three includes the freight-related Comprehensive Plan policies and classification map for the freight system.

Chapter Four describes the implementing actions and strategies for managing the movement goods in our community and how we measure our success.

Chapter Five lists the freight infrastructure improvements and describes sources of funding.

Chapter Six focuses on planning for trucks in the right-of-way by providing a summary of the design guidelines for trucks.

Appendices

RELATIONSHIP TO THE COMPREHENSIVE PLAN AND THE TRANSPORTATION SYSTEM PLAN

Portland's Comprehensive Plan is the policy guide for how the city grows and develops. The Transportation System Plan (TSP) is covered under the umbrella of the Comprehensive Plan. It serves as the City's public facility plan for transportation and it is home to the transportation policies found in Goal 6, Transportation and Goal 11B, Public Rights-of-Way.

The Freight Master Plan is the base document for the freight element of the TSP. The Freight Master Plan is adopted by City Council as by resolution and functions as the detailed guide for the freight mode. Portions of the Freight Master Plan are also folded into the Comprehensive Plan and the TSP including:

- Changes to Comprehensive Plan policies

  The Freight Master Plan includes revisions to current Goal 5, Economic Development, Goal 6, Transportation, and Goal 11B, Public Rights-of-Way. Goal 6 includes both freight policies and classification maps.

- Changes to the Public Facilities Plan for Transportation

  The Freight Master Plan infrastructure improvements list updates the current list of major system improvements for transportation.

- Changes to the Transportation System Plan

  The Freight Master Plan informs the Truck and Air-Rail-Water-Pipeline modal plans.

CHAPTER 2 SETTING THE COURSE

INTRODUCTION

Historic investments in Portland's transportation infrastructure have contributed directly to our importance as a center for commerce in the region. Portland's transportation system is an economic engine for the state, moving both people and commerce by a variety of transport modes. Maintaining and improving on freight mobility within Portland is a key element in sustaining the vitality of our local, regional, and statewide economy.

Reliability and efficiency are measures of a well-functioning freight transportation system. A reliable system is predictable and dependable for businesses that plan freight movement in hours and minutes. An efficient system is one that is cost effective in terms of time, energy consumption, and infrastructure needs.

When a system is unreliable and inefficient, it has real consequences for the economy and the community:

- Freight assets like trucks and trains become less productive.
- Business put more trucks on the road to meet customer needs.
- Need to warehouse inventory increases business costs.
- Added financial and operational pressure for companies competing in a competitive, global market.[1]

Understanding and improving the freight transportation with these basic performance measures in mind is an imperative.

ASSESSING THE FREIGHT SYSTEM

Growth and Congestion in the Freight System

The region's travel forecast model estimates that between 2000 (base year) and 2020 (future year), the number of medium and heavy truck trips nearly double[2]. Not surprisingly, arterials that serve the Portland's industrial areas have the highest volume of medium and heavy truck trips today and in the future.

Along with the growth in truck movement, traffic congestion is also increasing on Portland's street system. Analysis of the travel forecast model data indicates that locations that experience peak hour vehicle congestion today will have increased levels of congestion in the future. The locations that demonstrate the greatest increases in travel delay for freight movement occur on roads approaching the Portland International Airport and surrounding

[1] *Reliability: Critical to Freight Transportation,* Public Roads, November/December 2004.

[2] The Regional Travel Forecast Model defines *medium truck* as having two axles, less than six tires, and less than 40,000 lb GTW. *Heavy truck* is defined as having two or more axles, six or more tires, and a GTW over 40,000 lbs.

industrial area, along the US 30 industrial corridor, and on all of the freeway corridors in the city.

Growth challenges are not confined to Portland's street system. The projected growth in freight moved by marine, rail, and air is significant.[3]

- Air cargo is anticipated to increase at a rate of 5 to 9 percent per year over the next 15 years.
- Marine traffic is expected to grow by 7 percent/year between 2000 and 2020.
- Freight rail traffic grows by 3.5 to 4 percent/year.

According to recent technical studies, the Portland region's rail infrastructure contains critical bottlenecks along several mainline segments and rail yards operated by Burlington Northern-Santa Fe and Union Pacific. The delays experienced on our local freight network are equivalent to those experienced in the nation's largest rail hub – Chicago – which has 3.7 times the freight train traffic and 42 times the passenger train traffic of Portland.[4] In addition, branch line rail operations to and from rail yards and intermodal terminals are also highly congested.

Infrastructure Barriers to Freight Mobility

Congestion is not the only challenge facing freight mobility in Portland. Physical barriers due to inadequate infrastructure also hamper the efficient and reliable movement of freight in the city. Some of the more significant obstacles include:

WEIGHT-RESTRICTED BRIDGES

A number of bridges on truck routes in Portland are weight-restricted to a single-unit truck weight of 50,000 lbs. and 80,000 lb. for a combination truck, and in some instances less than 80,000 lbs. Industry efficiencies have led to an increase in the size of trucks since these bridges were constructed. Modern-day truck weights routinely exceed the design weight of these aging facilities. The result is that over-weight trucks are detoured from direct routes, increasing fuel consumption and operating costs. There is also the potential for diversion of trucks to streets that are not intended for frequent truck trips. (Add picture)

BRIDGES WITH LOW VERTICAL CLEARANCE

Also an issue are bridges with sub-standard clearance for trucks passing under them. The legal height for trucks operating on highways and city streets is 14 feet but many trucks operating by permit exceed this standard height. As many as 24 bridges in Portland have clearance between 14' and 17', with most located on highways or priority truck routes. Like weight-restricted bridges, this barrier also results in detours from direct routes. (Add picture)

AT-GRADE RAIL CROSSINGS

With train traffic predicted to increase substantially over the next twenty years in the Pacific Northwest, the impact will be increased conflict between train and truck traffic. Safety at locations where roads and rails intersect has long been a concern. More recently, the concern has turned to growing delays. Crossings near intermodal facilities, ports, major rail yards, and classification and switching areas will experience high train and truck traffic increases due to

[3] *Commodity Flow Forecast Update and Lower Columbia River Cargo Forecast Final Report*, prepared for the Port of Portland, Metro, Oregon Department of Transportation, Port of Vancouver, Regional Transportation Council, prepared by DRI-WEFA, BST Associates, and Cambridge Systematics, Inc, June 30, 2002.

[4] *I-5 Rail Capacity Study,* prepared by HDR Engineering, Inc, February 2003, page 2-5

increases in domestic and foreign trade.[5] In Portland, most at-grade crossings are located in industrial areas increasing the delays for truck traffic. At some crossings, stopped delay time for vehicle and other traffic can be as high as four hours out of a 24-hour period creating congestion and increasing operating costs. (Add picture)

LIFT AND SWING SPANS OVER THE COLUMBIA RIVER

A more unique freight barrier in the region is the misalignment of two adjacent bridge spans. Travel by river tow boats and barge vessels are complicated during high water periods by the indirect alignment of the high span of the Interstate Bridge and the swing span of the BNSF rail bridge over the Columbia river. Captains maneuver their vessels under the mid-section of the I-5 bridge to avoid I-5 bridge lifts that delay interstate traffic. Once clear of this bridge, captains maneuver their vessel to the northern river channel to clear the swing span of the rail bridge. During periods of high water, about six months of the year, this maneuver becomes far more difficult, increasing the potential for an accident. (Add picture)

PAVEMENT CONDITION

Portland is facing a growing street maintenance backlog for pavement. Declining revenues and increasing costs have reduced the miles of city streets maintained on a regular basis. Between 1980 and 2004, the backlog has grown from 285 miles to 586 miles. Regular maintenance of pavement increases its longevity, extending the time before major reconstruction is needed.

Large trucks accelerate the deterioration of paved surfaces. With forecasts of increasing truck volumes, the pavement on Portland's streets will certainly be subjected to increased wear and tear. The result of poor pavement conditions is decreased fuel economy, increased vehicle operation and maintenance costs, and the potential for damage to cargo.[6] (Add picture)

ROAD DESIGN

Most of Portland has a mature arterial street system, designed to accommodate vehicle traffic of the era. Today, many of the trucks that use these older streets to deliver goods and services to the community are much larger than the street design is intended to support. At times, the needs for efficient truck movement are in conflict with other desired design features on the same street such as median islands or curb extensions. In other cases, trucks benefit from a design feature such as bike lanes that provide more space for turns. Balancing the needs of the different truck types using the streets with the needs of other users presents a challenge, especially in mixed-use centers and along main streets. (Add picture)

PARKING AND LOADING

A critical element of the supply chain is the ability to efficiently transfer goods and materials between shippers, trucks, and customers. Portland provides commercial on-street loading zones along many of its streets. The zones are assigned by request from individuals who receive and/or make truck deliveries. Portland's zoning code has requirements for off-street loading spaces in commercial, employment and larger residential developments.

Anecdotal evidence suggests that the existing supply of and demand for loading spaces is mismatched. The result is that drivers will double-park in travel lanes, blocking traffic, or park illegally. Currently, there is no comprehensive approach to ensuring that on- and off-street loading is adequate to meet business needs. (Add picture)

---

[5] *Status of Nation's Highways, Bridges and Transit:2002 Conditions and Performance Report to Congress,* U.S. Department of Transportation, Federal Highway Administration. Pg. 26-1.

[6] www.transportationca.com, Transportation California, April 28, 2004.

OVER-DIMENSIONAL TRUCKLOADS

Some loads carried by trucks are not practically divisible, meaning that they can not be reduced to meet legal limits for weight, height, length, and/or width set by the State of Oregon. The State requires that trucks exceeding legal dimensions obtain a permit when traveling on public roadways. Portland also regulates over-dimensional loads and writes permits based on criteria established in Title 16 of the City Code.

The most common type of over-dimensional load in Portland is construction equipment such as cranes and excavators but other manufactured items such as steel slabs and bridge girders required over-dimension moves. These are an infrequent but an important type of freight movement in the city. There is a need to identify and maintain a primary network of over-dimensional routes, with a focus on connections in and between Freight Districts. (Add picture)

Industrial Lands and Freight

Compared to other cities, Portland has a relatively large number of industrial parcels available for development. Portland has a natural advantage for firms seeking an industrial location adjacent to aviation, marine, rail and highway networks. However, analyses by Portland Development Commission and the Bureau of Planning found that demand for *development-ready* industrial land will outstrip supply. The challenge is that available industrial land has limitations to being readily developed, including:

- Lack of good access to the street and highway network;
- Environmental and ownership constraints;
- Many of the parcels are redevelopment sites that carry greater expense for construction.

A COURSE OF ACTION

The Freight Master Plan is intended to provide an overall strategy of investment and management of the transportation system as a catalyst for improved mobility, livability and economic health. To that end, the Plan strives to achieve its goal in a way that is supportive of and consistent with the community's transportation values encapsulated in the Transportation System Plan including:

- Maintain a healthy economy and a thriving community.
- Manage transportation assets in a fiscally responsible way that ensures limited dollars are available for a wide-range of solutions.
- Provide transportation choices.
- Look for ways to reduce environmental impacts of transportation.
- Emphasize coordination and partnership in planning for the transportation system.

The Plan's implementation framework relies on a three-pronged approach of policy guidance, programmatic actions and strategies, and infrastructure improvements. The following chapters provide the details as to how the Plan will achieve the City's freight mobility goals and objectives.

CHAPTER 3 POLICIES AND OBJECTIVES

INTRODUCTION

The City of Portland relies on its Comprehensive Plan to guide decision-making for the City's future growth and development. The Plan contains a coordinated set of goals, policies and objectives that together set a direction for choices about programs, capital investments, and funding priorities.

- Goals are the broadest expression of a community's desire and aspirations for a particular focus area.
- Policies are statements that set a preferred course of direction.
- Objectives are specific actions that carry out the intent of the goal and policy.

The Comprehensive Plan goals relevant to freight movement include Goal 5, Economic Development, Goal 6, Transportation, and Goal 11B, Public Rights-of-Way. Following is a brief description of these goals.

Goal 5, Economic Development, promotes a multimodal transportation system that encourages economic development.

Goal 6, Transportation, provides overall guidance on how Portland's transportation system should function over the life of the Comprehensive Plan, 20 years. The goal reflects the multiple functions of a balanced transportation system, which distributes transportation benefits and effects fairly across the many populations of users.

Goal 11B, Public Rights-of-Way meets State requirements on jurisdictions to maintain public facility plans. Goal 11B policies and the Transportation System Plan project list comprise the public facility plan for transportation. The goal intends to improve the quality of Portland's transportation system by carrying out projects to implement the 2040 Growth Concept, preserving public rights-of-way, implementing street plans, continuing high-quality maintenance and improvement programs, and allocating limited resources to identified needs of neighborhoods and businesses.

POLICY FRAMEWORK

Portland's Comprehensive Plan establishes policies for freight in the context of a larger regulatory framework of federal, state, regional goals and policies. Portland's policies are required to be compatible with and complement the framework established at higher levels of governance.

Intermodal Surface Transportation Act of 1991 (ISTEA)

Landmark federal transportation legislation that initiated national policy direction toward the development of a national intermodal transportation system that is economically efficient, environmentally sound, and energy efficient in the movement of people and goods.

National Highway System (NHS)

Established under ISTEA legislation, the NHS is a 161,000-mile national network of interconnected roadways that link primary intermodal facilities including airports, international border crossings, maritime ports, rail-truck terminals, intermodal passenger facilities, and major travel destinations. These roadways are the most critical connections in our national

transportation network. In Oregon, the NHS is comprised of three classes of designation: Interstate Highway - NHS, State Highway – NHS, and NHS Intermodal Connectors, which are primarily attached to county and city owned roadways.

National Network
The Surface Transportation Assistance Act of 1982 requires states to allow larger vehicles on a national network of roadways comprised of the Interstate Highway System and non-Interstate Federal Aid Primary System. The act also specifies the legal limits for height, length, width, and weight of trucks using the National Network roadways. Jurisdictions are required to provide reasonable access for STAA legal-sized vehicles on their networks.

Oregon Statewide Planning Goal 12
Statewide Planning Goal 12, Transportation is Oregon's policy umbrella for transportation planning at the State, regional, and local levels. Goal 12 directs jurisdictions to "provide for and encourage a safe, convenient and economic transportation system." The goal states implementing directives including consideration of all transportation modes in planning; identify system needs; avoid reliance on a single mode of transportation; minimize adverse impacts; conserve energy; meet needs of the transportation disadvantaged; and strengthen the economy by facilitating the flow of goods and services.

Transportation Planning Rule (TPR)
The TPR is the implementing rule for Goal 12, Transportation. It establishes mandates for linking land uses and transportation planning activities including the identification of needs for movement of goods and services to support planned industrial and commercial development.

Oregon Transportation Plan (OTP)
The OTP is the transportation system plan, providing guidance for policy and long-range planning for the multimodal transportation system. It directs that the state transportation system be modally balanced, efficient, accessible, environmentally responsible, connect places and modes, safe, and financially sustainable. Specific to freight movement, Goal 3: Economic Development supports a balanced and efficient freight system, effective transportation links to markets, cooperation on expanding system capacity, and promotion of intermodal hubs.

Oregon Highway Plan (OHP)
The OHP is a subset of the encompassing Oregon Transportation Plan. It focuses specifically on Oregon's state highway system and includes policies and objectives that direct on the system should function for freight. The plan also identifies a freight system network, which incorporates the National Highway System designations.

2040 Growth Concept and Regional Framework Plan
The 2040 Growth Concept defines how the region should grow and develop over a 50-year planning horizon. The concept directs growth into higher density mixed-use centers and corridors supported by a multi-modal transportation system. Industrial areas are a primary component of the concept and are maintain as sanctuaries for long-term industrial activities. The Regional Framework Plan provides specific policies and guidelines for concept implementation.

Regional Transportation Plan (RTP)
The RTP is the Portland metropolitan area's policy and investment guide for the multimodal transportation system. The plan recognizes the importance of a sound multimodal freight

system to support the region's economic and livability goals. The RTP identifies and defines a regional freight system.

RELATIONSHIP TO PORTLAND TRANSPORTATION SYSTEM PLAN

Portland's Transportation System Plan (TSP) is the 20-year guide for planning and investment in our multimodal transportation system. The TSP includes the Transportation Element of the Comprehensive Plan, consisting of Goal 6, Transportation and Goal 11B, Public Rights-of-Way policies and objectives.

The Freight Master Plan is a focused guide for managing freight activities. It details the specific policies, infrastructure needs, street design, and management actions that lead to an integrated and well-functioning freight transportation system. Through incorporation of freight policies and objectives, freight network map, infrastructure improvements, the more detailed plan folds into the TSP. Future updates to modal plans for trucks and air-rail-water-pipeline are informed by the Freight Master Plan.

In the TSP, implementation of the Freight Master Plan is combined and balanced with the needs of all transportation modes.

RELATIONSHIP TO OTHER CITY DOCUMENTS

Community and Neighborhood Plans

The City has numerous neighborhood and community plans with policies, strategies, and action items for improving local areas. Many of these plans specifically address freight. All existing neighborhood and community plans were reviewed for freight-related issues. Better management of truck activity in neighborhoods was the primary directive from these plans. Policy objectives and action items are addressed in the Freight Master Plan.

Portland Zoning Code

TITLE 33: PLANNING AND ZONING CODE

33.266.310, Loading Standards specifies the minimum number of loading spaces required to ensure adequate loading areas for larger uses and developments. The regulations ensure that access to and from loading facilities will not have a negative effect on the traffic safety or other transportation functions of the abutting right-of-way. The section regulates the number of loading spaces based on land use and specifies where the regulations apply. It also regulates loading space size, their placement, setback and landscaping. Regulations state that the design of a facility allows vehicles enter and exit the site in a forward motion, except in the Central City plan district.

33.130.255, Trucks and Equipment regulates parking and storage of trucks and equipment to ensure that it will be consistent with the desired character of the commercial zones and to limit adverse effects on adjacent residential lands. The section sets truck and equipment parking standards for business vehicles (light, medium and heavy trucks) that parked regularly at a site.

Section 33.140.250, Trucks and Equipment regulates truck and equipment parking for business vehicles that parked regularly at a site. The regulations do not apply to pick-up and delivery activities, the use of vehicles during construction or other intermittent, short-term activities. The regulations differentiate between light and medium trucks and heavy trucks.

TITLE 16: VEHICLES AND TRAFFIC

16.20.220, Truck Loading Zone regulates truck loading zones. Truck loading zones are established to prevent double parking and other illegal parking by designating a supply of parking spaces dedicated to the delivery of merchandise by trucks to commercial properties. The regulations specify the types of vehicles that may park in a truck loading zone, the duration (30 minutes), frequency and where the truck loading zone should be located in relation to an intersection for traffic safety reasons.

16.20.530,Temporary Truck Loading Area Permit regulates the issuance of a temporary truck loading permit to any person proving a need for the permit. The temporary truck loading area must be designated by portable signs or parking meter hoods or as otherwise designated by the administrative instructions of the permit.

16.70.600, Over Dimensional Vehicles generally prohibits the driving or movement of vehicles of excessive weight; those dragging a log, pole, or other thing; and a vehicle that is constructed or loaded so as to allow its contents to drop, sift, leak or escape, among other general prohibitions. The section defines exemptions to the general prohibitions, which include the operation of government vehicles and vehicles permitted by the Traffic Engineer.

16.70.630, Permits stipulates permitted use of over dimensional vehicles.

16.70.640 defines limits of authority to issue variance permits.

TITLE 18: NOISE CONTROL

18.10.020, Motor Vehicles regulates excessive noise from motor vehicles including trucks. Section B (3) specifically prohibits the use of a dynamic braking device on trucks over 10,000 GCWR within any residential zone of the City or within 200 feet of residences, school, hospital, or library, expect to avoid imminent danger.

COMPREHENSIVE PLAN POLICIES FOR FREIGHT

Goals, policies and objectives are the common link between the Freight Master Plan to the Comprehensive Plan. Development of the Freight Master Plan identified revisions to policies to better address freight movement needs and impacts. Following is a summary of policies and objectives that guide freight activity in Portland. Appendix A includes the complete text of the freight-related Comprehensive Plan policies.

Goal 5 Economic Development Policies

Goal 5, Economic Development, promotes a multimodal transportation system that encourages economic development.

Goal 5.4, Transportation System, Objectives A, B, and H addresses the connection between the City's transportation system and economic development by enhancing the multimodal freight transportation system for competitive access to global markets, supporting development of industrial- and employment-zoned properties, and reinforcing the link between transportation investment and thriving industrial districts.

Goal 6 Transportation Policies
Goal 6, Transportation, provides overall guidance for how Portland's transportation system should function. The goal reflects the multiple functions of a balanced transportation system, which addresses the needs of the many types of users. Many Goal 6 policies and objectives pertain directly to freight mobility including:

Policy 6.3 Transportation Education, Objective B supports a public-private partnership for implementing educational programs about freight movement in the City.

Policy 6.9 Freight Classification Descriptions, Objectives A – I describe the various elements of the City's Freight System including roadways, railways, industrial districts, and freight facilities.

Policy 6.13 Traffic Calming, Objective C encourages vehicular traffic, including trucks, to use streets with higher classifications consistent with function to avoid non-local traffic from infiltrating residential neighborhoods.

Policy 6.15 Transportation System Management, Objective B directs the City to give preference to projects that add system capacity through operational improvements such as signal upgrades, ITS, and intersection design that benefit all modes of transportation.

Policy 6.29 Multimodal Freight System, Objectives A – E supports the development of a safe, reliable, and efficient freight system that includes truck, rail, air, marine, and pipeline transport modes. The objectives emphasize public-private coordination and partnership in planning, prioritizing and funding freight infrastructure improvements. The also stress the need to work cooperatively to minimize adverse impacts cause by freight movement.

Policy 6.30 Truck Mobility, Objectives A – G provides guidance for developing, maintaining and managing the street network that supports truck movement. The objectives guide investment priorities, design for legal and over-dimensional loads, appropriate use of streets by trucks, and operational improvements to reduce delay.

Policy 6.31 Truck Accessibility, Objective A – F addresses truck access and circulation needs through objectives that focus on such actions as eliminating bridge weight and height restrictions, improving at-grade rail crossing to limit delay and increase safety, managing on-street loading zones for efficient loading and unloading, and considering truck needs in street design.

Policies 6.34 – 6.40, Transportation District Policies and Objectives detail and clarify issues and needs specific to a Transportation District. There are eight transportation district in Portland – North, Northeast, Far Northeast, Northwest, Southeast, Far Southeast, Southwest, and Central City – many of which have policy and objectives that address freight mobility.

Goal 11B Public Rights-of Way
Goal 11B policies and objectives are intended to improve the quality of Portland's transportation system by guiding project development to implement the 2040 Growth Concept, preserve public rights-of-way, implement street plans, continue high-quality maintenance and improvement programs, and allocate limited resources to identified needs of neighborhoods, commerce and industry.

Policy 11.10 Street Design and Right-of-Way Improvements, Objective E directs the City to use the collection of right-of-way design resources including the Design Guide for Trucks when developing and designing street improvements.

THE FREIGHT SYSTEM

Portland relies on a multimodal classification system to describe the design and function of a street or other transportation facility. There are seven classification categories: Traffic, Transit, Pedestrian, Bicycle, Freight, Emergency Response, and Street Design. When funding, designing, or operating a facility all modal classifications are considered.

Portland's freight system is comprised of streets, rail lines, and freight facilities including marine terminals, intermodal rail yards, airports, and pipeline terminals. Policy 6.9 describes each of the freight system classifications in the hierarchy. The classifications correspond to the land use activities. For classifying network features, freight movement is divided into two broad categories: industrial-serving and goods and service delivery.

Industrial-serving freight moves by a combination of modes – truck, rail, air, pipeline, and marine vessel. Origins and destinations for this type of movement are primarily in Portland's industrial sanctuaries. Efficient and reliable access to terminal facilities and the regional/interstate freight network is paramount for this category of freight. High truck volumes and tractor-trailer activity characterize industrial-serving freight movement.

Goods and services delivery relies on trucks alone. This category of truck movement has varied origins and destinations, which can be industrial, commercial or residential. Truck size varies depending on the type of delivery or service. Efficient circulation and access between distribution centers and customer locations is important.

Table 3.1 describes the type of freight movement and land uses that correspond to the freight classifications.

Table 3.1 Freight Classifications by Activity Type

Freight Classification	Primary Activity			Land Use Connection
	Heavy Freight	Goods Delivery	Services	
Regional Truckway	●	◎	◎	Routes for interregional and interstate movement of freight. Serves both industrial and commercial land uses via access ramps.
Priority Truck Street	●	○	○	Principal route for truck mobility in Freight Districts, and between Freight Districts and Regional Truckways. Provides truck access and circulation to industrial and employment land uses.
Major Truck Street	◎	●	◎	Principal route for truck mobility between commercial centers and corridors. Provides truck access and circulation to regional main streets.
Truck Access Street	○	●	◎	Route for distribution of truck trips in neighborhoods. Provides truck access and circulation for delivery goods and services to commercial and residential uses.
Local Truck Street	○	◎	●	Route for local truck access and circulation to residents and businesses outside of the freight districts.
Freight District	●	○	○	Freight districts are determined by the presence of industrial sanctuary zoning (IG1, IG2 & IH). Streets within a Freight District provide local truck circulation and access. Applies to all streets unless classified with a higher designation.
Railroad Main Lines	●	○	○	Transports freight cargo and passengers over long distances as part of a national rail network.
Railroad Branch Lines	●	○	○	Transports freight cargo over short distances or distributes it to and from railroad main lines.
Freight Facilities	●	○	○	The major marine terminals, airport, railyards, and intermodal facilities located in Freight Districts.

● **Primary Activity** ◎ **Secondary Activity** ○ **Limited Activity**

Mapping the Freight System

Figure 3.1 Recommended Freight Network displays Portland's freight system including the highway and street network, rail network, and major freight facilities. The mapped network, in combination with the classification descriptions, are part of Goal 6 of the Comprehensive Plan.

CITY OF PORTLAND OFFICE OF TRANSPORTATION

City of Portland

RECOMMENDED FREIGHT NETWORK

Freight Classifications

- Regional Truck Way
- Priority Truck Street
- Major Truck Street
- Truck Access Street
- Freight District Street
- Local Service Truck Street
- Main Rail Line
- Branch Rail
- Freight Facilities
- Freight District
- Urban Service Area

N

FREIGHT MASTER PLAN (7/27/05)

CHAPTER 4 IMPLEMENTING THE PLAN

INTRODUCTION

Success of the Plan's goals, policies, and objectives depends upon effective implementation and monitoring of progress in meeting the goals. The combination of engineering, education, and enforcement strategies described in Chapters 4 and 5 are intended to enhance the movement of freight and delivery of goods and services in our city.

This chapter describes the follow-up actions and on-going City of Portland activities to manage goods movement in our community. Chapter 5, Freight System Improvements, lists the infrastructure improvements that address freight network deficiencies. Together, these chapters provide the complete strategy for achieving the City's freight policies and objectives.

ACTIONS AND ACTIVITIES

The three themes of the Plan – Mobility, Livability, Healthy Economy – provide the framework for organizing the follow-up actions and on-going activities.

Mobility

The *mobility* theme focuses on improving reliability and efficiency on the network of roads, railroads, rivers, rods, and runways that move freight in Portland. Following are the actions and activities targeted at freight mobility:

- Coordinate with Metro and Oregon Department of Transportation to transfer US 30 Bypass designation and State freight route designation to N. Columbia Blvd.
- Develop a strategy for improving Columbia Blvd to better meet the needs of over-dimensional truck movement.
- Identify and safeguard truck routes that serve the movement of over-dimensional loads in the city. Coordinate this effort with existing Continuous Operations Variance Permit program activities.
- Develop a local street plan for the Northwest Industrial District to address access and circulation issues.
- Designate freight classifications for Central city sub-districts including Downtown, Lloyd Pearl District, South Waterfront, and Central Eastside streets as part of the Central City Transportation Plan update.
- Implement Intelligent Transportation System projects to manage congestion on key truck routes in order to provide better information about traffic delays and improved signal operation to control flow of traffic for certain situations.
- Coordinate with ODOT to provide truck-only queue lanes at freeway ramps in freight districts. Investigate use of different ramp meter timing for truck only lanes.
- Investigate implementation of exclusive trucks lanes including use of high-occupancy vehicle (HOV) lanes by trucks when not in use for HOV traffic.
- Optimizing signal timing in freight corridors including Columbia Blvd, Airport Way, Powell Blvd, and McLoughlin Blvd.
- Deploy ITS communication system for high-delay, at-grade rail crossings to provide real-time information about traffic delays due to train activity.

- Coordinate on evaluation of freight mobility issues in Columbia River Crossing Draft Environmental Impact Statement (DEIS).
- Institute transportation demand management strategies in Freight Districts to provide travel options that help reduce single-occupancy vehicle use and increase capacity for trucks.
- Support other freight modes such as rail or short sea shipping as alternatives to moving freight by truck.
- Develop freight mobility web page that can provide up to date information on City truck routes, advisories about construction detours and work zones, over-dimensional permits and routing, and general information about the City's freight system management.

Livability

The *livability* theme looks at ways to manage the aspects of freight movement that impact a community's quality of life. Following are the actions and activities to address livability:

- Work with local businesses and the Oregon Trucking Association to establish "good neighbor agreements" to address truck delivery issues including circulation plans and delivery schedules.
- Coordinate with Portland Police Bureau through programs like Strategic and Focused Enforcement (SAFE) to identify opportunities for improving truck safety, education, and enforcement.
- Develop and implement a signage program to direct trucks to appropriate routes.
- Evaluate and update on-street and off-street truck loading regulations and operations.
- Use Transportation Safety and Livability Hotline to monitor and resolve neighborhood conflicts with freight movement.
- Implement *Share the Road*, a public education program to distribute information about the characteristics and operational needs of the various transportation modes in an effort to improve safety on the road.
- Partner with railroad operators and ODOT to institute "Quiet Zones" to reduce train whistle noise and improve track safety.
- Support efforts to foster environmentally-friendly goods movement practices such as cleaner fuels and reduction of truck and train idling.
- Monitor and enforce over-dimensional truck activity through the Continuous Operations Variance Permit Program (COVP).

Healthy Economy
Promoting a multimodal transportation system that stimulates and supports long term economic development and business investment is the focus of the *healthy economy* theme. Following are the actions and activities targeted at building and maintaining a healthy economy:

- Identify and improve site specific obstacles to access and circulation in Freight Districts.
- Collaborate with agency partners on public investment strategies to stimulate economic development associated with freight movement and the industries that rely on the efficient movement of freight.
- Partner with Portland Development Commission to identify and implement transportation improvements that enhance marketability of industrial opportunity sites.
- Work with businesses in centers and along main streets to address truck access and loading issues.
- Identify and prioritize pavement maintenance needs in industrial areas.
- Participate in the development of workforce strategies for freight service providers.

MOVING AHEAD

A plan is only as successful as the time and effort given to supporting its realization. Responsibility for the carrying out the actions, activities, and projects identified in the Plan is spread across a number of work units in the Portland Office of Transportation. The Office of Transportation's Freight Coordinator will manage the implementation of the plan in coordination with these various work units.

Moreover, the City of Portland will continue to work closely with its agency partners to better address regional freight mobility. Partners include Oregon Department of Transportation, Metro, Port of Portland, Multnomah County, Washington State Department of Transportation, SW Regional Transportation Council, and the other local cities, counties, and service districts with the Portland/Vancouver region.

Additionally, the City's advisory committee on freight mobility matters – the Portland Freight Committee – continues to be an important forum for discussing the City's freight issues and providing advice to city leaders and staff on all topics related to improving freight movement.

MEASURING SUCCESS

An important component to any plan is establishment of methods for measuring progress in achieving the plan goals and objectives. Measures have great value in technical assessment of change over time, evaluation of planned improvements, and as a tool for communication about the state of the system. The City uses performance measures to monitor its achievements and progress toward goals for transportation system performance and in meeting the transportation needs of its citizens. The City's TSP already includes several performance measures applicable to truck mobility. The Freight Master Plan seeks to enhance these existing performance measures and augment these with additional measures.

Table 4.1 lists both the established TSP measures and additional recommended measures. Refinement of the performance measures, development of baseline data, and on-going reporting of the data will occur as part of plan implementation.

Table 4.1 Freight System Performance Measures

Source	Measure	Description
TSP	Hours of truck delay in the PM Peak and Mid-day	Tracks delay as a result of congested roadways. The current baseline data compares hours of truck delay for the entire City street system with regional delay. Enhancements to current measure include track delay at key intersections and along freight corridors, and distinguishing between causes of congestion cause by re-occurring vs. non-reoccurring events. Intersections and truck streets should be selected based on their direct accessibility to freight terminals and transfer facilities.
TSP	Travel time in ITS Corridors for average PM Peak, AM Peak, and Off-peak	Evaluates the travel time performance in corridors using ITS technology to manage system operations. Expand the current selection of corridors to include those critical for freight movement including Rivergate, Airport Way, Columbia Blvd, US 30, and interstate freeways in Portland. Track travel time for truck trip in addition to auto trip, as is current practice.
TSP	Assessment of unmet pavement need	Tracks success in reducing pavement maintenance backlog. Assess and report on pavement condition in Freight Districts and along major freight corridors.
TSP	Employee participation in Transportation Management Associations (TMA)	Tracks progress in expanding the use of and participation in TMA programs to encourage use of alternatives to the single-occupancy vehicle for work commute trips.
FMP	Annual truck collisions/million vehicle miles of travel	Measures the number of report collisions that involved trucks and other modes include rail as reported for all City locations.
FMP	Elimination of weight-restricted bridges on truck streets	Tracks progress in rehabilitating or replacing weight-restricted bridges.
FMP	Assessment of truck compliant resolution	Evaluates the number of freight-related complaints received by PDOT and status of resolution.

CHAPTER 5 FREIGHT SYSTEM IMPROVEMENTS

INTRODUCTION

Over the last decade, many area plans and corridor studies have identified needed freight infrastructure improvements in the City. The set of freight infrastructure improvements described in this chapter draw from multiple sources including:

- Portland Transportation System Plan
- Regional Transportation Plan
- Port of Portland Transportation Improvement Plan
- I-5 Rail Capacity Study
- I-5 Trade Corridor Study
- Central Eastside Transportation Study
- Columbia Corridor Transportation Study
- South Portland Circulation Study
- Intelligent Transportation System Implementation Plan
- Freight Master Plan technical analysis and community input

WHAT IS A *FREIGHT* IMPROVEMENT?

An infrastructure improvement is deemed "freight-related" if it meets the following criteria:

- Improves a freight route of significance, as defined by a Transportation System Plan, Regional Transportation Plan, Oregon Highway Plan, and/or National Highway System freight route designation or is located on or improves access to properties zoned for industrial or employment land uses.
- Includes project elements that improves or facilitates freight movement.
- Demonstrates consistency with state, regional, and local transportation policies.

TYPES OF FREIGHT IMPROVEMENTS

The freight infrastructure improvements included in the Pan are presented in six categories:

- Highway

  Infrastructure improvements on Portland's freeway system such as interchange upgrades and auxiliary lanes.

- Street

  Infrastructure improvements on Portland's arterial street system such as intersection upgrades, access management, and new road connections.

- System Management

  Installation of Intelligent Transportation System infrastructure such as closed circuit TV cameras and variable message signs to provide real-time information to dispatchers and truck drivers.

- Bridge

  Upgrading load-limits, improving clearances, seismic upgrades, and new structures.

- Rail

  Infrastructure improvements, such as signalization upgrades, bypass tracks, and high-speed turnouts, to improve rail capacity and reduce bottlenecks.

- Marine

  Infrastructure improvements, such as longer berths, channel dredging, and adequate bridge clearances, to upgrade river operations and marine terminal facilities.

SETTING INFRASTRUCTURE PRIORITIES

All of the infrastructure improvements presented later in this chapter meet an identified need. However, finite resources for funding and implementing transportation projects require that priorities be set to direct limited resources to gain the greatest value for the dollar spent.

Priority Tiers

The freight infrastructure improvements are classified into four priority tiers by improvement category. The four tiers include:

- Funded – Projects with identified partial or full funding, an indication that the project is advancing towards implementation in the near term.
- Tier 1 – Near-term advancement for funding and implementation, within five years
- Tier 2 – Mid-term advancement for funding and implementation, within ten years
- Tier 3 – Long-term advancement for funding and implementation, within twenty years

Project Priority and Selection Criteria
The criteria used to develop priorities are shown in Table 5.1. Improvements with the highest priority demonstrate the following characteristics:

- Benefits multiple modes of freight transportation and may have benefits for non-freight modes, particularly transit, bicycles, and pedestrians;
- Benefits a key freight corridor by improving system reliability, safety and/or access;
- Improves access to freight facilities.

The criteria was applied to the infrastructure improvements listed under Highway, Street, System Management and Bridge categories to establish relative priority in each category. Priority for Rail and Marine improvements have been established in other planning efforts.

FREIGHT INFRASTRUCTURE IMPROVEMENTS

The following pages identify Portland's freight infrastructure improvements by category and include a location map. The list of improvements is inclusive of the needs identified to date. Future improvements may be added as additional needs are uncovered through further evaluation and study of freight movement.

Many of the infrastructure improvements identified here will require further study, more neighborhood input, and additional City Council review prior to construction. As further evaluations are made of the projects in this Plan, the projects may be modified.

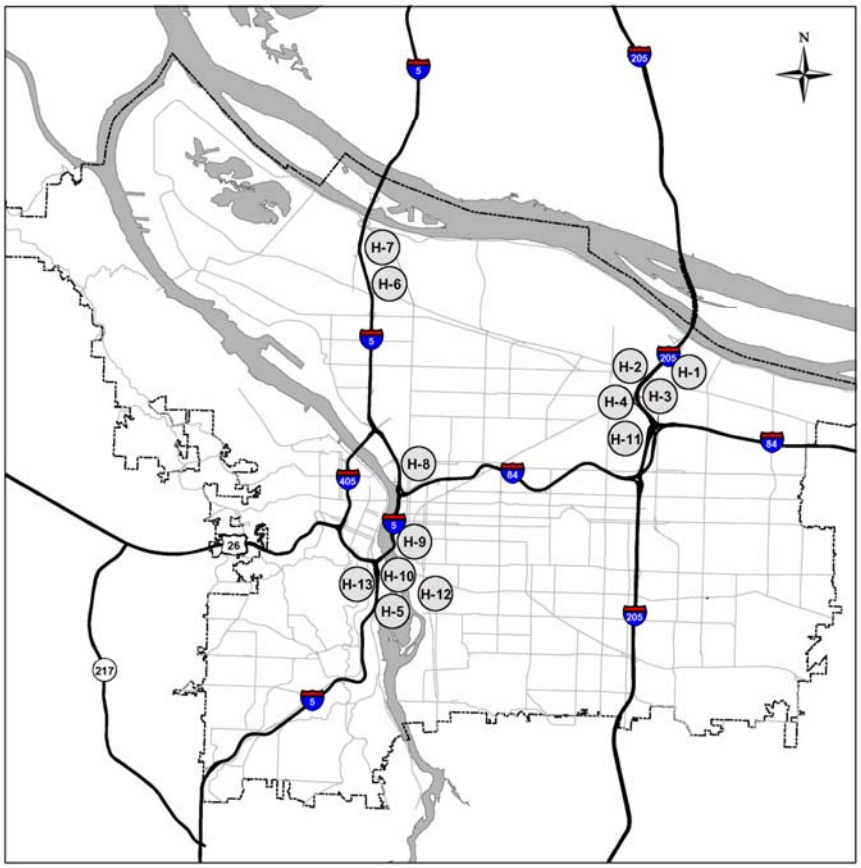
Appendix B includes the list of infrastructure improvements with detailed descriptions and estimated costs.

Table 5.1 Prioritization Criteria for Highway and Street Infrastructure Improvements for Freight

Criteria	Score	Rating
Policy Metrics		
Will this project benefit multimodal freight transportation movement?	High, Medium, or Low	Freight modes include trucks, rail, air, marine, pipeline • Low – benefits one mode • Medium – benefits 2 modes • High – benefits 3 or more freight modes
Is this project located on freight routes of significance?	High, Medium, or Low	• Low – Portland freight system only • Medium – Portland and Regional freight system • High – all the above plus Oregon Highway Plan and National Highway System
Operational Metrics		
Will this project improve reliability on the freight system?	High or Low	• Low – Minimal or no impact on system reliability • High – Improves freight travel-time in a corridor through operation improvements, or removes a system bottleneck, or improves a congested intersection/roadway
Will this project improve freight system connectivity?	High or Low	• Low – Minimal or no impact on system connectivity • High – Removes barriers such as load-limits, clearance restrictions, or improves street connectivity
Will this project improve safety on the freight system?	High or Low	• Low – Minimal or no impact on system safety • High – Reduces vehicle/rail conflicts, reduces risk of catastrophic failure, improves intersection turn movements at high accident locations
Will this project improve access to the airport, marine terminals or intermodal rail facilities	High or Low	Does this project improve primary access to airport, marine terminals, or intermodal facilities? • Low – No • High - Yes
Public Benefit Metrics		
Will this project contribute to improved air quality?	High or Low	• Low – Minimal or no impact on air quality • High – Reduces idling or travel time
Will this project also benefit transit, walking, bicycling?	High, Medium, or Low	• Low – Benefits 1 alternative mode • Medium – Benefits 2 alternative modes • High – Benefits 3 or more alternative modes

Highway

Figure 5.1 Highway Improvements



Funded

Map ID	Project Name
H7	I-5, N (Expo Center - Lombard): Widening Freeway
H10	I-5/North Macadam Access Improvements, SW

Tier 1

Map ID	Project Name
H6	I-5, N (at Columbia Blvd): Interchange Improvements
H8	I-5, N (Lloyd District/Rose Quarter): Reconstruction and Widening

Tier 2

Map ID	Project Name
H3	I-205, NE (I-205/Airport Way) Interchange Improvement at NB On-ramp
H4	I-205, NE (I-205/Airport Way) Interchange Improvement at SB On-ramp
H5	I-405/US 26/Ross Island Bridge, SW: Access Improvements
H13	Ross Island Bridge Interchange, SW

Tier 3

Map ID	Project Name
H1	Airport Way, NE: Braided Ramps
H2	I-205 ,NE (Columbia Blvd - Airport Way): Auxiliary Lane
H9	I-5/ McLoughlin, SE: Construct Access Ramps
H11	I-84/I-205, NE: Auxiliary Lane
H12	McLoughlin (99E), SE (Ross Island Bridge - Clatsop): Multi-modal Improvements

Street

Figure 5.2 Street Improvements – N & NW Portland

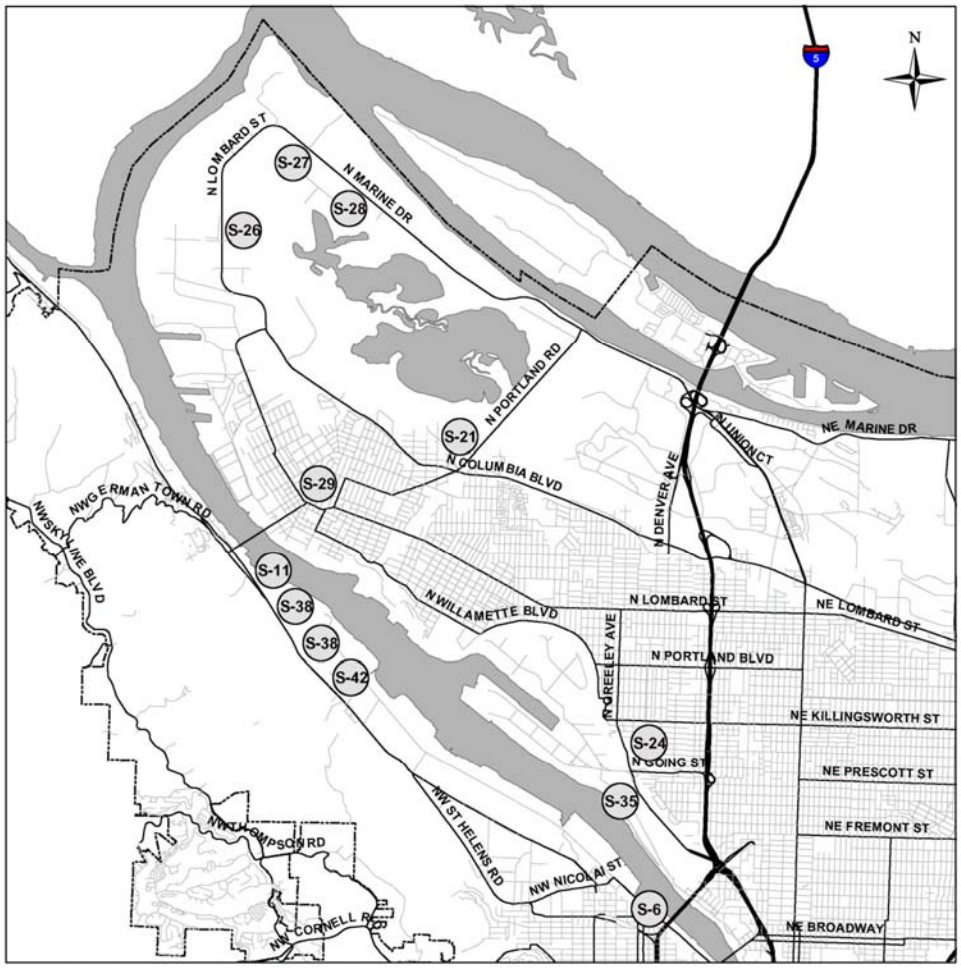


Figure 5.3 Street Improvements – NE Portland

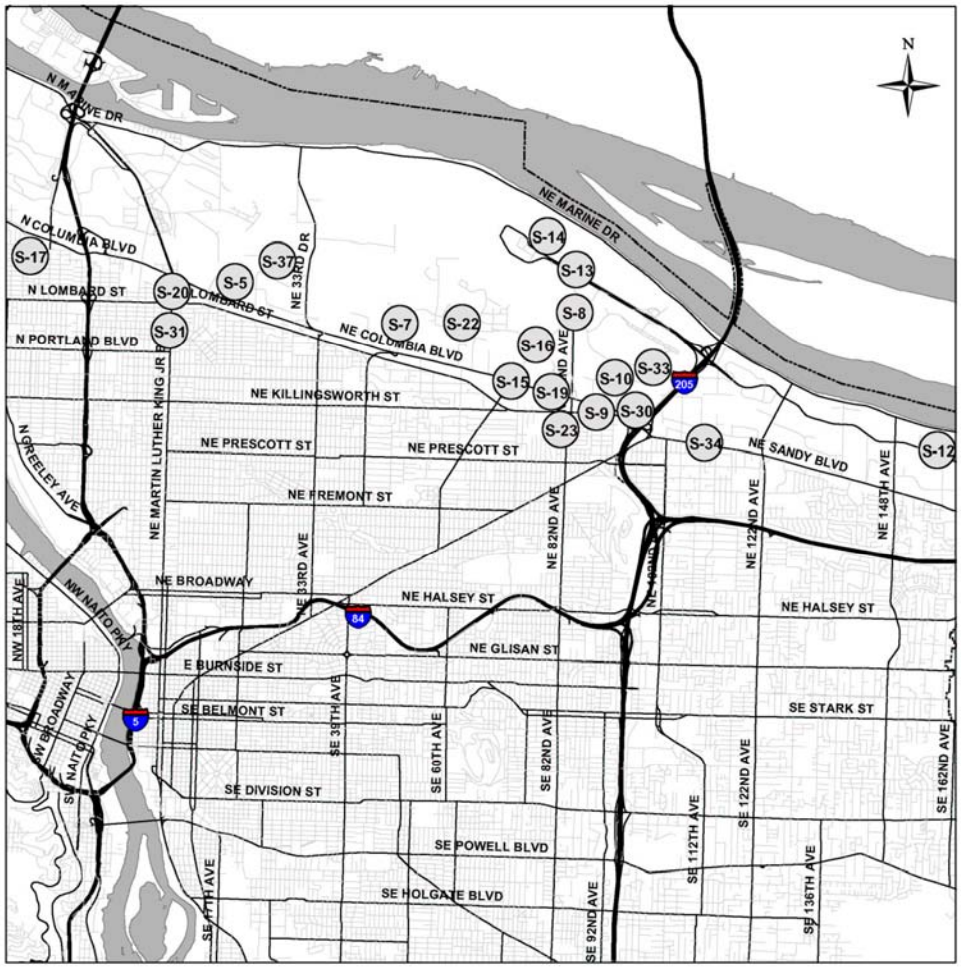
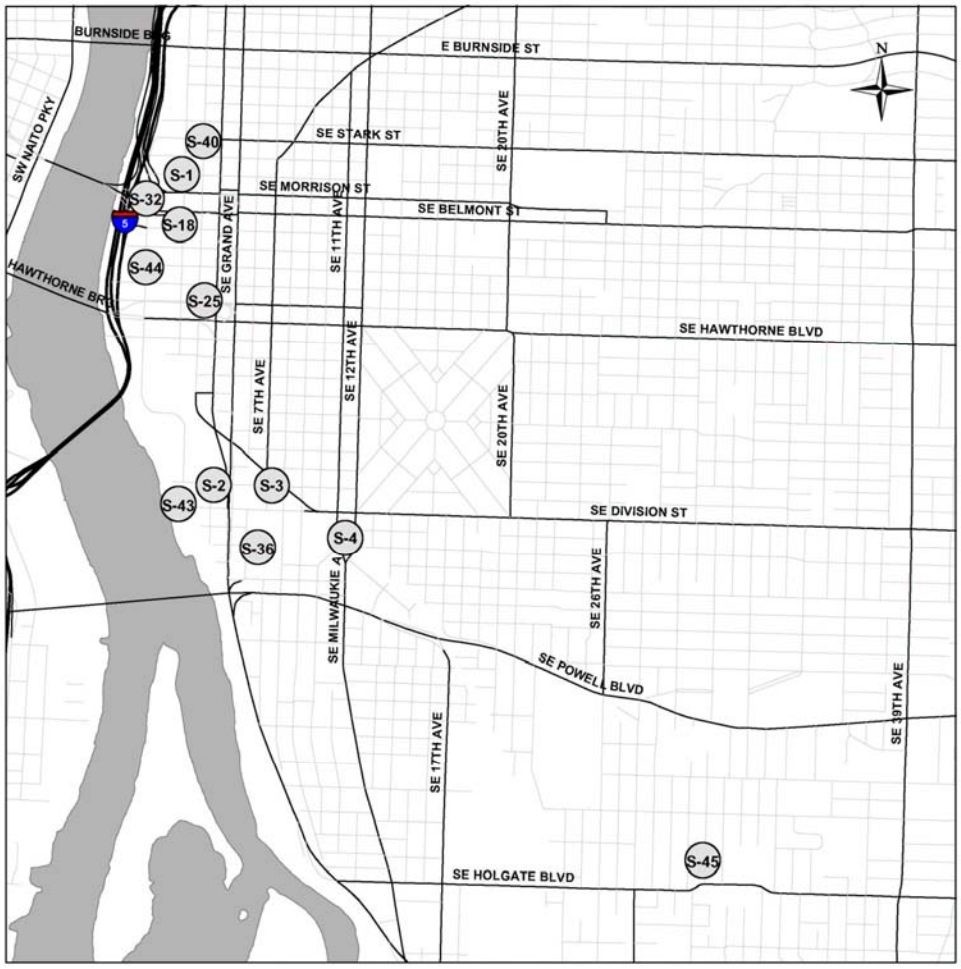


Figure 5.4 Street Improvements – Central Eastside Portland



Funded

Map ID	Project Name
S22	Cornfoot, NE (47th-Alderwood): Road Widening & Intersection Improvements
S23	East End Connector, NE
S27	Leadbetter, N (Marine Dr Loop): Street Extension
S28	Lombard, N (Rivergate - T-6): Multi-modal Improvements
S29	Lombard/St. Louis/Ivanhoe Multimodal Improvements, N
S32	Morrison Bridge at Water Ave Ramp, SE: Ramp Realignment
S41	Terminal 4 Driveway Consolidation
S42	US 30 at Lake Yard Hub Facility, NW: Access Improvements
S7	47th, NE (Columbia - Cornfoot): Roadway & Intersection Improvements
S8	82nd Ave/Alderwood Rd, NE: Intersection Improvements

Tier 1

Map ID	Project Name
S2	4th Ave, SE (Caruthers – Ivon): Multi-modal Street Improvements
S3	7th/8th Ave, SE: New Street Connection
S5	11th/13th, NE (at Columbia Blvd): Roadway Connector
S9	87th/Columbia, NE: Intersection Improvement
S15	Alderwood/Columbia Blvd/Cully, NE: Intersection Improvements
S16	Alderwood/Cornfoot Road, NE: Intersection Improvement
S20	Columbia Blvd/MLK Jr & Lombard/MLK Jr, NE: Intersection Improvements
S21	Columbia Blvd/Portland Rd, N: Intersection Improvements
S24	Going/Greeley, N: Climbing Lane and Interchange Improvements
S25	Grand Ave, SE: Bridgehead Improvements
S26	Heineman, N: Road Connection
S33	Mt St Helens Ave, NE (Cascades Parkway – Alderwood Rd): Street Extension
S38	St Helens Rd (US 30), NW, (in Willbridge area): Traffic Improvements
S43	Water Ave, SE (Caruthers – Division Pl): Street Extension Phase II

Tier 2

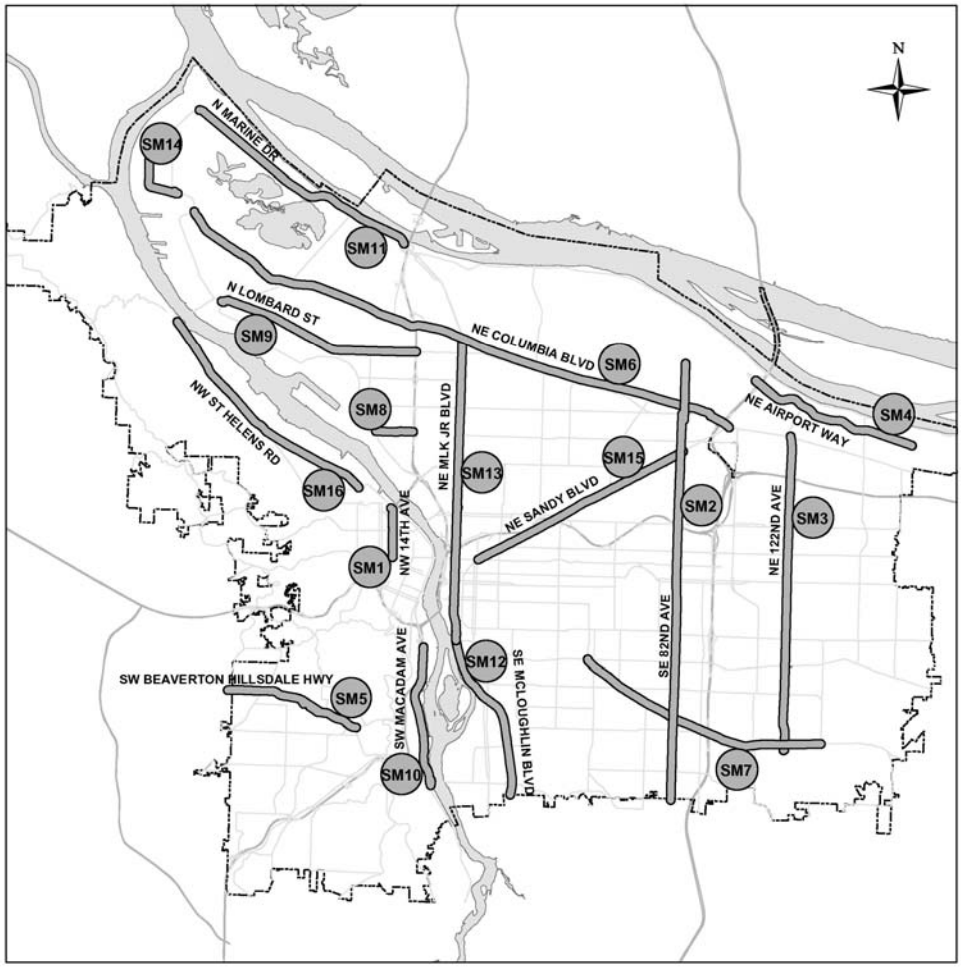
Map ID	Project Name
S4	11th/12th/Railroad Crossing, SE (West of Division): Intersection Improvements
S10	92nd Ave, NE, (Alderwood - Columbia Bl): Street Improvements
S11	112th Ave/US 30, NW: Intersection Improvements
S13	Airport Way, NE (82nd - PDX Terminal): Street Widening
S14	Airport Way, NE: Access Road
S18	Belmont Ramp, SE (Eastside of Morrison Bridge): Ramp Reconstruction
S19	Columbia Blvd, NE (60th - 82nd): Road Widening
S30	Marx Dr, NE (82nd-87th): Street Extension
S31	MLK Jr, NE (Columbia - Lombard): Widen Street
S35	River Ave, N (Port Center Way - River Ave): Street Extension
S37	Southwest Quad, NE (at 33rd): Access to PDX Properties
S39	St. Helens Rd (US 30), NW (at Saltzman & Balboa): Intersection Realignment
S40	Stark St, SE (2nd - Grand): Safety & Capacity Improvements
S44	Water Ave, SE (Stark - Clay): Reconstruction

Tier 3

Map ID	Project Name
S1	1st Ave, SE (Stark - Clay): Railroad Mainline Access Improvements
S6	14/16th Connections, NW
S12	158th, NE (Columbia Slough - Sandy Bl): Street Improvements
S17	Argyle, NE (14th - MLK): Street Extension
S34	Parkrose Connectivity Improvements, NE
S36	Southern Triangle Circulation Improvements, SE
S45	Sandy Bl, NE (122nd - City Limits): Multimodal Improvements

System Management

Figure 5.5 System Management Improvements



Funded

Map ID	Project Name
SM2	82nd, NE/SE: ITS

Tier 1

Map ID	Project Name
SM4	Airport Way, NE (I-205 - 158th): ITS
SM6	Columbia Blvd, N/NE(I-205 - Burgard): ITS
SM8	Going, N (Interstate - Greeley): ITS
SM14	Rivergate ITS, N
SM16	Yeon/St. Helens, NW: ITS

Tier 2

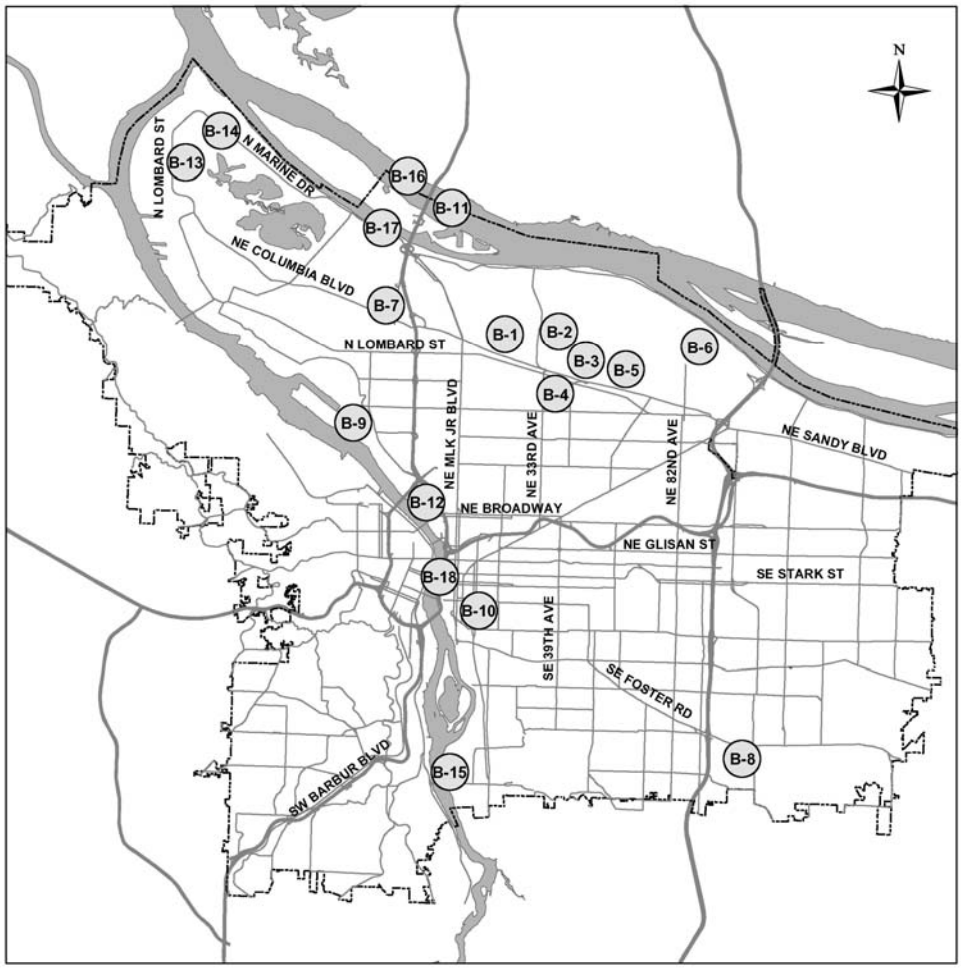
Map ID	Project Name
SM3	122nd, NE/SE (Airport Way - Powell): ITS
SM10	Macadam, SW (Bancroft - Sellwood Br): ITS
SM11	Marine Dr, N/NE (Portland Rd to 185th): ITS
SM12	McLoughlin, SE: ITS
SM13	MLK Jr, N (Columbia Bl - CEID): ITS
SM17	Powell Blvd, SE (Milwaukie – 122nd): ITS

Tier 3

Map ID	Project Name
SM1	14th/16th, NW/SW & 13th/14th, SW, Glisan - Clay: ITS, Clay to Glisan
SM5	Beaverton-Hillsdale Hwy, SW: ITS
SM7	Foster Rd, SE: ITS
SM9	Lombard, N/NE (MLK Jr - Philadelphia): ITS
SM15	Sandy Bl, NE (82nd - Burnside): ITS

Bridge

Figure 5.6 Bridge Improvements



Funded

Map ID	Project Name
B3	33rd, NE (at Columbia Slough): Bridge Replacement
B4	33rd, NE (at Lombard): Bridge Replacement
B8	Foster Rd, Bridge at Johnson Creek
B9	Going St Bridge, N: Bridge Replacement
B10	Grand/ MLK Jr Viaduct, SE: Reconstruct Viaduct
B11	I-5, N (Columbia River - Columbia Bl): Bridge Widening
B13	Lombard at Columbia Slough Overcrossing, N
B14	Lombard St. (Burgard) Structure Upgrade, N
B18	Willamette River Bridges, NE/NW/SE/SW: Rehabilitation for Broadway, Burnside, Morrison, and Sauvie Island (Phased improvement program)

Tier 1

Map ID	Project Name
B7	Denver Viaduct, N: Reconstruct Viaduct (Identified as Phase 2 alternative in I-5 Delta Park to Lombard project)
B15	Sellwood Bridge, SE/SW: Multi-modal Improvements
B16	Vancouver BNSF Rail Bridge Project (Columbia River)
B19	Vancouver Bridge, N (at Columbia Slough): Bridge Replacement

Tier 2

Map ID	Project Name
B1	21st, NE (at Columbia Slough): Bridge Replacement

Tier 3

Map ID	Project Name
B2	33rd Ramps, NE, (at Columbia Bl/Lombard): New Ramps
B5	42nd Bridge, NE (at Lombard): Bridge Replacement
B6	82nd/Airport Way, NE: Overcrossing
B12	Interstate, N, Bridge at Larrabee: Bridge Rehabilitation
B17	West Hayden Crossing, N

Rail

Figure 5.7 Rail Improvements

Tier 1

Map ID	Project Name
R7	Ramsey Rail Complex, N (south of Columbia Slough Bridge): Capacity Improvements
R8	Rivergate Rail Yard Expansion, N
R10	T-5 Unit Rail Loops #3 & #4
R11	T-6 Intermodal Third Lead
R16	West Hayden Island/Rivergate, N: Rail Access

Tier 2

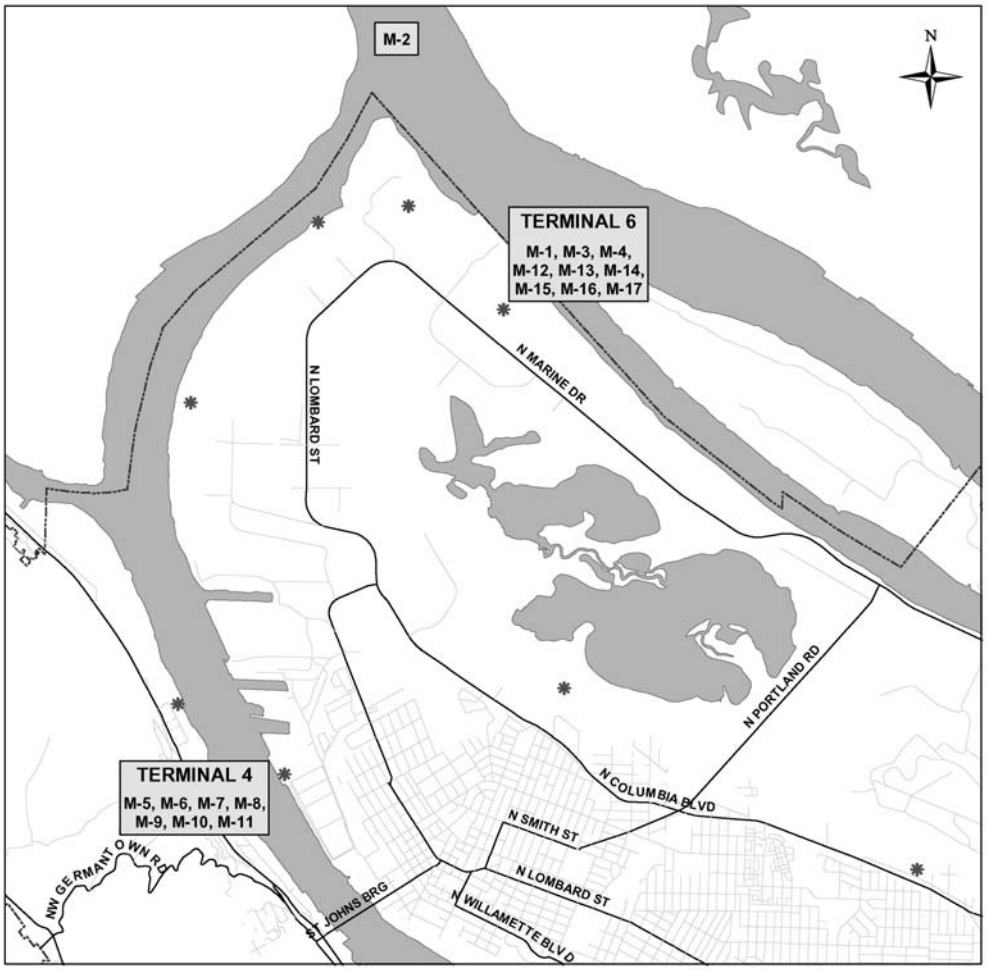
Map ID	Project Name
R1	Barnes Rail Yard - Bonneville Rail Yard, N: Track Expansion
R2	BNSF Line @ Columbia Bridge, N: Track Improvements
R5	North Portland Junction, N: Rail Improvements
R6	Penn Junction, N, UP/BNSF Main Line: Track Realignment
R12	Terminal 6 A&B Yards
R13	UP Line Connection, SE (Brooklyn line - Graham line)
R14	UP Line UPgrade, SE (Albina Yard - East Portland)

Tier 3

Map ID	Project Name
R3	Kenton Rail Line, NE: Additional RR Tracks
R4	Marine Dr, N (at Rivergate West): Rail Crossing, Phase II
R9	Slough Rail Bridge, N
R15	West Hayden Island Rail Yard Expansion, West Hayden Island

Marine

Figure 5.8 Marine Improvements



Funded

Map ID	Project Name
M2	Columbia River Channel Deepening - Regional Share, N/NE
M3	Container Crane - Terminal 6
M4	Honda Facility Upgrade, N
M10	Terminal 4 Pier 2 Rail Yard Improvements, N
M13	Terminal 6 Berth Deepening
M14	Terminal 6 Computer System Upgrades, N

Tier 1

Map ID	Project Name
M1	Access Tunnel at Hyundai/Kia Facility, N
M5	Hyundai Auto Terminal Expansion, N
M6	Mar Com North Facility, N
M7	Optional Terminal Lower Lot Access, N
M8	Terminal 4 Grain Elevator Barge Conveyor Rebuild, N
M9	Terminal 4 On-site Overcrossing, N
M15	Terminal 6 Container Dock Extension, N

Tier 2

Map ID	Project Name
M11	Terminal 4, N: Access Improvements
M16	Terminal 6 Dock Structural Upgrades, N

Tier 3

Map ID	Project Name
M12	Terminal 6 Additional Post-Panamax Cranes, N
M17	Terminal 6 - Marine Dr, N: Overcrossing

FUNDING THE FREIGHT SYSTEM

Appendix C includes an in depth discussion of the federal, state, regional and local transportation financing options for freight infrastructure improvements.

CHAPTER 6 TRUCKS AND STREET DESIGN

INTRODUCTION

Successful implementation of the freight mobility improvements and policies for trucks described in this document are based on the expectation that appropriate and consistent design practices are used for safe and convenient truck travel on city streets. Planning and designing for truck circulation and access is essential for all environments and districts in the city.

Streets within industrial areas as well as those that provide direct connections between industrial areas and the regional freeway system need to fully accommodate truck movements without impeding their mobility. In mixed-use areas, lane widths and corner radii may be narrowed to compel trucks to travel more slowly in order to provide a streetscape that supports significant pedestrian travel. In residential areas, all vehicle travel is limited to slower speeds, and streets in these areas are intended for local truck deliveries. Accommodating truck travel in these and other environments requires careful design practices that balance the needs of all users of the street.

This chapter provides a general overview of street design for trucks. *The Portland Design Guidelines for Trucks*, a companion document to the Freight Master Plan, is an in depth look at street design and trucks.

PLANNING FOR TRUCKS IN THE RIGHT-OF-WAY

Trucks come in many shapes and sizes, dictated by the goods or materials being hauled and the distance that the goods travel. The American Association of State Highway and Transportation Officials (AASHTO) have developed a classification system that identifies trucks by their approximate overall vehicle height, width, and length. This classification ranges from the SU-30 Single Unit truck (e.g., cement trucks, large rental trucks, local delivery trucks) up to the WB-67 Interstate truck (large semi-trailer with sleeper cab equipped tractor; this class also includes double and triple trailer combinations). Figure 6.1 shows the typical dimensions of the AASHTO standard vehicles referenced in these guidelines, and Table 6.1 lists the specific characteristics of each vehicle type. Additional information on these and other design vehicles can be found in the AASHTO "Policy on Geometric Design of Highways and Streets".[1]

Portland's Street Classification Designations

As shown in Table 6.2, streets within the City of Portland are designated by functional classifications on the basis of the traffic they are intended and expected to carry and the desired performance of traffic on those streets. With each designation comes a set of design principles to accomplish those functions. For example, Regional Truckways carry high volumes of intercity and interstate truck traffic on limited access highways with high speed limits, while Local Truck Streets are intended to accommodate local deliveries on streets with relatively slow travel speed limits.

[1] *Policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials, 2004

Figure 6.1: Dimensions of Typical Design Vehicles

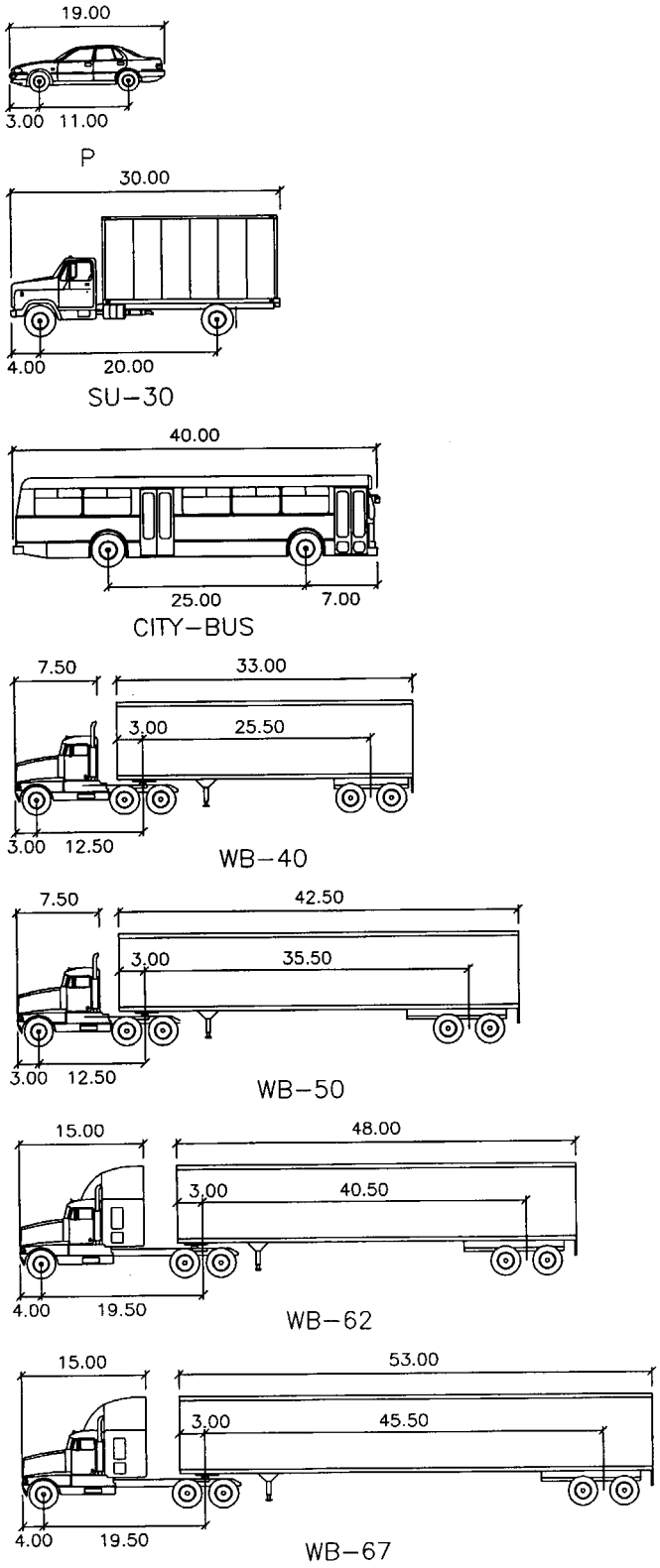


Table 6.1 Truck Design Vehicle Characteristics and Turning Movement Information

Design Vehicle	Symbol	Trailer	Wheelbase	Overall length	Minimum Design Turning Radius	Truck Widths* (without mirrors)	Minimum Inside Radius**
Automobile	P	none	11’	19’	24’	na	14.4’
Bus	BUS	none	25’	40’	42’	8.5’	24.5’
Single Unit Truck	SU-30	none	20’	30’	42’	8.5’	28.3’
Intermediate Semi-Trailer	WB-40	33’ trailer	40’	45’	40’	8.5’	19.3’
Intermediate Semi-Trailer	WB-50	42.5’ trailer	50’	55’	45’	8.5’	17.0’
Interstate Semi-Trailer	WB-62	48’ trailer	62’	68.5’	45’	8.5’	7.9’
Interstate Semi-Trailer	WB-67	53’ trailer	65’	73.5’	45’	8.5’	4.4’

Source: AASHTO *A Policy on Geometric Design of Highways and Streets*, 2001, Fourth Edition
* Mirrors on trucks extend between 12” and 18” from the frame of the truck.
**For a 180-degree turn.

Trucks in Freight Districts

Priority Truck Streets and local streets in Freight Districts should be designed to provide for good truck mobility, access, and circulation. Because trucks measure about 10.5’ wide (including side mirrors) it is important to provide adequate roadway lane width for a truck to travel without encroaching into an adjacent lane, where another vehicle could be struck or forced to take evasive action. In addition, most trucks require a minimum vertical clearance of at least 14’ between the roadway and overhead fixed objects. In addition to lane width and vertical clearance, other items to consider when designing a corridor for high truck activity include corner and median island radii, location of signs, utility and signal poles, street trees, and other roadside items.

While procedural guidance can be developed to provide general direction for design of intersections for trucks, the final configuration and best overall design of an intersection must still be completed by experienced designers. Basic geometric considerations, such as the angle at which the roads intersect, the presence of buildings abutting the right of way, and use of right-turn lanes will vary from intersection to intersection. Moreover, the surrounding land use, existing development, and many other factors could influence specific decisions about intersection design.

Trucks in Mixed-Use Neighborhoods

Portland’s mixed-use pedestrian and bicycle-friendly neighborhoods are hubs of activity hosting a variety of commercial and retail shops, restaurants, and residences and are referred to as “Centers” and “Main Streets”. Common features that benefit pedestrians, such as narrow streets, curb extensions, and parked cars, are the toughest challenges for trucks and can impact the ability for trucks to maneuver, particularly compared to the streetscape provided in Freight Districts.

In most instances, deliveries to businesses in these locations can be completed with smaller trucks. Their compact size and tight turning radius make them suitable for narrow street geometries and local deliveries. Typical trucks include the SU-30 and WB-40 truck types. However, on occasion larger trucks, such as a WB-50 truck or a WB-67 truck, must circulate in a Center or Main Street area to make a delivery. The key design elements that need to be considered for the occasional large truck is intersection design.

Figure 6.2 illustrates how a WB-67 truck would negotiate a right-hand turn onto a 4-lane street with a 15' turning radius. Note that the truck has to position to the left and use as much space as possible to turn the trailer into the desired direction.

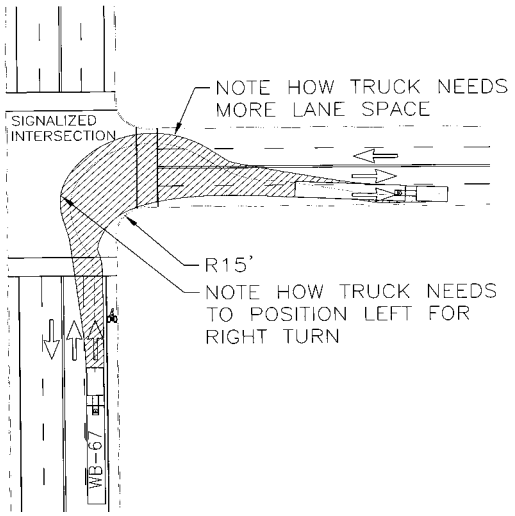


Figure 6.2: Right-hand turn by a WB-67 truck into a four-lane street with 15' curb radius.

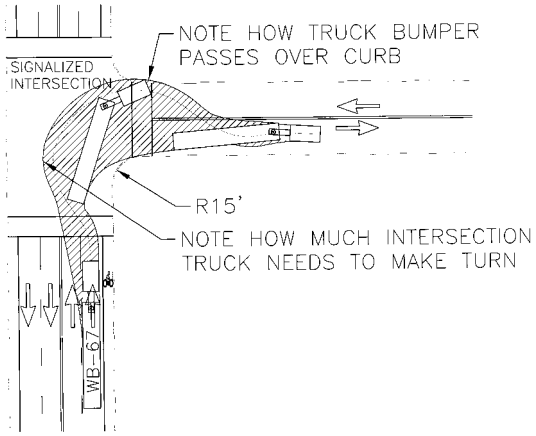


Figure 6.3: Right-hand turn by a WB-67 truck into a two-lane street with 15' curb

Figure 6.3 illustrates how a WB-67 truck completes a right-turn into a two-lane street. This is one of the most difficult street conditions a truck driver might face. Note how much of the on-street parking space the truck needs to complete the turn.

Trucks in Residential Areas

Portland's residential neighborhoods are principally designed for automobile, pedestrian and bicycle movements, and very low volumes of truck activity. While occasional large delivery trucks and moving vans travel in these areas, the more common truck type is smaller-sized delivery trucks. The streets serving residential areas are classified for local truck deliveries, and they are not intended for through truck trips. Trucks in these areas travel at relatively slow speeds and trucks conduct loading from on-street or even residential driveway locations.

Lane widths on streets within residential areas are often relatively narrow and may feature on-street parking on one or both sides of the street. The combination of these elements leads to posted slow speeds (typically under 25 mph), and in many instances, traffic calming devices (such as raised center islands, landscaping treatments, rumble strips, and speed bumps) to reinforce the speed limits and improve pedestrian safety. The minimum width for streets in residential neighborhoods with parking on both sides is

32', but many streets are as narrow as 20'. Similar to Centers and Main Streets, truck movements are complicated by limited curb radii, narrow roadways, and often, parked vehicles near intersections.

"DESIGN FOR" VERSUS "ACCOMMODATE" APPROACHES TO ADDRESSING TRUCK ACCESS

In the design of an intersection, it is essential to anticipate the type and size of trucks that will be accessing the intersection. The answers to these questions can be determined through an evaluation of the current and future surrounding land use, roadway classification, truck route designation, the need for a truck to turn at a particular intersection versus taking another more accessible route, etc.

With an understanding of the expected truck type, the designer evaluates the turning track maneuvers of a vehicle using AASHTO turning templates or specialized computer software such as AutoTURN2, including the path followed by the corners of the vehicle body or trailer, as well as the inside rear wheels. For a typical passenger vehicle, the path followed by the rear wheels is very nearly the same as that of the front wheels. With larger vehicles, the swept area becomes much larger as the inside rear wheels track substantially inside of the path of the front wheels. This becomes the most critical factor in sizing the intersection.

When developing designs to fully accommodate truck movements through an intersection, the designer establishes a travel path that allows the selected vehicle to remain entirely within its designated lane or lanes as it completes its turn. With respect to accommodating a truck in a tight street environment, the designer assumes more latitude for the vehicle path, including encroachment on adjacent lanes approaching and/or departing the intersection. (See Figure 6.4)
When seeking to accommodate larger vehicles in tight street environments, the designer often assumes a truck driver will shift to the left, hugging the lane line, before beginning a right turn, and will use all available lanes moving in their direction to begin and complete the turn.

[2] AutoTURN is a registered trademark of Transoft Solutions.

Figure 6.4 Examples of "Design For" and "Accommodate" in Truck Design

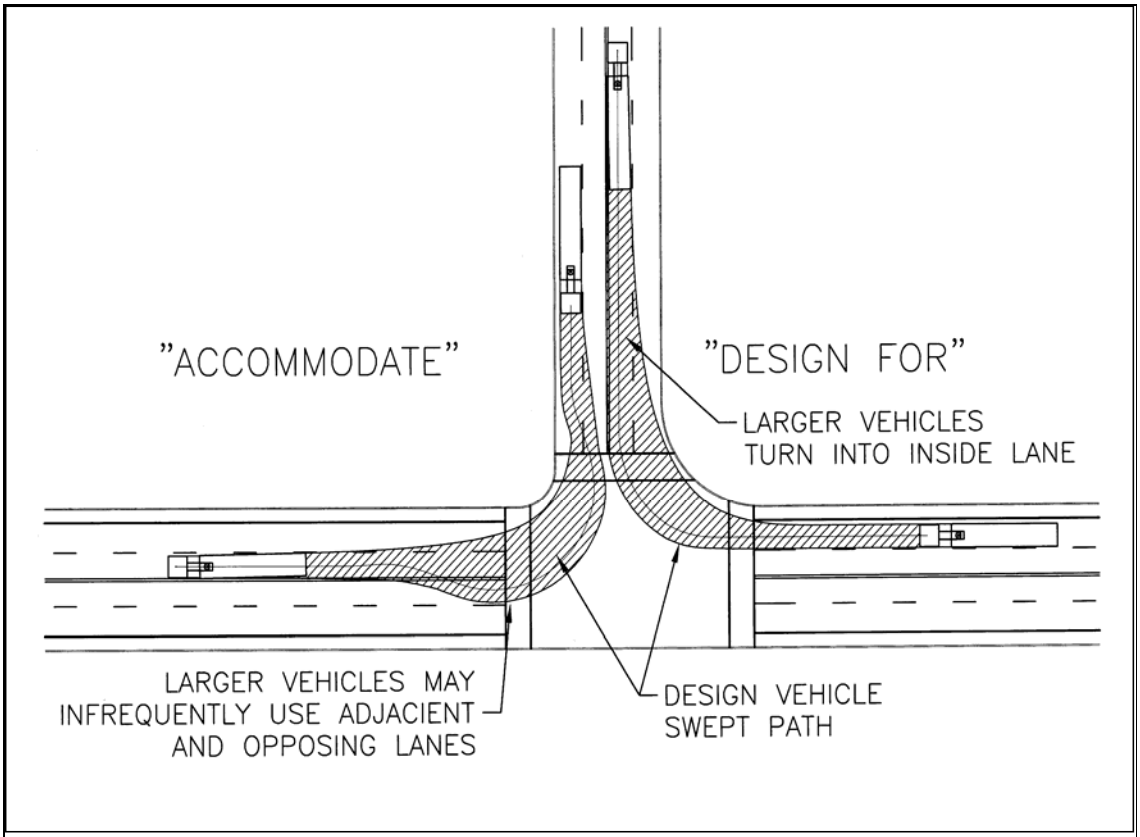


Figure 1b: Designing for Minimal and Optimal Truck Circulation at Intersections.
Note: This is just one example of how a designer might accommodate truck movements in a low traffic volume situation.

This can produce interference with other traffic during those times when trucks are turning. This is sometimes referred to as “operational accommodation” since the compromise is some loss of operational efficiency of traffic movements. If this maneuvering by large trucks is infrequent or if general traffic volume is low, the interference from the encroachment into adjacent lanes moving in the same direction as the trucks is considered acceptable.

If physical constraints, such as limited right of way, restrict the ability for all trucks to conveniently complete a turn, the designer may be forced to further compromise the intersection operation with regard to large trucks. At a minimum, the designer seeks to assure “physical accommodation” of large vehicles. In such cases, the designer tries to design the intersection such that there are no permanent physical features that prevent a large vehicle from negotiating a corner. For example, the designer could assume that the entire street width is available for truck maneuvering. This maneuvering may require that trucks use opposing travel lanes normally used by oncoming traffic, and could require pilot cars, flaggers, or permits. Designing for minimal truck circulation and access may not be a desirable condition; however, if truck traffic is infrequent and traffic volumes are low, it is a workable operation and would have little effect on an overall streetscape concept. In addition, the designer seeks to keep traffic signal poles, fire hydrants and other street features outside the obstruction free zone of a street corner so that in extreme cases, trucks might even drive over the curb to complete a turn.

Over-Dimension Load Considerations

Over-dimension variance permits are required by the Oregon Department of Transportation when truck width exceeds 8.5’ or when truck height exceeds 14’. Pilot cars are required according to the segment of highway being traversed. On some highways, pilot cars may be required for loads as narrow as 9’, but on other highways loads of 12’ or even 14’ may be permitted without pilot cars.

The City’s Continuous Operating Variance Permit Map provides guidance on designated pilot car routes.

The Manual on Uniform Traffic Control Devices (MUTCD) specifies that traffic signals be mounted with the bottom no less than 17’ and no more than 19’ above the pavement. In actual practice, some traffic signals in the Portland area fall outside these parameters. As indicated in the previous paragraph, trucks higher than 14’ require permits, so that the placement of traffic signals, even those mounted lower than the standard specified in the MUTCD, do not interfere with regular loads. Since over-dimension loads are an important form of freight, it is important to give these types of movements some consideration.

CONSIDERING TRUCKS IN DESIGN

This section provides a list of design considerations and suggested design practices for accommodating trucks in Centers and Main Street areas for use by engineers, architects, designers, and planners involved in the design and planning of street design concepts, land developments, and streetscapes that require access by trucks.

Coordination with Street Classifications

Streets in the City are classified according to their function in the transportation system. Higher-classified routes such as I-5 and US 26 carry high volumes of traffic over long distances, and have a significant number of larger vehicles. Lower-classified streets such as neighborhood collectors carry primarily passenger car traffic to and from residential areas. Policy language describes the desired function and design priorities for street classifications.

Plan for Trucks Early in the Process

Truck circulation should be considered early in the conceptual development of street design, as well as in the conceptual stages of a land use development proposal. During street design, consideration should be given to the level of truck activity along a street and access to and from adjacent properties. Street characteristics such as lane width, area and design of existing intersections need to be evaluated for their suitability to the types of trucks that are needed for businesses in the area. This is particularly important in existing urbanized areas outside of Freight Districts where conflicts with trucks are more likely to occur. Other land uses in the area that use trucks should also be noted.

During the conceptual design/design development stages of street design and land use actions, trucks need to be carefully considered in the design of loading facilities. Access to loading facilities (on- or off- street) and to properties on those streets need to be considered.

Suggested Design Practices for Accommodating Trucks in Main Street and Centers Environments

Suggested Design Practices are intended to illustrate some example solutions of facilities designed for and that accommodate truck movements.

Suggested Design Practice topics are divided into instances which are mostly found within Centers and on Main Streets, and instances which are typically found elsewhere (such as in Freight Districts). These include:

CENTERS AND MAIN STREETS

There are several elements of the Main Street toolbox in which considerations should be made for trucks. Specifically, these include:

- Pedestrian Median Refuge Islands
- Curb Extensions
- Mountable Curbs
- Intersection STOP Bar Location

In other locations around the city, such as in Freight Districts, other design strategies and tools should be considered, such as:

- Corner Islands
- Multiple Centered Curbs/Corners

Each of these Suggested Design Practices requires the cooperation of users, and some form of compromise. Truck operators, business owners, planning and transportation officials, should work together to find solutions that are acceptable to all involved.

APPENDIX A

COMPREHENSIVE PLAN POLICIES FOR FREIGHT MOBILITY

Goal 5 Economic Development

GOAL 5.4, TRANSPORTATION SYSTEM
Promote a multimodal regional transportation system that stimulates and supports long term economic development and business investment.

Objective A
Support multimodal freight transportation improvements to provide competitive regional access to global markets and facilitate the efficient movement of goods and services in and out of Portland's major industrial and commercial districts. Ensure access to intermodal terminals and related distribution facilities to facilitate the local, national, and international distribution of goods and services.

Objective B
Use transportation system improvements as a catalyst for attracting industrial and employment development.

Objective H
Pursue transportation and parking improvements that reinforce commercial, industrial and residential districts and promote development of new districts.

Goal 6 Transportation

POLICY 6.3 TRANSPORTATION EDUCATION
Implement educational programs that support a range of transportation choices and emphasize safety for all modes travel.

Objective B
Implement educational programs that recognize the need for developing and maintaining a multimodal transportation system that supports the movement of freight as well as people.

POLICY 6.9 FREIGHT CLASSIFICATION DESCRIPTIONS
Designate a system of truck streets, railroad lines, and intermodal freight facilities that support local, national, and international distribution of goods and services.

Objective A. Freight Districts
Freight Districts are intended to provide safe and convenient truck mobility and access in industrial and employment areas serving high levels of truck traffic.

- Land Use. Support locating industrial and employment land uses that rely on multimodal freight movement Freight Districts.
- Function. Freight District streets provide local truck access and circulation to industrial and employment land uses.
- Connections. In Freight Districts, streets not classified as Regional Truckways or Priority Truck Streets are classified as Freight District streets. Freight District streets connect individual properties to Priority Truck Streets.

- Design. Freight District streets should be designed to accommodate all truck types and over-dimensional loads, as practicable.

Objective B. Regional Truckways
Regional Truckways are intended to facilitate interregional and interstate movement of freight.

- Land Use. Support locating industrial and employment land uses with high levels of truck activity near Regional Truckway interchanges.
- Function. Provide for safe and efficient continuous-flow operation for trucks.
- Connection. Provide Regional Truckway interchanges that directly serve Freight Districts and connect to Priority Truck Streets and other streets with high levels of truck activity.
- Design. Design Regional Truckways to be limited access facilities and to standards that accommodate all truck types.

Objective C. Priority Truck Streets
Priority Truck Streets are intended to serve as the primary route for access and circulation in Freight Districts, and between Freight Districts and Regional Truckways.

- Land Use. Support locating industrial and employment uses that generate high truck activity on corridors served by Priority Truck Streets.
- Function. Priority Truck Streets accommodate high truck volumes and provide high-quality mobility and access.
- Connections. Priority Truck Streets connect Freight Districts to Regional Truckways.
- Design. Priority Truck Streets should be designed to accommodate all truck classes and over-dimensional loads, as practicable. Buffer adjacent residential uses from noise impacts, where warranted.

Objective D. Major Truck Streets
Major Truck Streets are intended to serve as principal routes for trucks in a Transportation District.

- Land Use. Commercial and employment land uses that generate high levels of truck activity should locate along Major Truck Streets.
- Function. Major Truck Streets provide truck mobility within a Transportation District and access to commercial development along the corridor.
- Connections. Major Truck Streets connect Transportation District-level truck trips to Regional Truckways. Trucks with no trip ends within a Transportation District should be discouraged from using Major Truck Streets.
- Design. Major Truck Streets should accommodate all truck types, as practicable.

Objective E. Truck Access Streets
Truck Access Streets are intended to serve as a main route for delivery of goods and services to neighborhood-serving commercial and employment locations.

- Land Use. Support locating commercial land uses that generate lower volumes of truck trips on Truck Access Streets.

- Function. Truck Access Streets should provide access and circulation to land uses within a Transportation District. Non-local truck trips are discouraged from using Truck Access Streets.
- Connections. Truck Access Streets should distribute truck trips from Major Truck Streets to neighborhood-serving destinations.
- Design. Design Truck Access Streets to accommodate truck needs in balance with other modal needs of the street.

Objective F. Local Service Truck Streets
Local Service Truck Streets are intended to serve local truck circulation and access.

- Land Use. Local Service Truck Streets provide for goods and service delivery to individual commercial, employment, and residential locations outside of Freight Districts.
- Function. Local Service Truck Streets should provide local truck access and circulation only.
- Connections. All streets, outside of Freight Districts, not classified as Regional Truckways, Priority Truck Streets, Major Truck Streets, or Truck Access Streets are classified as Local Service Truck Streets. Local Service Truck Streets with a higher Traffic classification are the preferred route for local access and circulation.
- Design. Local Service Truck Streets should give preference to accessing individual properties and the specific needs of property owners and residents along the street. Use of restrictive signage and operational accommodation are appropriate for Local Truck Streets.

Objective G. Railroad Main Lines
Railroad Main Lines transport freight cargo and passengers over long distance as part of a railway network.

Objective H. Railroad Branch Lines
Railroad Branch Lines transport freight cargo over short distances on local rail lines that are not part of a rail network and distribute cargo to and from main line railroads.

Objective I. Freight Facilities
Freight Facilities include the major marine, air, rail, and pipeline terminals that facilitate the local, national and international movement of freight.

POLICY 6.13 TRAFFIC CALMING
Manage traffic on Neighborhood Collectors and Local Traffic Streets, along main streets, and in centers consistent with their street classifications, classification descriptions, and desired land uses.

Objective C.
Encourage non-local traffic, including trucks, to use streets of higher traffic and truck classification through design, operations, permitting, and signing.

POLICY 6.15 TRANSPORTATION SYSTEM MANAGEMENT
Give preference to transportation improvements that use existing roadway capacity efficiently and improve the safety of the system.

Objective B.
Employ transportation system management measures, including coordinating and synchronizing signals and intersection design, to improve mobility and safety for all modes.

POLICY 6.29 MULTI-MODAL FREIGHT SYSTEM
Develop and maintain a multimodal freight transportation system for the safe, reliable, and efficient movement of freight within and through the City.

Explanation: The relationship between the movement of freight, goods and services is also addressed by objectives under Policy 5.4, Transportation System, of the Economic Development goal of the Comprehensive Plan.

Objective A
Support a well-integrated freight system that includes truck, rail, marine, air, and pipeline modes as vital to a healthy economy.

Objective B
Coordinate with private and public stakeholders to identify improvement and funding strategies for multimodal freight mobility needs.

Objective C
Participate with inter-jurisdictional partners in the development of corridor plans, master plans, and regional facility plans that impact freight mobility.

Objective D
Address freight access and mobility needs when conducting multimodal transportation studies or designing transportation facilities.

Objective E
Work with community stakeholders to minimize adverse impacts of freight activity on the environment and residential and mixed-use neighborhoods.

POLICY 6.30 TRUCK MOBILITY
Develop, manage, and maintain a safe, efficient, and reliable freight street network to serve Freight Districts, commercial areas, and neighborhoods.

Explanation: This policy recognizes the City's role in managing truck movement on its street system.

Objective A
Prioritize transportation investments in the freight street network that improve connections between Freight Districts and Regional Truckways.

Objective B
Accommodate truck travel on designated truck streets through improvements to facility design and operations that address the dimensional needs of trucks.

Objective C
Encourage through-truck traffic to use Regional Truckways, Priority Truck Streets, and Major Truck Streets for mobility and Truck Access Streets and Local Service Truck Streets to access local destinations.

Objective D
Develop and implement street connectivity plans for Freight Districts to improve truck circulation and access to industrial land uses.

Objective E
Develop and implement a signage plan for designated truck routes and major freight destinations.

Objective F
Designate and maintain preferred routes to accommodate over-dimensional freight movement.

Objective G
Employ intelligent transportation system measures to reduce delays and improve travel time on Regional Truckways, Priority Truck Streets and Major Truck Streets.

POLICY 6.31 TRUCK ACCESSIBILITY
Improve truck access to and from intermodal freight facilities, industrial and commercial districts, and the regional freight system.

Objective A
Evaluate and improve locations where inadequate roadway design creates barriers for truck access in Freight Districts and on designated truck streets.

Objective B
Upgrade bridges to remove load limits and vertical clearance restrictions on designated truck streets.

Objective C
Use public-private collaboration to identify and implement measures to minimize delays and improve safety at at-grade rail freight crossings.

Objective D
Provide adequate off-street loading areas for larger employment, commercial and multi-family developments.

Objective E
Manage supply, operations, and demand of on-street truck loading spaces to ensure efficient, reliable and safe loading and unloading activities.

Objective F
Implement design guidelines for truck streets that meet the dimensional needs of trucks, party for Freight Districts, while balancing the needs of other transportation modes in the right-of-way.

POLICY 6.34 NORTH TRANSPORTATION DISTRICT
Reinforce neighborhood livability and commercial activity by planning and investing in a multimodal transportation network, relieving traffic congestion through measures that reduce transportation demand, and routing non-local and industrial traffic along the edges of the residential areas.

Objective A

(Add Transportation District Policies/Objectives that related to Freight – include new North District objective for Over-dimensional Freight on Lombard and SE District objective about Holgate)

Goal 11B Public Rights-of Way

POLICY 11.10 STREET DESIGN AND RIGHT-OF-WAY IMPROVEMENTS
Design improvements to existing and new transportation facilities to implement transportation and land use goals and objectives.

Objective E
Use a variety of transportation resources in developing and designing projects for all City streets, such as the City of Portland's Pedestrian Design Guide, Bicycle Master Plan-Appendix A, Design Guide for Truck Streets, and Design Guide for Public Street Improvements.

APPENDIX B

FREIGHT SYSTEM INFRASTRUCTURE IMPROVEMENTS

HIGHWAY				
H1	**Airport Way, NE: Braided Ramps**	*Construct braided ramps between the I-205 interchange and Cascade interchange to maintain capacity and improve safety on Airport Way and freeway interchanges.*	Est. Cost: $30 M	Tier 3
H2	**I-205 ,NE (Columbia Blvd - Airport Way): Auxiliary Lane**	*New auxiliary lane on I-205 connecting Columbia Blvd and Airport Way ramps to reduce slowdowns and help improve safety for merging vehicles.*	Est. Cost: $20 M	Tier 3
H3	**I-205, NE (I-205/Airport Way) Interchange Improvement at NB On-ramp**	*New I-205 NB on-ramp at Airport Way interchange to provide additional capacity for anticipated growth at interchange.*	Est. Cost: $23 M	Tier 2
H4	**I-205, NE (I-205/Airport Way) Interchange Improvement at SB On-ramp**	*Widen I-205 SB on-ramp at Airport Way interchangeto provide additional capacity for anticipated growth at interchange.*	Est. Cost: $1 M	Tier 2
H5	**I-405/US 26/Ross Island Bridge, SW: Access Improvements**	*Construct new freeway access from Ross Island Bridge to I-405 and US 26 to improve connections between regional facilities and separate traffic from neighborhood streets.*	Est. Cost: $50 M	Tier 2
H6	**I-5, N (at Columbia Blvd): Interchange Improvements**	*Construct full direction access interchange based on recommendations from I-5: Delta Park to Lombard Environmental Assessment to improve connections between the Columbia Corridor industrial area and I-5.*	Est. Cost: $56 M	Tier 1
H7	**I-5, N (Expo Center - Lombard): Widening Freeway**	*Widen I-5 to three lanes in each direction from Lombard to the Expo Center exit to improve safety and repair a system bottleneck.*	Est. Cost: $41 M	Funded
H8	**I-5, N (Lloyd District/Rose Quarter): Reconstruction and Widening**	*Modernize freeway and ramps between I-84 interchange and Fremont Bridge. Project improves safety, access to the Lloyd District and Rose Quarter, and reduces delay.*	Est. Cost: $92 M	Tier 1
H9	**I-5/ McLoughlin, SE: Construct Access Ramps**	*Construct new ramps from McLoughlin to I-5 NB near Division to improve connections between regional facilities.*	Est. Cost: $20 M	Tier 3

H10	**I-5/North Macadam Access Improvements, SW**	*Construct new off-ramp at NB I-5 to NB Macadam Ave to add capacity and improve safety.*	Est. Cost: $60.0 M	Funded
H11	**I-84/I-205, NE: Auxiliary Lane**	*New auxiliary lane from I-84 to I-205 NB before Columbia Blvd to reduce slowdowns and help improve safety for merging vehicles.*	Est. Cost: $5 M	Tier 3
H12	**McLoughlin (99E), SE (Ross Island Bridge - Clatsop): Multi-modal Improvements**	*Provide access management, reversible travel lane from Ross Island Bridge to Harold, widen to six lanes from Harold to I-205 and construct pedestrian and bike facilities. Project reduces vehicle delay and improves corridor access for pedestrian and bicycles.*	Est. Cost: $96.5 M	Tier 3
H13	**Ross Island Bridge Interchange, SW**	*US 26 Interchange improvement on east approach to Ross Island Bridge.*	Est. Cost: $4.4 M	Tier 2
STREET				
S1	**1st Ave, SE (Stark - Clay): Railroad Mainline Access Improvements**	*Construct limited roadway access improvements, such as one-way vehicle circulation loops or loading zones, along the east side of the ROW adjacent to, but protected from, the railroad mainline.*	$750 K	Tier 3
S2	**4th Ave, SE (Caruthers - Ivon): Multi-modal Street Improvements**	*Improve geometrically constrained 4th and Caruthers intersection to facilitate truck turning movements. Construct urban standard street improvements for traffic, and pedestrian and bike facilities connecting the Springwater Corridor to Caruthers.*	$250 K	Tier 1
S3	**7th/8th Ave, SE: New Street Connection**	*Construct new street connection from SE 7th to 8th Avenue at Division Street to improve local street connectivity for industrial properties.*	$500 K	Tier 1
S4	**11th/12th/Railroad Crossing, SE (West of Division): Intersection Improvements**	*Reconstruct intersection to upgrade traffic signalization and establish bike and ped routes to improve safety and reduce delay at intersection.*	$400 K	Tier 2

S5	**11th/13th, NE (at Columbia Blvd): Roadway Connector**	*New three lane roadway and bridge over rail line to connect Lombard and Columbia. Provides space for doube tracking of rail line. Improves freight mobility through additional rail capacity, new street connection, and grade separation.*	$8 M	Tier 1
S6	**14/16th Connections, NW**	*Improve or create connections to W. Burnside, Yeon, and Vaughn and provide directional signage to route non-local traffic to 14th/16th couplet.*	$200 K	Tier 3
S7	**47th, NE (Columbia - Cornfoot): Roadway & Intersection Improvements**	*Widen and reconfigure intersections to better facilitate truck turning movements to the cargo area located within the airport area. Project includes sidewalks and bikeway improvements.*	$4.1 M	Partially Funded 1 - 5 Years
S8	**82nd Ave/Alderwood Rd, NE: Intersection Improvements**	*Construct right turn lane on SB 82nd Ave; modify traffic signal and construct second right turn lane on Alderwood westbound. Project improves access to industrial properties.*	$200 K	Partially Funded 1 - 5 Years
S9	**87th/Columbia, NE: Intersection Improvement**	*Widen intersection to accommodate large truck turning movements (53' trailer). Project includes r-o-w acquisition, retaining walls, bike lanes and sidewalks, and stormwater facilities. Project improves access to industrial properties.*	$454 K	Tier 1
S10	**92nd Ave, NE, (Alderwood - Columbia Bl): Street Improvements**	*Extend 92nd to Alderwood to improvement better facilitate circulation in the Portland International Center development. Scope of project not fully defined.*	$1.5 M	Tier 2
S11	**112th Ave/US 30, NW: Intersection Improvements**	*Add traffic signal to improve safety and property access.*	$135 K	Tier 2
S12	**158th, NE (Columbia Slough - Sandy Bl): Street Improvements**	*Reconstruct street to industrial standards, add sidewalks, stripe bike lanes, curb and storm drainage, and construct bridge to replace culverts at main slough crossing.*	$480 K	Tier 3
S13	**Airport Way, NE (82nd - PDX Terminal): Street Widening**	*Widen to three lanes in both directions to improve traffic flow.*	$10 M	Tier 2
S14	**Airport Way, NE: Access Road**	*Construct Airport Way East Terminal access road to improve access to properties.*	$8.0 M	Tier 2

S15	**Alderwood/Columbia Blvd/Cully, NE: Intersection Improvements**	*Reconstruct intersection to provide left turn pockets, enhancing turning radii and improving circulation for trucks serving expanding air cargo facilities south of Portland.*	$350 K	Tier 1
S16	**Alderwood/Cornfoot Road, NE: Intersection Improvement**	*Add signal and improve turn lanes at Alderwood Road/Cornfoot Road to improve safety, circulaiton, and access to PDX and Portland International Center properties.*	$350 K	Tier 1
S17	**Argyle, NE (14th - MLK): Street Extension**	*Extend NE Argyle to provide better street grid. Will serve as a collector/distributor for industrial businesses & reduce traffic congestion at MLK/Columbia intersection.*	$480 K	Tier 3
S18	**Belmont Ramp, SE (Eastside of Morrison Bridge): Ramp Reconstruction**	*Reconstruct ramp to provide better access to the Central Eastside.*	$1.5 M	Tier 2
S19	**Columbia Blvd, NE (60th - 82nd): Road Widening**	*Widen Columbia Blvd to five lanes in this segment to address a system bottleneck and improve property access.*	$15 M	Tier 2
S20	**Columbia Blvd/MLK Jr & Lombard/MLK Jr, NE: Intersection Improvements**	*Widen turn lanes at MLK Jr intersections with Columbia and Lombard to facilitate truck turning movements.*	$700 K	Tier 1
S21	**Columbia Blvd/Portland Rd, N: Intersection Improvements**	*Redesign of intersection could include realignment of travel lanes, channelization, signalization, signage, and new sidewalks and curbs. Project reinforces through-truck movements on truck streets and minimizes neighborhood cut-through traffic.*	$700 K	Tier 1
S22	**Cornfoot, NE (47th-Alderwood): Road Widening & Intersection Improvements**	*Road widening project including lighting and landscaping, left turn lanes, and bike lanes (47th - Airtrans Way). Signalize Cornfoot/Airtrans intersection and reconfigure traffic flow. Stripe bike lanes (Airtrans - Alderwood). Project improves traffic flow to air cargo facilities in airport area.*	$2.0 M	Partially Funded

S23	**East End Connector, NE**	*Construct an at-grade intersection connection from Columbia Bl at 82nd to US 30 Bypass/I-205 interchange and widen I-205 southbound on-ramp at Columbia Bl. Project resolves an existing safety and capacity problem at terminus of Columbia Blvd at 92nd. Adds capacity to Lombard. With completion of project, Killingsworth replaces Columbia Blvd as NHS intermodal connector east of new connection.*	$26.5 M	Funded - Construction s begins 2005
S24	**Going/Greeley, N: Climbing Lane and Interchange Improvements**	*Redesign Going/Greeley interchange including climbing lane on Going to improve truck movement between Swan Island, Lower Albina, and I-5.*	$2 M	Tier 1
S25	**Grand Ave, SE: Bridgehead Improvements**	*Reconstruct west edge of SE Grand at bridgehead to provide sidewalks and urban standard turn lanes for vehicles. Improves truck safety and access.*	$4.1 M	Tier 1
S26	**Heineman, N: Road Connection**	*Construct new street to provide access to developing Port of Portland industrial property.*	$570 K	Tier 1
S27	**Leadbetter, N (Marine Dr Loop): Street Extension**	*Extend Leadbetter to Terminal 6/Marine Drive, including a new rail overcrossing to provide access to developing Port property and address delay from at-grade rail crossing.*	$10.8 M	Partially Funded 1 - 5 Years
S28	**Lombard, N (Rivergate - T-6): Multi-modal Improvements**	*Widen N Lombard to include two travel lanes, a non-continuous center turn lane, medians, bike lanes, sidewalks and planting strips to improve safety and access to industrial properties.*	$3.6 M	Partially Funded 1 - 5 Years
S29	**Lombard/St. Louis/Ivanhoe Multimodal Improvements, N**	*Restripe, construct curb extensions, realign, and signalize as needed to improve pedestrian and bicyclists amenities while not impeding truck movements. Project maintains truck movement and minimizes conflicts with bicycles and pedestrians in town center.*	$1.4 m	Phase 1 Funded
S30	**Marx Dr, NE (82nd-87th): Street Extension**	*Extend NE Marx Dr west from 87th and signalize at 82nd Ave to provide better street connectivity for industrial properties.*	$315 K	Tier 2

S31	**MLK Jr, NE (Columbia - Lombard): Widen Street**	*Expand roadway to provide better connection between streets for improved freight movement in and through the area.*	$12.6 M	Tier 2
S32	**Morrison Bridge at Water Ave Ramp, SE: Ramp Realignment**	*Realign and separate the Morrison Bridge off-ramp to Water Avenue from the I-5 off-ramp by moving it north approximately 100' from the Yamhill/Water intersection. Construct a sidewalk and bike lane along the south side of the realigned ramp.*	$1.75 M	Funded - Construction begins 2005
S33	**Mt St Helens Ave, NE (Cascades Parkway - Alderwood Rd): Street Extension**	*Construct two-lane road extension to provide traffic access for developing properties.*	$1.5 M	Tier 1
S34	**Parkrose Connectivity Improvements, NE**	*Supplement access route for commercial properties in Parkrose by creating a loop road connection (102nd and 109th, NE, Killingsworth - Sandy; Killingsworth, NE, 109nd - 102nd) serving truck access functions, pedestrian, and bike connections.*	$500 K	Tier 3
S35	**River Ave, N (Port Center Way - River Ave): Street Extension**	*Secondary access road from Swan Island connecting to the Lower Albina Overcrossing at River. Improvements include roadway, drainage, pedestrian path & bike routes. Project improves street connectivity for industrial properties.*	N/A	Tier 2
S36	**Southern Triangle Circulation Improvements, SE**	*Improve local street network and regional access routes in the area between the Powell/12th, Willamette River, railroad mainline and Hawthorne Bridge. Improve freeway access route from CEID to I-5 SB via the Ross Island Bridge.*	$2.5 M	Tier 3
S37	**Southwest Quad, NE (at 33rd): Access to PDX Properties**	*Provide street access from 33rd into the SW Quad property to provide access to developing Port properties.*	$1.5M	Tier 2
S38	**St Helens Rd (US 30), NW, (in Willbridge area): Traffic Improvements**	*Install center turn lane to NW Front to improve safety and property access*	$300 K	Tier 1
S39	**St. Helens Rd (US 30), NW (at Saltzman & Balboa): Intersection Realignment**	*Realign intersections to correct two offset intersections.*	$600 K	Tier 2

S40	**Stark St, SE (2nd - Grand): Safety & Capacity Improvments**	*Improve safety and capacity at the Stark/Grand intersection by restriping street to add eastbound lane, revising Stark to one-way eastbound between King-Grand, or implement a Stark-Oak one-way couplet between 2nd and Grand.*	$50 K	Tier 2
S41	**Terminal 4 Driveway Consolidation**	*Consolidate driveways at Terminal 4 and Schnitzer Steel to improve industrial property access.*	$1 m	Funded
S42	**US 30 at Lake Yard Hub Facility, NW: Access Improvements**	*Provide an access lane on US 30 for trucks entering and/or exiting the site, add a signal at the entrance, and if needed construct an on-site access road and realigning tracks to improve access to intermodal yard and improve corridor safety.*	$2 M	Funded
S43	**Water Ave, SE (Caruthers - Division Pl): Street Extension Phase II**	*Provide new roadway connection with sidewalks, bike lanes, landscaping, access to Willamette Greenway to improve access and circulation for industrial district.*	$250 K	Tier 1
S44	**Water Ave, SE (Stark - Clay): Reconstruction**	*Reconstruct street to meet industrial needs and provide pedestrian enhancements.*	$900 K	Tier 2
S45	**Sandy Bl, NE (122nd - City Limits): Multimodal Improvements**	*Widen street to three or five lanes with sidewalks and bike lanes.*	$5.75 M	Tier 3
SYSTEM MANAGEMENT				
SM1	**14th/16th, NW/SW & 13th/14th, SW, Glisan - Clay: ITS, Clay to Glisan**	*Closed-circuit TV (CCTV) camera at Everett. Changeable message signs at Glisan, Everett, Burnside, Taylor, Jefferson and Clay intersections.*	$175 K	Tier 3
SM2	**82nd, NE/SE: ITS**	*Implement ITS infrastructure to allow monitoring & control of traffic flow including circuit TV cameras & variable message signs to improve safety, reduce neighborhood intrusion, & help buses.*	$350 K	Funded - Construction begins 2006

SM3	**122nd, NE/SE (Airport Way - Powell): ITS**	*CCTV at Powell, Division, Stark, I-84 eastbound ramp, Halsey, Sandy and Airport Way intersections. Changeable message signs at I-84 ramp, Sandy and Airport Way. Traffic monitoring stations at Powell, Division, I-84 and Airport Way.*	$200 K	Tier 2
SM4	**Airport Way, NE (I-205 - 158th): ITS**	*CCTV at I-205 and 122nd intersections. Variable sign at I-205. Monitoring stations at 122nd and 158th.*	$220 K	Tier 1
SM5	**Beaverton-Hillsdale Hwy, SW: ITS**	*CCTV at Terwilliger, Bertha and Shattuck intersections. Changeable signs at Bertha/Capitol Highway and 56th.*	$90 K	Tier 3
SM6	**Columbia Blvd, N/NE(I-205 - Burgard): ITS**	*CCTV at I-205 ramps, NE 82nd, NE 47th, NE 33rd ramps, MLK, Jr, I-5 southbound ramps, N Portland Rd, and N Burgaard Rd. Changeable message signs at NE 82nd, MLK, Jr,, and I-5 southbound ramps, N Portland Rd. Monitoring at I-205, NE 33rd, MLK, Jr,, and I-5 southbound ramps.*	$310 K	Tier 1
SM7	**Foster Rd, SE: ITS**	*CCTV at 50th/Powell, 82nd, 92nd, I-205, 112th, 122nd and Jenne Rd intersections. Changeable signs at 50th/Powell, 92nd/ Woodstock, 112th, 122nd, Jenne. Monitoring at 50th, 82nd, I-205.*	$145 K	Tier 3
SM8	**Going, N (Interstate - Greeley): ITS**	*CCTV at Greeley/Interstate intersections. Variable message sign for eastbound traffic at Greeley. Changeable message sign for eastbound traffic at Interstate. Monitoring station at Greeley.*	$255 K	Tier 1
SM9	**Lombard, N/NE (MLK Jr - Philadelphia): ITS**	*CCTV cameras at intersections with MLK Jr, Interstate, Greeley, Portsmouth, Philadelphia/ Ivanhoe. Changeable message signs at Interstate, Portsmouth and Lombard.*	$210 K	Tier 3
SM10	**Macadam, SW (Bancroft - Sellwood Br): ITS**	*CCTV at Hood/Bancroft, Taylors Ferry and Sellwood Bridge. Variable sign at Hood/Bancroft. Changeable sign at Taylors Ferry. Monitoring at Bancroft and Sellwood Bridge.*	$290 K	Tier 2

SM11	**Marine Dr, N/NE (Portland Rd to 185th): ITS**	*CCTV at N Portland Rd. Changeable message signs at Portland Rd, Vancouver and 185th.*	$750 K	Tier 2
SM12	**McLoughlin, SE: ITS**	*CCTV at Holgate, 17th, Bybee, Johnson Creek/Tacoma. Variable sign at Holgate. Monitoring at Holgate and Bybee.*	$250 K	Tier 1
SM13	**MLK Jr, N (Columbia Bl - CEID): ITS**	*CCTV at Hawthorne ramp, Clay, Belmont, Morrison, Burnside, Lloyd, Broadway, Fremont, Killingsworth, Lombard, Columbia, I-5/and Marine Dr. Changeable message signs at Madison, Morrison, Burnside, Lombard, I-5/Marine Dr. traffic monitoring stations at Clay, Burnside.*	$550 K	Tier 2
SM14	**Rivergate ITS, N**	*Connect real-time information about the Rivergate road system to ODOT's Highway ITC systems.*	$200 K	Tier 1
SM15	**Sandy Bl, NE (82nd - Burnside): ITS**	*CCTV at 12th, 37th, 39th, 57th, 72nd, 82nd, I-205 northbound ramp, and 122nd intersections. Variable signs at 37th, 102nd intersections. Changeable signs at 12th, 82nd, and 102nd. Monitoring stations at 12th, 57th, 82nd, I-205, 122nd and 162nd*	$340 K	Tier 3
SM16	**Yeon/St. Helens, NW: ITS**	*CCTV at Nicolai, Kittridge, St. John's Bridge, I-405/Vaughn/ 23rd intersection. Changeable signs at Nicolai/I-405, Kittridge and I-405/Vaughn/23rd. Monitoring at Nicolai and Kittridge*	$193 K	Tier 1
SM17	**Powell Blvd, SE (Milwaukie – 122nd): ITS**	*CCTV at 39th, 50th, 82nd, I-205 Ramp, 122nd. Variable signs at Milwaukie. Changeable signs at 39th, 50th, 82nd, I-205 ramps.*	$395 K	Tier 2

BRIDGE

B1	**21st, NE (at Columbia Slough): Bridge Replacement**	*Replace weight restricted bridge.*	$5 M	Tier 2
B2	**33rd Ramps, NE, (at Columbia Bl/Lombard): New Ramps**	*New ramp system connecting Columbia and Lombard at 33rd Ave to faciliate truck movement.*	$12 M	Tier 3
B3	**33rd, NE (at Columbia Slough): Bridge Replacement**	*Replacement of side-by-side bridges carrying NE 33rd Drive over Columbia Slough.*	$3.0 M	Funded - Construction starts 2006

B4	**33rd, NE (at Lombard): Bridge Replacement**	*Lengthen and replace main span carrying NE 33rd Ave over Lombard St. Project will improve bridge clearance and load rating.*	$3.5 M	Funded - Construction starts 2005
B5	**42nd Bridge, NE (at Lombard): Bridge Replacement**	*Replace 42nd bridge over Lombard to remove weight restriction and improve vertical clearance under bridge.*	$3. 0 M	Tier 3
B6	**82nd/Airport Way, NE: Overcrossing**	*Construct grade-separated overcrossing to improve efficiency of traffic flow to PDX properties.*	$11 M	Tier 3
B7	**Denver Viaduct, N: Reconstruct Viaduct**	*Rebuild viaduct and add pedestrian walkway/bikeway. Project improves truck access to I-5.*	$2 M	Tier 1 - Identified as Phase 2 alternative in I-5 Delta Park to Lombard project
B8	**Foster Rd, Bridge at Johnson Creek**	*Replace southern bridge span. Bridge is currently weight restricted.*	$1.4 M	Funded - Construction begins 2007
B9	**Going St Bridge, N: Bridge Replacement**	*Replace bridge over UPRR. Bridge is currently weight restricted.*	$3 M	Funded - OTIA
B10	**Grand/ MLK Jr Viaduct, SE: Reconstruct Viaduct**	*Reconstruct viaduct between Stephens & McLoughlin Blvd. Existing structure is deficient and requires capacity and structural design improvements.*	$22 M	Funded - Construction begins 2005
B11	**I-5, N (Columbia River - Columbia Bl): Bridge Widening**	*Improve I-5/Columbia River bridge (local share of joint project) based on recommendations in I-5 Trade Corridor Study. Project addresses a high congestion location.*	$200 M	Funded - Alternative analysis underway as part of Columbia River Crossing project
B12	**Interstate, N, Bridge at Larrabee: Bridge Rehabilitation**	*Rehabilitate Interstate overcrossing of Larrabee to remove weight restriction.*	$1.2 M	Tier 3
B13	**Lombard at Columbia Slough Overcrossing, N**	*Strengthen Columbia Slough bridge and add sidewalks and bike lanes.ate overweight loads.*	4.9	Funded - Construction begins 2010 (est.)
B14	**Lombard St. (Burgard) Structure Upgrade, N**	*Upgrade structure at entrance to Terminal 4 and Schnitzer Steel to eliminate load reconstructions on the bridge.*	$1.5 M	Funded - Construction begins 2005
B15	**Sellwood Bridge, SE/SW: Multi-modal Improvements**	*Replace weight restricted bridge.*	$75 M	Tier 1

B16	**Vancouver BNSF Rail Bridge Project (Columbia River)**	*Replace existing swing span with lift span and relocate position to mid-river channel. Project creates wider and quicker opening, reduces I-5 Fwy lifts, eases river navigation, and could accommodate a third rail track.*	$42 M	Tier
B17	**West Hayden Crossing, N**	*New four-lane bridge from Marine Drive to Hayden Island to serve as the primary access to marine terminals on the island.*	$49 M	Tier 3
B18	**Willamette River Bridges, NE/NW/SE/SW: Rehabilitation**	*Provide for long-term rehabilitation and structural needs of the Broadway, Burnside, Morrison, and Sauvie Island bridges.*	$113 M	Funded - On-going
B19	**Vancouver Bridge, N (at Columbia Slough): Bridge Replacement**	*Replace deteriorating bridge to improve safety and remove weight restriction.*	$8.5 M	Tier 1
RAIL				
R7	**Ramsey Rail Complex, N (south of Columbia Slough Bridge): Capacity Improvements**	*Construct six tracks and one mainline track and lead into complex. Adds 46,000 linear feet of rail storage separate from the main line tracks. Improves regional heavy rail system efficiency. Solves storage capacity issues, bottlenecks, terminal access limitations, and other multimodal inefficiencies.*	$13.2 M	Tier 1
R8	**Rivergate Rail Yard Expansion, N**	*Expand railroad capacity in the Rivergate industrial area to increase bulk capacity for mineral and agricultural products and improve train flows within the industrial area.*	$6 M	Tier 1
R10	**T-5 Unit Rail Loops #3 & #4**	*Construct two additional loop tracks to increase rail storage and rail handling capability of existing bulk terminal.*	$2.8 M	Tier 1
R11	**T-6 Intermodal Third Lead**	*Construct a dedicated lead for the T-6 intermodal yard. Removes bottleneck at T-6 for unit trains, auto carriers, box cars, and tank cars.*	$4.5 M	Tier 1
R16	**West Hayden Island/Rivergate, N: Rail Access**	*Rail access from Rivergate to Hayden Island development to support development.*	$3 M	Tier 1

R1	**Barnes Rail Yard - Bonneville Rail Yard, N: Track Expansion**	*Construct additional unit train trackage between Bonneville and Barnes Yards to support unit train movement between South Rivergate and the Columbia Corridor. Addresses limited Rivergate staging area for unit trains approaching the marine terminals. Solves switching bottlenecks, terminal access limitations, and other operational conflicts.*	$4.5 M	Tier 2
R2	**BNSF Line @ Columbia Bridge, N: Track Improvements**	*Improve rail track conditions on approaches to movable spans over the Columbia River to increase track speeds in this section of the north/south main line.*	$8 M	Tier 2
R5	**North Portland Junction, N: Rail Improvements**	*Upgrade rail track with revised crossovers, centralized traffic control tie-in and increased turning radius to accommodate higher rail speeds and capacity.*	$5 M	Tier 2
R6	**Penn Junction, N, UP/BNSF Main Line: Track Realignment**	*Realign track configuration, double track, and upgrade signaling to improve mainline capacity over the Columbia River bridge and allow greater train turnaround speed.*	$3.5 M	Tier 2
R12	**Terminal 6 A&B Yards**	*Connect A and B rail yards to increase Terminal 6 rail capacity.*	$3 M	Tier 2
R13	**UP Line Connection, SE (Brooklyn line - Graham line)**	*Add rail connection between the Brooklyn and Graham lines in Southeast Portland to increase rail capacity.*	$11 M	Tier 2
R14	**UP Line UPgrade, SE (Albina Yard - East Portland)**	*Upgrade existing track to second main track to increase track speeds in this section of the north/south main line.*	$8.8 M	Tier 2
R3	**Kenton Rail Line, NE: Additional RR Tracks**	*Upgrade single track sections to double tracks built to mainline standards with new sidings from Peninsula Junction to I-205. Provides additional rail tracks for staging of Pacific Northwest unit trains. Expands capacity and reduces delays*	$14 M	Tier 3

R4	**Marine Dr, N (at Rivergate West): Rail Crossing, Phase II**	*Reroute rail tracks and construct an above-grade rail crossing at Rivergate West entrance to improve safety and reduce vehicle and rail traffic conflicts.*	$18 M	Tier 3
R9	**Slough Rail Bridge, N**	*Potential for future rail bridge across Columbia Slough to provide rail connection to south Rivergate from Terminal 6.*	$4.5 M	Tier 3
R15	**West Hayden Island Rail Yard Expansion, West Hayden Island**	*Construct 7 track rail yard connected to facility trackage to advance rail-dependent development.*	$9.5 M	Tier 3
MARINE TERMINAL				
M1	**Access Tunnel at Hyundai/Kia Facility, N**	*Access tunnel to Rivergate from Terminal 6 to allow auto facility access to facility expansion in Rivergate.*	$3 M	1 - 5 years
M2	**Columbia River Channel Deepening - Regional Share, N/NE**	*Deepen the Columbia River channel to 43 feet from Astoria and Portland to better serve the new class of larger container ships.*	$150.5 M	Phase 1 Funded
M3	**Container Crane - Terminal 6**	*Purchase post-panamax container crane to permit the efficient handling of larger container ships. Includes electrical upgrades to dock and addition of related yard equipment.*	12.5 M	Funded - Delivery in 2006
M4	**Honda Facility Upgrade, N**	*Includes three elements: 1. Berth 607 modifications; 2. Rail loadout facilitiy expansion; 3. Rail overcrossing at T6.*	$7.6 M	Funded - Completion by 2007
M5	**Hyundai Auto Terminal Expansion, N**	*40 acre expansion of import auto terminal to allow capacity improvements to include paving, lighting, and storm water management.*	$8.0 M	1 - 5 Years
M6	**Mar Com North Facility, N**	*Aciquistion, design, permitting, and development of 6.54 acre brownfield site adjacent to south side of Terminal 4 to provide additional auto storage capacity.*	$2. M	1 - 5 Years
M7	**Optional Terminal Lower Lot Access, N**	*Regrade hill slope to provide two-lane truck access to provide alternative access to lower lot.*	$3 M	1 - 5 years

M8	**Terminal 4 Grain Elevator Barge Conveyor Rebuild, N**	*Rebuild conveyor connecting T4 grain elevator to Berth 405 barge unloader. Current conveyor will be removed with warehouse 1 and 2 demolition project. Barge facility use to transport Oregon wheat.*	$1.5 M	1 - 5 Years
M9	**Terminal 4 On-site Overcrossing, N**	*Construct overcrossing for trucks to improve access between lower T-4 and Lombard.*	$2.5 M	1 - 5 years
M10	**Terminal 4 Pier 2 Rail Yard Improvements, N**	*Construct new yare with capacity of 200 loaded rail cars and 60 empty cars, replacing current capacity. Project will provide stormwater management for rail yard and upgrade riparian edge along Willamette R.*	$54. M	Funded - Completion by 2005
M11	**Terminal 4, N: Access Improvements**	*Provide terminal overpass - two lane hwy bridge and driveway improvement. Provide bulk terminal access via single lane tunnel under rail tracks. Project maintains domestic trucking access inside the rail loop and accommodates emergency vehicle access inside the bulk rail loop.*	$10 M	6 - 10 years
M12	**Terminal 6 Additional Post-Panamax Cranes, N**	*Acquistion of three add'l post-panamax cranes to make T6 a two berth post panamax facility.*	$33.4 M	11 - 20 Years
M13	**Terminal 6 Berth Deepening**	*Provide design, permitting, and construction to deepen T6 container berths in conjunction with Channel Deepening project.*	$1.25 M	Funded - Completion by 2007
M14	**Terminal 6 Computer System Upgrades, N**	*Increase efficiency at the T6 container terminal with improved cargo tracking systems.*	$2 M	Funded - Completion by 2006
M15	**Terminal 6 Container Dock Extension, N**	*Extend Berth 605 upstream by 600' or more to facilitate handling of longer container vessels. Also includes the extension of the 100' gauge crane rail through Berth 604.*	$14.9 M	1 - 5 Years
M16	**Terminal 6 Dock Structural Upgrades, N**	*Structural improvements to the T6 container dock to extend the design life another 50 years.*	$15 M	6 - 10 Years
M17	**Terminal 6 - Marine Dr, N: Overcrossing**	*Construct an elevated roadway between Marine Dr and T-6 to allow for second gate at T-6. Project improves port terminal access.*	$18 M	11 - 20 years

APPENDIX C

FEDERAL, STATE, REGIONAL AND LOCAL TRANSPORTATION FINANCING IN PORTLAND AND OREGON

HISTORY BRIEF OF TRANSPORTATION FUNDING NATIONALLY

Historically financing of public roadways has come directly from the users of the transportation system – through taxation of gas and gasoline derivative products. The retail fuel companies on behalf of the State and Federal government collect those taxes. Each state determines its own taxing level. The federal tax is fixed nationwide. The State taxes are to be used traditionally for construction and maintenance of state designated highways that serve as connections between the Interstate system (now known primarily as the National Highway System) and the web of highways linking cities and towns around the State.

There are three distinct eras of transportation infrastructure building in recent history: pre- WWII "Up and Out of the Mud"; "Post WWII Interstate Highway Building" and "Flexible Multi Mode Financing".

With the advent of production automobile manufacturing in the early 1900's, dirt trails and roads crisscrossing the landscape provided nothing but a quagmire for the new conveyances. As a matter of necessity cars had to get "Up and Out of the Mud" to be able to perform their intended duties. Plank roads like the original Canyon Road (now Sunset Highway) provided some traction but the trip still remained slow. Not until the advent of Macadam pavement did the roadway network really begin to be a promising way to get products from farm to market; connect burgeoning cities and people to places of beauty.

The early road building era made State highway engineers in Oregon into early visionaries who could see that roadways were an economic necessity to bring goods to market and to attract people to populate the State. They were also the early financiers of the modern roadway. As example, the Columbia Gorge highway was envisioned as both a critical accessway through the Cascade Mountains as well as a unique architectural and engineering opportunity to allow residents to enjoy the natural scenic beauty of the Columbia Gorge. This early highway was constructed on the premise that private enterprise and the general public would benefit from its construction, hence a partnership between the public and private sector was struck to finance the vision. The tradition continues today.

Of note, however, is that during this era cities were still based on streetcars, walking and compact form. All that was about to change.

The Post World War II Interstate Highway Building

The post WWII era in the early 1950's set out to accomplish several goals. Build an interconnected system of free public roadways of high quality and standards for national defense; fast and reliable transport of goods to far reaching markets, further urbanizing cities and unifying the nation. In order to pay for such a system, the Highway Trust Fund was established by Congress and the precursor to today's United States Department of Transportation (USDOT), the Department of Public Roads, was created. The Highway Trust fund was and is fed by the federal tax on gasoline. Monies were granted to the individual State highway departments to design and construct the Interstate Freeway System based on a formula and through congressional appropriations. States also taxed fuel purchases based on

their needs to provide for their own state highway system and to match the federal dollars for the Interstate system.

The shape of cities was growing outward enabled by personal travel freedom afforded by the auto. Buses (private) replaced streetcars. Walking was too difficult as the distances between activities grew longer.

The Interstate Highway construction era, which started in the early 50's, reached its peak in the mid-1960's. By the end of the decade not only was the majority of the system constructed but the public's attitude about its impact on communities was changing. The advent of environmental consciousness, displacement of people and businesses, and social disruption of communities all lead to reshaping the direction of public policy, finance and engineering standards for our national roadway networks.

The 1969 National Environmental Policy Act changed the way in which all federal, state and local agencies of different disciplines assure that any expenditure of federal dollars for most manmade public facilities of any type are not a detriment to the environment in which they are constructed. In the early 1970's the pendulum moved away from freeway building to multi-modal highway and transportation system construction. Limitations on the legislative mandate of federal, state and local funding programs did not allow gas tax dollars to be spent for non-highway purposes, such as transit, pedestrian and bicycle facilities. The Highway Trust fund could not be "busted" for these purposes. Legislation in the late 1970's followed the crisis of inner cities to maintain diesel bus services. Since World War II City buses had been private in many locations. With the advent of suburban development many went bankrupt leaving a void in the transportation system. Congress created the Urban Mass Transit Administration to step in to provide traditional fixed route bus services and assistance for aging heavy rail systems. Financing from the federal government to operate, maintain and grow these systems was established. A chink in the Highway Trust Fund armor was provided. Multi-modal financing was on the horizon.

The Congressional passage of Intermodal Surface Transportation Efficiency Act or ISTEA in 1991 set the modern "Flexible Multi Mode Finance" era. As has been tradition, transportation financing legislation or bills has a six-year life. ISTEA and its successor TEA-21, the Transportation Equity Act for the 21st century, provide for the Highway Trust Fund to be used for all modes of surface transportation. Each Congressional bill has specific provisions for different modal categories of money that can be expended by states; counties and cities based on prescribed formulas. Transportation system financing has been expanded to integrate modes, encourage the public's use of alternatives to single occupant vehicles and to diminish environmental impact.

Congress is currently negotiating the third generation of flexible funding transportation bills or TEA-LU, the Transportation Equity Act a Legacy for Users . This pending TEA-LU bill should have been enacted in September 2003 to enable the six-year extent of its authority. Due to disputes between the Administration, House and Senate over funding dollar amounts and provision of the new bill, the date of enactment remains unclear. Extensions of the previous TEA- 21 Bill are evoked monthly and quarterly to allow transportation agencies to proceed with projects.

FEDERAL TRANSPORTATION FUNDING PROGRAMS

Of the myriad of highway and multi mode funding programs in the existing Six Year TEA-21 Bill this overview discusses only those that are relevant to the City of Portland, Office of Transportation, Metro, and in part to the Oregon Department of Transportation and TriMet. Since federal transit dollars are largely allocated to TriMet they are not discussed in detail here.

The following major highway program funds are available as part of the TEA -21 Bill.

- National Highway System (NHS)
- Surface Transportation Program (STP)
- Congestion Management Air Quality (CMAQ)
- Transportation Enhancement (TE)
- High Priority (Demonstration) Projects (HPP)
- Highway Bridge Replacement and Rehabilitation Program (HBRRP)
- Intelligent Transportation Systems Program (ITS)

Within each of the program categories are specific sub-categories that may be relevant to the City and region.

NATIONAL HIGHWAY SYSTEM (NHS)

Program purpose: funding for improvements to rural and urban roads that are part of the NHS, including the Interstate System and designated connections to major intermodal terminals. In some instances NHS funds may be used for transit improvements in NHS corridors.

Distribution of funds based on the following formula:

- 25% based on total lane miles of principal arterials – excluding the Interstate System – in each state as a percent of total such principal arterial lane miles in all states.

- 35% based on total vehicle miles traveled (VMT) on lanes and principal arterials (excluding Interstate System) in each State as a percent of total VMT or lanes of such principal arterials in all states.

- 30% based on diesel fuel used on all highways in each state as a percent of diesel fuel used on all highways in all states

- 10% based on total lane miles of principal arterials in each state divided by total population n each state as a percent of such ration for all states.

- Up to 50% of apportionments can be transferred to IM, STP, CMAQ and/or bridge programs or 100% may be transferred to STP on approval of the Secretary of Transportation.

Funds may also be used for intra and intercity bus terminals, natural habitat mitigation and ITS improvements.

How NHS funds are used in the Portland region

Candidate projects are programmed through the ODOT STIP through a public process, which includes the local transportation agencies. The STIP is coordinated with the Metro MTIP process.

Typically, NHS funds are used for Interstate Freeway, primary state routes and freight-intermodal and bridge projects. As an example, NHS funds are being used to fund the I-5 Bridge influence area analysis and design work.

Match requirements are 10.27%.

SURFACE TRANSPORTATION PROGRAM (STP)
Program purpose: To provide flexible funding that may be used by states and localities for projects on any Federal-aid highway, including the National Highway System (NHS), bridge projects on any public road, transit capital projects and intracity and intercity bus terminals and facilities.

Distribution of federal highway funds based on formula:

- 25% based on total lane miles of Federal-aid highway (FAH) in the State as a percent of total FAH lane miles in all states.
- 40% based on total vehicle miles (VMT) in lanes of FAH in the State as a percent of total VMT on lanes of FAH in all states.
- 35% based on estimated tax payments attributable to highway users in the State paid into the Highway Account of the Highway Trust Fund (HTF) in the latest fiscal year for which date are available, as a percent of total such payments by all states.

State sub-allocations of apportioned funds set-asides including:

- 10% set aside for safety improvement projects including railway-highway crossings.
- 10% set aside for transportation enhancements (TE) up to 25% of the difference between the amount set aside for TE for the fiscal year and the amount set aside for the TE for FY 97 may be transferred IM, NHS, CMAQ or the Bridge Program.
- Set aside for urbanized areas over 200,000 population.
- States required to make available obligation authority to urbanized areas over 200,000 population in two – 3 year movements over the life of the Bill.

How STP funds are used in the Portland region

STP funds are “flexible federal funds” meaning they can be used to finance a variety of modal projects.

- ODOT programs STP funds through their statewide transportation improvements program (STIP) which is updated every two years and delivers funds over a four-year timeframe with minor realignments every year. A portion of ODOT’s STP funds are provide elderly and disabled services as well as a small allocation to the public transit division.
- Metro distributes STP funds to all agencies in the Portland region as a part of the “Transportation Priorities MTIP” process undertaken every two years for funds programmed for a four-year timeframe. Although a four-year look is provided, funds are programmed for the last two of every four-year timeframe. For example, for the current 2006-09 MTIP process, Metro is programming new projects only for years 2008 and 2009. In the intervening years like 2005, only minor adjustments to existing programmed projects will be made.

The 2006-09 MTIP will be integrated into the ODOT STIP timeline so that from this year forward the ODOT STIP and MTIP process will be coincidental.

Typically STP funds in this region are used for highway related improvements like main streets, freight, reconstruction and bridge project types. As an example STP funds are being used for the S. Rivergate Rail Overcrossing project. They are also financing NW 23rd Avenue reconstruction.

Match requirements are 10.27% from a local source.

CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENTS PROGRAM FUNDS (CMAQ)
Program purpose: Provides funding for projects and programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide and small particulate matter which reduce transportation related emissions.

Distribution of funds according to the following formula:

- New weighting factors for ozone and CO maintenance areas.
- Up to 50% of the difference between the original program level of $1.35 billion annually and the actual annual program level can be transferred to STP, NHS, IM and/or Bridge.
- States may allocate funds to private and non-private entities for land, facilities, vehicles and project development activities.

How CMAQ funds are used in the Portland region

- Approximately $ 11.50 M in CMAQ dollars are available to the Portland region on an annual basis. Note: Portland is now a CO attainment or maintenance area. CMAQ funding levels in the pending TEA-LU Bill may change.
- CMAQ is part of the METRO administered "flexible federal funds" allocated every two years through the "Transportation Priorities" MTIP process.
- Examples of projects funded by this program include bicycle, pedestrian and transit system (both rail and bus) improvement projects, main streets, transit oriented developments.
- Match requirements are 10.27% from a local source.

TRANSPORTATION ENHANCEMENTS FUNDS (TE)
Program purpose: Provides transportation-related activities that are designed to strengthen the cultural, aesthetic and environmental aspects of the nation's intermodal transportation system.

Provides for the implementation of a variety of non-traditional projects including restoration of historic transportation facilities, bike and pedestrian improvements, landscaping, bike and pedestrian improvements, landscaping and beautification, the mitigation of water pollution from highway run-off and the establishment of transportation museums.
10% allocation of STP funds to TE funds.

How TE funds are used in the Portland region

- Approximately $ 4.0 Million in TE funds are available statewide. The Portland region historically receives approximately $1.0 – 1.5 M. every two years for one, possibly two projects.

- ODOT administers this program through a public solicitation process that is semicoincidental with the Metro MTIP process. ODOT uses the Metro TPAC and JPACT advisory boards to screen candidate projects. ODOT assesses a select list of potential projects statewide and determines a final list based on specific program criteria.
- Examples of projects selected for funding through this program include parts of the Springwater Trail for bikes and pedestrians and the preliminary design for reconstruction of the Union Station.
- Match for these projects is usually 10.27%. However, states may apply funds from other Federal agencies to the non-Federal share of the project. The local match can also be calculated on a project, multiple project or program basis. Therefore, it is possible that no local match may be required.

HIGH PRIORITY (DEMONSTRATION) PROJECTS

Program purpose: This program provides funding for projects identified by Congress with a specific amount of funding over the six years of TEA-21. The designated funding can be used only for the specified project. This is commonly known as earmarked funds.
Allocation of funds authorized for each project are to be made available for obligation over the six year period in roughly a 1/6 split in each year of the TEA 21Authorization Bill.

Also establishes advance construction, which permits states to construct High Priority projects without the aid of Federal funds and then be reimbursed as the Federal funds become available in accordance with the distribution schedule.
How High Priority funds are used in the Portland region:

Typically these requests come directly from transportation agencies and are coordinated generally both at the formulation states of a new Transportation Bill and annually through JPACT as annual Appropriation requests are made of the Oregon Congressional delegation.

Metro through TPAC and JPACT prepare a regional adopted appropriations project list which is submitted as part of the Oregon Congressional delegation visit by JPACT members in March each year.

During the formulation of both programmatic and project requests for a new Six Year Transportation Bill, TPAC and JPACT will begin to formulate a position paper one year in advance of a new bill's authorization. The region currently has a JPACT adopted position paper and project request list that has been presented to the Oregon Congressional delegation in March 2003 and 2004.

Annual appropriations requests are coordinated through the City of Portland's Intergovernmental Relations office. A comprehensive list of annual appropriations citywide is submitted to City Council by Resolution to ensure coordination where federal finance opportunities could potentially be piggybacked.

INTELLIGENT TRANSPORTATION SYSTEMS PROGRAM (ITS)

Program purpose: provides for research, development and operational testing of Intelligent Transportation Systems aimed at solving congestion and safety problems, improving operating efficiencies in transit and commercial vehicles, and reducing the environmental impact of growing travel demand.

Allocation of funds is the same as other federal aid programmed funds. ITS program elements fall into two categories: research and development and deployment incentives. The latter allowing for implementation of those ideals developed on the research and development side of the program.

How the ITS funds are used in the Portland region

- Examples of projects that use this funding source are the corridor-wide ITS projects on Powell Blvd. that provide improved signal timing for bus advantage at intersections.
- Match requirements for these programs and deployment are 10.27% local funds.

HIGHWAY BRIDGE REPLACEMENT AND REHABILITATION PROGRAM (HBRRP)

Program purpose: provides funds to assist the states in their programs to replace or rehabilitate deficient highway bridges and to seismically retrofit bridges on any public road.

Allocation of funds:

- Bridge discretionary funds are $100 million; $25 million of that total must be spent on seismic retrofit.
- Funds are distributed according to each state's relative share of the total cost to repair or replace deficient highway bridges.
- Up to 50% of apportionments can be transferred to IM, NHS, STP and/or CMAW programs.
- Federal dollars guaranteed minimum of 25% of HBRRP funds to each state; no state shall receive more than 10% of the federal total.

How HBRRR funds are used in the Portland region

- Examples of projects that use this funding source include the Bybee Bridge project and the King Viaduct.
- Match requirements for this source of funds is 10.27% local funds.

STATE FUND TRANSPORTATION FINANCING

Federal fund "pass through" to states/locals

As described under section II above, many federal USDOT funds are passed through the State via ODOT to the local jurisdictions.
Federal funding programs including NHS, ITS, HBRRP, and some STP allocations are "passed through" the State to locals. To request funds from any of these sources the request must be submitted and approved in the four-year STIP.

How State gas tax is apportioned

State collected gas taxes are apportioned to counties and cities based on unique formulas for each jurisdiction. The City a share of its population size relative to all other cities in the state of the 15.57% of motor fuels tax, vehicle registration fees and weight mile tax on trucks. The annual dollar amount totals about $21 Million. In addition, through an agreement, Multnomah County and the City share in the pooled dollars available to the County. That sum totals about $21 Million annually as well.

Revenue sources administered by ODOT that are available to local jurisdictions through the ODOT Statewide Improvement Program process:

- Oregon Transportation Investment Act (OTIA) I through III:
- OTIA I and II authorized by the legislature in 2001 and 2002, provides for $500 Million in state bonding proceeds for modernization and preservation of Oregon's transportation system. Local matching funds statewide of $146 Million bring the total to $646 Million. Those funds are apportioned generally $250 Million for moderization; $175 Million for bridge and rehabilitation and $75 Million for preservation.
- OTIA I and II funds are competitive statewide and have stringent criteria by which prospective projects are judged. They are generally committed to "shovel ready" projects. Local projects funded through OTIA I and II are the East End Connector and Sandy Boulevard projects.
- OTIA III, passed by the Legislature in 2003, provides for $ 1.3 Billion
- in replacement and repair of state bridges; $300 Million in replacement of local bridges and $300 Million in modernization funds.
- ODOT has established program criteria appropriate to the category judged. Prospective projects are submitted by a transportation agencies committee statewide including municipalities, counties, and port authorities. The committee make a recommendation on a list of projects based on technical and public review to the Oregon Transportation Commission. The OTC is the final decision-maker.

OREGON BICYCLE AND PEDESTRIAN PROGRAM.
Administered by ODOT – commonly known as the "Ronkin" fund. Michael Ronkin is the ODOT administrator for bicycle and pedestrian programs. 1% of statewide gas tax is allocated to these facilities.

This is a competitive program that is on the same two-year cycle as the Metro MTIP. It is slightly out of synch with MTIP "Transportation Priorities" MTIP timetable. For example, for the year 2008-09, the State is requesting that all submissions for review is submitted in July 2004 for lengthy scrutiny over the summer and incorporation into the draft STIP in September 2004.

TRANSPORTATION SAFETY PROGRAM
Supports safety programs throughout the state at approximately $5 million per year.

RAILROAD CROSSING SAFETY IMPROVEMENT PROGRAM
As the title implies this program funds improvements to unsafe crossings with signals, crossing hazard signage and placement of crossing arms. Approximately $2 Million per year available statewide.

TRANSPORTATION DEMAND MANAGEMENT PROGRAM
ODOT finances programmatic opportunities that provide transportation travel options to the private automobile and assist in achieving air quality in urban areas. An example, is the Portland Travelsmart program that educates communities about travel options available to them. $2 million is available statewide annually.

OREGON PLAN FOR SALMON AND WATERSHEDS
Culvert restoration program on stream with historic fish runs and where barriers to fish movement can be mitigated. Annual amount available statewide is $ 3 million.

THE LOCAL FUNDING PROCESS

Metro MTIP "Transportation Priorities" Process
Regional flexible federal funds that are administered by Metro, the regional federally recognized metropolitan planning organization for the Portland region.
"Flexible" funds may be spent on a wide variety of transportation projects or programs. These funds constitute about 4% of the total annual spending on transportation in the Portland region. Allocation of flexible funds occurs every two years as denoted in the TEA 21 Authorization Bill. As an example, funds are currently being programmed for 2008-09 specifically and adjustments made to projects programmed in 2006-07, hence the entire program years are defined as 2006-09.

Two sources of regional flexible funds are:

- Surface Transportation Program (STP) which may be used any transportation improvement with the exception of local streets. The region receives approximately $17.63 M annually for allocation to local transportation agencies.
- Congestion Mitigation/Air Quality (CMAQ) funds may be used for projects, which demonstrate that, some improvement in air quality will result from building or operating a program. CMAQ finds represent approximately $11.25 Million of the total $28.88 Million available annually in flexible federal funds.

How regional flexible funds are allocated as a part of the Transportation Priorities Process also known as the "Metropolitan Transportation Improvement Program or MTIP":

Project applications are submitted to Metro on behalf of eligible public sponsors (like the City of Portland). These applications address specific questions regarding the project cost, their ability to meet the objectives adopted by the Joint Policy Advisory Committee on Transportation (JPACT) and the Metro Council to guide the allocation of funds.

The primary objective for the Transportation Priorities 2006-09 program is to leverage economic development in priority 2040 Framework Plan land use areas through investments that support:

- 2040 Tier I and II mixed use areas (central city, regional and town centers, main streets and station communities).
- 2040 Tier I and II industrial areas (regionally significant industrial areas and industrial areas).
- 2040 Tier I and II mixed use and industrial areas within the urban growth boundary expansion areas with completed concept plans.

Other policy objectives include:

- Emphasis on modes that do not have other sources of revenue
- Completion of gaps in the modal systems
- Development of a multi mode transportation system with a strong emphasis on funding bicycle, boulevard, freight, green street demonstration, pedestrian, regional transportation options, transit oriented development and transit projects and programs.

- Meet the average annual requirements of the State Implementation Plan for air quality for the provision of pedestrian and bicycle facilities.

Process for selection of projects

- An initial screening process is accomplished by Metro staff using the selection criteria outlined above. Project applications are ranked considering that criteria and a draft list of projects 150% over the total dollar amount available to allocate is submitted for public review. The candidate list must comply with elements 2-9 below.
- Candidate projects must be consistent with regional street design guidelines for its designated design classification.
- Candidate projects must be in the Regional Transportation Plan (RTP) and in the local Transportation Systems Plan and be consistent with the regional functional classifications described in the RTP.
- Candidate projects must be included in the Financially Constrained system of the 2004 RTP or otherwise eligible for consideration to amendment of the financially constrained system.
- The total cost of submitted projects must be consistent with established cost targets for each jurisdiction. For Portland in 2008-09, $33.1 Million.
- The applicant is in compliance with the Metro functional plan.
- The applicant must make a statement that the project is deliverable within the funding timeframe and brief summary of anticipated project development schedule.
- Projects of less than $200,000 are not encouraged because administrative costs of bringing a project to bid would be relatively high.
- Public involvement is conducted by Metro through public meetings held by JPACT. They along with the Metro Council will recommend projects for further consideration and public comment, harrowing the candidate list of projects to 150% of available funding. JPACT and the Metro Council may direct technical staff to develop a technical recommendation on a final list of projects and programs for the Council and JPACT's consideration.
- Metro staff and TPAC recommend a final selection of projects to JPACT and the Metro Council within available funding revenues.
- Air quality model analysis is provided on that list of projects to meet air quality conformity regulations.
- The Metro Council adopts the final package and funds are ready for disbursement.

The City of Portland—Office of Transportation's "Transportation Priorities" MTIP and State Funding Coordination Process:

The Office Transportation (PDOT) coordinates the City's regional, state and federal solicitation of transportation funds for all city agencies and bureaus, as well as supports candidate projects for the Port of Portland and Multnomah County in the MTIP process.

PDOT has responsibility for coordinating the following discreet funding processes:

- Biannual Metro "Transportation Priorities MTIP" process for regional flexible funds.
- Biannual ODOT Statewide Transportation Improvement Program (STIP) in concert with the MTIP. ODOT requests local transportation agencies to submit requests for projects on the state's highway system that are funded by the STP, ITS, and HBRPR programs.
- Biannual Transportation Enhancements (TE) program.
- Biannual ODOT Pedestrian and Bicycle Project statewide allocation.
- Annual High Priority federal demonstration projects commonly known as Congressional Appropriations earmarks. Coordination occurs formally through resolution at TPAC and JPACT.
- Every six years, Congressional reauthorization of the Transportation Bill occurs. Coordination of project earmarks (High Priority) and programmatic changes through resolution at TPAC and JPACT.

Process Specific Timelines for Funding Process Coordination

PDOT uses the process outlined below for all of its transportation funding coordination responsibilities with other agencies and bureaus. Transportation Planning staff acts as the inter and intra bureau list coordinators. Note that this process is currently under review by the PDOT Directors Team and is subject to some revision.

Most funding programs are on a two-year cycle. For those that are on annual cycles, projects should be chosen from the larger two-year cycle project listings compiled for the "Transportation Priorities MTIP Process", JPACT federal project list or the Transportation Systems Plan Transportation System Improvements or Reference Lists.

There will also be anomalous situations that must be accommodated. If that arises the same general process principles eg. the same committee structure and processing requirements should be adhered to.

The following schedule applies to the "Transportation Priorities" MTIP Process and serves as the guide for all other funding source list production. Note that this process starts on even numbered years:

- January--- two meetings
- PDOT Directors Team (bureau managers, director and division managers from finance and planning) provide project list development criteria and policy emphasis complementary to Metro section criteria as basis for PDOT Capital Oversight Committee (COC) list review and refinement. Directors Team may advance different policy perspectives for selection of projects year to year based on the type, scope, local match availability, need and location of the city's transportation infrastructure at any point in time.
- End of January through May--- COC (represented by bureau and division managers and modal coordinators) meets monthly to provide internal review of prospective project list.
- End of January--- Transportation Planning re-establishes inter agency committee of participating bureaus and other agency representatives of process schedule and selection criteria.

- February through May--- inter agency committee meets monthly to review their individual list production and that of PDOT COC.
- June--- PDOT COC and inter agency committee merge lists (in the MTIP process) to determine consensus on a draft list of project totaling 200 % of regional flexible dollars available for distribution.
- July---draft finalized. Transportation Planning staff develops a Council Resolution for adoption detailing the policy rationale for the 200% list of projects.
- July through early November---Transportation Planning provides internal project managers and inter - agency managers with comprehensive list of projects for which applications must be provided. All agencies and bureaus are responsible for providing their own applications including cost estimates unless prior arrangements are made with PDOT.
- Early November---one month prior to project application submission to Metro, PDOT COC and MTIP application managers set tow meetings with agency staff to review project applications. Purpose for meeting is to determine if project cost estimates are on target; if projects require re-scoping or must be dropped to comply with target dollar allocation.
- Mid December--- tow days prior to project submission deadline, Transportation Planning coordinator collects paper and electronic copies of all projects to be submitted to Metro. TRP staff bundles all projects from city bureaus, the Portland Development Commission, the Port of Portland and Multnomah County and hand delivers to Metro.
- Mid December through February--- Metro provides technical rankings and draft environmental justice analysis is released. Public hearings are held by Metro on draft list.
- February-March--- 150% cut list recommendation released by Metro.
- March-April---Public hearings held by Metro on 150% list. Final recommendations approved
- May/June--- Air quality conformity determination completed by Metro. Public hearing held and STIP reporting and documentation completed.
- July--- Full MTIP adoption before TPAC and JPACT and Metro Council.
- October---Obligation of federal fiscal year funding begins.
- End of process.

Notes: No discussion is included in this document about federal financing for transit programs and projects primarily because Federal Transit Administration administered funds are the primary, but not the sole responsibility of TriMet both from a financing and operational viewpoint. Note that CMAQ and STP funds can be used for most transit capital projects. Federal " Section 5309" transit operating funds are used by TriMet for the stated purpose and not for highway related capital investments.