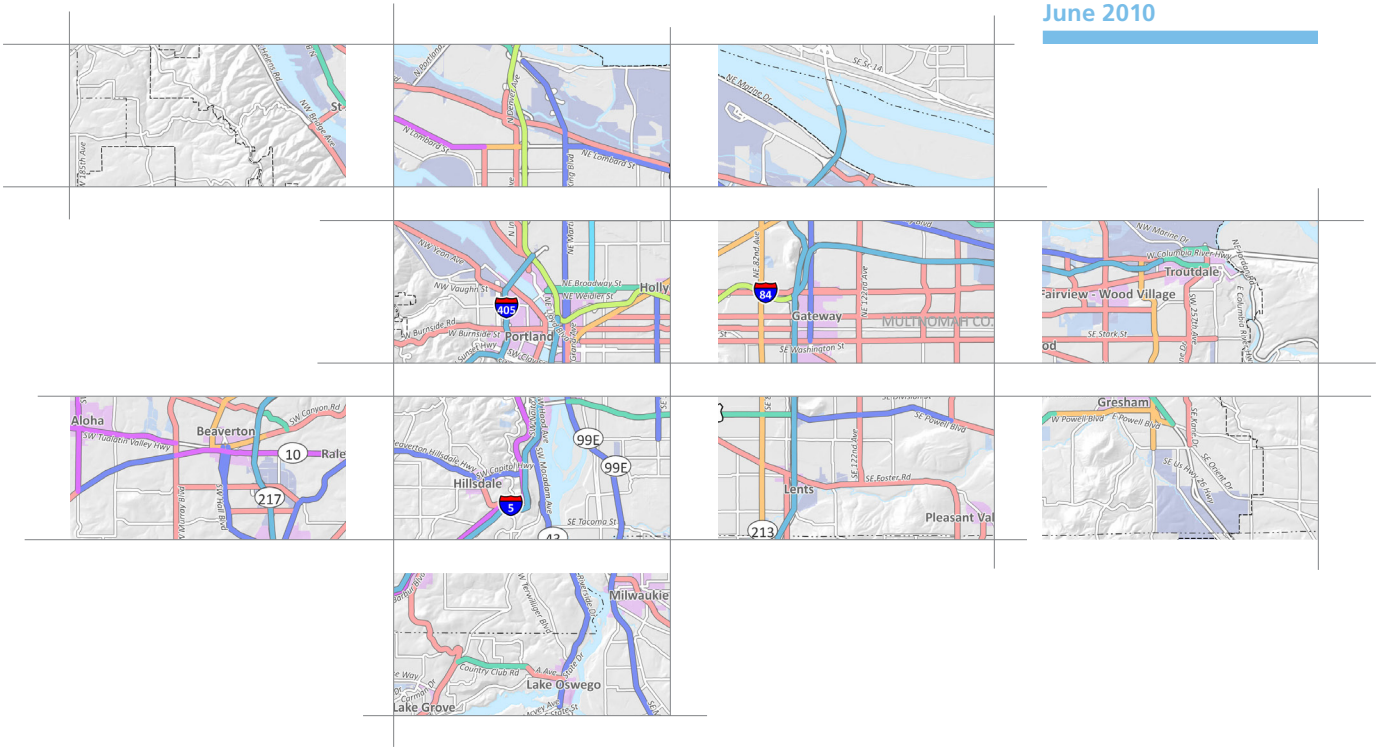
June 2010



REGIONAL TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

2010 – 2020

June 2010

Metro | *Joint Policy Advisory Committee on Transportation*

Metro is the federally mandated metropolitan planning organization designated by the governor to develop an overall transportation plan and to allocate federal funds for the region.

The Joint Policy Advisory Committee on Transportation (JPACT) is a 17-member committee that provides a forum for elected officials and representatives of agencies involved in transportation to evaluate transportation needs in the region and to make recommendations to the Metro Council.

The established decision-making process assures a well-balanced regional transportation system and involves local elected officials directly in decisions that help the Metro Council develop regional transportation policies, including allocating transportation funds.

Project web site: www.oregonmetro.gov

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), local government, and State of Oregon funds. The contents of this document do not necessarily reflect views or policies of the State of Oregon.

The preparation of this report was financed in part by the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration. The opinions, findings and conclusions expressed in this report are not necessarily those of the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration.

NONDISCRIMINATION NOTICE TO THE PUBLIC

Metro hereby gives public notice that it is the policy of the Metro Council to assure full compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice and related statutes and regulations in all programs and activities. Title VI requires that no person in the United States of America shall, on the grounds of race, color, sex, or national origin, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which Metro receives federal financial assistance. Any person who believes they have been aggrieved by an unlawful discriminatory practice under Title VI has a right to file a formal complaint with Metro. Any such complaint must be in writing and filed the Metro's Title VI Coordinator within one hundred eighty (180) days following the date of the alleged discriminatory occurrence. For more information, or to obtain a Title VI Discrimination Complaint Form, see the web site at www.oregonmetro.gov or call 503-797-1536.

Regional Transportation System Management and Operations

2010 – 2020 • DRAFT PLAN • June 2010

ACKNOWLEDGEMENTS

Metro

Robin McArthur, Planning Director
Tom Kloster, Transportation Planning Manager
Pam Peck, Regional Travel Options Program Manager
Deena Platman, Metro Project Manager

With much assistance from Liz Adams, Rian Amiton, Pamela Blackhorse, Heath Brackett, Anthony Butzek, Kim Ellis, Pat Emmerson, Matthew Hampton, Dan Kaempff, Huan Li, Josh Naramore, Sean Tevlin, Marlon Warren and Caleb Winter.

Consulting Team

DKS Associates – Jim Peters, Project Manager; Jennifer Bachman, Renee Hurtado
Kittelson and Associates – Peter Koonce and Shaun Quayle, Shing Tsoi
Anglo Planning – D.J. Heffernan
JLA Public Involvement – Stacy Thomas

Advisory Committees

Transport, the Transportation Policy Alternatives Committee subcommittee on Intelligent Transportation Systems (ITS)

RTO Subcommittee, the Transportation Policy Alternatives Committee subcommittee on Transportation Demand Management (TDM)

TSMO Policy Work Group
Tom Clemo – Tualatin Valley Fire and Rescue
Marie Dodds – AAA Oregon/Idaho
Patty Fink – Coalition for a Livable Future
Bob Hart – Southwest Regional Transportation Commission
Eric Hesse - TriMet
Bill Kloos – City of Portland
Tom Kloster - Metro
Jay McCoy – City of Gresham
Jane McFarland – Multnomah County
Galen McGill – Oregon Department of Transportation
Margaret Middleton – City of Beaverton
Dennis Mitchell – Oregon Department of Transportation, Region 1
Louis Ornelas – Metro Transportation Policy Alternatives Committee citizen member
Wilda Parks – North Clackamas Chamber of Commerce
Pam Peck - Metro
Nathaniel Price – Federal Highway Administration
Paul Smith – City of Portland
Tom Tushner – Washington County
Ron Weinman – Clackamas County

Metro | *People places. Open spaces.*

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.

Metro representatives

Metro Council President – David Bragdon

Metro Councilors
Rod Park, District 1
Carlotta Collette, District 2
Carl Hosticka, District 3
Kathryn Harrington, District 4
Rex Burkholder, District 5
Robert Liberty, District 6

Auditor – Suzanne Flynn

www.oregon**metro.gov**

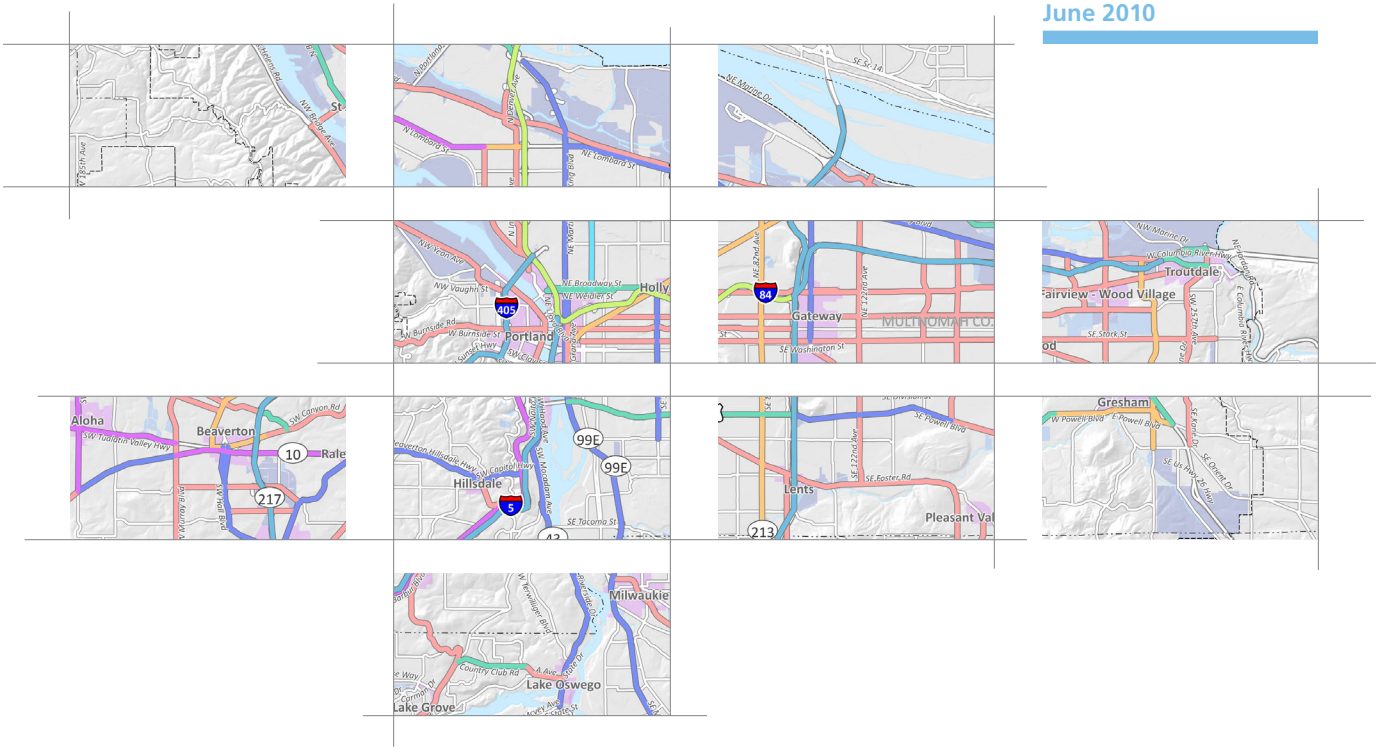
Metro
600 NE Grand Ave.
Portland, OR 97232-2736

503-797-1700

Printed on recycled content paper. 09298 September 2009

Table of Contents

June 2010



REGIONAL TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

2010 – 2020

June 2010

Metro | *Joint Policy Advisory Committee on Transportation*

Metro is the federally mandated metropolitan planning organization designated by the governor to develop an overall transportation plan and to allocate federal funds for the region.

The Joint Policy Advisory Committee on Transportation (JPACT) is a 17-member committee that provides a forum for elected officials and representatives of agencies involved in transportation to evaluate transportation needs in the region and to make recommendations to the Metro Council.

The established decision-making process assures a well-balanced regional transportation system and involves local elected officials directly in decisions that help the Metro Council develop regional transportation policies, including allocating transportation funds.

Project web site: www.oregonmetro.gov

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), local government, and State of Oregon funds. The contents of this document do not necessarily reflect views or policies of the State of Oregon.

The preparation of this report was financed in part by the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration. The opinions, findings and conclusions expressed in this report are not necessarily those of the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration.

NONDISCRIMINATION NOTICE TO THE PUBLIC

Metro hereby gives public notice that it is the policy of the Metro Council to assure full compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice and related statutes and regulations in all programs and activities. Title VI requires that no person in the United States of America shall, on the grounds of race, color, sex, or national origin, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which Metro receives federal financial assistance. Any person who believes they have been aggrieved by an unlawful discriminatory practice under Title VI has a right to file a formal complaint with Metro. Any such complaint must be in writing and filed the Metro's Title VI Coordinator within one hundred eighty (180) days following the date of the alleged discriminatory occurrence. For more information, or to obtain a Title VI Discrimination Complaint Form, see the web site at www.oregonmetro.gov or call 503-797-1536.

Regional Transportation System Management and Operations

2010 – 2020 • DRAFT PLAN • June 2010

ACKNOWLEDGEMENTS

Metro

Robin McArthur, Planning Director
Tom Kloster, Transportation Planning Manager
Pam Peck, Regional Travel Options Program Manager
Deena Platman, Metro Project Manager

With much assistance from Liz Adams, Rian Amiton, Pamela Blackhorse, Heath Brackett, Anthony Butzek, Kim Ellis, Pat Emmerson, Matthew Hampton, Dan Kaempff, Huan Li, Josh Naramore, Sean Tevlin, Marlon Warren and Caleb Winter.

Consulting Team

DKS Associates – Jim Peters, Project Manager; Jennifer Bachman, Renee Hurtado
Kittelson and Associates – Peter Koonce and Shaun Quayle, Shing Tsoi
Anglo Planning – D.J. Heffernan
JLA Public Involvement – Stacy Thomas

Advisory Committees

Transport, the Transportation Policy Alternatives Committee subcommittee on Intelligent Transportation Systems (ITS)

RTO Subcommittee, the Transportation Policy Alternatives Committee subcommittee on Transportation Demand Management (TDM)

TSMO Policy Work Group
Tom Clemo – Tualatin Valley Fire and Rescue
Marie Dodds – AAA Oregon/Idaho
Patty Fink – Coalition for a Livable Future
Bob Hart – Southwest Regional Transportation Commission
Eric Hesse - TriMet
Bill Kloos – City of Portland
Tom Kloster - Metro
Jay McCoy – City of Gresham
Jane McFarland – Multnomah County
Galen McGill – Oregon Department of Transportation
Margaret Middleton – City of Beaverton
Dennis Mitchell – Oregon Department of Transportation, Region 1
Louis Ornelas – Metro Transportation Policy Alternatives Committee citizen member
Wilda Parks – North Clackamas Chamber of Commerce
Pam Peck - Metro
Nathaniel Price – Federal Highway Administration
Paul Smith – City of Portland
Tom Tushner – Washington County
Ron Weinman – Clackamas County

Metro | *People places. Open spaces.*

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy and good transportation choices for people and businesses in our region. Voters have asked Metro to help with the challenges that cross those lines and affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to protecting open space, caring for parks, planning for the best use of land, managing garbage disposal and increasing recycling. Metro oversees world-class facilities such as the Oregon Zoo, which contributes to conservation and education, and the Oregon Convention Center, which benefits the region's economy.

Metro representatives

Metro Council President – David Bragdon

Metro Councilors
Rod Park, District 1
Carlotta Collette, District 2
Carl Hosticka, District 3
Kathryn Harrington, District 4
Rex Burkholder, District 5
Robert Liberty, District 6

Auditor – Suzanne Flynn

www.oregon**metro.gov**

Metro
600 NE Grand Ave.
Portland, OR 97232-2736

503-797-1700

Printed on recycled content paper. 09298 September 2009

List of Figures

List of Tables

I. Introduction

Transportation is so critical to our daily lives. We move between places and activities using an extensive network of roads, transit lines, bikeways, and sidewalks; billions of our tax dollars invested to ensure mobility for people and goods. As the 21st century unfolds, a new paradigm is emerging - brought on by concerns over the social, environmental and fiscal costs of traditional transportation solutions – that supports an integrated approach to the provision of transportation infrastructure and services where better management of the existing system has a prominent role.

The Portland region is in an enviable position; a penchant for regional coordination and openness to new ideas has placed the region on the leading edge for "smart" investments in both transportation system and demand management. The Regional Transportation System Management and Operations (TSMO) Plan takes the next step by integrating these complementary elements of system management to better link opportunities for coordinated investments that maximize the efficiency of the existing transportation system.

What is TSMO?

TSMO is a set of integrated transportation solutions intended to improve the performance of existing transportation infrastructure. Through a combination of transportation system management (TSM) and transportation demand management (TDM) systems, services and projects, TSMO addresses transportation goals such as mobility, reliability, safety and accessibility, which have traditionally been achieved via larger scale, expensive infrastructure investments.

The TSM component typically incorporates advanced technologies to improve traffic operations. TDM promotes travel options and ongoing programs that result in reduced demand for drive alone trips. Together these two transportation management techniques optimize the existing transportation infrastructure.

The Regional TSMO plan identifies four functional areas of investment:

1. multimodal traffic management
2. traveler information
3. traffic incident management
4. transportation demand management

Each of these four functional areas is further detailed in the action plan segment of this document.

What are the benefits of TSMO?

The region's experience with TSMO as well as that of agencies in other parts of the country demonstrates that TSMO strategies support many regional transportation goals, including:

- Improve travel time reliability
- Reduce crashes
- Improve transit on-time arrival
- Reduce travel delay
- Reduce fuel consumption Reduce air pollution and greenhouse gas (GHG) emissions
- Reduce drive alone trips
- Reduce vehicle miles traveled

Following are example benefits specific to the Portland region that can be achieve in each of the functional areas.

Multimodal traffic management

- An adaptive signal timing project installed in Gresham in 2007 reduced average travel times by 10 percent and saves over 74,000 gallons of fuel every year.
- A typical signal timing project in Portland saves over 300 metric tons of CO2 annually per retimed traffic signal[1].
- The transit signal priority project in the Portland metro area has the ability to reduce transit delay by 30 to 40% and improve travel time by 2 to 16% based on previous studies.[2]

Traffic incident management

- The ODOT incident response program responds to over 12,700[3] incidents each year in the Portland metro area. Based on 2001 data, if all delay-causing incidents in the Portland region were reduced by 5 minutes, over 270,000 hours of delay would be saved annually.[4]

Traveler Information

- In 2008 the TripCheck web site was visited over 23 million times, and that number has grown steadily since 2002 when data was first collected. The record month for visits was

[1] DKS. Monitoring and Verification Report: Estimated Project CO2 Savings. Portland Climate Trust Traffic Signal Optimization Project. December 27, 2009

[2] ITS Benefits and Costs databases (http://www.itsbenefits.its.dot.gov

[3] 2006 incidents as noted on ODOT's website: http://www.oregon.gov/ODOT/HWY/ITS/project_COMET.shtml

[4] Bertini, Robert L. Rose, Michael W. El-Geneidy, Ahmed M. Portland State University. Using Archived Data to Measure Operational Benefits of ITS Investments: Region 1 Incident Response Program. June 2004.

December 2008 with almost 6 million visits. Surveys show that TripCheck information influences travel decisions for up to 80 percent of survey respondents.

- In 2009, TriMet's transit tracker phone service received an average of 1.4 Million calls every month and 360,000 trips were planned online using the agency's online trip planning tool.
- The CarpoolMatchNW.org ride-matching web site has more than 11,000 registered users.

Transportation demand management

- An individualized marketing project in North and Northeast Portland during the opening of MAX Yellow Line reduced auto trips by 9% and transit ridership grew 44% while ridership in a control group grew only 24%.
- Employer transportation programs are in place at 1,139 worksites in the region, and 924 of those include an employer-provided transit subsidy for employees. Surveys of employees indicate that the non-SOV mode share at these worksites exceeds 35%.
- A survey of residents in the Portland metro area found that nearly one out of five (19%) took action to reduce car trips because of what they saw, read or heard about the Drive Less/Save More campaign.

Why does the region need a TSMO Plan?

The Oregon Transportation Plan and the 2035 Regional Transportation Plan (RTP) emphasize the importance of TSMO as a cost effective way to achieve plan goals including mobility, accessibility, safety and sustainability. However, these plans lack detail as to how TSMO will be used in pursuit of plan goals. Outstanding questions include:

- What are the available opportunities?
- Among the identified problems and challenges, which are best suited for TSMO solutions?
- What are the regional priorities for investment in TSMO?

In the past decade, many agencies across the region have completed intelligent transportation system (ITS) plans to guide advanced technology investments. A strategic plan for regional travel options programming was also completed. While these efforts have benefited efficiency, safety, and improved traveler information and options, they have been largely isolated from the development of long-range transportation plans.

There is a paradigm shift both regionally and nationally regarding how best to address transportation challenges. With raising costs for traditional infrastructure solutions and declining transportation budgets, agencies are looking for ways to better manage existing systems. There is also a growing acknowledgement that building to address congestion is

inconsistent with other goals like reducing GHG emissions, decreasing our dependence on the automobile, encouraging more walking and biking, and developing in ways that are consistent with desired land use goals.

Lastly, there is a critical need for regionalism in implementing TSMO strategies. Coordination and collaboration is needed between cities, counties, regional service providers and the state so that our transportation system operates seamlessly.

How Was the TSMO Plan Developed?

Developing the TSMO Plan was a joint effort among key stakeholders. Throughout the course of this project, several committees joined efforts to create, review, and revise the plan. Figure 1 shows the general advisory committee structure for the TSMO Plan. Three advisory committees guided the planning effort.

TransPort, the operations subcommittee to the Transportation Policy Alternatives Committee (TPAC), served as the TSM technical advisory committee. TransPort members include operations professional from transportation agencies across the region. TransPort met monthly to review the technical aspects of the plan.

The Regional Travel Option (RTO) Subcommittee, the TDM subcommittee to TPAC, joined efforts in the development of the TSMO plan and provided key information for the transportation demand management solutions. The RTO Subcommittee includes public agency and private stakeholders interested in TDM. The committee meets bi-monthly.

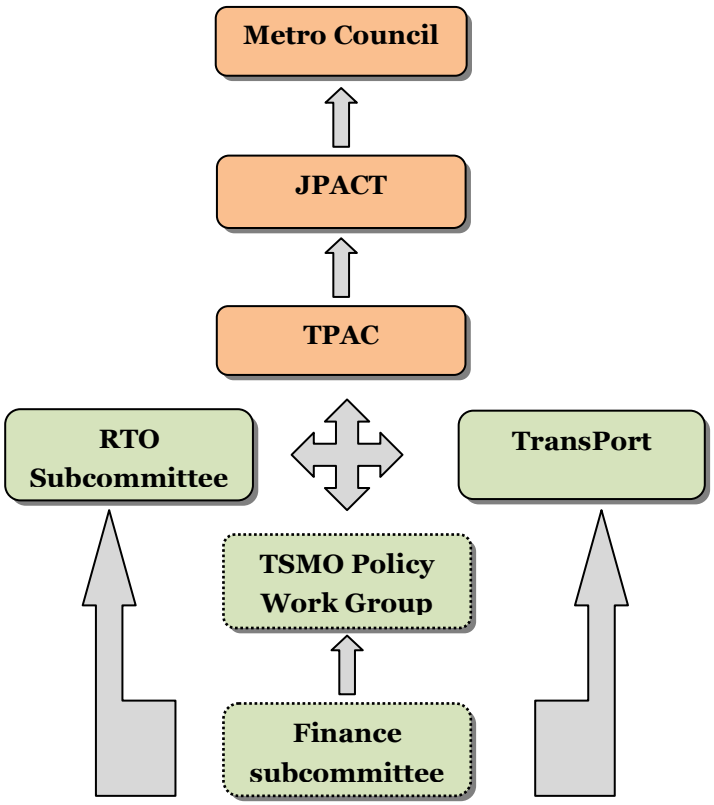


Figure 1: Advisory committee structure for TSMO Plan

The TSMO Policy Work Group (PWG) was formed to provide high-level policy guidance for the plan. The group consisted of TPAC members, key private sector stakeholders, and other transportation professionals that participate in, or oversee TSMO activities. The PWG met four

times over the course of the plan to review and comment on and provide recommendations for vision and goals, strategies, and implementation actions.

A finance subcommittee, comprised of members from all three advisory groups, also convened during the course of this project to address funding challenges and non-capital actions for successful implementation.

Presentations were made to TPAC, the Joint Policy Advisory Committee on Transportation (JPACT), the Metropolitan Policy Advisory Committee (MPAC), and Metro Council at critical milestones including the creation of visions, goals, and objectives for TSMO, and the TSMO Action Plan.

Together, all of these advisory groups provided feedback and reached consensus as the plan progressed. The key steps involved:

1. Creating a vision statement with supporting goals, guiding principles and objectives to guide the course of the TSMO plan.
2. Identifying transportation needs and existing conditions of the transportation network.
3. Developing and prioritizing projects that encompass the TSMO action plan.
4. Addressing implementation and finance challenges and recommending actions necessary for successful implementation of the regional TSMO plan.
5. Recommending a set of projects for the first funding allocation.
6. Establishing a method for future project selection and funding.

II. Traffic congestion and TSMO

TSMO solutions address transportation congestion problems, which are a growing concern in the Portland region. This section presents a brief overview of congestion in the Portland area. For more information about Portland congestion issues, please refer to Appendix B.

Traffic congestion generates longer and often unreliable travel times, reduces mobility, increases operational and delivery costs, wastes fuel, increase vehicle emissions and is the cause of many crashes. Congestion has intensified steadily along with the growth in population and today costs the region more than $600 million annually in lost time and wasted fuel – an increase of more than 450 percent since 1985.[5]

[5] Congestion Data for Your City. *Texas Transportation Institute. http://mobility.tamu.edu/ums/congestion_data/. Accessed Dec. 1, 2008.*

Sources of roadway congestion

Congestion is the direct result of the demand exceeding the available capacity. Capacity is either limited by a physical constraint in the transportation network or by an unpredictable event that reduces the available roadway capacity – an incident, special event, poor signal timing, weather or work zones. The root sources of roadway congestion are shown in Figure 2.[6] These six sources account for two types of congestion, recurring and non-recurring. Recurring congestion is generally predictable and occurs on most days because the typical source – a physical bottleneck – always exists in the absence of a capacity building project. Accounting for 40 percent of congestion, bottlenecks are areas where physical capacity does not meet vehicle demand. A well-known bottleneck in the Portland area is I-5 Northbound at the Columbia River, where congestion is predictable every day.

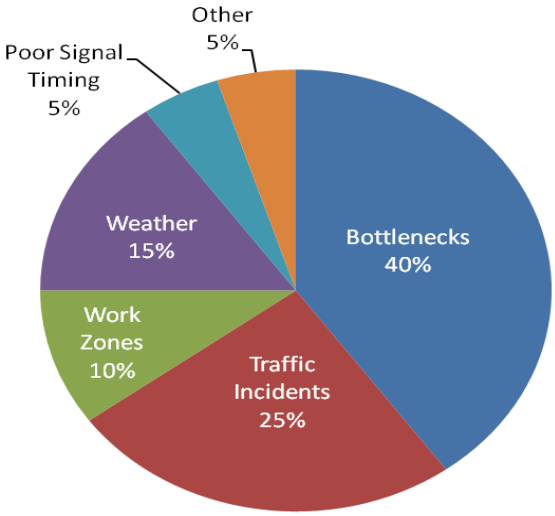


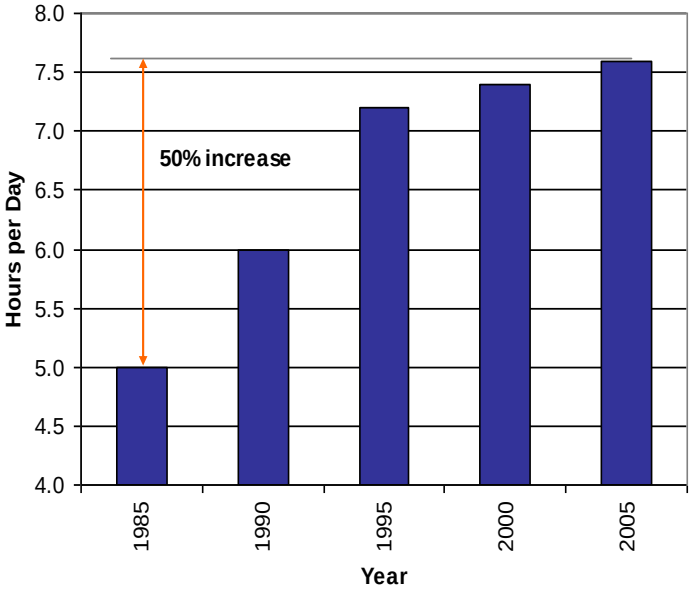
Figure 2: Sources of Congestion

Non-recurring congestion is less predictable and results from the other five sources – traffic incidents, work zones, weather, poor signal timing and special events. These events do not recur in the same location, but when they do roadway capacity is reduced. Congestion results when the demand exceeds the reduced capacity.

Hours of congested travel

Congestion on Portland's roadways is a growing problem. Auto and truck traffic has increased steadily and the region has not been able to keep pace with roadway expansion projects. The total hours of congested travel increased 50% from an average of 5.0 hours per day in 1985 to over 7.5 hours per day in 2005 as shown in Figure 3.

6 Describing the Congestion Problem. *Federal Highway Administration.* *http://www.fhwa.dot.gov/congestion/describing_problem.htm. Accessed Dec. 22, 2008.*



Data Source: Texas Transportation Institute

Figure 3: Congested Travel Hours Each Day in Portland (1985 - 2005)

Capacity is not constant

It is commonly assumed that roadway capacity is a constant when, in fact, incidents, work zones, poor signal timing, weather and special events all reduce existing capacity in the roadway network. Another assumption is that closing a single lane of a two lane roadway reduces the capacity by 50 percent. Seems logical, but research suggests this assumption is not correct. Closing a single lane of a two lane highway reduces the available capacity by 65 percent. Even closing a shoulder reduces capacity by as much as 19 percent. Table 1 shows the percentage of capacity lost when lanes are closed.[7]

TSMO strategies seek to restore the capacity lost from non-recurring events, manage the demand through bottlenecks and reduce demand overall.

Table 1: Impact of Incidents on Highway Capacity

Number of Hwy Lanes	% Facility Capacity Lost by Blockage Type			
	Shoulder	1 Lane	2 Lanes	3 Lanes
2	19%	65%	100%	N/A
3	17%	51%	83%	100%
4	15%	42%	75%	87%

Source: TRB

Key congestion findings for the Portland region include:

- Population is projected to increase from 1.7 million in 2005 to 3.0 million in 2030[8]. At that rate, the daily hours of congested travel and number of incidents will increase further unless something is done to manage demand and operations.

[7] Highway Capacity Manual 2000. *Transportation Research Board, National Research Council, Washington, D.C., 2000.*

[8] *Economic Report to the Metro Council, Proposed Final Draft*. Metro, Data Resource Center, Sept. 2002.

- In 2005 congestion in Portland cost the average driver over $700 per year today, a 450 percent increase since 1985.[9]
- Average peak period travel times are 20 percent longer today than in 1985[10].
- Over 25,000 incidents are reported annually on Portland region roadways.[11]
- Traffic incidents increase during peak congested hours[12], which cause further delay.
- Population is projected to increase from 1.7 million in 2005 to 3.0 million in 2030[13]. At that rate, the daily hours of congested travel and number of incidents will increase further unless something is done to better manage demand and operations.

Although roadway capacity building projects will still be constructed, demand far exceeds the available funding needed to build our way out congestion. Non-recurring events will continue to rob the facility of existing capacity. Because capacity building projects alone are not sustainable, improving the region's ability to manage non-recurring events, restore lost capacity quickly and reduce demand is essential.

TSMO provides cost effective tools and strategies to restore lost capacity quickly, promote and support effective non-drive alone travel options that can reduce demand, and control traffic approaching physical bottlenecks to manage demand. Congestion will continue to increase, but TSMO provides alternatives to building more physical capacity into the system. It allows the region to manage its existing transportation system at maximum efficiency, while improving the safety and quality of life for the region's residents.

III. TSMO policy framework

The TSMO plan is guided by a policy framework that includes a regional vision, planning goals and objectives, and guiding principles and aims to support implementation.

Vision Statement

The Portland metropolitan region will collaboratively and proactively manage its multimodal transportation system to ensure safe, reliable, efficient, and equitable mobility for people and goods. The region will strive to be a nationally recognized leader for innovative management and operations of its system.

---

[9] *Congestion Data for Your City*. Texas Transportation Institute. http://mobility.tamu.edu/ums/congestion_data/. Accessed Dec. 1, 2008.
[10] *Congestion Data for Your City*. Texas Transportation Institute. http://mobility.tamu.edu/ums/congestion_data/. Accessed Dec. 1, 2008.
[11] ODOT ATMS data, 2005-2007.
[12] ODOT ATMS data, 2005-2007.
[13] *Economic Report to the Metro Council, Proposed Final Draft*. Metro, Data Resource Center, Sept. 2002.

Goals & Objectives

The goals and objectives direct how the region plans to achieve its vision for TSMO.

Goal 1: Reliability
Provide reliable travel times for people and goods movement.

Objective 1.1 Expand traffic incident and event management capabilities to restore roadway capacity reduced by incidents, weather and construction.

Objective 1.2 Enhance regional traffic signal coordination systems and support systems that respond to current conditions.

Objective 1.3 Implement and expand systems that improve reliability for transit, pedestrians and bicycles.

Objective 1.4 Implement systems that reduce delays through known bottlenecks.

Objective 1.5 Integrate arterial and freeway roadway systems and operate the transportation system from the overall system perspective.

Objective 1.6 Market and provide travel options services to employers and commuters.

Goal 2: Safety and Security
Enhance transportation safety and security for all modes.

Objective 2.1 Reduce crashes at signalized intersections.

Objective 2.2 Reduce crashes resulting from weather, construction and secondary crashes from incidents.

Objective 2.3 Reduce crashes involving vulnerable road users (pedestrians and bicycles).

Objective 2.4 Provide a safe environment for transit, bicycling and walking.

Objective 2.5 Encourage transit ridership by providing safe and secure public transportation facilities.

Objective 2.6 Improve communication and coordination between transportation agencies and emergency management agencies.

Objective 2.7 Protect physical infrastructure and transportation communication networks from harm or misuse.

Goal 3: Quality of Life
Enhance the environment and quality of life by supporting state and regional greenhouse gas and air quality goals.

Objective 3.1 Encourage transit ridership by improving transit travel times and services.

Objective 3.2 Improve connections between modes to enhance traveler mobility and reduce reliance on the automobile.

Objective 3.3 Support initiatives to reduce greenhouse gas emissions from vehicles.

Objective 3.4 Support equitable distribution of transportation services and investment.

Objective 3.5 Support systems that implement future pricing strategies (e.g., congestion, tolls, parking).

Objective 3.6 Continue a regional collaborative marketing campaign to increase awareness and use of travel options and reduce drive-alone trips.

Goal 4: Traveler Information
Provide comprehensive multimodal traveler information to people and businesses.

Objective 4.1 Provide current information that may affect roadway users and travel choices across all modes.

Objective 4.2 Enhance pre-trip and en-route traveler information tools.

Objective 4.3 Enhance regional multi-modal trip planning tools.

Objective 4.4 Expand traffic surveillance and transportation system condition data collection capabilities.

Guiding Principles & Aims

While the goals and objectives direct investment in TSMO, the guiding principles and aims steer implementation.

Guiding Principle 1: Regional Partnerships
Enhance regional partnerships that support collaborative investment and implementation of management and operations strategies that benefit the region.

Aim 1.1 Regularly update regional transportation systems architecture documents to ensure system compatibility amongst agencies.

Aim 1.2 Support collaboration and coordination of TSMO and RTO partner activities.

Aim 1.3 Encourage opportunities for public-private collaboration and partnerships that support transportation system management and operations goals.

Guiding Principle 2: System Performance
Monitor transportation system performance and evaluate system management strategies to aid equitable policy and sustainable investment decisions.

Aim 2.1 Apply appropriate measures to support investment in cost-effective strategies.

Aim 2.2 Support maintenance and upgrades to the regional data warehouse.

Aim 2.3 Include an automated data collection component with all systems management projects.

Guiding Principle 3: Investment in Ongoing Operations
Provide on-going maintenance and operations to support the transportation network.

Aim 3.1 Provide financial and staff resources to effectively manage, operate and maintain transportation management systems.

Aim 3.2 Develop regional investment strategies to develop, operate, and implement transportation system management and operation strategies.

Aim 3.3 Establish systems management and operations as a core program – equal in importance to systems development and preservation.

IV. TSMO Action Plan

The TSMO action plan is the region's road map for carrying out transportation system and demand management strategies to improve travel for people and goods. It builds upon previously completed Intelligent Transportation System (ITS) plans completed by ODOT and local transportation agencies, and the 2008-2013 RTO Strategic Plan.

Full (10 year) implementation of the region-wide and corridor specific transportation demand management projects will mean investing approximately $23 million in capital improvements and up to $44 million a year for operations and maintenance.[14] Full implementation of the systems management and operation projects will mean investing approximately $330 million for capital improvements and annual operation and maintenance costs of up to approximately $11 million.[15]

TSMO investments include capital improvements using intelligent transportation system (ITS) infrastructure and service strategies that provide traveler information and assistance, or respond to unexpected events. They also include programmatic investments to promote alternatives to driving alone, collect and analyze system operations data, and measure performance. In most cases, TSMO services require ongoing investment in personnel to operate incident response vehicles, staff operations centers, or maintain travel information and public outreach programs.

An effective TSMO program requires a managed program on an equal level to construction and maintenance programs. This presents public agencies with significant policy, organizational and budget challenges to successful implementation.

Action plan organization

The action plan is organized into two distinct sections: regional investments and corridor investments. Regional investments include strategies that cross agency boundaries, benefit multiple agencies and/or require a shared commitment to ongoing system management. An

[14] The annual operation and maintenance expense will reach $44 million after full implementation of the TDM projects; however, the average cost over the 10-year period is estimated at $30.5 million a year since not all projects will be implemented during the first year of the plan.
Total cost = $23M + (10 x $30.5M) = $328M

[15] The annual operation and maintenance expense will reach $11 million after full implementation of the TSMO projects; however, the average cost over the 10-year period is estimated at $7.4 million a year since not all projects will be implemented during the first year of the plan.
Total Cost = $327M + (10 x $7.4M) = $401M

example of regional investment is traffic incident management. Traffic incident management includes integration of emergency response and traffic management systems, and partnerships between transportation agencies and emergency services to provide a coordinated response to identify, respond to and clear incidents quickly. The system interfaces benefit both transportation and emergency service agencies, but traditional public agency budgets make it difficult to determine who should be responsible for the initial investments and ongoing system enhancements.

Corridor investments include both capital improvements and services that can be targeted and provided to a specific transportation corridor. For example, many arterials in the region lack the traffic detection and communications infrastructure to provide data and video images for a traveler information web site.

Functional area analysis

The stakeholders and project team considered a wide range of TSMO strategies covering the broad spectrum of transportation operations and demand management including transit operations, multimodal traffic control, traffic incident management, congestion pricing, traveler information, intelligent vehicle initiatives, pedestrian/bicycle safety enhancements, and transportation demand management. The following near term priority investments should be considered in the first implementation phase. These priorities are based on analysis of the strategies, a comparison of benefit-cost and the current state of TSMO investment in the region.

Multimodal traffic management

- Provides arterial and freeway multimodal traffic management and operations functions including signal timing, access management, arterial performance monitoring and data collection, active traffic management

Traveler information

- Provides current and forecasted travel conditions information via a variety of sources including web site, mobile devices, phone systems, dynamic message signs, highway advisory radio and via private sources for in-vehicle navigation systems to help people make better informed travel decisions.

Traffic incident management

- Provides resources and builds partnerships to foster a coordinated, timely and efficient response to incidents. The strategies are aimed at reducing overall incident duration to restore capacity quickly and reduce secondary crashes.

Transportation demand management (TDM)

- Maximizes investments in the transportation system and relieves traffic congestion by managing travel demand, particularly during peak commute hours. Supports and leverages capital investments in transit, trails, and other infrastructure by marketing travel options to potential riders and users and increasing the share of trips made by transit, walking, cycling and other travel options.

Ongoing funding

The collection of TSMO strategies in this action plan requires a moderate investment in up front capital and continued funding for operations and maintenance for most of the projects. Total capital investment for the 10-year plan for the Portland metropolitan area is valued at approximately $378.5 million. However, it is important to consider the necessary operation and maintenance investment in addition to the capital investment. A commitment to sustaining an ongoing operating program that will provide quality service to the traveling public requires an ongoing and stable funding source. A successful transportation system operations program must be treated like a capital and/or maintenance program with a dedicated funding source. The annual operations and maintenance cost, if all of the TDM and TSMO projects in this plan are implemented, is estimated to reach about $39 million. However, the annual operations and maintenance budget will not begin at $39 million. The annual investment will grow gradually as projects are implemented, and could reach up to $39 million with full implementation.

TSMO region-wide action plan

This section outlines the TSMO strategies that apply region-wide. These projects extend across agency boundaries and benefit multiple jurisdictions. Following this section, are the corridor specific projects which apply to particular geographic areas. The section is organized by the four functional areas: regional multimodal traffic management, traveler information, incident management and transportation demand management.

Functional area: multimodal traffic management

The Multimodal Traffic Management projects improve metropolitan mobility by applying 21st century technology solutions to actively manage the transportation network. It is clear that the existing network can be used more efficiently to improve mobility for people and goods while reducing the capital and social costs of large-scale infrastructure investments. This program area invests in highly congested transit, freight and emergency response corridors to improve on-time performance for buses, travel-time reliability for trucks, and response times for emergency responders. The program also builds the infrastructure for performance data that can supply traveler information such as real-time corridor travel times and congestion maps.

This data will be further used by agencies to promote more efficient use of the transportation system.

The following bullets describe the projects identified in this functional area, as well as preliminary cost estimates and timeframes.

- **Operate and maintain regional ITS communications network**
  Improved coordination is necessary to insure effective management of the regional transportation system. Maintaining the regional ITS network allows for more efficient use of available resources and sharing of resources can reduce overall costs and increase project efficiencies. The first step in facilitating regional coordination is to enhance the operation and maintenance of the regional ITS communications network. As the existing ITS network is expanded to include additional facilities and functions, the early projects will need reinvestment to insure that these critical links are adequate.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Operate and Maintain Regional ITS Communications Network	Ensure ITS capital investments are used as efficiently and effectively as possible.	High	Ongoing	$0	$100K	TransPort

- **Active traffic management regional concept of transportation operations (RCTO)**
  Active traffic management consists of a combination of strategies which vary in cost and capabilities. Active traffic management may include variable speed limit signs, lane control, reversible lanes, advanced signal systems, etc. Given the relatively high costs, lack of local implementation, and the limited number of national implementations of active traffic management, it is prudent to first conduct a preliminary study of the technology and potential locations or corridors where the technology benefits seem to be a good fit to the challenges.

  The first effort for active traffic management is to conduct a study to review the various strategies and determine those feasible. The next step is to identify the potential corridors for implementing active traffic management strategies based on current operational and safety challenges that could be addressed by active traffic management. Subsequent study(s) should focus on development of an active traffic management implementation plan and identifying specific elements appropriate for each of these corridors.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Active Traffic Management RCTO	Identify potential corridors for active traffic management implementation, and develop an implementation plan	High	1-5 years	$350K	$0	Metro

- **Transit priority treatment performance measurement**
  Transit signal priority (TSP) is used by TriMet and the City of Portland along key arterials with major transit routes. TSP enhances transit schedule reliability and thus encourages transit ridership. However, the field performance of TSP has not been thoroughly studied. It is therefore necessary to establish a set of performance measures which will apply across all corridors with TSP implemented, and regularly monitor and evaluate the performance of TSP. This evaluation is necessary to determine the cost-effectiveness of expanding TSP to other corridors.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Transit Priority Treatment Performance Measurement	Enhance regional traffic signal coordination systems and support systems that respond to current conditions.	High	1-5 years	$200K	$200K	TriMet

- **Region-wide access management strategies**
  Regional Concept of Transportation Operations (RCTO)
  Access management consolidates or restricts access points to provide a safer environment for vehicles, pedestrians and bicycles. Access management can be expensive depending on access rights and right-of-way acquisition. Strategy plans are necessary to guide the implementation of access management and better allocate the limited resources spent on access management. Currently, ODOT does have access management regulations and standards, however, these standards only apply to state highways. This project aims to incorporate non-state highways into the access management strategy and generate stronger regional policy regarding access management. The first step of the process is to develop overall access management goals and objectives and to identify potential corridors for access management implementation. The next step is to develop a corridor specific access management strategy that provides a toolbox of techniques that may be applied as road

improvement projects, development, or redevelopment occurs within the roadway corridor. The strategy is intended to be adopted by the jurisdictions that have responsibility for the roadway, permitting of driveways, land use regulations, local ordinances and site development requirements.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Region-wide Access Management Strategies	Improve safety and preserve capacity on regional facilities	Medium	6-10 years	$500K	$0	ODOT

- **Enhance regional traffic signal system**
  Software upgrades or enhancements can provide new functionalities and provide a low cost solution to increasing system capabilities. Software updates can be implemented in various transportation elements including advanced signal operations, supportive GIS databases, incident management timing plans, etc. Additionally, capabilities in traffic signal systems such as automation of turn movement counts collection and automated collection of arterial travel times requires additional equipment and hardware upgrades of the signal system.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Enhance Regional Traffic Signal System	Enhance regional traffic signal coordination systems and support systems that respond to current conditions.	High	1-5 years	$12M	$50K	TransPort

- **Expand PSU ITS freight data collection**
  Expand Portland State University's existing web based ITS "count sensor" program beyond the freeway to some key arterials throughout the region. Create a repository of freight data (primarily truck data) from the region's Freight Data Collection project.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Implement Freight Data Collection System	Collect region wide freight data	Medium	6-10 years	$50K	$100K	Port of Portland

- **Congestion pricing/high occupancy toll lanes**
  pilot project
  Congestion pricing is one of the effective ways to reduce traffic congestion. It works by shifting rush hour highway travel to other transportation modes or to off-peak periods. High occupancy toll (HOT) lane is one form of congestion pricing, which carries additional benefits compared to traditional tolling methods. HOT lanes encourage carpooling and at the same time utilize unused capacity of carpool lanes. On top on that, implementing dynamic pricing would have the effect of diverting traffic across different modes, time and space. A pilot project will develop and implement congestion pricing and study the effect it may have on reducing traffic congestion.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Congestion Pricing/ High Occupancy Toll Lanes	Support systems that implement future pricing strategies (e.g., congestion, tolls, parking).	High	1-5 years	$5 M	n/a	ODOT

- **Active traffic management pilot project**
  This pilot project is the second step following the development of regional concepts and implementation plans for active traffic management. Based on the results of the preliminary study, this step includes field implementation of active traffic management on the priority corridor identified as a part of the study.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Active Traffic Management Pilot Project	Field prove ATM concept and show system benefit	Medium	6-10 years	$5M	$100K	ODOT

- **Next generation transit signal priority system**
  After evaluating existing transit signal priority (TSP) system, the next step is to develop new standards for buses communicating to the traffic signal system. This brings TSP to the next level, giving new capabilities and increasing the operational efficiency of TSP system.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Next Generation Transit Signal Priority System	Enhance regional traffic signal systems to support efficiency goals.	Medium	6-10 years	$500K	$100K	TriMet/ TransPort

- **24-Hour transportation operations coverage**
  Following the improvement in operation and maintenance of the regional ITS communications network, the next step is to implement 24-hour transportation operations centers (TOC) coverage. Providing 24-hour staff coverage across the entire Portland Metro area will allow quicker identification of traffic issues, expansion of traffic surveillance and facilitation of communication at all hours of the day.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
24-Hour Transportation Operations Coverage	Expand traffic surveillance and facilitation of communication during late night/early morning hours.	Low	Beyond 10 years	$0	$100K	ODOT/ TransPort

- **Automated speed enforcement**
  Speeding can negatively affect the safety of other road users, transit, pedestrians and bicyclists. The use of technology to help enforce speeds can reduce needed manpower as well as result in increased vehicle operator obedience. To achieve automated ticketing of vehicle speeding, the first step is to identify and install speeding cameras along corridors with common speeding problems. The information for vehicle speeding would be matched with the vehicle registration database to achieve automated ticketing of speeding. This would be achieved through software and hardware upgrades.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Automated Speed Enforcement	Provide a safe environment for transit, bicycling and walking	Low	Beyond 10 years	$1M	$100K	ODOT or others

Functional area: traveler information

Real-time traveler information provides travelers more accurate and comprehensive information for their route, mode, and time of day choice decision making. The information system may include system components transmitted via internet, radio, cell phone, or physically on the roadside. Currently, real-time traveler information system in the Portland Metro area includes dynamic message signs, highway advisory radio, traffic surveillance cameras, Tripcheck.com, TriMet trip planning tools and PORTAL.

The following bullets describe the projects identified in this functional area, as well as preliminary cost estimates and timeframes.

- **Portland Oregon Regional Transportation Data Archive Listing (PORTAL) enhancements**
  PORTAL is a traffic information system developed by Portland State University. The purpose of the system is to implement the U.S. National ITS Architecture's Archived Data User Service (ADUS) for the Portland Metro area. PORTAL shares U.S. Department of Transportation's vision to improve transportation decisions through the archiving and sharing of ITS generated data. As the regional traffic information data warehouse for the Portland Metro area, PORTAL requires continuous support, maintenance and upgrades. The next stage in PORTAL development is to link GIS data with PORTAL to provide more capabilities.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Portland OR Regional Transportation Data Archive Listing (PORTAL) Enhancements	Expand traffic surveillance and transportation system condition data collection capabilities.	High	Ongoing	n/a	$100K	PSU

- **Multi-modal traveler data and tools**
  Provide and/or maintain data and tools to encourage and ease the use of travel options. While some Traveler Information shares real-time data with the travelling public, this action provides data and tools to the travelling public to pre-plan their mode and route. Examples include CarpoolMatchNW.org, and roadway bike-suitability data maintenance for bike maps and online trip planning tools.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Multi-modal traveler data and tools	Provide and/or maintain data and tools to encourage and ease the use of travel options.	High	Ongoing	$0	$150K	Metro

- **Park & Ride traveler information**
  Add Park & Ride feature to a future TriMet multimodal trip planning tool. The project will focus on Park & Ride lots that are at capacity in order to direct users to the next best Park & Ride lot. The tool might be based on estimates or real-time parking space availability (e.g. models and/or sensors) depending on project needs and investment decisions.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Park & Ride Traveler Information	Add Park & Ride feature to route planning tools	High	Ongoing	$500K	$150K	Metro or TriMet

- **TripCheck Travel Information Portal (TTIP) enhancement**
  TripCheck Travel Information Portal (TTIP) is a data exchange system that allows ODOT and other public jurisdictions to share traveler information data as well as provides an access point for private companies, which in turn repackage this travel information data. Currently, regional freeways are the main roadways with traveler information available on TTIP. The data exchange is capable of incorporating arterial roadways; however, equipment needs to be installed on arterial roadways to connect with the data exchange system. With this project, arterial travel information will be integrated into TTIP and region-wide coverage will be provided for incident, construction, traffic and weather information for both freeways and key arterials. ODOT's TripCheck website is the direct product of TTIP. It is envisioned that regional real-time traveler information could be accessed via one single central website for the entire region.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
TripCheck Travel Information Portal (TTIP) Enhancement	Provide current information to affect road users and travel choices for all modes.	High	1-5 years	$3M	$2M	ODOT

- **Arterial performance measure**

  Regional Concept of Transportation Operations (RCTO)

  A natural expansion of the region's performance measurement capabilities, beyond PORTAL and other freeway-based facilities, is to the major arterials across the region. Arterial performance measurement in the form of travel times, travel speeds, and potentially origin-destination data will support engineering and planning decision-makers, enabling more efficient investments of limited funds. Provision of this data in real-time or near real-time makes the data even more useful for transportation professionals and the traveling public.

  The first project using this TSMO strategy is envisioned to make use of media access control address (MAC) reading technology at strategic locations to cover the major arterials region wide. This data will be stored and used in a similar fashion to PORTAL. The arterial performance data, such as real-time speeds, will be made available to the public in an easy to use end format, such as ODOT's TripCheck website. The data could be used to help predict travel times under recurring or non-recurring events.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Arterial Performance Measure	Expand traffic surveillance and transportation system condition data collection capabilities across all modes.	High	1-5 years	$750K	$100K	Metro

- **Transit performance measurement system**

  Following the expansion of arterial performance measure capabilities, the next step is to develop tools to improve data collection from TriMet's automated vehicle locator (AVL) system. This system will be used for comparisons with arterial performance measurement system. The transit data can be compared with vehicle data collected from the arterial performance measurement system to evaluate transit performance and the competitiveness of transit compared to other transportation modes.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Transit Performance Measurement System	Provide effective data to decision makers and agency staff to affect the investments made on the system.	High	1-5 years	$350K	$50K	TriMet

Functional area: incident management

Effective incident management can reduce the effects of incident-related congestion by decreasing the time to detect incidents, the time for responding vehicles to arrive, and the time required for traffic to return to normal conditions. Efficient incident detection, communication and information exchange between various agencies and incident responders is critical.

The following bullets describe the projects identified in this functional area, as well as preliminary cost estimates and timeframes.

- **Incident management**
  Incident management comprises various strategies and elements to facilitate incident and emergency response. Incident management includes (but is not limited to) expanding designated incident response routes, installing surveillance equipment to provide improved incident detection, establishing target clearance goals, contracting with towing services for paid "dry-runs", adding vehicles and staff to the incident response fleet, and expanding incident training teams.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Incident Management	Expand traffic incident and event management capabilities to restore roadway capacity reduced by incidents, weather and construction	High	1-5 years	$2M	$200K	ODOT

- **Expand incident management teams/training**
  Together with implementing incident management strategies, it is necessary to expand incident management teams and provide training in order to enhance partnerships with transportation and emergency management agencies. Members of the incident management teams may include emergency responders, traffic operation center staff, non-transportation agencies associated with traffic incident management, private sector personnel, and others. The incident management teams would be responsible for coordinating traffic incident response, providing joint training, sharing lessons learned, and other functions to improve traffic incident management capabilities.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Expand Incident Management Teams/Training	Provide a coordinated response to traffic incidents	High	1-5 years	$0	$500K	TransPort

- **Integrate voice and data networks**

  An improvement to inter-agency communication systems is a key element in incident management. This project enables emergency information sharing between responders and integrates communications between transportation agencies and emergency management agencies. The information sharing would be facilitated by upgrading communication network (including video feed) between transportation operation centers (TOCs) and installing hardware equipment for incident and emergency responders. By implementing this project, better support and information exchange are possible in times of incidents and emergencies.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Integrate Voice and Data Networks	Improve communication and coordination between transportation agencies and emergency management agencies	Medium	6-10 years	$10M	$500K	TransPort

- **Emergency responder GIS system upgrades**

  GIS system upgrades allow emergency responders to access up to date roadway information while en-route. This project potentially includes responder equipment installation, central system upgrades, and sharing of surveillance or performance measurement data between agencies to speed response times and increase incident understanding prior to emergency response arrival.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Emergency Responders GIS System Upgrades	Provide better data and support for emergency management	Medium	6-10 years	$200K	$50K	Metro

- **Dynamic routing and preemption pilot project**
  Dynamic routing and preemption pilot project enables emergency responders to establish a response route and enact signal preemption along the route before arriving at signals.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Dynamic Routing and Preemption Pilot Project	Enable emergency responders to establish a response route and enact signal preemption along the route before arriving at signals.	Low	Beyond 10 years	$500K	$75K	TVF&R

Functional area: transportation demand management

Transportation Demand Management for the Portland region is coordinated through the Regional Travel Options (RTO) Program. RTO carries out regional strategies to increase use of travel options, reduce pollution and improve mobility.

Regional travel options include all of the alternatives to driving alone – carpooling, vanpooling, riding transit, bicycling, walking and telecommuting. The program maximizes investments in the transportation system and relieves traffic congestion by managing travel demand, particularly during peak commute hours.

The following bullets describe the priority projects in this functional area, as well as preliminary cost estimates and timeframes.

- **Collaborative marketing**
  Continue the Drive Less/Save More regional collaborative marketing campaign that increases awareness and use of travel options and reduces drive-alone trips. Update regional Bike There! map and other collateral materials. Provide sponsorships for partner events and activities. Conduct outreach to the public. Support partner collaboration and coordination.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Collaborative Marketing	Continue regional collaborative marketing campaign that increases awareness and use of travel options and reduces drive-alone trips.	High	Ongoing	$0	$975K	Metro

- **Employer services**
  Implement and/or support outreach and technical support in a collaborative manner with RTO partners to help employers increase non drive-alone travel modes.*

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Employer Services	Implement and/or support outreach and technical support in a collaborative manner with RTO partners to help employers increase non drive-alone travel modes.	High	Ongoing	$0	$1M	Metro

*Additional investment in this strategy is appropriate in some corridors.

- **Rideshare services**
  Implement and/or support marketing, outreach, vanpool fare incentives, and services directed at residents and employees to encourage and incentivize ridesharing.*

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Rideshare Services	Implement and/or support marketing, outreach, vanpool fare incentives, and services directed at residents and employees to encourage and incentivize ridesharing.	High	Ongoing	$0	$360K	Metro

*Additional investment in this strategy is appropriate in some corridors.

- **Measurement**
  Implement and/or support strategies that support investment in cost-effective strategies by measuring program effectiveness and easing data sharing among partners.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Measurement	Implement and/or support strategies that invest in cost-effective ways to measure program effectiveness and ease data sharing among partners.	High	Ongoing	$0	$150K	Metro

- **Regional Transportation System Management & Operations program**
  Support strategic and collaborative program oversight. Support meetings and activities of the RTO and TransPort Subcommittees of TPAC, administer RTO and TSMO grant programs. Develop equitable and sustainable funding plans, seek additional funds to leverage federal grants. Track and support the development of regional, state and local policies that advance TDM and TSM strategies.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
TSMO Program	Support strategic and collaborative program oversight.	High	Ongoing	$0	$335K	Metro

- **Parking management strategy**
  Develop a regional parking management strategy aimed at reducing peak-period congestion while promoting access to areas served by non-auto transportation options (transit, bike, walk, and rideshare). The strategy will include public education, enforcement of existing parking management, and technology for variable pricing at existing parking meters, and opportunities for suburban jurisdictions to advance parking management. The strategy must address the possible negative effects such as business impacts, spillover to adjacent neighborhood and socio-economic impacts.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Parking Management Strategy	Develop regional parking management strategy	High	1-5 years	$100K	$0	Metro

- **Parking management region-wide incentive pilot program**
  Implement a pilot program that provides incentives for jurisdictions to implement parking strategies in urban areas. This could incorporate a "best practices" type of policy or case studies within the jurisdiction to determine optimal parking strategies. Parking strategies can include time restrictions (maximums), paid parking areas, limiting parking to encourage alternative transportation modes, as well as other strategies.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Parking Management Pilot Program	Provide incentives for jurisdictions to manage parking	High	1-5 years	$0	$100K	Metro

- **Smartcard fare system regional concept of operations (RCTO)**
  A smartcard fare system will improve transit operating efficiency by accelerating boarding and fare payment and enhance attractiveness of the system by providing customers with more convenient and flexible payment options. This project develops the approach and lays out the processes to support implementation of the smartcard fare system.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Smartcard fare system RCTO	Improve transit operating efficiency	High	1-5 years	$100K	$0	TriMet

- **Smartcard fare system pilot project**
  A smartcard fare system will improve transit operating efficiency by accelerating boarding and fare payment and enhance attractiveness of the system by providing customers with more convenient and flexible payment options.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Smartcard fare system pilot project	Improve transit operating efficiency	High	1-5 years	$12M	$n/a	TriMet

- **Youth transit pass program – development stage**
  Overcome barriers to youth transit trips and increase the demand for transit region-wide in order to reduce miles driven by parents and among youth who have vehicles for their use. Develop agreements between TriMet, schools, and local governments to provide youth transit passes. This project could be incorporated with the development of a smart card fare system that can account the exact amount youth take transit trips. Work with schools to develop methods and agreements so that youth transit cards can be issued to students.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Youth transit pass program	Overcome barriers to youth transit trips and increase the demand for transit region-wide.	Medium	6-10 years	$0	$100K	Metro

- **Youth transit pass program**
  Implement a youth transit pass project that was developed in the project above. The project focuses on one or multiple schools across the region. The implementation component will be further defined as part of the development stage.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Youth transit pass program	Implement the youth transit pass program.	Medium	1 year (6-10 years)	$0	$15M	Metro

- **Regional incentive system**
  Provide a method for incentives that can be used regionally or by local partners to manage demand with individuals. Creating a regional system would allow seamless incentive delivery and management.

TSMO Project	Goal / Objective	Priority	Time-frame	Capital Cost	O&M Cost	Potential Lead Agency
Regional Incentive/Disincentive System	Provide a method for incentives used to manage demand with individuals.	Low	Beyond 10 years	$9M	$200K	Metro

Investment costs for region-wide projects

Table 2 shows the total costs if all the region-wide projects were to be implemented. The operations and maintenance cost is on an annual basis.

Table 2: Estimate of Region-Wide Investment Costs

Functional Area	1-5 Year Timeframe		6-10 Year Timeframe	
	Capital Cost	Annual O&M Cost	Capital Cost	Annual O&M Cost**
Regional Multimodal Traffic Management	$18M	$250K	$7M	$850K
Traveler Information	$4M	$2.5M	$500K	$2.6M
Incident Management	$2M	$700K	$11M	$1.3M
Transportation Demand Management	$12.1M	$3M	$9M	$18M*
Overall Cost (Region-wide Projects Only)	**$36.1M**	**$6.5M**	**$27.5M**	**$23M***

*This assumes a one-time annual operations and maintenance cost of $15 million for the youth transit pass pilot project.

**The annual O&M cost for the 6 to 10 year timeframe includes those projects started in the 1 to 5 year time frame and continued through the 6 to 10 year timeframe.

Corridor specific projects

In addition to the region-wide projects identified in this plan, several projects apply to specific facilities and are detailed in the corridor action plans that follow. The corridor mobility concept was developed by Metro as a new way to think about an integrated transportation system. The Portland area was divided into 23 unique corridors, see Figure 4. Each corridor focuses on the region's network of freeway and highways, and includes parallel networks of arterial streets, regional multi-use paths, high capacity transit and frequent bus service.

In following Metro's mobility corridor concept (which was in part designed to help planners and decision-makers understand existing conditions, identify needs and prioritize mobility investments) the projects in this action plan are allocated by mobility corridor.

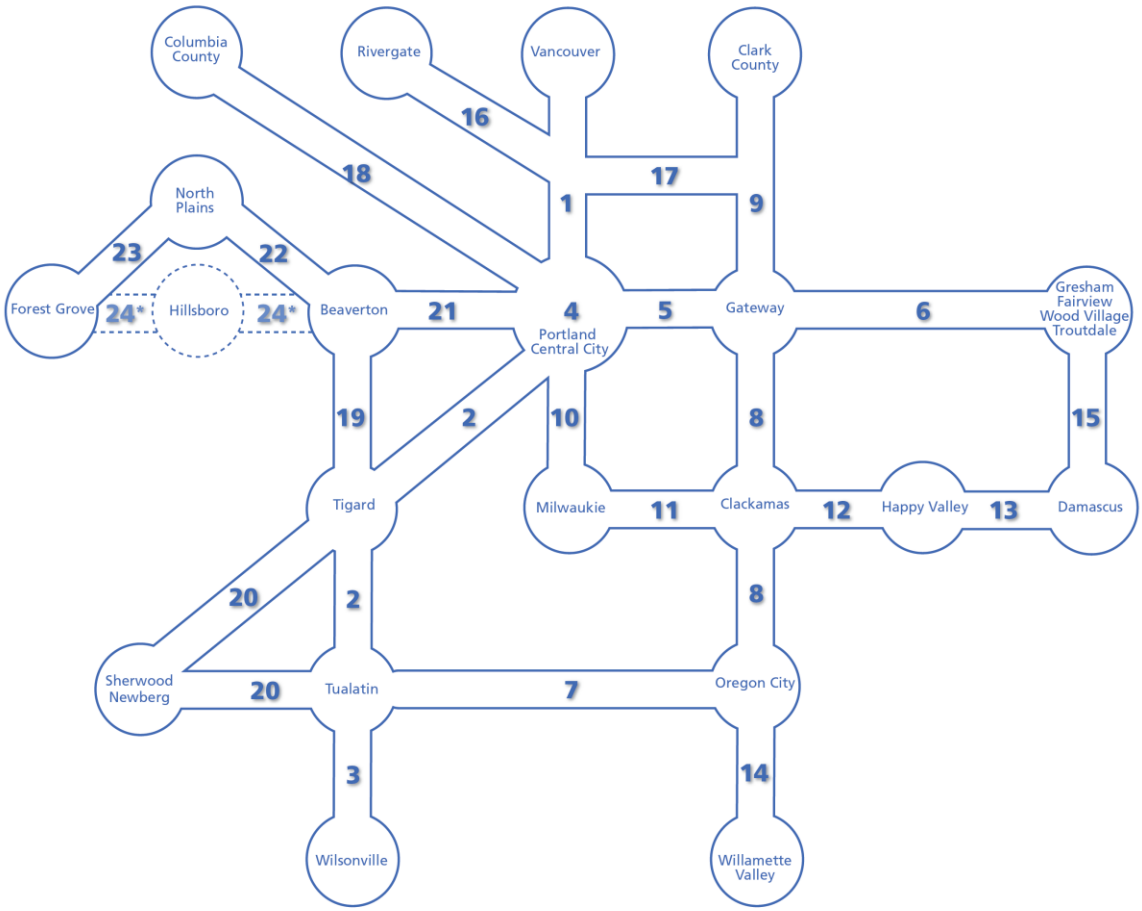


Figure 4: Corridor index map

*Corridor 24 will be added in the future, in this plan facilities in corridor 24 are incorporated in corridors 22 and 23.

Maps of projects

For the corridor specific projects, maps were created to help illustrate project locations. The maps are broken into two categories: transportation system management (TSM) which includes the regional multimodal traffic control, traveler information, and traffic incident management related projects, and transportation demand management (TDM). Each category has its own set of maps to help illustrate the project locations and also show how the Portland region has developed, and will continue to develop in the future with respect to TSM and TDM investments.

There are three maps that illustrate TSM projects in the Portland region:

- Past - A map of TSM investments around the Portland region in 2000 (Figure 5).
- Present - A map of current (2009) TSM investments (Figure 6).

- Future - And a map of the region in 2020 illustrating all the planned TSM investments (Figure 7). This future map incorporates all of the projects listed in the corridor action plans on the following pages. For more information about the project types shown in the legend of this map, the corridor action plans can be referenced.

Then the next four maps illustrate the TDM projects in the Portland region, both existing and planned:

- Existing (2009) map of rideshare efforts such as carpool and vanpool (Figure 8).
- Existing (2009) map of employer services and resulting drive-alone rates (Figure 9).
- Existing (2009) map of collaborative marketing efforts (Figure 10).
- A map of the region in 2020 showing all the planned TDM projects (Figure 11). Similar to the TSMO projects, all of the TDM projects in this map are also detailed in the corridor action plans and can be referenced for more information.

Corridor Project Cost Estimate

Table 3 shows the cost estimate of implementing all of the corridor projects. The operations and maintenance cost is on an annual basis, depending when a project is implemented, that operations and maintenance cost is allocated from that point forward. The primary cost of the transportation system management (TSM) projects is the capital cost (installing equipment and software) whereas the primary cost of TDM projects is the annual operations and maintenance budget (running programs and marketing).

Table 3: Estimate of Corridor Investment Costs

Project Type	1-5 Year Timeframe		6-10 Year Timeframe	
	Capital Cost	Annual O&M Cost	Capital Cost	Annual O&M Cost*
TSM Projects - Regional Multimodal Traffic Management/Traveler Information/ Traffic Incident Management	$89M	$2M	$196M	$6M
Transportation Demand Management	$200K	$14M	$2M	$24M
Overall Cost	**$89.2M**	**$16M**	**$198M**	**$30M**

*The annual .O&M cost for the 6-10 year timeframe includes those projects started in the 1-5 year timeframe and continued through the 6-10 year timeframe.

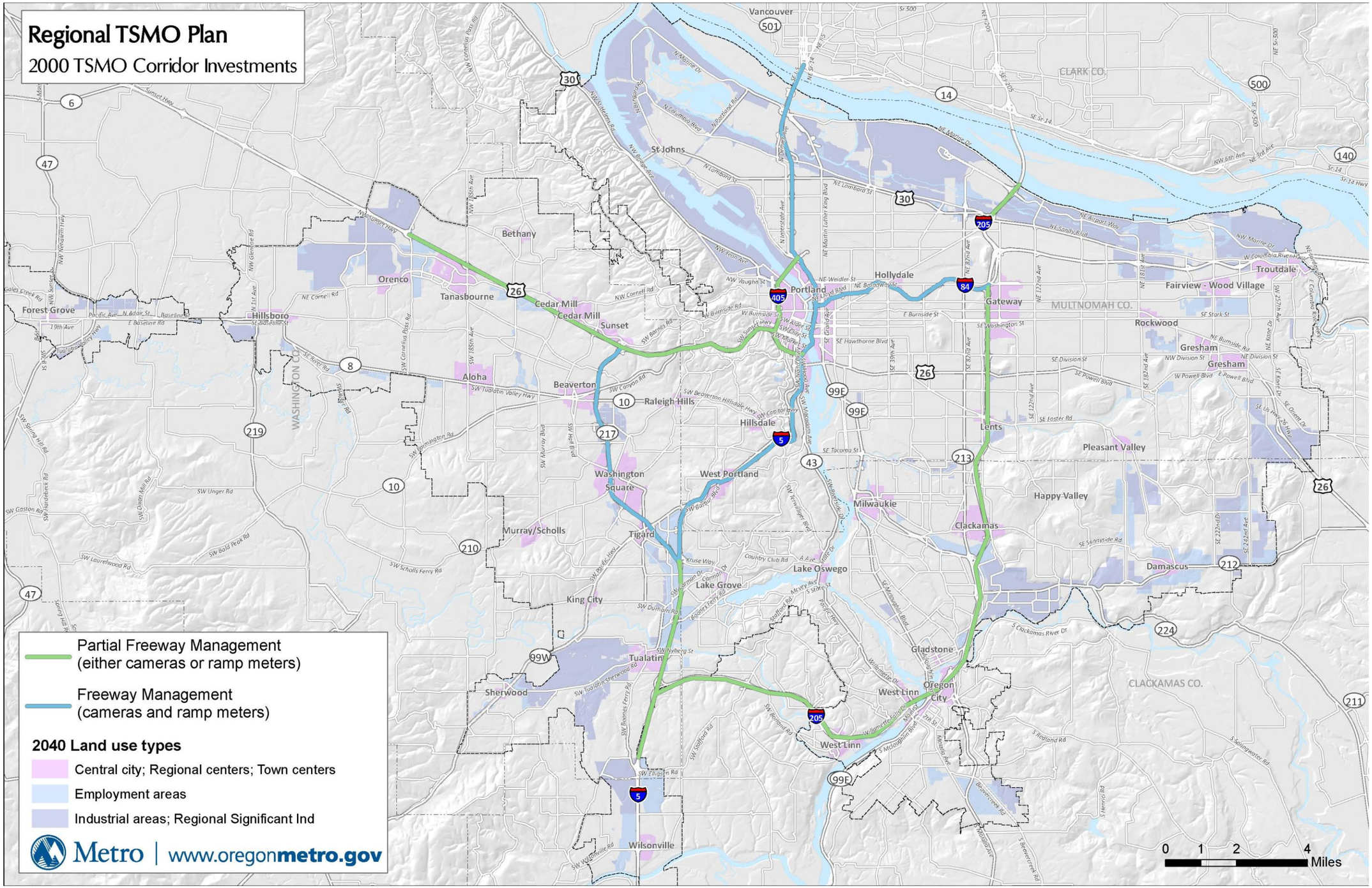


Figure 5: Map of the Portland region and TSM investments in 2000

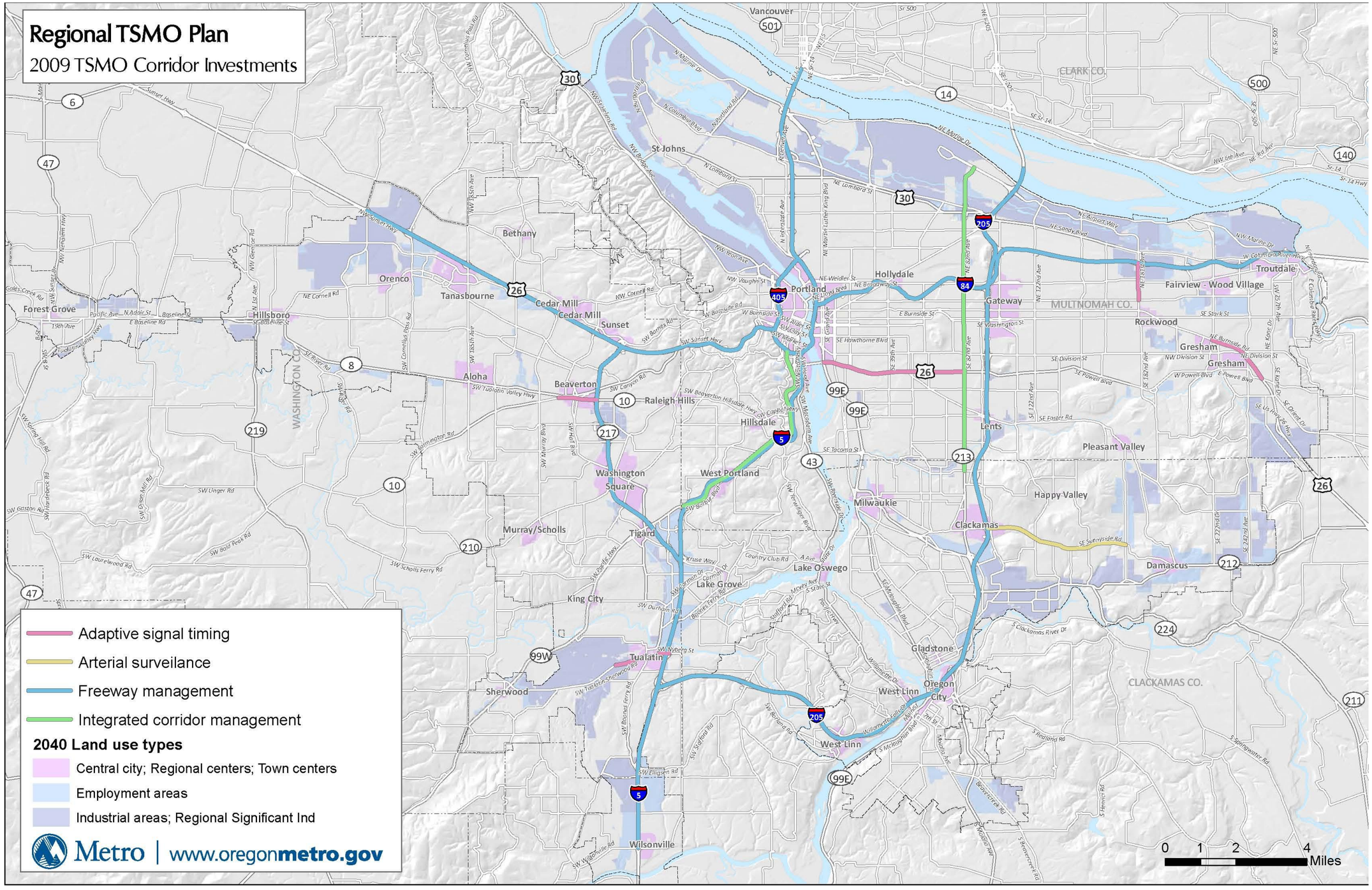


Figure 6: Map of Existing TSM investments in the Portland Region in 2009

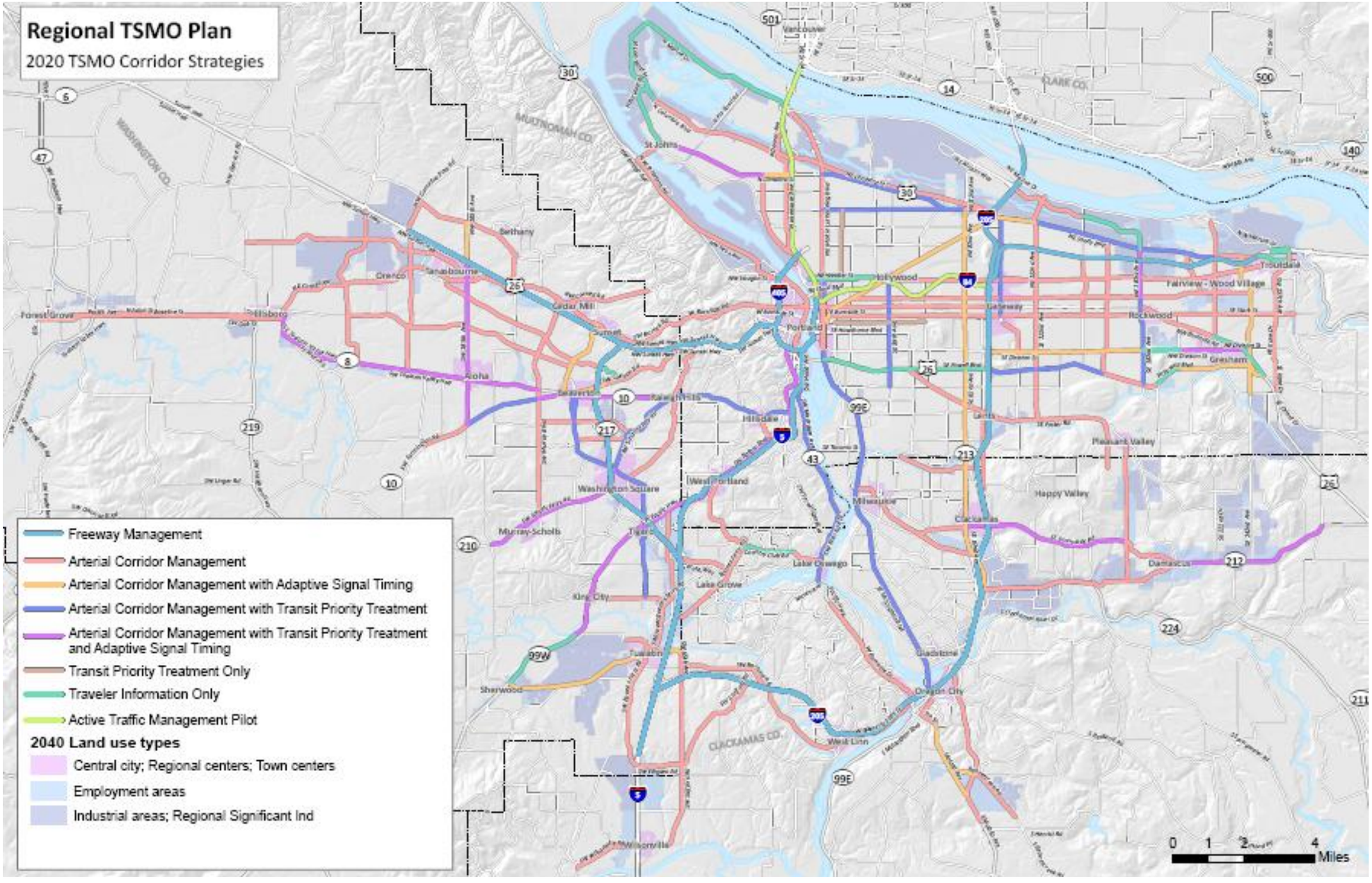


Figure 7: Map of planned TSM investments in the Portland region for 2020

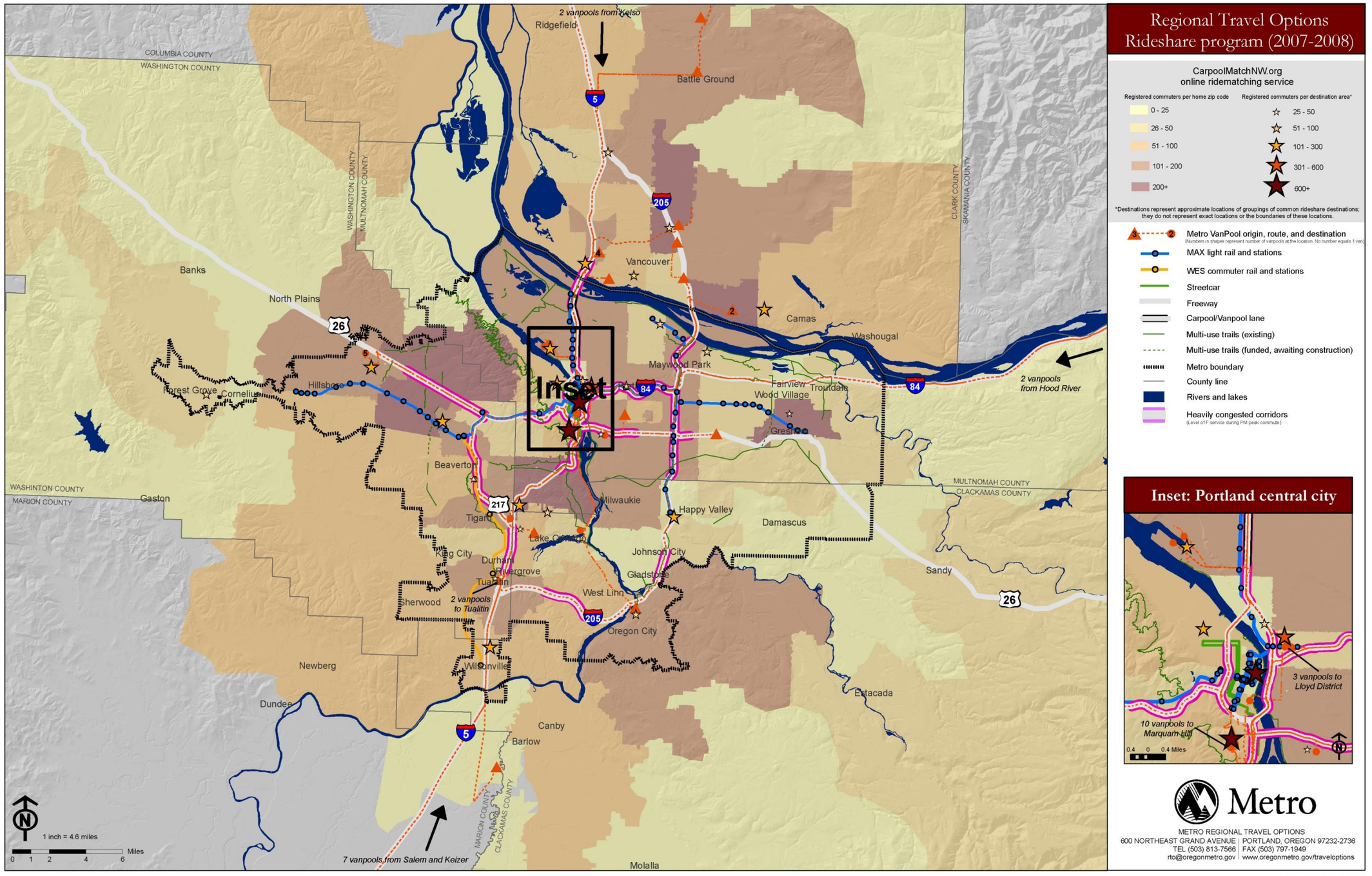


Figure 8: Map of existing (2009) TDM rideshare efforts (carpool and vanpool) in the Portland region.

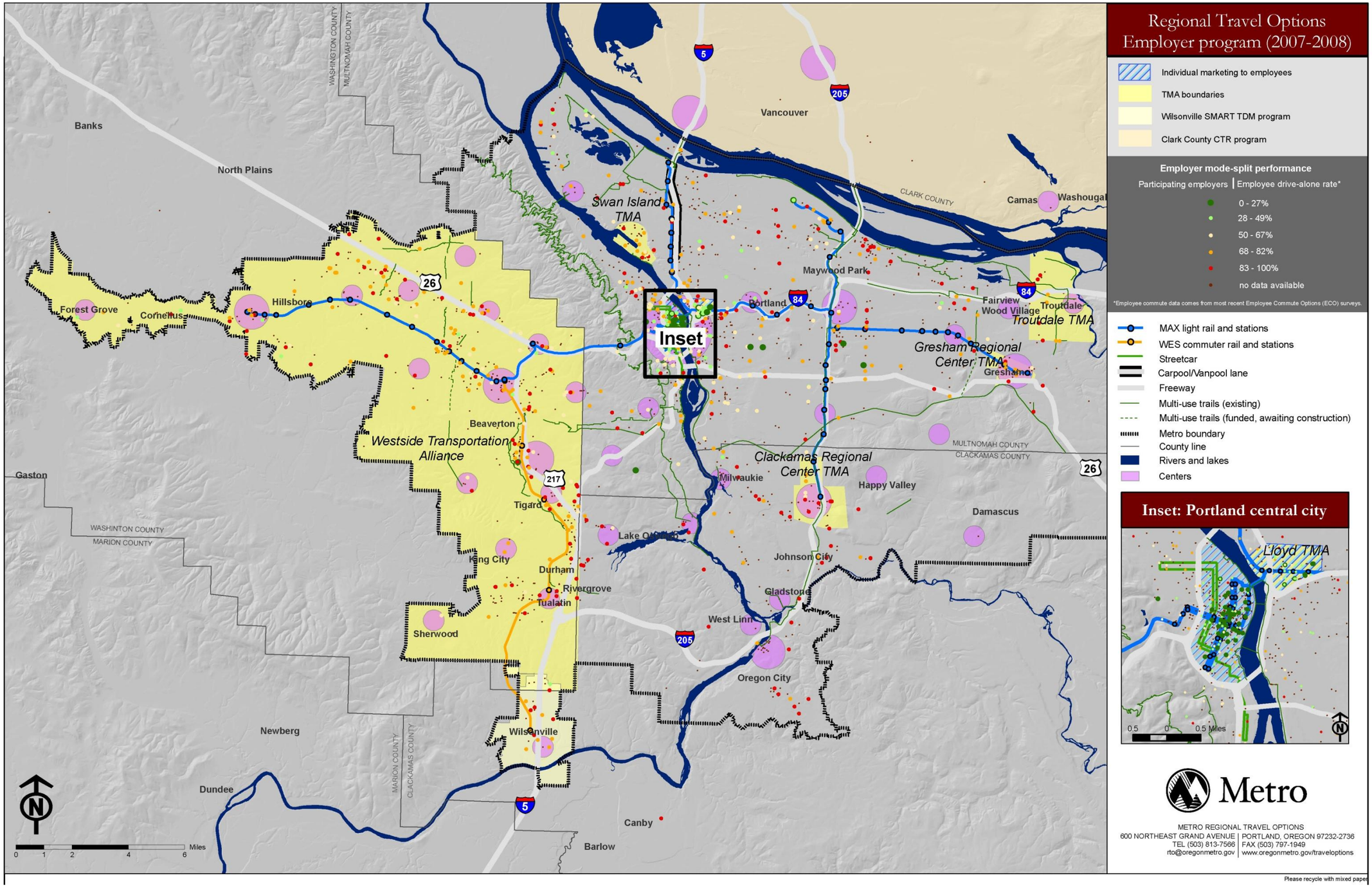


Figure 9: Map of existing (2009) TDM related employer services and resulting drive-alone rates in the Portland region.

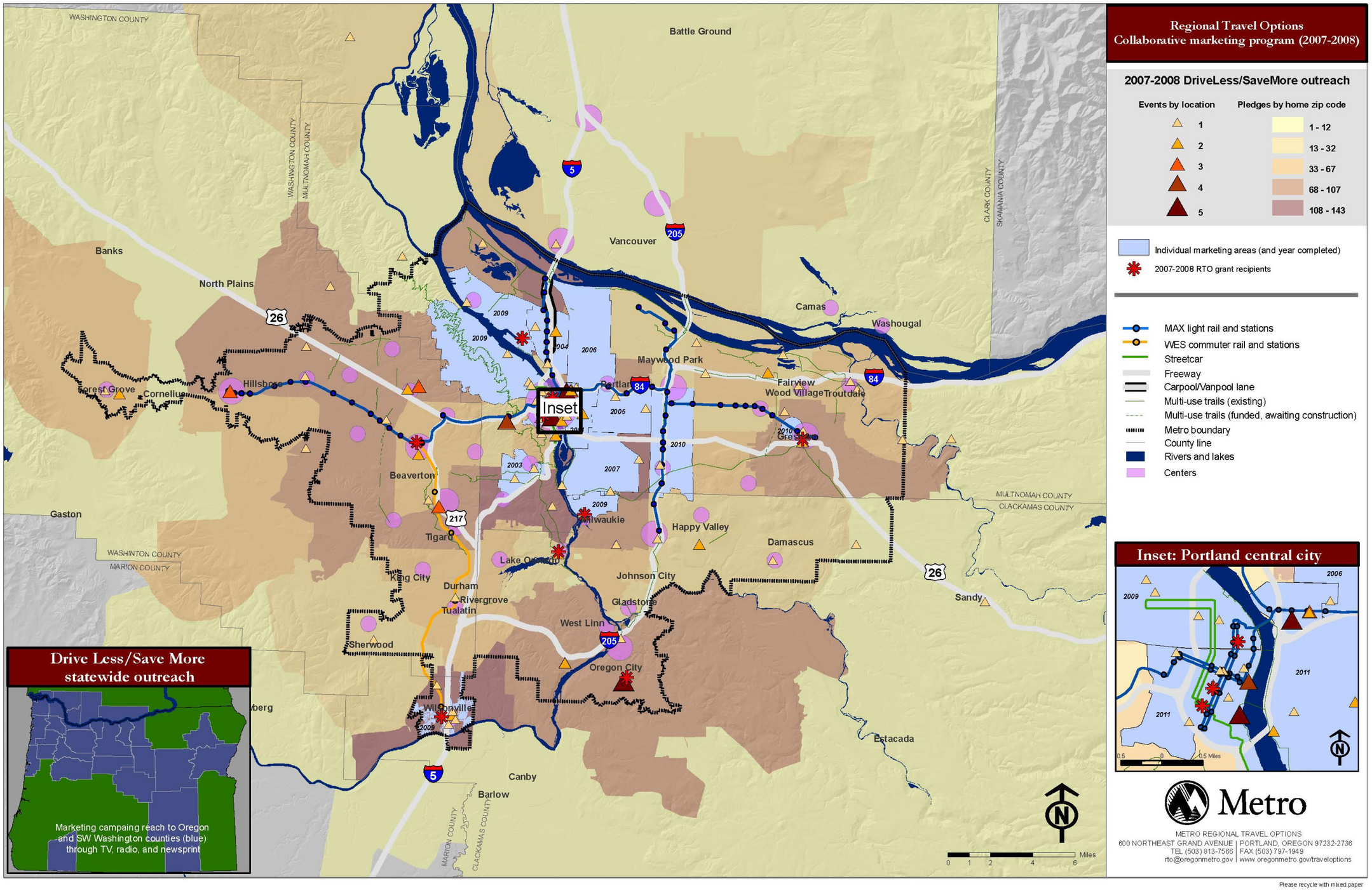


Figure 10: Map of existing (2009) TDM related collaborative marketing efforts in the Portland region.

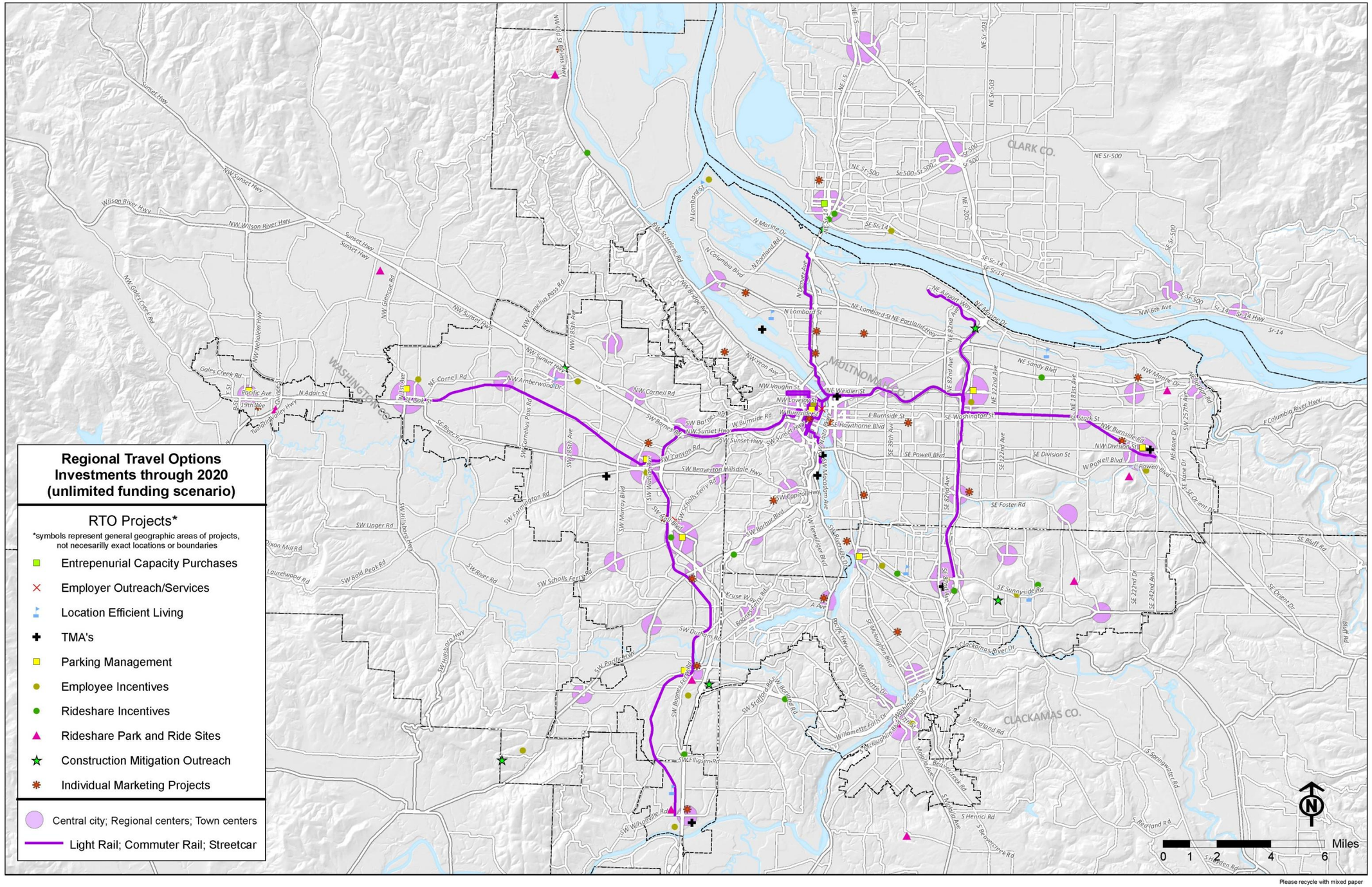
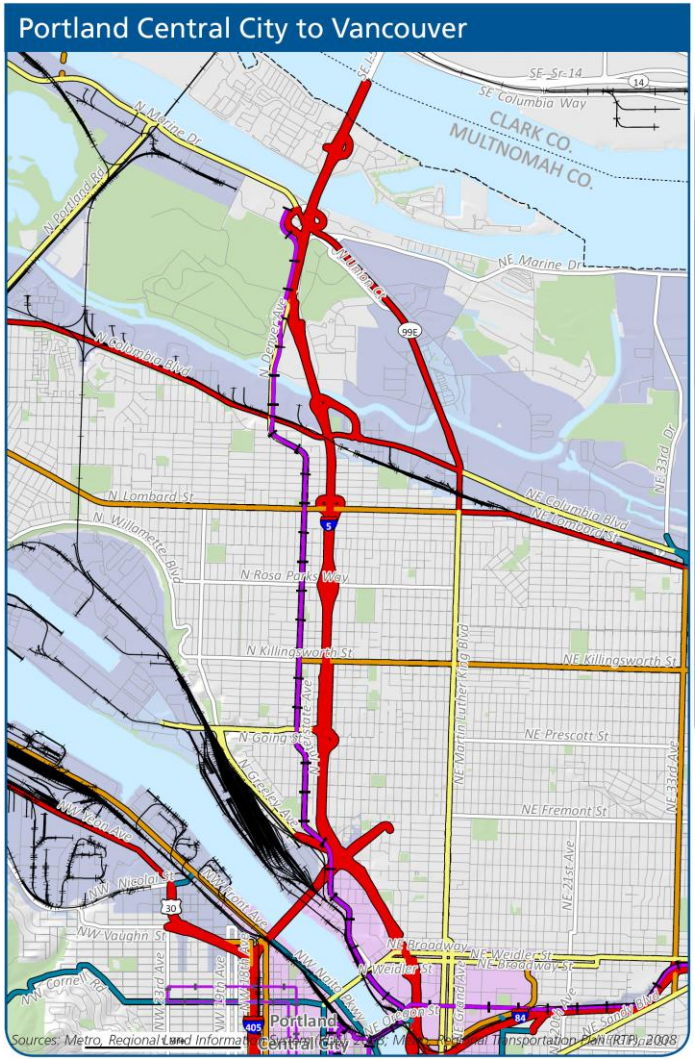


Figure 11: Map of planned TDM projects for implementation by the year 2020 in the Portland region

Mobility Corridor 1: Portland Central City to Vancouver



Corridor Summary

The Portland Central City to Vancouver mobility corridor encompasses I-5**,** MAX light rail, and several parallel facilities that support auto, truck, transit and bicycle travel. I-5 is a principal arterial freeway that accommodates both interstate and interregional travel. The key parallel arterials include **N Greeley Ave, N Denver Ave, N Interstate Ave, NE Martin Luther King Jr. Blvd, NE Vancouver Ave/NE Williams Ave**. This corridor combines residential, commercial, parks, and industrial areas. In the commercial and residential areas, the street network is well-connected; however, industrial areas are served by a discontinuous street network.

Where Are We Now?

Currently three regional facilities in this corridor have coordinated signal timings updated within the last five years: N Interstate, NE Vancouver and NE Williams. Transit signal priority is located at select traffic signals along NE MLK, NE Vancouver, and NE Williams. Communications infrastructure exists along N Interstate Ave, NE MLK Blvd, and N Denver St. The segment of I-5 through this corridor is generally equipped with cameras, ramp meters, detection, and

communication equipment. Also, ODOT and WSDOT share data, cameras and coordinate on freeway operation.

There are programs in place on both the Oregon and Washington sides of the Columbia River to improve mobility in the corridor. On the Washington side, C-TRAN helps subsidize commuter vanpools going through the area, and Clark County coordinates TDM marketing and services to employees through the Southbound Solutions program. In Oregon, the Swan Island TMA and Lloyd TMA work with employers to reduce drive-alone rates among employees. Additionally, the Lloyd TMA offers the Lloyd Links individualized marketing program to district employees who live close to work, while the Swan Island TMA has developed a Location-Efficient Living program to help Swan Island employees and N/NE Portland residents live closer to where they work and work closer to where they live. Finally, the City of Portland sponsors Sunday Parkways events in North Portland to encourage biking and walking.

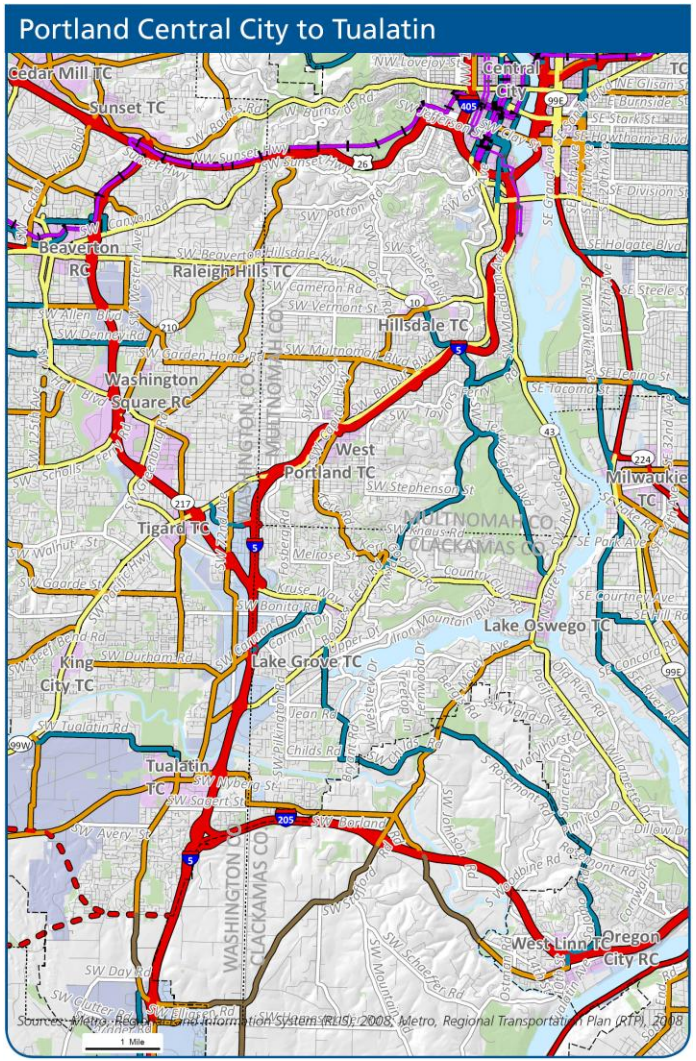
Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	**Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.**	**NE Vancouver**	Reliability & Traveler Information	11+ yrs	$1,000,000	$21,000
		NE Williams		11+ yrs	$950,000	$19,000
		N Greeley/Denver		11+ yrs	$1,900,000	$40,000

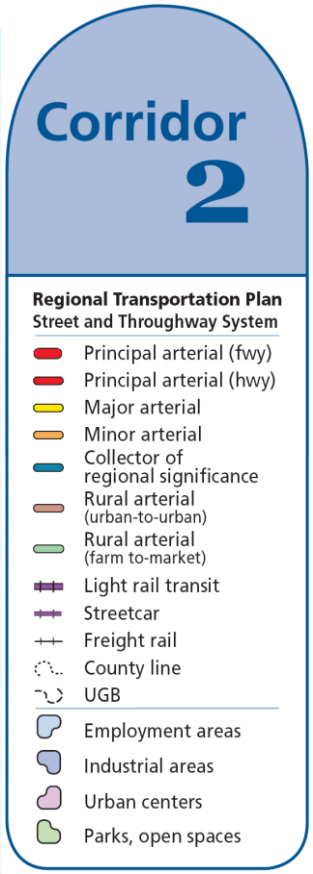
Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	NE MLK (Line 6)	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$3,100,000	$60,000
Transit Priority Treatment Only	Install/Expand transit signal priority capabilities at traffic signals.	NE 15th (Line 8)	Quality of Life & Reliability	6-10 yrs	$280,000	$6,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-5	Reliability, Traveler Information, & Safety	1-5 yrs	$400,000	$8,000
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Residential Individualized Marketing	(same as above)	City of Portland N/NE SmartTrips (Chautauqua to 82nd, N of I-84)	Quality of life	1-5 years	$0	$1,000,000
Residential Individualized Marketing	(same as above)	TBD (location based on relative impact on I-5 bridge	Quality of life	6-10 years	$0	$600,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Employer Individualized Marketing	(same as above)	employers in Oregon with high number of employees living in Clark County, WA	Quality of life	6-10 years	$0	$200,000
Construction mitigation campaign	Public awareness campaign using Drive Less/Save More brand, leveraging existing campaign resources, focused on CRC construction, operation.	I-5 bridge	Quality of life	1-5 years	$0	$250,000
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	I-5 bridge	Quality of life	6-10 years	$0	$100,000
Rideshare incentives	Vanpool program (operated by C-TRAN)	I-5 bridge	Quality of life	1-5 years	$3,150,000	$930,000
Rideshare incentives	Vanpool program (operated by C-TRAN)	I-5 bridge	Quality of life	6-10 years	$0	$930,000
Employer Services	Implement and/or support outreach and technical assistance in a collaborative manner with RTO partners to help employers increase non drive-alone travel modes.	employers with high number of employees living in Vancouver, WA	Quality of life	through 10 years	$0	$110,000
Transportation Management Associations	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options.	Swan Island TMA	Quality of life	through 10 years	$0	$75,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Management Associations	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options.	Lloyd TMA	Quality of life	through 10 years	$0	(recorded under corridor 4)
Location-efficient living	Support programs and strategies that promote and advance location-efficient living strategies.	north Portland/Swan Island	Quality of life	currently funded RTO grant	$0	$25,000
Entrepreneurial Capacity Purchases	Provide funding to regional or town centers to reduce drive-alone auto trips. Incentive based - centers earn additional funding for exceeding performance goals. (WSDOT program - GTEC)	Vancouver city center	Quality of life	1-5 years	$0	$920,000
Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.	Quality of life	6-10 years	$100,000	$50,000

Mobility Corridor 2: Portland Central City to Tualatin





Corridor Summary

The Portland Central City to Tualatin mobility encompasses I-5 and parallel arterials, that support auto, truck, transit and bicycle movement in and through the corridor. I-5 is a principal arterial freeway that accommodates interstate and interregional travel. The key parallel arterials include **SW Barbur Blvd (99W), SW Boones Ferry Rd/SW Terwilliger Blvd, SW Taylors Ferry Rd,** and **SW Macadam Ave (Hwy 43)**. This corridor is largely single-family residential uses and neighborhood-serving commercial with a mix of parks and open spaces. The hilly topography in this corridor is hilly contributes to the winding and discontinuous street network.

Where Are We Now?

No regional facilities in this corridor have coordinated signal timings updated within the last five years. Transit signal priority is located at select traffic signals along SW Barbur Blvd. Communications infrastructure exists along SW Barbur; SW Barbur Blvd is also an incident management route equipped with cameras and vehicle detection. The

segment of I-5 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

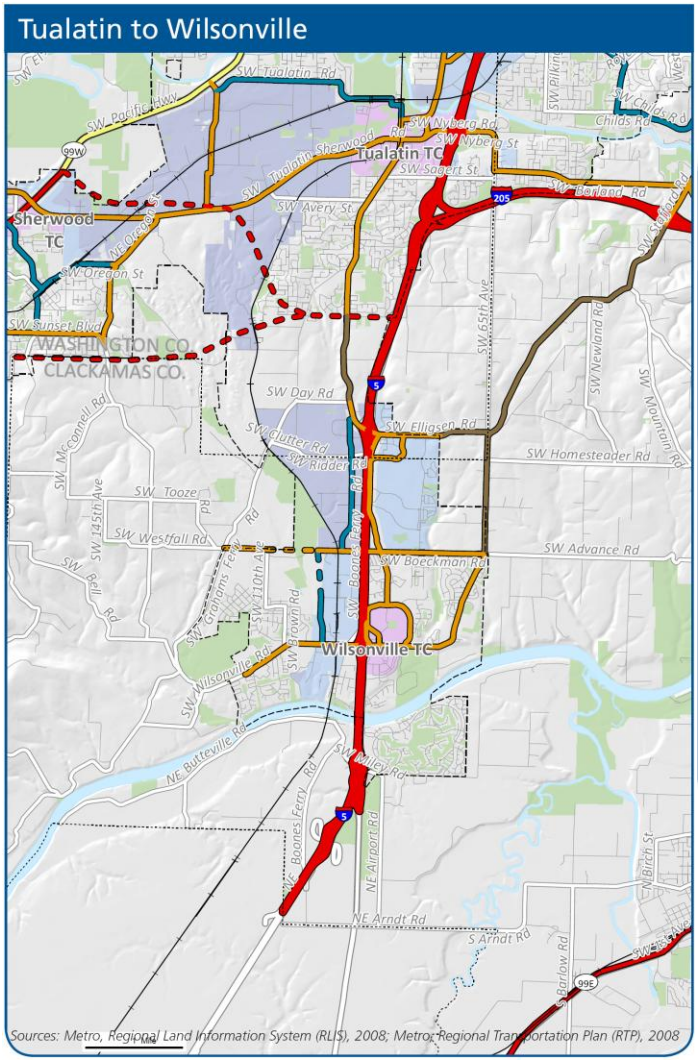
The Westside Transportation Alliance (WTA) works with employers in Tigard and Tualatin (in addition to other Washington County areas) and the Lloyd TMA works with employers in the Lloyd District. Both work to reduce employee drive-alone trips. Additionally, a study has been funded to assess the potential for a new TMA in Portland's South Waterfront. The City of Portland's Smart Trips Downtown program and the Lloyd TMA's Lloyd Links program offer individualized marketing to employees in these areas. There are also several bike-specific projects in the corridor including , a WTA program to install free bike racks for area businesses, and an update of the City of Tigard's 20-year old bike map.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	Upper Boones Ferry Rd	Reliability & Traveler Information	1-5 yrs	$1,300,000	$25,000
		Kruse Way		1-5 yrs	$60,000	$12,000
		Boones Ferry Rd/Capital Hwy		6-10 yrs	$4,600,000	$90,000
		72nd Ave		11+ yrs	$1,600,000	$30,000
		Durham Rd		11+ yrs	$1,400,000	$30,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	Hwy 43 (Macadam Ave)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$3,700,000	$70,000
ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	Hwy 99 (Barbur Blvd from Downtown Portland past Hwy 217)	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$3,400,000	$70,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-5	Reliability, Traveler Information, & Safety	6-10 yrs	$900,000	$18,000
Traveler Information						
Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	Country Club Rd	Traveler Information	6-10 yrs	$700,000	$14,000
		Hwy 99, south of Tualatin		1-5 yrs	$1,100,000	$20,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. (in support of Portland/Multnomah County Climate Change Action Plan)	Supports new transit/trail facility from Central City Portland to Lake Oswego TC	Quality of life	1-5 years	$0	$500,000
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents. (in support of Portland/Multnomah County Climate Change Action Plan)	Tigard TC and adjacent neighborhoods	Quality of life	6-10 years	$0	$500,000
Individualized Marketing	(same as above)	Tualatin TC and adjacent neighborhoods	Quality of life	6-10 years	$0	$500,000
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	I-5	Quality of life	1-5 years	$0	$50,000
Rideshare incentives	(same as above)	I-5	Quality of life	6-10 years	$0	$50,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	I-5	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	I-5	Quality of life	6-10 years	$0	$4,800
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance serves employers.	Tigard, Tualatin and other parts of Washington County	Quality of life	through 10 years	$0	(annual amount recorded in corridor 19)
Transportation Management Associations (TMA)	Lower Macadam/Johns Landing TMA start-up.	Lower Macadam/Johns Landing	Quality of life	6-10 years	$0	$300,000
Car-share operations	Support 3 or more car sharing vehicles in developing centers.	Lake Oswego Town Center	Quality of life	1-5 years	$0	$200,000



Corridor 3

Regional Transportation Plan
Street and Throughway System

- Principal arterial (fwy)
- Principal arterial (hwy)
- Major arterial
- Minor arterial
- Collector of regional significance
- Rural arterial (urban-to-urban)
- Rural arterial (farm to-market)
- Light rail transit
- Streetcar
- Freight rail
- County line
- UGB
- Employment areas
- Industrial areas
- Urban centers
- Parks, open spaces

Corridor Summary

The Tualatin to Wilsonville corridor supports mostly north-south movement with I-5 as the major through facility. Other transportation elements in this corridor include Westside Express Service (WES) commuter rail, several parallel facilities that support not only auto and truck travel, but also bus service and bicycle facilities. I-5 is a principal arterial freeway that supports interstate and interregional travel. It also provides access to the Sherwood, Tualatin, and Wilsonville town centers, employment areas and industrial areas. The key parallel arterials include **SW Boones Ferry Rd, SW Grahams Ferry Rd, SW Stafford Rd,** and **SW 65th Ave**. East-west mobility in this corridor is limited with few overcrossings of I-5. The land use is mainly rural, however, in the urbanized areas there is significant employment and industry. The roadway network is a mix of farm-to-market roads and discontinuous residential streets.

Where Are We Now?

Currently one regional facility in this corridor, SW Stafford Rd, has coordinated signal timing updated within the last five years. There is no transit signal priority installed and no communications infrastructure exists

along the regional arterials. The segment of I-5 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

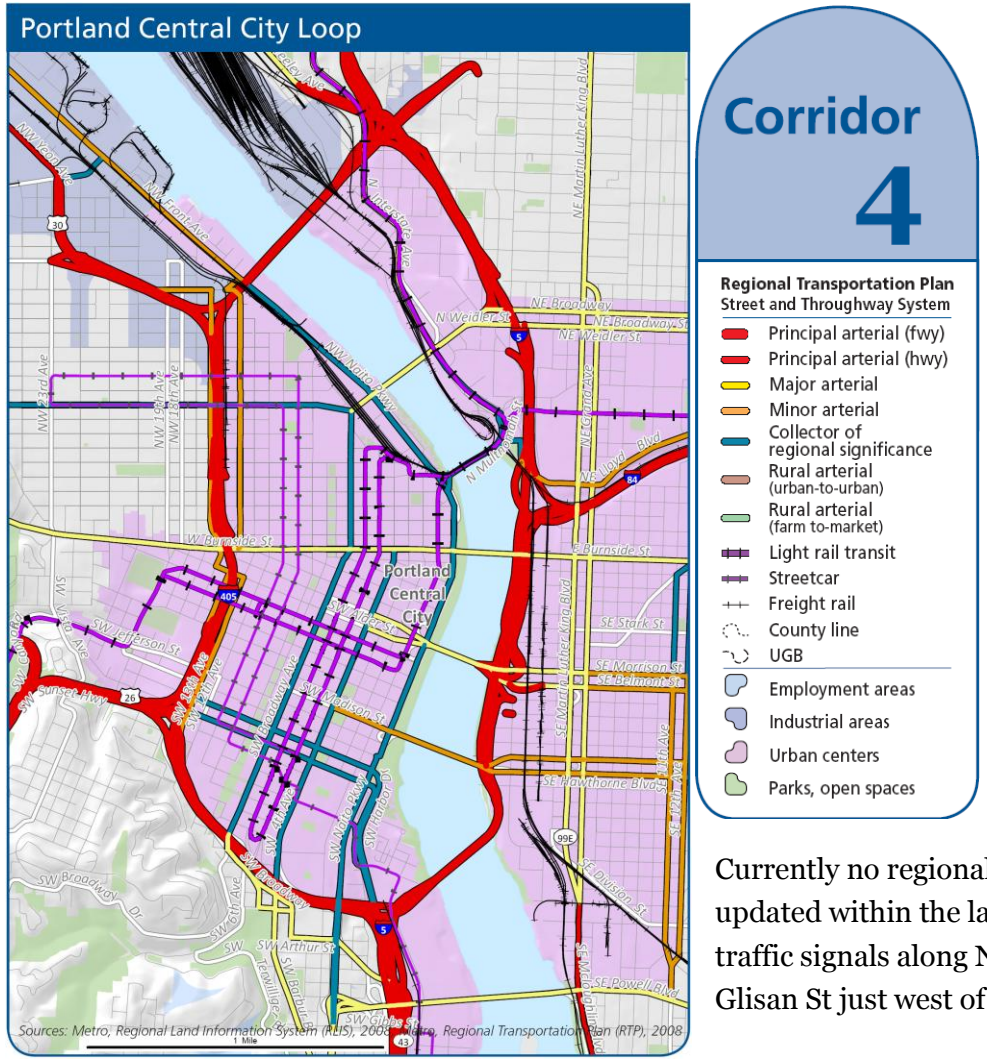
A limited amount of TDM services are available. The City of Wilsonville runs the Wilsonville SMART Options program to encourage citizens to take transit, walk more, and they are hiring a bike/pedestrian coordinator to improve and expand their walking and biking programs.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage.Also includes on-going maintenance and parts replacement.	SW Boones Ferry Rd	Reliability & Traveler Information	6-10 yrs	$2,400,000	$50,000
		SW 65th Ave		11+ yrs	$1,000,000	$20,000
		Wilsonville Rd (west of I-5)		11+ yrs	$700,000	$14,000
		SW Stafford Rd		11+ yrs	$1,300,000	$30,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-5	Reliability, Traveler Information, & Safety	1-5 yrs	$500,000	$10,000
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Wilsonville (RTO Subcommittee funded this project)	Quality of life	1-5 years (starts 2010)	$0	$278,100
Individualized Marketing	(same as above)	Residents served by frequent transit service, other travel options and near commercial zoning.	Quality of life	6-10 years	$0	$500,000
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	I-5	Quality of life	1-5 years	$0	$25,000
Rideshare incentives	(same as above)	I-5	Quality of life	6-10 years	$0	$25,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	I-5	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	I-5	Quality of life	6-10 years	$0	$4,800
Construction mitigation campaign	Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects.	Areas impacted by I-5 to I-205 additional merge lane construction.	Quality of life	1-5 years	$0	$100,000
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Wilsonville SMART Options	The City of Wilsonville SMART Options Outreach Program works with Wilsonville area employers and residents to promote transit and other transportation options. The primary goals of the program are to increase awareness of transportation options available in Wilsonville and the region, reduce drive alone trips and increase communication between the City of Wilsonville, local businesses of all sizes, community organizations and regional partners.	Wilsonville		through 10 years	$0	$62,000
Car-share operations	Support 3 or more car-sharing vehicles in developing centers.	Wilsonville Town Center	Quality of life	1-5 years	$0	$200,000

Mobility Corridor 4: Portland City Central Loop



Corridor Summary

The Portland City Central Loop encompasses **I-5** and **I-405**, as well as **key throughway interchanges with I-84, US 26,** and **US 30**. The main parallel facilities in this corridor include **NW Front/SW Naito Parkway** and **NE Grand Ave/Martin Luther King Jr. Blvd**. There are seven freeway and arterial bridges crossing the Willamette River. MAX light rail, bus service and bicycle facilities support movement in and through the corridor. Additionally, streetcar connects between NW Portland and the South Waterfront District, with expansion to the eastside planned for 2011. On the west side of the Willamette, the primary land uses are high density office development, mid-rise residential and mixed use commercial. On the east side, warehouse and commercial uses are abundant. The street network in this corridor is compact, with abundant multi-modal access.

Where Are We Now?

Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years. Transit signal priority is located at select traffic signals along NE/SE MLK Blvd, NE/SE Grand Ave, SE 11th Ave, and NW Glisan St just west of the Steel Bridge. Communications infrastructure exists

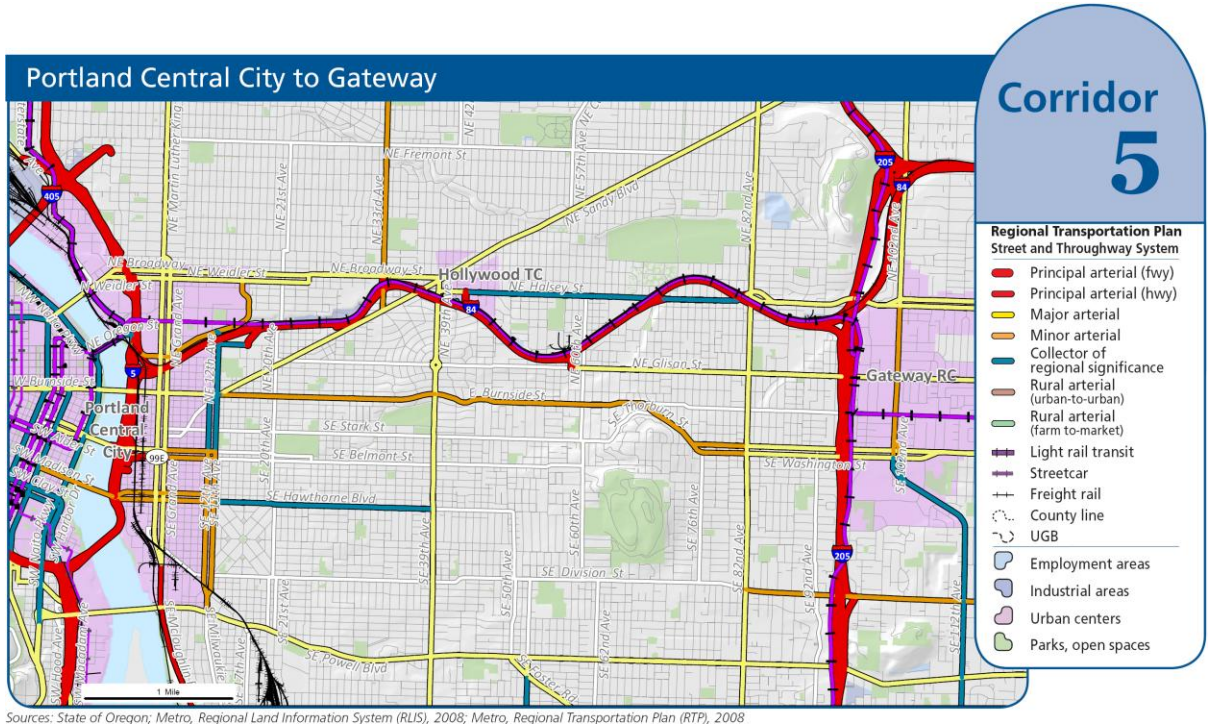
along the main parallel facilities as well as several additional roadways in this corridor, with most traffic signals connected to the central signal system. The segment of I-5 and I-405 through this corridor are generally equipped with cameras, detectors, ramp meters, and communication equipment. The Lloyd TMA works with employers and employees to reduce drive-alone trips. Additionally, a study has been funded to assess the potential for a new TMA in the South Waterfront. The City of Portland's Smart Trips Downtown program and the Lloyd TMA's Lloyd Links program offer individualized marketing to employees. Finally, Portland State University is currently building a new long-term bike storage facility.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	SW/NW Naito Pkwy	Reliability & Traveler Information	6-10 yrs	$1,900,000	$40,000
		SE/NE MLK Blvd		6-10 yrs	$2,360,000	$50,000
		NE/SE Grand (south of I-84)		6-10 yrs	$1,400,000	$30,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	NE Grand Ave (north of I-84)	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$1,200,000	$25,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-5	Reliability, Traveler Information, & Safety	1-5 yrs	$240,000	$5,000
		I-405		6-10 yrs	$240,000	$5,000
Traveler Information						
Railroad Crossing Information System	Implement communications between the at-grade railroad crossing and the traffic operations center and emergency management centers to inform emergency responders and general travelers when service will be interrupted.	SE Division St/8th Ave	Reliability, Traveler Information, & Safety	6-10 yrs	$75,000	$2,000
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Neighborhoods along Portland Streetcar Loop (RTO Subcommittee funded this project)	Quality of life	1-5 years	$0	$726,090
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Transportation Management Associations (TMA)	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Lloyd District	Quality of life	through 10 years	$0	$51,000
Transportation Management Associations (TMA)	TMA start-up	South Waterfront or another Central City area.	Quality of life	1-5 years	$0	$300,000
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	To be determined	Quality of life	1-5 years	$0	$100,000
Parking management	(same as above)	To be determined	Quality of life	6-10 years	$0	$100,000
Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.	Quality of life	6-10 years	$100,000	$50,000
End-of-trip bike facilities	Bike parking (short term and/or long term), bike stations, related bike services	Central City	Quality of life	6-10 years	$100,000	$100,000

Mobility Corridor 5: Portland Central City to Gateway



Sources: State of Oregon; Metro, Regional Land Information System (RLIS), 2008; Metro, Regional Transportation Plan (RTP), 2008

Corridor Summary

The Portland Central City to Gateway mobility corridor encompasses **I-84,** MAX light rail, parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. I-84 supports interstate and interregional travel and connects with both I-205 and I-5. The key parallel arterials include **Broadway St, Halsey St, Weidler St, Sandy Blvd, Glisan St, Burnside St,** and **Powell Blvd**. The roadway network in this corridor is dense and serves a diverse land use pattern.

Where Are We Now?

Currently one regional facility in this corridor, NE Glisan St, has coordinated signal timings updated within the last five years. SE Powell Blvd is in the process of converting to adaptive signal timing. Transit signal priority is located at select traffic signals along SE Powell Blvd, SE Division St, SE Hawthorne Blvd, NE Sandy Blvd, NE Weidler St, and NE Broadway St. Communication infrastructure exists along segments of NE Sandy Blvd, SE Powell Blvd, NE Glisan St, NE Halsey St, and NE Broadway St, as well as some non-regional roadways in this corridor. The segment of I-84 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

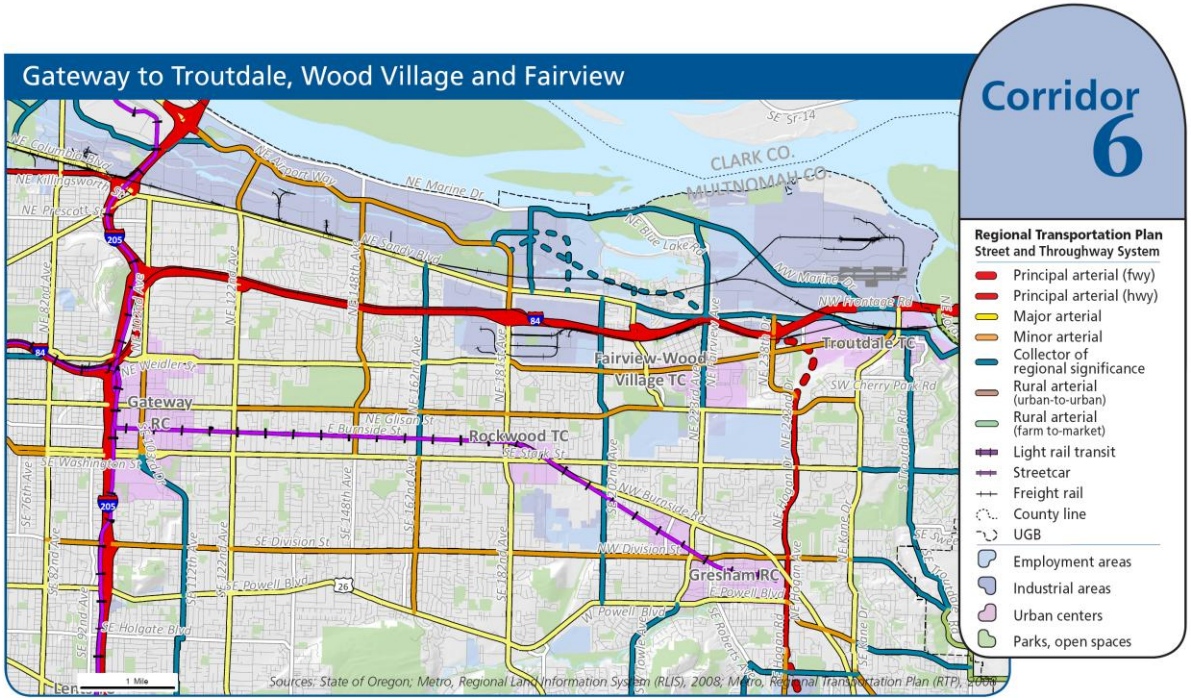
The Lloyd TMA works with employers and employees to reduce drive-alone trips, and they offer the Lloyd Links individualized marketing program to district employees who live close to work. Also, the City of Portland runs a Sunday Parkways event in Southeast and Northeast Portland to encourage use of alternative modes for all trips.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	NE Halsey St	Reliability & Traveler Information	11+ yrs	$2,000,000	$40,000
		NE Glisan St		6-10 yrs	$180,000	$35,000
		SE Stark St		11+ yrs	$2,700,000	$55,000
		NE Burnside St		6-10 yrs	$3,100,000	$60,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	NE Sandy Blvd	Reliability & Traveler Information	1-5 yrs	$5,000,000	$100,000
Transit Priority Treatment Only	Install/Expand transit signal priority capabilities at traffic signals.	SE Belmont St	Quality of Life & Reliability	11+ yrs	$1,700,000	$35,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-84	Reliability, Traveler Information, & Safety	1-5 yrs	$450,000	$9,000
Active Traffic Management Pilot Project	Install active traffic management devices such as variable speed limit signs, lane use devices, and other ATM equipment, as a pilot project for the Portland region.	I-84	Reliability, Traveler Information, & Safety	6-10 yrs	$5,000,000	$100,000
Traveler Information						
Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	SE Powell Blvd (Ross Island Bridge to I-205)	Traveler Information	1-5 yrs	$400,000	$8,000
		NE Weidler St		6-10 yrs	$1,500,000	$30,000
		NE Broadway St		6-10 yrs	$2,100,000	$40,000
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	NE Portland along North side of I-84	Quality of life	1-5 years	$0	$333,333
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	To be determined - likely commercial areas along corridors parallel to I-84	Quality of life	1-5 years	$0	$100,000
Parking management	(same as above)	(same as above)	Quality of life	6-10 years	$0	$100,000
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Gateway Regional Center	Quality of life	1-5 years	$0	$100,000
Parking management	(same as above)	Gateway Regional Center	Quality of life	6-10 years	$0	$100,000
Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.	Quality of life	6-10 years	$100,000	$50,000

Mobility Corridor 6: Gateway to Troutdale, Wood Village and Fairview



Corridor Summary

The Gateway to Troutdale mobility corridor includes sections of **I-84** and MAX light rail. I-84 provides interstate travel and interregional access to the Portland International Airport, the Columbia Gorge, and points beyond. The MAX blue line connects Gateway regional center and Portland central city to Gresham regional center. The key parallel arterials include **Marine Dr, Sandy Blvd, Halsey St, Glisan St, Division St,** and **Powell Blvd**. The local street network is generally discontinuous, with many dead end streets.

Where Are We Now?

Currently three regional facilities in this corridor have coordinated signal timings updated within the last five years: SE Division St, SE Powell Blvd and NE Sandy Blvd. Transit signal priority is located at select traffic signals along SE Division St and SE Powell Blvd. Communications infrastructure exists along segments of SE Division St, SE Powell Blvd, NE Airport Way, and E Burnside St. The segment of I-84 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Gresham Regional Center TMA works with employers, employees, and residents to reduce drive-alone trips. Additionally, the TMA runs a Bike Program which conducts safety outreach, gives away helmets and installs bike racks. The City of Gresham has begun to implement a city-wide bicycle way-finding program.

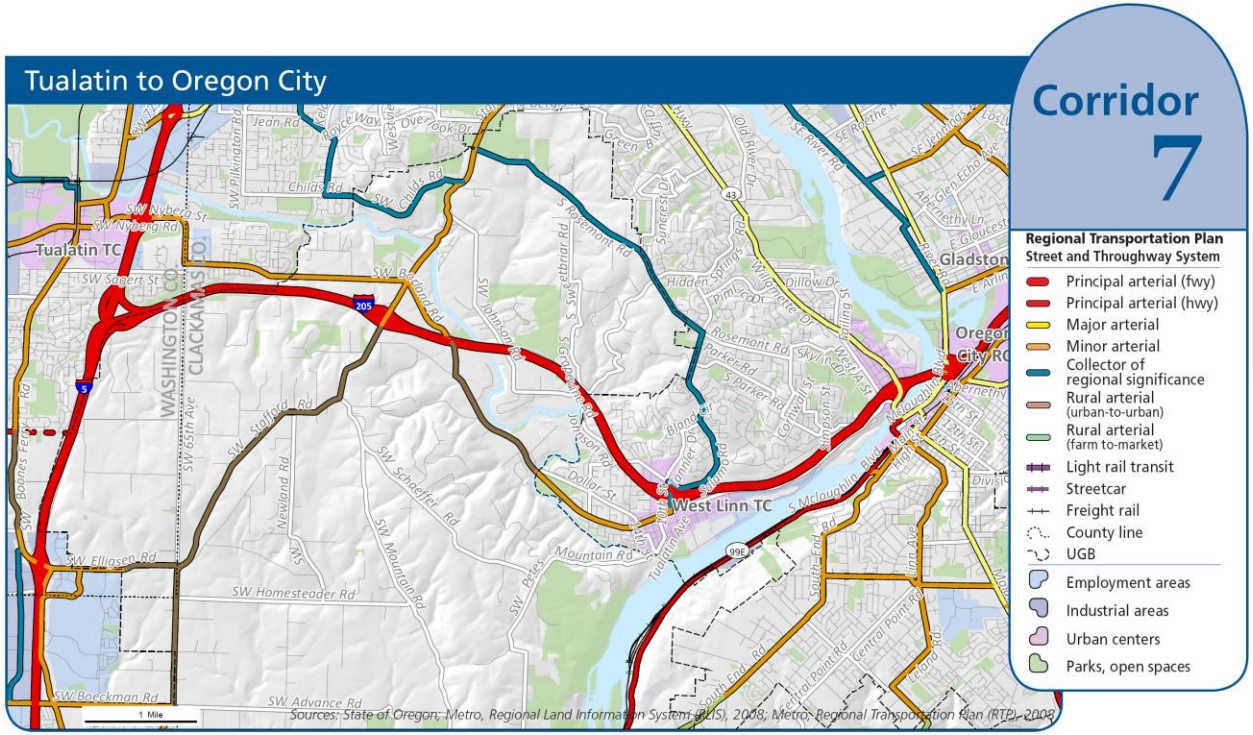
Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	NE Halsey St	Reliability & Traveler Information	11+ yrs	$4,900,000	$100,000
		SE Stark St		1-5 yrs	$3,600,000	$70,000
		NE Glisan St		6-10 yrs	$4,500,000	$90,000
		SE Division St (160th to 190th)		1-5 yrs	$700,000	$14,000
		Airport Way (I-205 to 158th)		6-10 yrs	$1,500,000	$30,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	SE Division St (I-205 to 160th)	Reliability & Traveler Information	6-10 yrs	$1,000,000	$20,000
		SE Powell Blvd (Birdsdale to US 26)		6-10 yrs	$1,900,000	$40,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	NE Sandy Blvd (east of 122nd)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$3,200,000	$60,000
		SE Powell Blvd (I-205 to 160th)		1-5 yrs	$1,500,000	$30,000
ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	Division (Birdsdale to Burnside)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$1,400,000	$30,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-84	Reliability, Traveler Information, & Safety	6-10 yrs	$700,000	$14,000
Traveler Information						
Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	SE Powell Blvd (190th to Birdsdale)	Traveler Information	6-10 yrs	$200,000	$40,000
		SE Division (182nd to Birdsdale)		6-10 yrs	$250,000	$5,000
		Airport Way (158th to Sandy)		11+ yrs	$1,100,000	$20,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Gresham Civic Station neighborhood (RTO Subcommittee funded this project)	Quality of life	1-5 years	$0	$130,000
Individualized Marketing	(same as above)	East Portland		1-5 years	$0	$500,000
Individualized Marketing	(same as above)	Fairview / Gresham		6-10 years	$0	$500,000
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	I-84	Quality of life	1-5 years	$0	$50,000
Rideshare incentives	(same as above)	I-84	Quality of life	6-10 years	$0	$50,000
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	I-84	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	I-84	Quality of life	6-10 years	$0	$4,800
Transportation Management Associations	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options.	Gresham Regional Center		through 10 years		$75,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Gresham Regional Center	Quality of life	1-5 years	$0	$100,000
Parking management	(same as above)	Gresham Regional Center	Quality of life	6-10 years	$0	$100,000
Location-efficient living	Support programs and strategies that promote and advance location-efficient living strategies.	Match industrial/employment area north if I-84 with housing opportunities to the south.	Quality of life	through 10 years	$0	$50,000
Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.	Quality of life	6-10 years	$100,000	$50,000
Park & Ride Management	Implement parking management elements such as time limits, fees or changing spaces to carpool-only.	Gateway Transit Center	Quality of life	1-5 years	$100,000	$10,000
Car-share operations	Support 3 or more car-sharing vehicles in developing centers.	Gresham Regional Center	Quality of life	1-5 years	$0	$200,000

Mobility Corridor 7: Tualatin to Oregon City



Corridor Summary

The Tualatin to Oregon City corridor encompasses **I-205,** parallel arterials, some bus service and bicycle routes. I-205 supports interstate, interregional, and intraregional travel and provides access to Oregon City, West Linn and Tualatin town centers. The key parallel arterials are **Willamette Falls Dr/Borland Rd**. North-south mobility is limited due to few overcrossings of I-205 and the Tualatin River. This corridor is mostly undeveloped with a mix of farm-to-market and discontinuous residential streets.

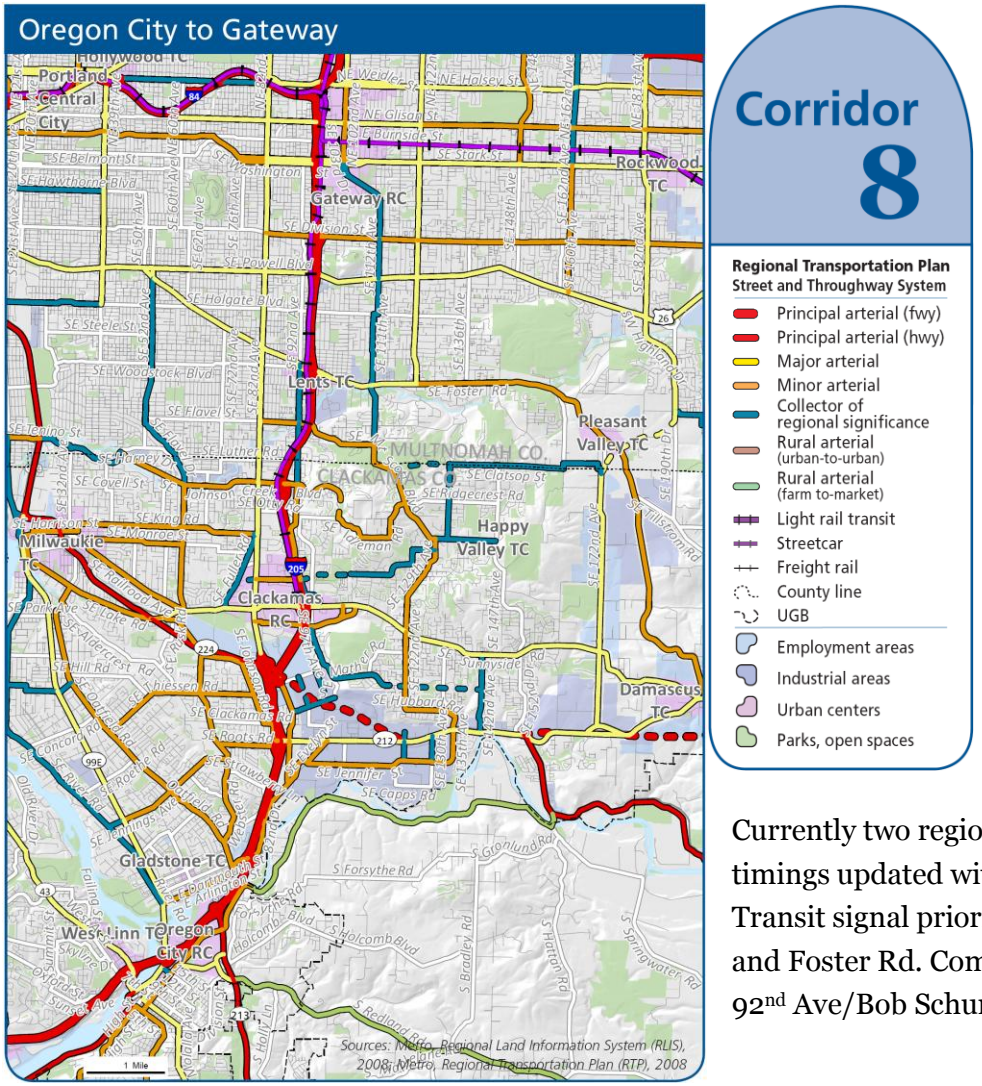
Where Are We Now?

Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years, and no facilities are equipped with transit signal priority or communications infrastructure. The segment of I-205 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Westside Transportation Alliance (WTA) works with employers and employees in the Tualatin area (in addition to other Washington County areas) to reduce drive-alone trips, and, runs a program to install free bike racks for area businesses. Also, Clackamas County updated and is distributing their bicycle map.

Project Name	Description	Facility	Goal/ Objectives	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	Borland Rd	Reliability & Traveler Information	11+ yrs	$2,000,000	$40,000
		Willamette Falls Dr		11+ yrs	$1,600,000	$30,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-205	Reliability, Traveler Information, & Safety	6-10 yrs	$650,000	$13,000

Project Name	Description	Facility	Goal/ Objectives	Time-frame	Cost	
					Capital	Annual O&M
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	I-5	Quality of life	1-5 years	$0	$25,000
Rideshare incentives	(same as above)	I-5	Quality of life	6-10 years	$0	$25,000
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	I-5	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	I-5	Quality of life	6-10 years	$0	$4,800
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance serves employers.	Tigard, Tualatin and other parts of Washington County	Quality of life	through 10 years	$0	(annual amount recorded in corridor 19)



Corridor Summary

The Oregon City to Gateway corridor provides access between Oregon City, Clackamas, and Gateway regional centers. The main freeway through this corridor is **I-205**, which supports interstate and intraregional travel. In 2009, a new MAX light rail line opens to connect the Clackamas and Gateway regional centers with the Portland central city. The main parallel arterials through this corridor are **82nd Ave, 92nd Ave, 122nd/132nd Ave** and **Bob Schumacher Rd**. The area is largely urbanized, with a diverse mix of residential, commercial and industrial land uses. Many north-south arterial and collector streets move people and goods through and to local destinations; although topography and land use patterns lead to circuitous travel in some areas. The local street network is a blend of well-connected and discontinuous streets.

Where Are We Now?

Currently two regional facilities in this corridor have coordinated signal timings updated within the last five years: SE 82nd Ave, and Foster Rd. Transit signal priority is located at select traffic signals along SE 82nd Ave, and Foster Rd. Communications infrastructure exists along segments of SE 92nd Ave/Bob Schumacher Rd, and SE 82nd Ave. The segment of I-205

through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Clackamas Regional Center TMA works with employers and employees to reduce drive-alone trips. Additionally, Clackamas County updated and is distributing their bicycle map. Finally, the City of Portland is beginning a SmartTrips individualized marketing program for the residents and businesses surrounding the MAX Green Line in east Portland.

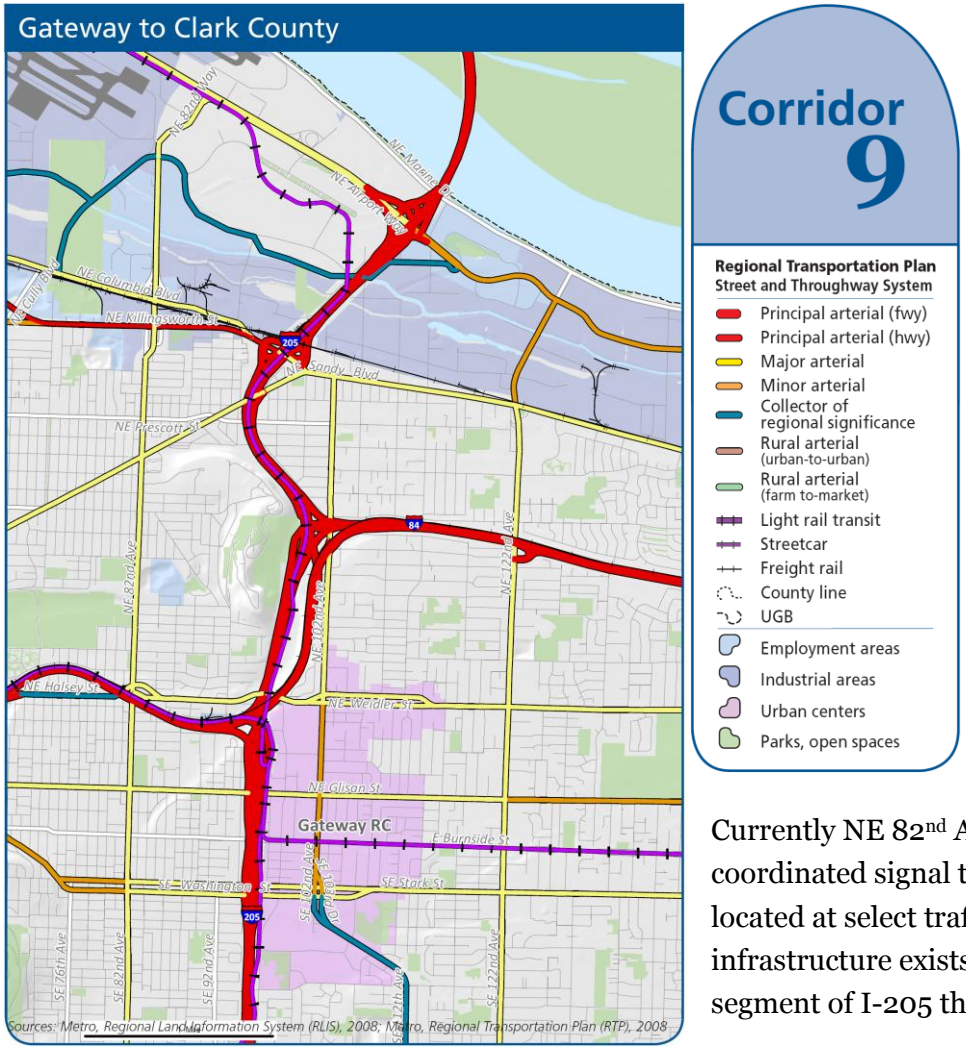
Project Name	Description	Facility	Goal/ Objectives	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	NE 148th Ave (I-84 to Stark)	Reliability & Traveler Information	11+ yrs	$950,000	$19,000
		SE 92nd Ave/Stevens Way/Bob Schumacher		1-5 yrs	$1,300,000	$30,000
		SE 172nd (Foster to Hwy 212)		11+ yrs	$2,000,000	$40,000
		SE Foster Rd/SE 162nd		6-10 yrs	$4,500,000	$90,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	SE 82nd Ave	Reliability & Traveler Information	1-5 yrs	$6,500,000	$120,000

Project Name	Description	Facility	Goal/ Objectives	Time-frame	Cost	
					Capital	Annual O&M
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-205	Reliability, Traveler Information, & Safety	6-10 yrs	$1,000,000	$20,000
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Neighborhoods adjacent MAX Green line alignment from Gateway south to Portland city limits. (RTO Subcommittee funded this project)	Quality of life	1-5 years	$0	$1,000,000
Individualized Marketing	(same as above)	Residents served by frequent transit service, other travel options and near commercial zoning.	Quality of life	6-10 years	$0	$500,000

Project Name	Description	Facility	Goal/ Objectives	Time-frame	Cost	
					Capital	Annual O&M
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	I-205	Quality of life	1-5 years	$0	$25,000
Rideshare incentives	(same as above)	I-205	Quality of life	6-10 years	$0	$25,000
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	I-205	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	I-205	Quality of life	6-10 years	$0	$4,800
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Transportation Management Associations	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options.	Clackamas Regional Center		through 10 years		$75,000
Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.	Quality of life	6-10 years	$100,000	$50,000

Project Name	Description	Facility	Goal/ Objectives	Time-frame	Cost	
					Capital	Annual O&M
Last-mile services	Provide shuttles or demand-responsive transit to connect transit stops with significant destinations one to two miles away, especially at hours not served by current transit service.	MAX Green Line and Oregon City	Quality of life	6-10 years	$500,000	$500,000
Car-share operations	Support 3 or more car-sharing vehicles in developing centers.	Clackamas Regional Center and Oregon City Town Center	Quality of life	1-5 years	$0	$200,000

Mobility Corridor 9: Gateway to Clark County



Corridor Summary

The Gateway to Clark County Corridor focuses on north-south travel with access to the Gateway, Clackamas, and Oregon City regional centers. The freeway through this corridor is **I-205** and the key parallel arterials are **NE 82nd Ave and NE 122nd Ave**. MAX light rail connects Gateway regional center to Portland central city, the Portland International Airport and Cascade Station area. Bus service and bicycle routes also support movement through this corridor. The corridor is largely urbanized with a diverse mix of residential, commercial and industrial land uses. A well-connected grid of arterial and collector streets move people and goods through the corridor and to local destinations. The local street network is a blend of well-connected and discontinuous streets.

Where Are We Now?

Currently NE 82nd Ave is the only regional facility in this corridor to update coordinated signal timings in the last five years. Transit signal priority is located at select traffic signals along NE 82nd Ave. Communications infrastructure exists along segments of NE 102nd and NE 82nd Ave. The segment of I-205 through this corridor is generally equipped with cameras,

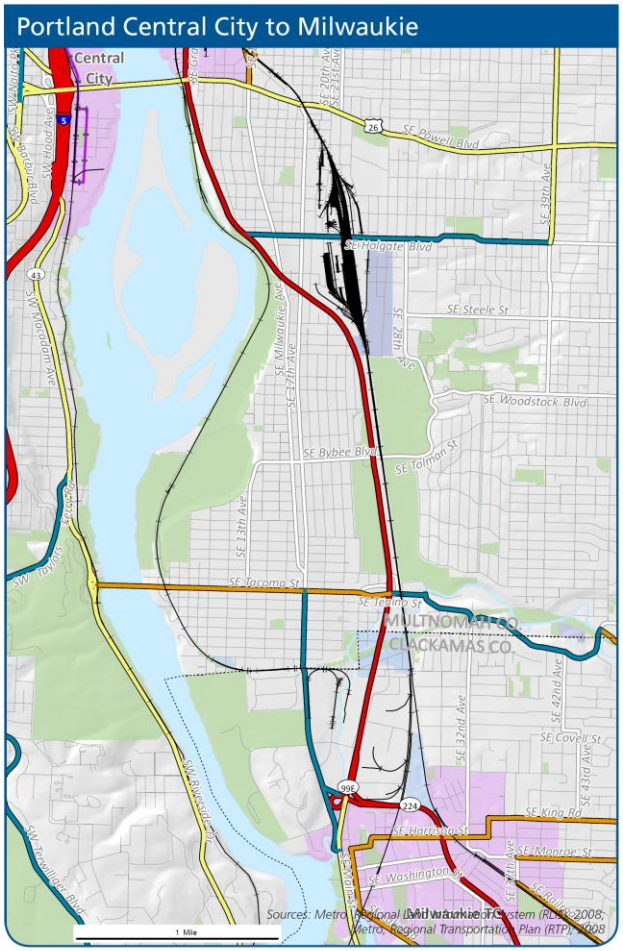
ramp meters, detection, and communication equipment. Also, ODOT and WSDOT share data, cameras and coordinate on freeway operation. C-TRAN subsidizes commuter vanpools in the area, and Clark County coordinates TDM marketing and services to employees through the Southbound Solutions program.

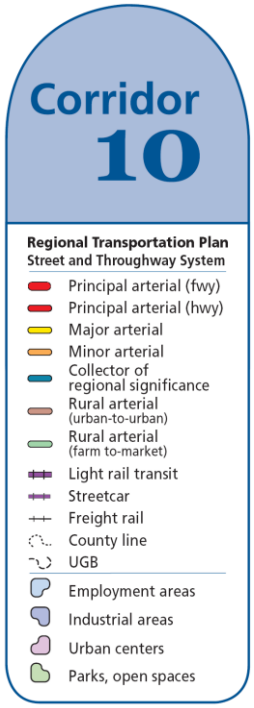
Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	NE/SE 122nd Ave	Reliability & Traveler Information	6-10 yrs	$2,600,000	$50,000
		SE 112th Ave		11+ yrs	$550,000	$11,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	NE 82nd Ave	Reliability & Traveler Information	1-5 yrs	$3,300,000	$70,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	NE 102nd Ave	Reliability, Traveler Information, & Quality of Life	11+ yrs	$1,800,000	$35,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	I-205	Reliability, Traveler Information, & Safety	1-5 yrs	$320,000	$6,000
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Construction mitigation campaign	Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects.	I-205 interchange with Airport Way	Quality of life	1-5 years	$0	$100,000
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.		6-10 years	$100,000	$50,000
End-of-trip bike facilities	Bike parking (short term and/or long term), bike stations, related bike services	PDX		6-10 years	$100,000	$100,000

Mobility Corridor 10: Portland Central City to Milwaukie





Corridor Summary

The Portland Central City to Milwaukie mobility corridor encompasses **99E** (McLoughlin Blvd), parallel facilities, transit and bicycle routes that support movement in and through the corridor. 99E accommodates mostly intraregional travel between Beaverton, Portland, and Milwaukie/Clackamas. The key parallel arterial is **Milwaukie Ave/17th Ave.** East-west mobility in this corridor is limited by lack of crossings of 99E and the Union Pacific Railroad that parallels 99E . The corridor has a very diverse land use pattern with a well-connected local street network.

Where Are We Now?

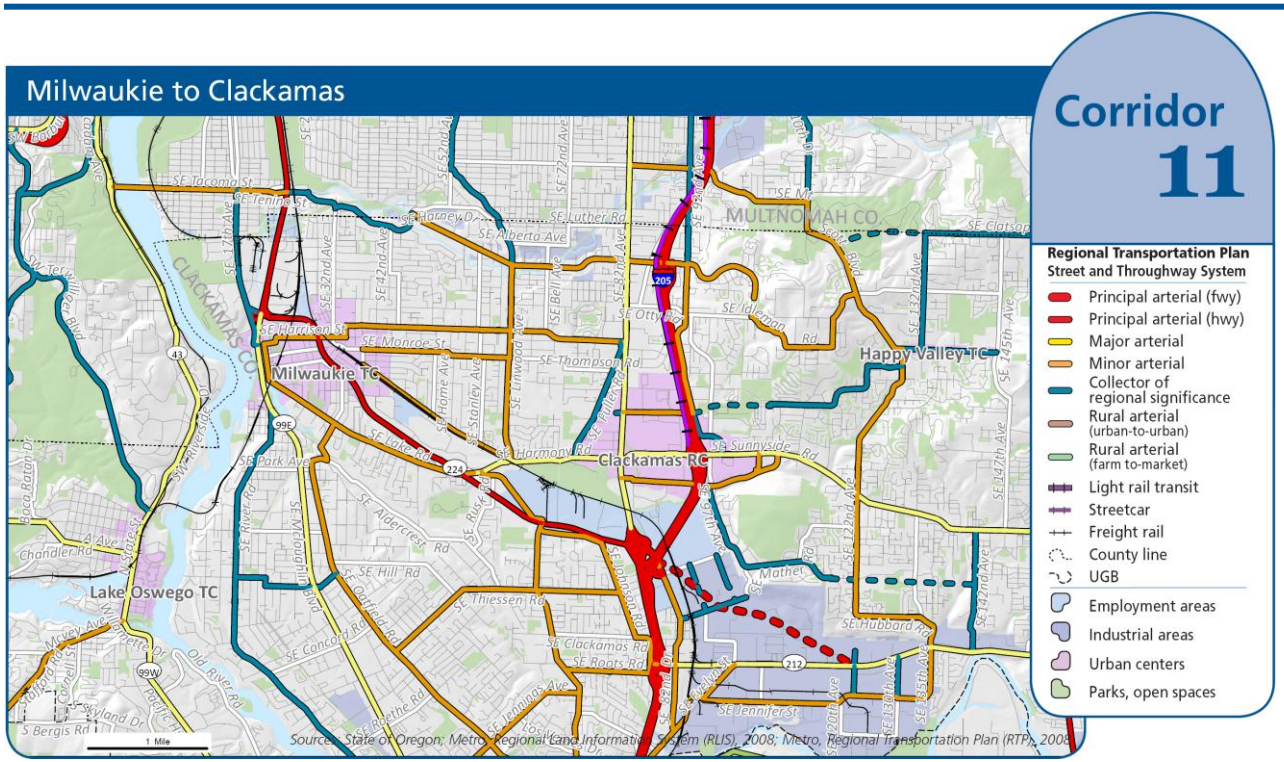
Currently two regional facilities in this corridor have coordinated signal timings updated within the last five years: a segment of SE McLoughlin Blvd, and SE 39th Ave. Transit signal priority is located at one traffic signal along SE McLoughlin Blvd, and at select traffic signals along SE 39th Ave. Communications infrastructure exists along SE McLoughlin Blvd, and a section of SE 17th Ave.

The City of Milwaukie recently completed an individualized marketing program for residents of the Ardenwald neighborhood.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	SE 17th (south of Tacoma)	Reliability & Traveler Information	6-10 yrs	$480,000	$10,000
		NE/SE 39th Ave		6-10 yrs	$1,200,000	$25,000
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	SE McLoughlin Blvd	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$2,700,000	$50,000
Traveler Information						
	No projects in this corridor					

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Neighborhoods near Portland/Milwaukie light rail.	Quality of life	1-5 years	$0	$500,000
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	(write in center)	Quality of life	6-10 years	$0	$100,000
Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.	Quality of life	6-10 years	$100,000	$50,000
Car-share operations	Support 3 or more car-sharing vehicles in developing centers.	Milwaukie Town Center	Quality of life	1-5 years	$0	$200,000

Mobility Corridor 11: Milwaukie to Clackamas



Corridor Summary

The Milwaukie to Clackamas corridor encompasses **Hwy 224** and provides intraregional travel and access to the Clackamas regional center, Milwaukie town center and industrial/employment lands located along its length. The key parallel arterials include **Johnson Creek Blvd and Lake Rd**. North-south access is limited due to the lack of crossings of Hwy 224 and the Union Pacific rail mainline. Bus service and bicycle routes also support movement through this corridor. The local street network is generally discontinuous, with many cul-de-sac and dead-end streets, reflecting the largely suburban residential land use pattern in this corridor.

Where Are We Now?

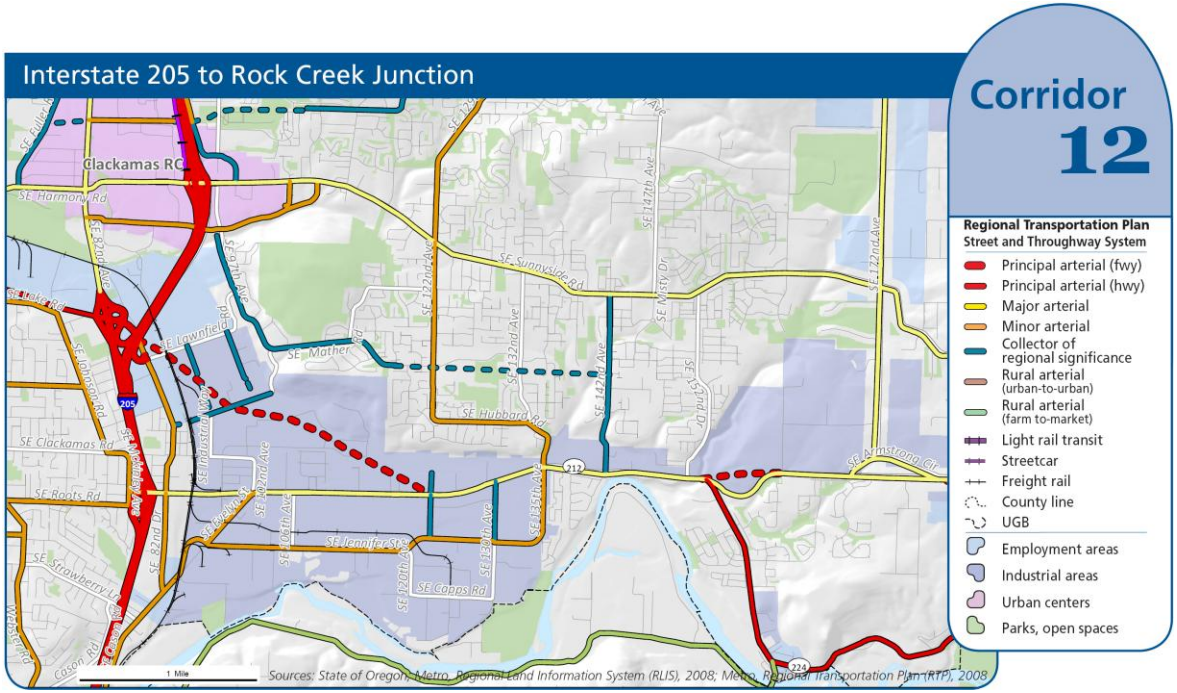
McLoughlin Blvd is the only regional facility in this corridor to have coordinated signal timings updated within the last five years. No facilities in have transit signal priority. Communications infrastructure exists along Hwy 224, and radio interconnect exists along McLoughlin Blvd.

The Clackamas Regional Center TMA works with employers and employees to reduce drive-alone trips. Additionally, the City of Milwaukie is beginning an individualized marketing program for residents of the Ardenwald neighborhood.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or traffic signage. Also includes on-going maintenance and parts replacement.	Johnson Creek Blvd	Reliability & Traveler Information	6-10 yrs	$1,400,000	$30,000
		Lake Rd		11+ yrs	$45,000	$1,000
		Hwy 224		11+ yrs	$1,600,000	$30,000
		Harmony Rd		11+ yrs	$8,200,000	$160,000
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Residents served by frequent transit service, other travel options and near commercial zoning.	Quality of life	6-10 years	$0	$500,000
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	Hwy 224, 99E, I-205	Quality of life	1-5 years	$0	$25,000
Rideshare incentives	(same as above)	Hwy 224, 99E, I-205	Quality of life	6-10 years	$0	$25,000
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	Hwy 224, 99E, I-205	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	Hwy 224, 99E, I-205	Quality of life	6-10 years	$0	$4,800
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	6-10 years	$0	$50,000
Location-efficient living	Support programs and strategies that promote and advance location-efficient living strategies.	Area in-between Milwaukie TC and Clackamas RC	Quality of life	through 10 years	$0	$50,000

Mobility Corridor 12: Interstate 205 to Rock Creek Junction



Corridor Summary

The I-205 to Rock Creek Junction corridor encompasses the existing **Hwy 212** and **future Sunrise Corridor** limited access facility. Hwy 212 supports interregional travel to central and eastern Oregon, intraregional travel for neighboring communities, and access between Clackamas industrial area and I-205. The only parallel arterial along this corridor is **SE Sunnyside Rd**. Transit service and bicycle routes also support movement in and through the corridor. North-south access is limited by topography and development patterns. Local streets are discontinuous, with many cul-de-sac and dead-end industrial and residential streets.

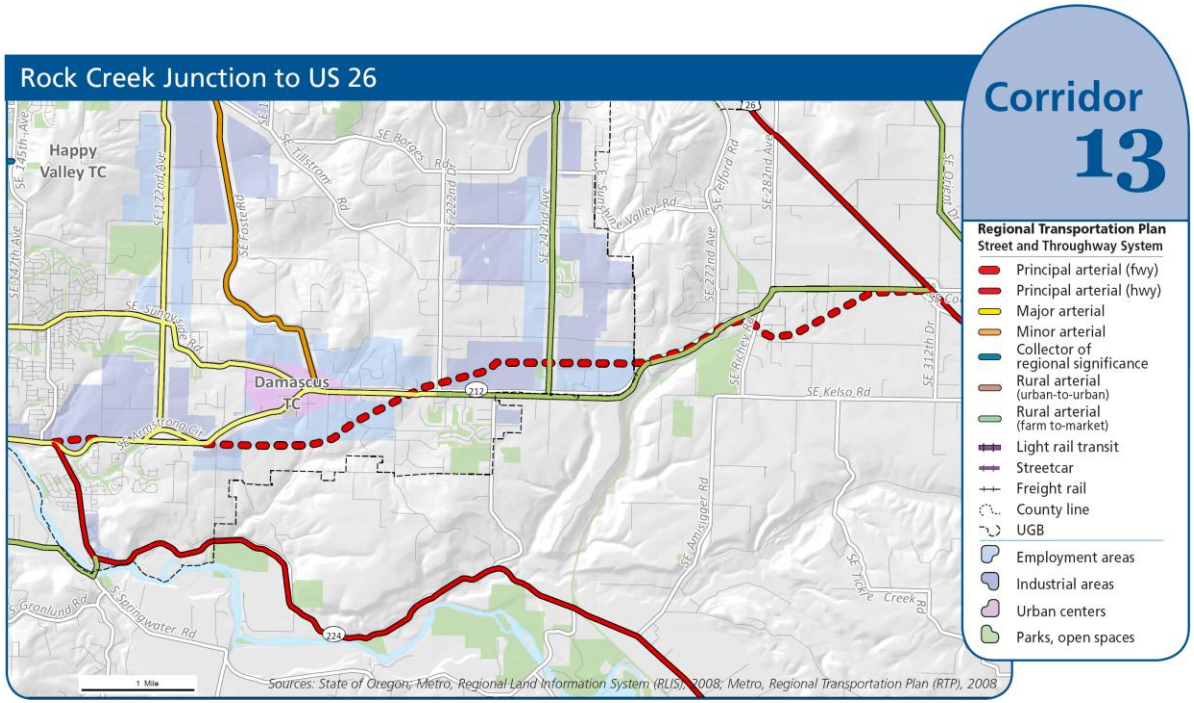
Where Are We Now?

Traffic signals along SE Sunnyside Rd were upgraded to responsive signal timing within the last five years. There is no transit signal priority located in this corridor. Communications infrastructure exists along SE Sunnyside Rd, SE Sunnybrook Rd, and Hwy 212/224. Also, cameras are located along SE Sunnyside Rd between SE 82nd Ave and SE 162nd Ave.

The Clackamas Regional Center TMA works with employers and employees to reduce drive-alone trips. Additionally, Clackamas County updated and is distributing their bicycle map.

	Project Name	Description	Facility	Goal/ Objectives	Time-frame	Cost	
						Capital	Annual O&M
Regional Multimodal Traffic Management							
	Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Also includes on-going maintenance and parts replacement.	Hwy 212/224	Reliability & Traveler Information	6-10 yrs	$2,600,000	$50,000
	ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	Sunnyside Rd (82nd to 122nd)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$1,560,000	$30,000
Traveler Information							
		No projects in this corridor					
Transportation Demand Management							
	Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	Hwy 212, Sunnyside Rd.,	Quality of life	1-5 years	$0	$25,000

Project Name	Description	Facility	Goal/ Objectives	Time-frame	Cost	
					Capital	Annual O&M
Rideshare incentives	(same as above)	Hwy 212, Sunnyside Rd.,	Quality of life	6-10 years	$0	$25,000
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	Hwy 212, Sunnyside Rd.,	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	Hwy 212, Sunnyside Rd.,	Quality of life	6-10 years	$0	$4,800
Construction mitigation campaign	Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects.	I-205 to Hwy 212 construction	Quality of life	1-5 years	$0	$100,000
Construction mitigation campaign	(same as above)	Sunrise Hwy	Quality of life	1-5 years	$0	$100,000
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Location-efficient living	Support programs and strategies that promote and advance location-efficient living strategies.	Match industrial/employment area along corridor with nearby housing opportunities.	Quality of life	through 10 years	$0	$50,000



Corridor Summary

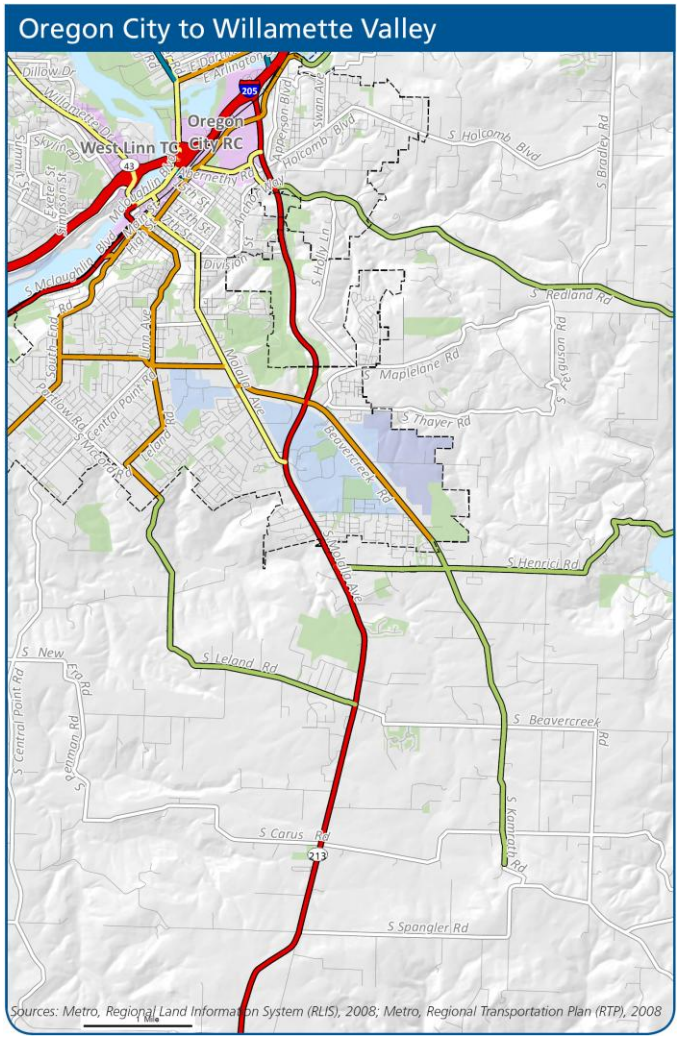
Rock Creek to US 26 corridor encompasses the existing **Hwy 212** and **future Sunrise Corridor** limited access facility. Hwy 212 supports interregional travel to central and eastern Oregon, intraregional travel for neighboring communities, and access to I-205. There are **no parallel arterials** along this corridor. Once the Sunrise limited access facility is built, it will provide primary mobility and Hwy 212 will become a parallel arterial. Transit service and bicycle routes also support movement in and through the corridor. Land use is a mix of low density residential and farmland with mobility provided by a farm-to-market street network.

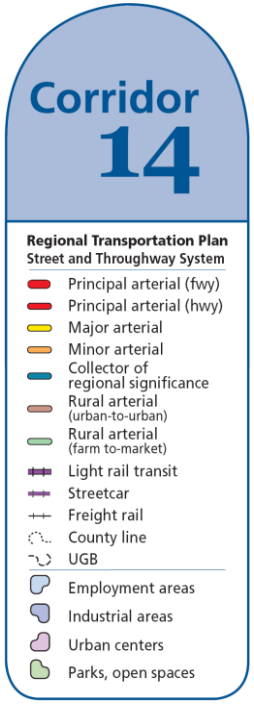
Where Are We Now?

Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years. And there are no transit signal priority locations or communications infrastructure in this corridor. Clackamas County updated and is distributing their bicycle map.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	Hwy 212, east of Damascus	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$3,400,000	$70,000
Traveler Information						
No projects in this corridor						
Transportation Demand Management						
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	Hwy 212, US 26	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	Hwy 212, US 26	Quality of life	6-10 years	$0	$4,800
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000

Mobility Corridor 14: Oregon City to Willamette Valley





Corridor Summary

The Oregon City to Willamette Valley encompasses **Hwy 213** south of I-205, parallel arterials as well as bus service and bicycle routes that support movement in and through the corridor. Hwy 213 supports intraregional and interregional travel between Oregon City and neighboring communities. The key parallel arterials are **Beavercreek Rd** and **Mollala Ave**. Land use in this corridor is both urban and rural. Within the urban area, the corridor has a diverse mix of land uses including commercial areas, institutional, and residential. The corridor outside the urban area is a mix of low density residential and farmland; its mobility provided by a farm-to-market street network. The local streets are well connected in the historic sections of Oregon City and discontinuous in the more recently developed sections.

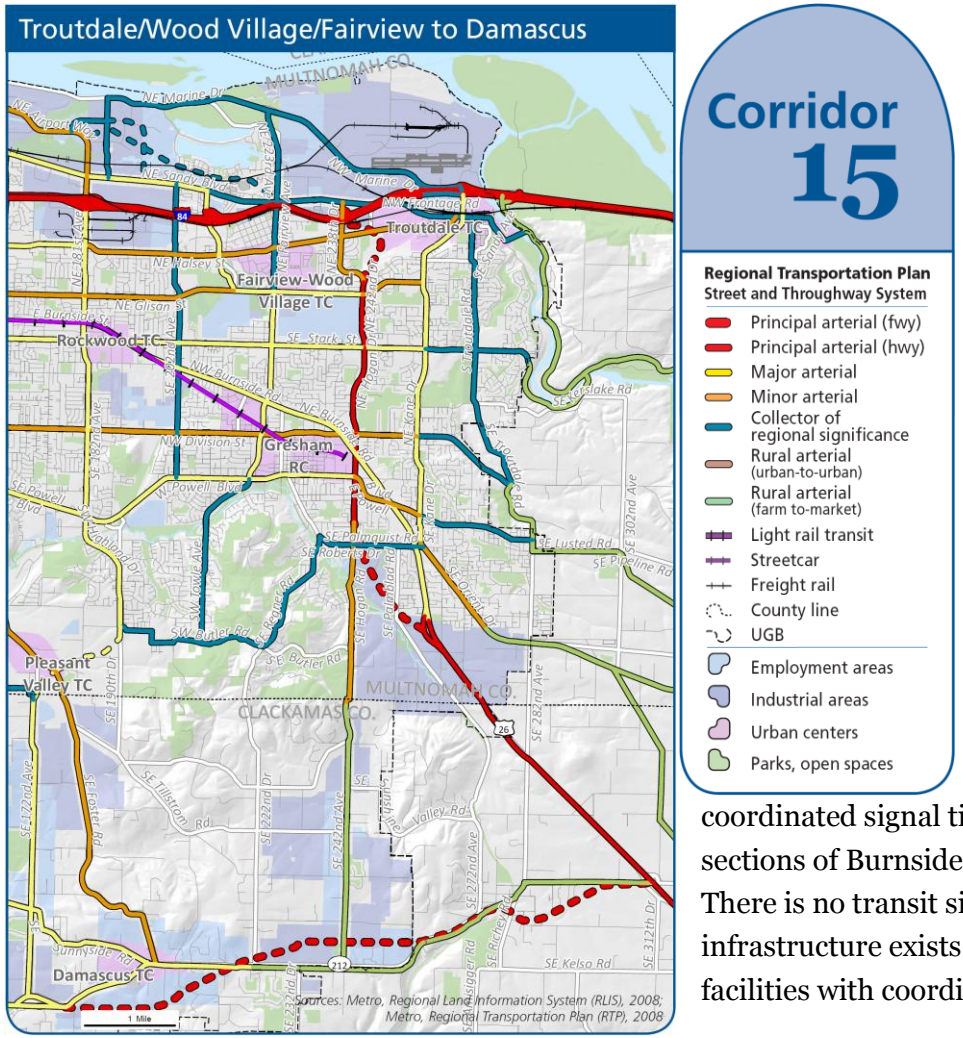
Where Are We Now?

No regional facilities in this corridor have coordinated signal timings updated within the last five years. There are no transit signal priority locations in this corridor. Communications infrastructure exists along sections of Beavercreek Rd, Hwy 213, and Molalla Ave. Clackamas County updated and is distributing their bicycle map.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	Hwy 213	Reliability & Traveler Information	6-10 yrs	$2,500,000	$50,000
		Beavercreek Rd (south of Hwy 213		11+ yrs	$950,000	$19,000
		Molalla Ave/Hwy 213 (to Henrici)		11+ yrs	$600,000	$12,000
		Washington St		6-10 yrs	$550,000	$11,000
		7th Ave		6-10 yrs	$200,000	$4,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	Molalla Ave (7th to Hwy 213)	Reliability & Traveler Information	1-5 yrs	$1,700,000	$35,000
		Beavercreek Rd (between Molalla and Hwy 213)		6-10 yrs	$440,000	$9,000
Traveler Information						
No projects in this corridor						

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Demand Management						
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	Hwy 213	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	Hwy 213	Quality of life	6-10 years	$0	$4,800

Mobility Corridor 15: Troutdale/Wood Village/Fairview to Damascus



Corridor Summary

The Troutdale/Wood Village/Fairview to Damascus mobility corridor encompasses the arterials and collector streets that provide access between I-84 and US 26, as well as transit and bicycle routes that support movement in and through the corridor. There are no freeways included within this corridor. The key arterials in this corridor include **SE 181st Ave, SE 202nd Ave, SE 238th/242nd/Hogan Dr** and **SE 257th/Kane Dr**. Although the corridor has a well-connected arterial and collector street grid, the local street network is generally discontinuous with many cul-de-sac and dead end streets. The majority of land use in this area is considered rural. The urbanized area has a mix of commercial and industrial uses.

Where Are We Now?

Currently one regional facility in this corridor has coordinated signal timings updated within the last five years, NE 242nd; and sections of Burnside Rd and 181st are equipped with adaptive signal timing. There is no transit signal priority located in this corridor. Communications infrastructure exists along 257th Ave, Glisan St, and 223rd as well as along the facilities with coordinated and adaptive signal timing.

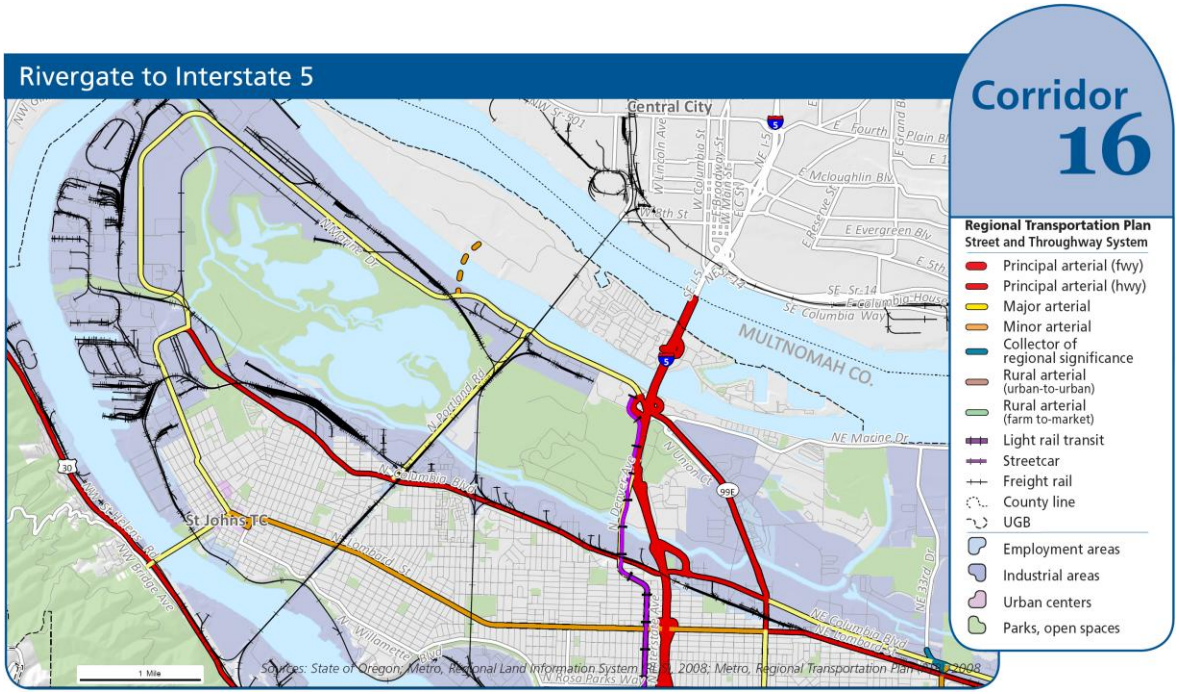
The Gresham Regional Center TMA works with employers, employees, and residents to reduce drive-alone trips. Additionally, the TMA runs a Bike Program which conducts safety outreach, gives away helmets, and installs bike racks. The City of Gresham has begun to implement a city-wide bicycle way-finding program.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	160th/162nd Ave	Reliability & Traveler Information	6-10 yrs	$2,100,000	$40,000
		Burnside (122nd to 223rd)		6-10 yrs	$1,200,000	$25,000
		NE 207th Ave (Sandy to Glisan)		6-10 yrs	$850,000	$17,000
		223rd Ave		6-10 yrs	$1,200,000	$25,000
		257th/Kane Dr		6-10 yrs	$2,800,000	$60,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	238th/242nd Ave/Hogan Dr (Sandy to Palmquist)	Reliability & Traveler Information	1-5 yrs	$3,600,000	$70,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	NE 181st/182nd Ave (Glisan to Powell)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$2,000,000	$40,000
ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	NE 181st Ave(I-84 to Glisan)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$600,000	$12,000
Traveler Information						
Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	Burnside (223rd to Powell) - Adaptive signal timing is in place along this segment, traveler information will be added.	Traveler Information	1-5 yrs	$950,000	$19,000
Roadside Travel Time Information	Provide real-time traveler information on westbound US 26 for different routes (arterial and freeway) between Portland and Gresham.	US 26	Traveler Information	6-10 yrs	$100,000	$15,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Demand Management						
Transportation Management Associations	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options.	Gresham Regional Center	Quality of Life	through 10 years	$0	(annual cost recorded under corridor 6)

Mobility Corridor 16: Rivergate to Interstate 5



Corridor Summary

The Rivergate to I-5 corridor encompasses **N Columbia Blvd**, parallel arterials as well as bus service and bicycle routes the support movement in and through the corridor. The key parallel arterials are **N Lombard/St John's Bridge** and **N Marine Dr**. The corridor includes a combination of marine-dependant industrial activities, nature reserves, mixed used commercial and residential uses. Due to the industrial and marine port uses, this corridor carries high volumes of heavy vehicle traffic. In the residential and commercial areas the local network is dense and well-connected. The local street network in the industrial and open space areas provides accessibility to large lots and tends to be discontinuous.

Where Are We Now?

Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years. Transit signal priority is located at select traffic signals along N Lombard St. Communications infrastructure exists along the St John's Bridge, N Oswego Ave/N Smith St/N Columbia Way/N Portland Rd, and N Marine Dr.

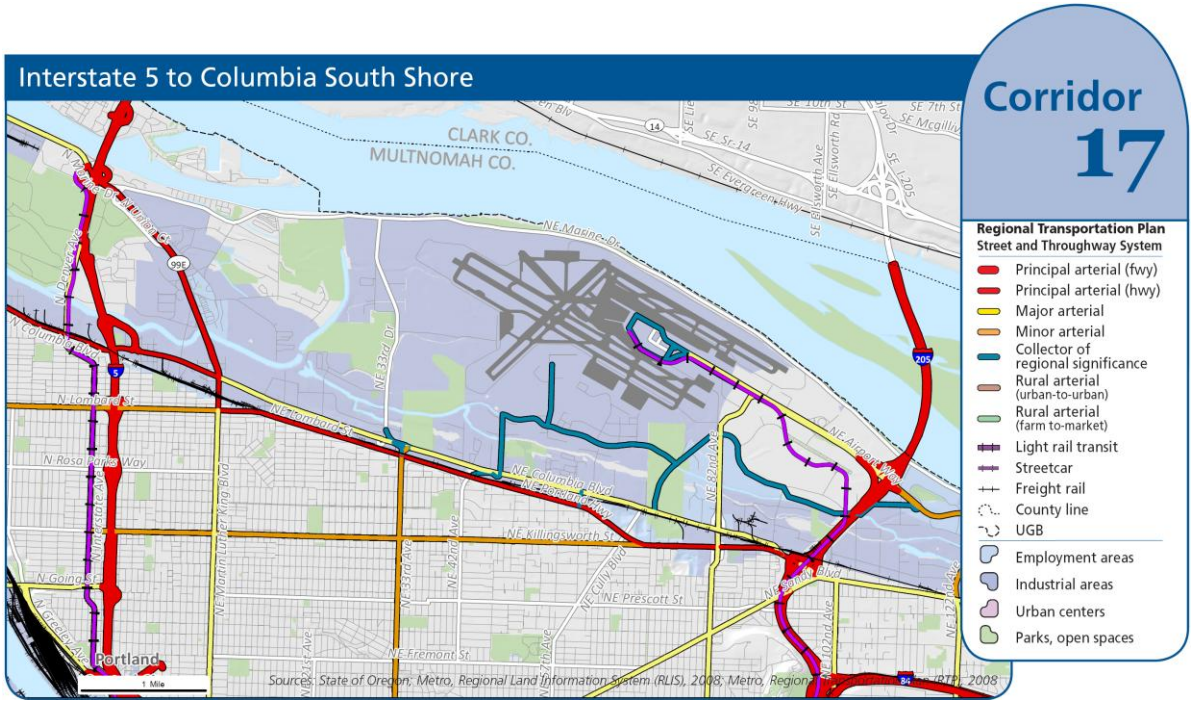
The City of Portland SmartTrips program began an individualized marketing program for residents of the N/NW Portland area. Also, the City of Portland sponsors Sunday Parkways events in North Portland to encourage use of biking and walking for all trips.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	N Columbia Blvd	Reliability & Traveler Information	6-10 yrs	$2,300,000	$45,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	N Lombard St (Greeley to I-5)	Reliability & Traveler Information	11+ yrs	$750,000	$15,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	N Lombard St (Richmond to Greeley)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$3,200,000	$60,000
Traveler Information						
Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	N Lombard St (north of St Johns Bridge)	Traveler Information	6-10 yrs	$2,200,000	$45,000
		Marine Dr		6-10 yrs	$2,200,000	$45,000
Railroad Crossing Information System	Implement communications between the at-grade railroad crossing and the traffic operations center and emergency management centers to inform emergency responders and general travelers when service will be interrupted.	Marine Dr	Reliabilty, Traveler Information, & Safety	6-10 yrs	$75,000	$2,000
Transportation Demand Management						
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Location-efficient living	Support programs and strategies that promote and advance location-efficient living strategies.	Rivergate industrial/employment area with nearby housing opportunities.	Quality of life	through 10 years	$0	$50,000
Last-mile services	Provide shuttles or demand-responsive transit to connect transit stops with significant destinations one to two miles away, especially at hours not served by current transit service.	Rivergate	Quality of life	6-10 years	$500,000	$500,000

Mobility Corridor 17: Interstate 5 to Columbia South Shore



Corridor Summary

The I-5 to Columbia South Shore corridor encompasses **N/NE Columbia Blvd** and **N/NE Lombard St,** parallel arterials as well as bus service and bicycle routes the support movement in and through the corridor. The key parallel arterials through this corridor are **NE Marine Dr** and **NE Killingsworth St**. Land use is primarily industrial with the Portland International Airport (PDX) occupying a substantial portion of acreage. The MAX Red line connects between PDX and Beaverton town center. South of N/NE Lombard St is primarily residential. In the residential area, the local street network is dense and well-connected. The local street network in the industrial area provides accessibility to large lots and is discontinuous.

Where Are We Now?

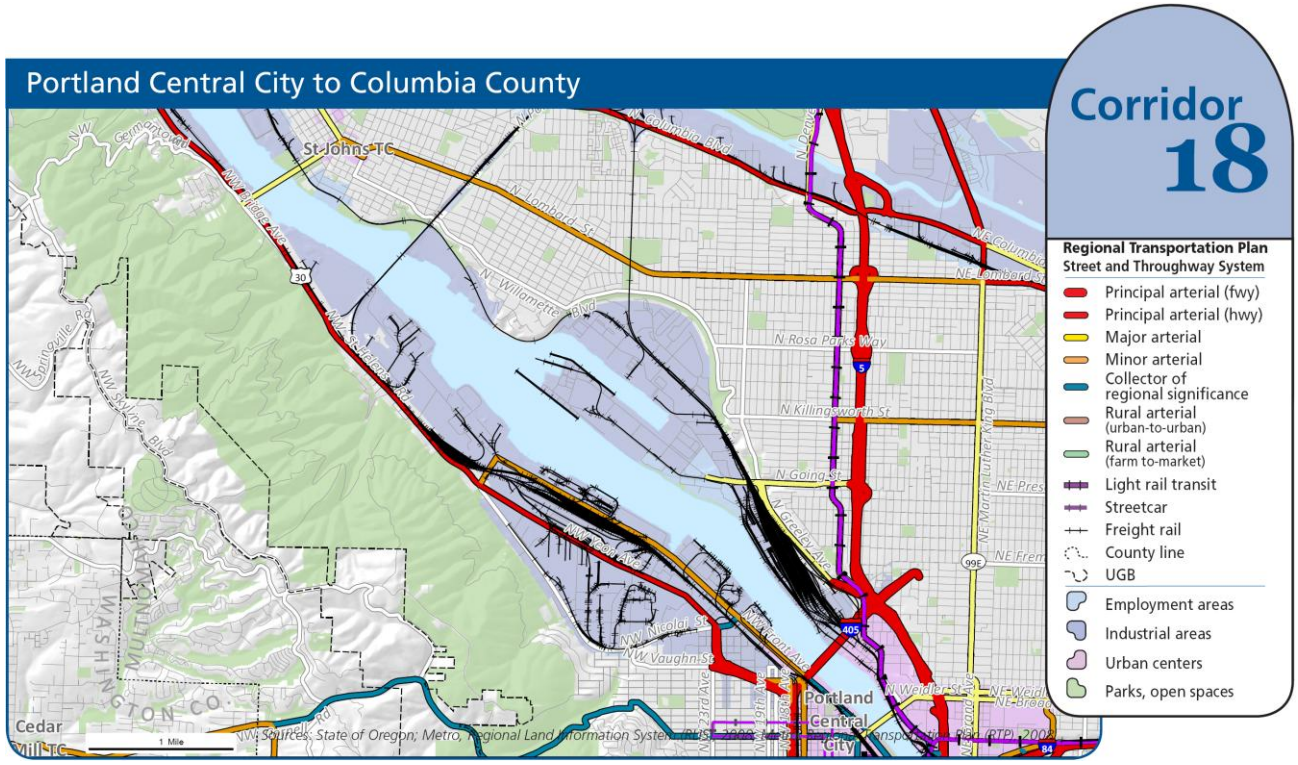
Currently two regional facilities in this corridor have coordinated signal timings updated within the last five years: NE Lombard St/NE Portland Hwy and NE Columbia Blvd. Transit signal priority is located at select traffic signals along NE Killingsworth St. Communications infrastructure exists along a segment of NE Killingsworth St.

The City of Portland sponsors Sunday Parkways events in Northeast Portland to encourage use of biking and walking for all trips. Additionally, the Community Cycling Center has been awarded a grant to reduce barriers for bicycling for historically under-represented populations.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	N/NE Columbia Blvd	Reliability & Traveler Information	1-5 yrs	$3,100,000	$60,000
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	N/NE Lombard St/NE Portland Hwy	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$2,600,000	$50,000
		N/NE Killingsworth St		6-10 yrs	$2,600,000	$50,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Individualized Marketing	City of Portland SmartTrips will reach N/NE Portland residents between Chautauqua and NE 82nd Ave. Consider 1/3rd of the project will impact Corridor 5. The action is to implement and/or support intensive outreach to targeted neighborhoods or demographics that encourages travel options through delivery of local travel options information and services to interested residents.	NE Portland along North side of I-84	Quality of life	1-5 years	$0	$333,333
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000

Mobility Corridor 18: Portland Central City to Columbia County



Corridor Summary

The Portland Central City to Columbia County corridor encompasses **US 30,** parallel arterials as well as bus service and bicycle routes that support movement in and through the corridor. US 30 provides interregional travel between the Willamette Valley, Portland and Astoria. It also serves intraregional travel, particularly between Portland, Beaverton and Hillsboro. The key parallel facilities include **NW Front St/NW Naito Pkwy, NW Nicolai, N Lombard St,** and **NW Yeon Ave**. This corridor is home to heavy industrial uses including petroleum tank farms, manufacturing, warehouse/distribution, BNSF Lake Yard intermodal terminal, the Port of Portland/s Terminal 2 and Metro Council waste transfer station.

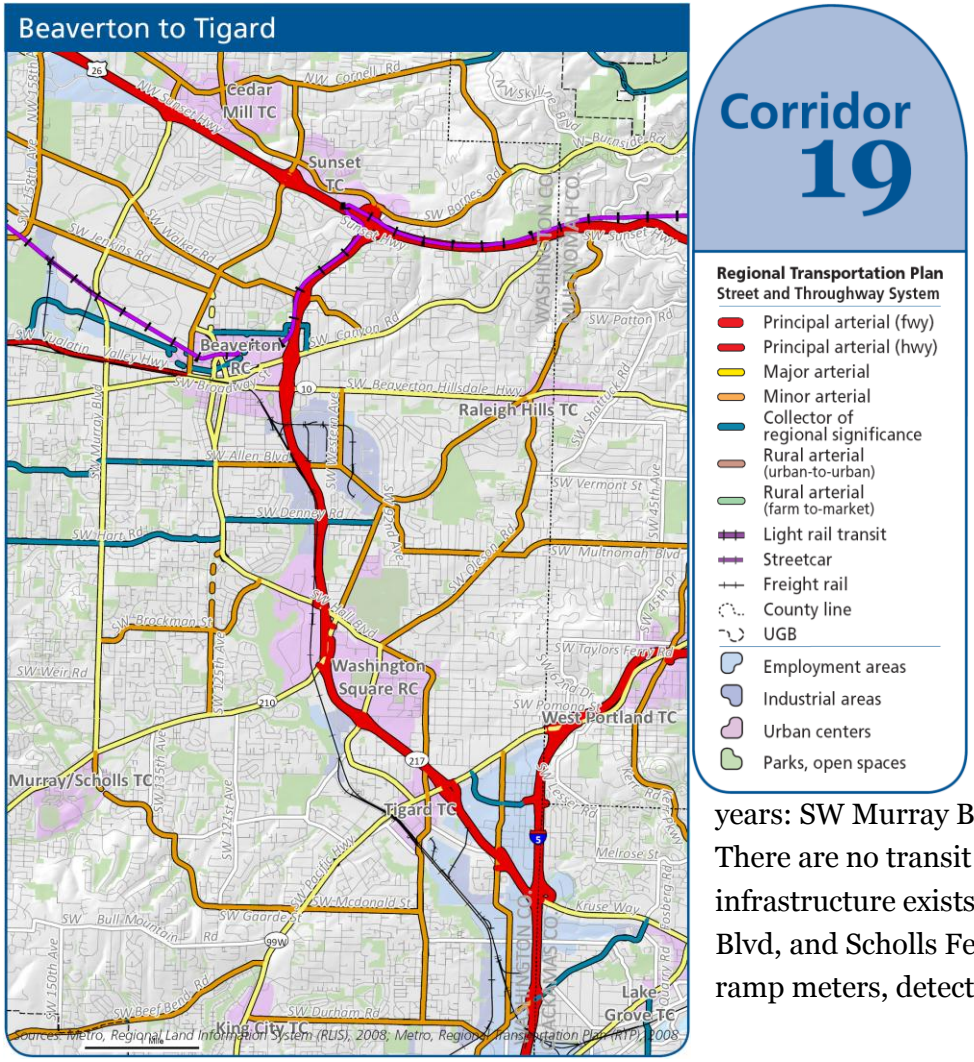
Where Are We Now?

Currently NW Naito Parkway/NW Front St is the only regional facility in this corridor to have coordinated signal timings updated within the last five years. Transit signal priority is located at select traffic signals along NW Vaughn St. Communications infrastructure exists along US 30 (St Helens Rd) NW Naito Parkway/NW Front St, and NW 29th Ave.

	Project Name	Description	Facility	Goal/Obj	Time-frame	Cost	
						Capital	Annual O&M
Regional Multimodal Traffic Management							
	Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	Hwy 30/St Helens Rd	Reliability & Traveler Information	6-10 yrs	$600,000	$11,000
Traveler Information							
		No projects in this corridor					

Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Residents served by frequent transit service, other travel options and near commercial zoning.	Quality of life	6-10 years	$0	$500,000
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	US 30	Quality of life	1-5 years	$0	$25,000
Rideshare incentives	(same as above)	US 30	Quality of life	6-10 years	$0	$25,000
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	US 30	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	US 30	Quality of life	6-10 years	$0	$4,800
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000

Mobility Corridor 19: Beaverton to Tigard



Corridor Summary

The Beaverton to Tigard corridor encompasses **Hwy 217,** MAX light rail, Westside Express Service (WES) commuter rail, parallel arterials as well as bus service and bicycle routes that support movement in and through the corridor. Hwy 217 supports intraregional travel between Beaverton, Hillsboro, Portland, Tigard, Tualatin, and Wilsonville. The key parallel arterials include **SW Hall Blvd, SW Murray Blvd, SW Oleson Rd** and **SW Scholls Ferry Blvd**. Land use in this corridor is diverse and includes several commercial centers, employment and industrial area. The local street network is a patchwork of well-connected and discontinuous streets.

Where Are We Now?

Currently three regional facilities in this corridor have coordinated signal timings updated within the last five years: SW Murray Blvd, SW Scholls Ferry Rd, and SW Hall Blvd (2 signals). There are no transit signal priority locations in this corridor. Communications infrastructure exists along SW Cedar Hills Blvd, SW Murray Blvd, SW Hall Blvd, and Scholls Ferry Rd. Highway 217 is generally equipped with cameras, ramp meters, detection, and communication equipment.

The Westside Transportation Alliance (WTA) works with employers and employees in Beaverton and Tigard (in addition to other Washington County areas) to reduce drive-alone trips. There are also several bike-specific projects in the corridor including the WTA program to install free bike racks for area businesses, the City of Tigard's update of their 20-year old bike map, and TriMet installation of E-Access Bike Lockers at several transit facilities in the area.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	SW Murray Blvd	Reliability & Traveler Information	6-10 yrs	$2,900,000	$60,000
		SW Oleson Rd		11+ yrs	$2,600,000	$50,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	Cedar Hills Blvd	Reliability & Traveler Information	6-10 yrs	$2,200,000	$45,000

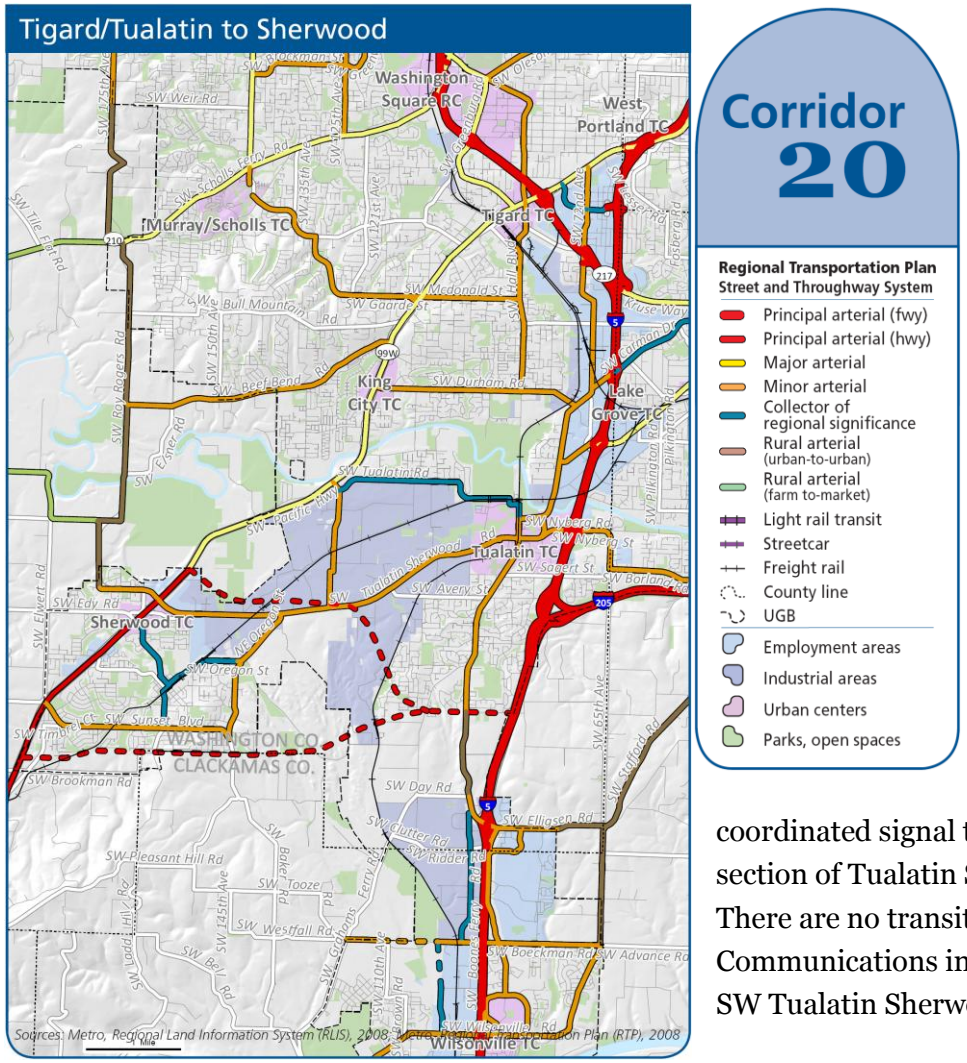
Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	SW Hall Blvd	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$3,700,000	$70,000
		Scholls Ferry Rd (Hall to BH Hwy)		1-5 yrs	$1,700,000	$35,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	Hwy 217	Reliability, Traveler Information, & Safety	1-5 yrs	$600,000	$12,000
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Neighborhood served by frequent transit service, other travel options and near commercial zoning.	Quality of life	1-5 years	$0	$500,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Individualized Marketing	(same as above)	Neighborhood served by frequent transit service, other travel options and near commercial zoning.	Quality of life	6-10 years	$0	$500,000
Rideshare incentives	Leverage regional rideshare services to encourage greater levels of carpooling and vanpooling by providing financial incentives to commuters.	For commuters on 217.	Quality of life	1-5 years	$0	$100,000
Rideshare incentives	(same as above)	For commuters on 217.	Quality of life	6-10 years	$0	$100,000
Employer outreach - additional resources	Leverage existing regional investment in employer services and TMAs to work with employers near corridor.	Employment sites near Highway 217		1-5 years		$200,000
Employer outreach - additional resources	(same as above)	Employment sites near Highway 217		6-10 years		$200,000
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance (WTA) provides employer services in Washington County, including this corridor.	Beaverton, Washington Square, Tigard and other parts of Washington County	Quality of life	through 10 years	$0	$300,000
Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance (WTA) provides employer services in Washington County, including this corridor.	Beaverton, Washington Square, Tigard and other parts of Washington County	Quality of life	through 10 years	$0	$75,000
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Beaverton Regional Center	Quality of life	1-5 years	$0	$100,000
Parking management	(same as above)	Beaverton Regional Center	Quality of life	6-10 years	$0	$100,000
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Washington Square Regional Center	Quality of life	1-5 years	$0	$100,000
Parking management	(same as above)	Washington Square Regional Center	Quality of life	6-10 years	$0	$100,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Tigard Town Center	Quality of life	1-5 years	$0	$100,000
Parking management	(same as above)	Tigard Town Center	Quality of life	6-10 years	$0	$100,000
Bike Sharing	Provide funding to implement bikes for loan or rent.	Transit oriented developments, large employers, colleges, hotels and significant transit stops.	Quality of life	6-10 years	$100,000	$50,000

Mobility Corridor 20: Tigard/Tualatin to Sherwood



Corridor Summary

The Tualatin to Sherwood corridor encompasses **99W,** parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. 99E supports inter- and intraregional travel inside the region and through the Willamette Valley. The key parallel arterials include **SW 72nd Ave/Boones Ferry Rd/Tualatin-Sherwood Rd, SW Hall Blvd,** and **SW Scholls Ferry Rd/Roy Rogers Rd.** These facilities provide access to Washington Square regional center, five town centers, and significant industrial and employment areas. Originally the arterial and collector street network were built as farm-to-market roads. As the area developed the roadway network lacks the continuous grid of more urbanized areas.

Where Are We Now?

Currently no regional facilities in this corridor have coordinated signal timings updated within the last five years; however, a section of Tualatin Sherwood Rd is equipped with adaptive signal timing. There are no transit signal priority locations in this corridor. Communications infrastructure exists along sections of Scholls Ferry Rd and SW Tualatin Sherwood Rd. The Westside Transportation Alliance (WTA)

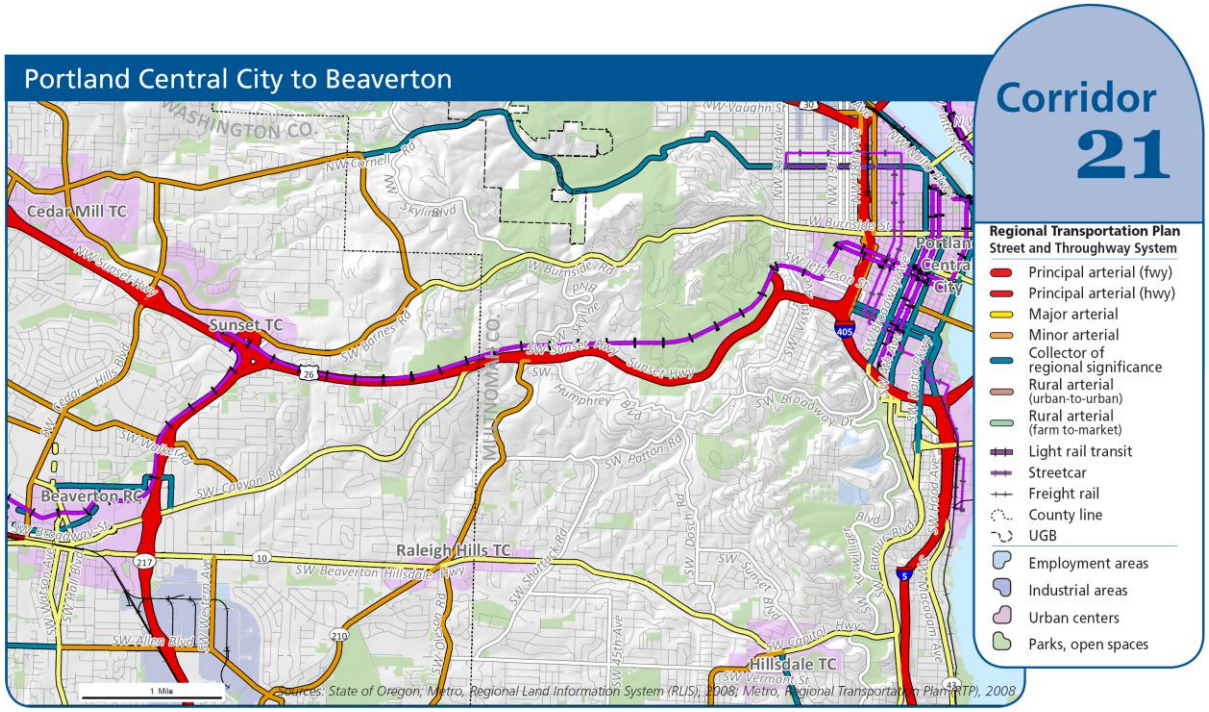
works with employers and employees in Tualatin (in addition to other Washington County areas) to reduce drive-alone trips. There are also several bike-specific projects in the corridor including a WTA program to install free bike racks for area businesses and the City of Tigard's update of their 20-year old bike map.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	SW 72nd Ave	Reliability & Traveler Information	11+ yrs	$1,700,000	$35,000
		Upper Boones Ferry Rd		11+ yrs	$1,300,000	$25,000
		Durham Rd		11+ yrs	$1,500,000	$30,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	Tualatin Sherwood Rd	Reliability & Traveler Information	1-5 yrs	$1,500,000	$30,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	SW Hall Blvd	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$1,900,000	$40,000
ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transity priority treatment.	SW Scholls Ferry Rd (River to Hall)	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$4,200,000	$80,000
		Hwy 99W (from 217 to 124th)		1-5 yrs	$4,200,000	$80,000
Traveler Information						
Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	Hwy 99W (124th to Tualatin Sherwood Rd)	Traveler Information	1-5 yrs	$1,200,000	$25,000
Transportation Demand Management						
Construction mitigation campaign	Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects.	99W construction to Newberg (per HB 2001 legislation)	Quality of life	1-5 years	$0	$100,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Location-efficient living	Support programs and strategies that promote and advance location-efficient living strategies.	Tualatin industrial/employment area west of I-5 and housing west of I-5.	Quality of life	through 10 years	$0	$50,000

Mobility Corridor 21: Portland Central City to Beaverton



Corridor Summary

The Portland to Beaverton corridor encompasses **US 26,** MAX light rail, parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. US 26 supports intraregional travel between Beaverton, Gresham, Hillsboro, Milwaukie, Portland, Tigard and Vancouver. The key parallel facilities include **SW Beaverton-Hillsdale Hwy, W Burnside/SW Barnes Rd, SW Canyon Rd, and SW Cornell Rd/SW Miller Rd.** North-south mobility is limited due to few overcrossings of US 26, rugged topography and large areas of parkland. Land use in this corridor is mainly residential with a relatively high percentage of land dedicated to parks and open space. The local street network is discontinuous with many cul-de-sac and dead end streets.

Where Are We Now?

Currently three regional facilities in this corridor have coordinated signal timings updated within the last five years: Beaverton Hillsdale Hwy (BH Hwy) Canyon Rd, and sections of Cornell Rd. Additionally, an adaptive signal timing project is underway for a segment of BH Hwy. Transit signal priority is located at select traffic signals along BH Hwy. Communications infrastructure exists

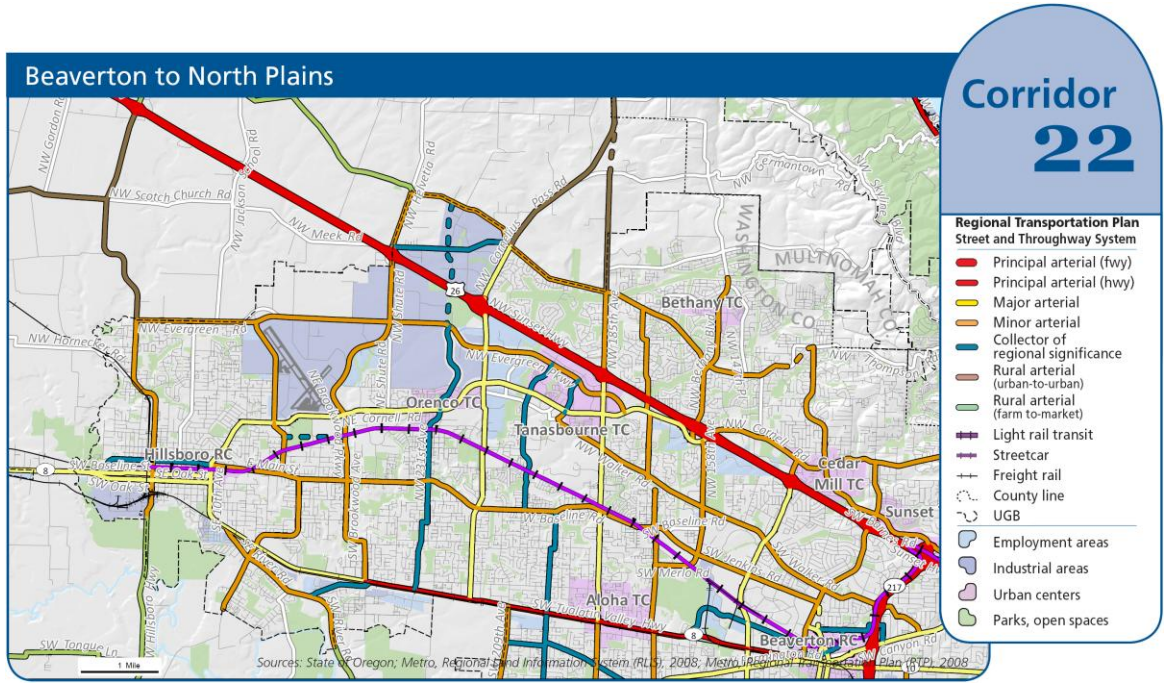
along BH Hwy, Canyon Rd, and SW Allen Blvd. The segment of US 26 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment. The Westside Transportation Alliance (WTA) works with employers in Beaverton (in addition to other Washington County areas) to reduce employee drive-alone trips. The City of Portland's Smart Trips Downtown program offers individualized marketing to employees in their service areas. There are several bike-specific projects in the corridor as well, with a WTA program to install free bike racks for area businesses, Portland State University currently building a new long-term bike storage facility, and TriMet installing E-Access Bike Lockers at several transit facilities in the area.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	Canyon Rd (north of Walker)	Reliability & Traveler Information	6-10 yrs	$1,600,000	$30,000
		Walker Rd (west of Hwy 217)		6-10 yrs	$700,000	$14,000
		Barnes Rd/Burnside		6-10 yrs	$2,100,000	$43,000
		Bertha		11+ yrs	$700,000	$13,000
		Allen Rd		11+ yrs	$2,300,000	$45,000
		Denny Rd		11+ yrs	$950,000	$19,000
		Cornell Rd		6-10 yrs	$1,700,000	$35,000
		Scholls Ferry Rd		6-10 yrs	$750,000	$15,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	Canyon Rd (near Walker to Cedar Hills)	Reliability & Traveler Information	6-10 yrs	$1,500,000	$30,000
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	Beaverton Hillsdale Hwy (Barbur Blvd to Scholls Ferry Rd)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$3,700,000	$70,000
ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	Beaverton Hillsdale Hwy (Scholls Ferry Rd to Murray Blvd)	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$2,500,000	$50,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	US 26	Reliability, Traveler Information, & Safety	6-10 yrs	$400,000	$8,000
Traveler Information						
Traveler Information Only	Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions.	Walker Rd (east of Hwy 217)	Traveler Information	6-10 yrs	$460,000	$9,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Demand Management						
Individualized Marketing	Implement and/or support intensive outreach to targeted neighborhoods that encourages use of travel options through delivery of local travel options information and services to interested residents.	Residents served by frequent transit service, other travel options and near commercial zoning.	Quality of life	1-5 years	$0	$500,000
Individualized Marketing	(same as above)	Residents served by frequent transit service, other travel options and near commercial zoning.	Quality of life	6-10 years	$0	$500,000
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000

Mobility Corridor 22: Beaverton to North Plains



Corridor Summary

The Beaverton to North Plains corridor encompasses **US 26,** MAX light rail, Westside Express Service (WES), parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. US 26 supports intraregional travel between Beaverton, Gresham, Hillsboro, Milwaukie, Portland, Tigard and Vancouver. The key parallel facilities include **NW Barnes Rd/Cornell Rd, NW Evergreen Pkwy, SW Jenkins Rd/Walker Rd, NW Union Rd, W Baseline Rd, and SW Tualatin Valley Hwy**. The corridor is a diverse mix of urban and rural land uses, with several commercial centers, employment and industrial areas in the urbanized sections. The local street network is a patchwork of well-connected and discontinuous streets. Farm-to-market roads provide mobility outside the urbanized areas.

Where Are We Now?

Currently two regional facilities in this corridor have coordinated signal timings updated within the last five years: Cornelius Pass and Cornell Rd. There are no transit signal priority locations in this corridor. Communications infrastructure exists along segments of Cornell Rd, Baseline St and Oak St. The segment of US 26 through this corridor is generally equipped with cameras, ramp meters, detection, and communication equipment. The Westside Transportation Alliance (WTA) works with employers and employees in

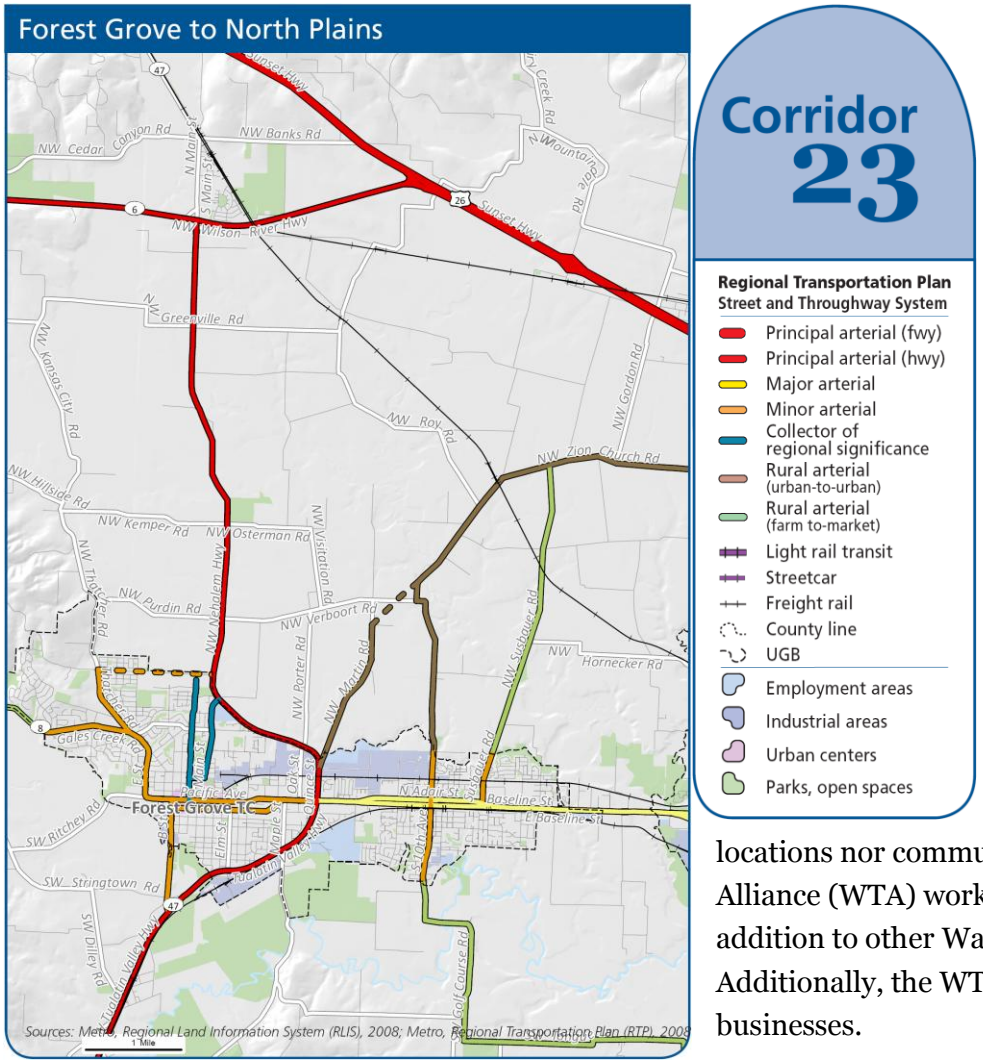
Beaverton (in addition to other Washington County areas) to reduce drive-alone trips. There are several bike-specific projects in the corridor including a WTA program to install free bike racks for area businesses and TriMet installation of E-Access Bike Lockers at several transit facilities in the area.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	Jenkins/ Baseline	Reliability & Traveler Information	11+ yrs	$3,300,000	$70,000
		Walker Rd		11+ yrs	$2,600,000	$50,000
		Cornell Rd		1-5 yrs	$6,800,000	$140,000
		Evergreen		11+ yrs	$4,700,000	$90,000
		Cornelius Pass		6-10 yrs	$3,500,000	$70,000
		Brookwood		11+ yrs	$2,800,000	$60,000
		Shute Rd		11+ yrs	$9,300,000	$180,000
		Farmington (185th to 209th)		6-10 yrs	$800,000	$16,000
ACM with Adaptive Signal Timing	Includes the ACM project with signal systems that automatically adapt to current arterial roadway conditions.	185th Ave (US 26 to Union Rd)	Reliability & Traveler Information	6-10 yrs	$1,200,000	$25,000

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
ACM with Transit Priority Treatment	Includes the ACM project with transit signal priority added to traffic signals along a facility.	Farmington (Murray to 185th)	Reliability, Traveler Information, & Quality of Life	6-10 yrs	$1,800,000	$35,000
ACM with Adaptive Signal Timing and Transit Priority Treatment	Includes the ACM with both adaptive signal timing and transit priority treatment.	185th Ave (US 26 to BH Hwy)	Reliability, Traveler Information, & Quality of Life	1-5 yrs	$4,500,000	$90,000
		Farmington (Western to Murray)		1-5 yrs	$2,500,000	$50,000
		Tualatin Valley Hwy (Murray to Baseline)		1-5 yrs	$7,300,000	$140,000
Freeway Management	Expand freeway vehicle detection to provide comprehensive freeway traveler information including travel speed, travel times, volumes, forecasted information, incident conditions, and weather conditions.	US 26	Reliability, Traveler Information, & Safety	6-10 yrs	$650,000	$13,000
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	US 26	Quality of life	1-5 years	$0	$4,800

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Rideshare Park & Ride	(same as above)	US 26	Quality of life	6-10 years	$0	$4,800
Construction mitigation campaign	Apply additional investment in TDM solutions to mitigate impacts to travelers of all modes during construction projects.	Hwy 26 near Amberglen	Quality of life	1-5 years	$0	$100,000
Employee incentives	Targeted investment to add to employer services to incentivize non-SOV commutes.	to be determined	Quality of life	1-5 years	$0	$50,000
Employee incentives	(same as above)	to be determined	Quality of life	6-10 years	$0	$50,000
Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance (WTA) provides employer services in Washington County, including this corridor.	Beaverton and other parts of Washington County	Quality of life	through 10 years	$0	(annual cost recorded under corridor 19)
Location-efficient living	Support programs and strategies that promote and advance location-efficient living strategies.	Industrial/employment area with nearby housing	Quality of life	through 10 years	$0	$50,000
Park & Ride Management	Implement parking management elements such as time limits, fees or changing spaces to carpool-only.	Sunset Transit Center	Quality of life	1-5 years	$100,000	$10,000

Mobility Corridor 23: Forest Grove to North Plains



Corridor Summary

The Beaverton to North Plains corridor encompasses **Hwy 47,** parallel arterials, as well as bus service and bicycle routes that support movement in and through the corridor. Hwy 47 supports intraregional travel between Forest Grove, Hillsboro and Beaverton. The key parallel facilities include **NW Martin Rd/Cornelius-Schefflin Rd, Kerkman/Dersham Rd, and Zion Church/Glencoe Rd.** The corridor is mostly rural farmland, with urban/suburban development tightly contained in the city of Forest Grove. The street network is a mix of farm-to-market roads and well-connected urban streets in the urbanized area.

Where Are We Now?

No regional facilities in this corridor have coordinated signal timing updated within the last five years. Additionally, there are no transit signal priority locations nor communications infrastructure. The Westside Transportation Alliance (WTA) works with employers and employees in Forest Grove (in addition to other Washington County areas) to reduce drive-alone trips. Additionally, the WTA offers a program to install free bike racks for area businesses.

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Regional Multimodal Traffic Management						
Arterial Corridor Management (ACM)	Improve arterial corridor operations by expanding traveler information and upgrading traffic signal equipment and timings. Install upgraded traffic signal controllers, establish communications to the central traffic signal system, provide arterial detection (including bicycle detection where appropriate) and routinely update signal timings. Provide real-time and forecasted traveler information on arterial roadways including current roadway conditions, congestion information, travel times, incident information, construction work zones, current weather conditions and other events that may affect traffic conditions. Upgrade and/or add traffic signage. Also includes on-going maintenance and parts replacement.	TV Hwy	Reliability & Traveler Information	6-10 yrs	$950,000	$19,000
Traveler Information						
	No projects in this corridor					
Transportation Demand Management						
Rideshare Park & Ride	Negotiate shared parking agreements with public and private parking lots, provide signage and, if needed, coordinate registration.	US 26	Quality of life	1-5 years	$0	$4,800
Rideshare Park & Ride	(same as above)	US 26	Quality of life	6-10 years	$0	$4,800

Project Name	Description	Facility	Goal/ Objective	Time-frame	Cost	
					Capital	Annual O&M
Transportation Management Associations (TMA)	Support public-private partnerships in regional or town centers that assist employees and/or residents increase use of travel options. Westside Transportation Alliance (WTA) provides employer services in Washington County, including this corridor.	Forest Grove and other parts of Washington County	Quality of life	through 10 years	$0	(annual cost recorded under corridor 19)
Parking management	Convene stakeholders to plan and implement parking management strategies. Ideally this action raises revenue to expand TDM solutions.	Forest Grove Town Center	Quality of life	6-10 years	$0	$100,000
Car-share operations	Support 3 or more car-sharing vehicles for large student populations.	Forest Grove	Quality of life	1-5 years	$0	$200,000

V. Implementation

The purpose of this section is to identify steps that partner agencies need to take to ensure successful implementation of TSMO strategies. This component of the TSMO plan includes the description of non-capital actions necessary to compliment capital investments.

Because TSMO is different than traditional transportation engineering and construction activities, it is imperative that partner agencies carefully coordinate its implementation The TSMO Plan identifies new practices or modifications to existing practices and procedures that are needed to ensure success and achieve the operations objectives. A desired outcome of the Regional TSMO Plan is for local agencies to modify existing practices as needed to support the TSMO solutions. This section presents organizational, policy and finance recommendations necessary for implementation of TSMO strategies.

Organization and policy recommendations

Implementation of specific projects must consider the institutional relationships necessary to achieve the operation objectives. Institutional arrangements have not been a significant issue for many of the projects completed to date because of the nature of informal relationships within TransPort and a separate structure for Regional Travel Options. However, as additional efforts proceed, institutional relationships will be a key component determining success or failure. While engineers are able to overcome most technical challenges, developing and maintaining relationships (including intergovernmental agreements) are often challenging aspects of a project, especially when competing goals or agency policies exist. Table 4 identifies recommendations related to institutional relationships to achieve successful implementation of TSMO projects. Metro will lead the effort to implement these actions.

Table 4: Organization and Policy Measure Recommendations

Item	Action	Descriptions	Year 1	Year 1-5	Long Term
1	TSMO Policy Committee (TSMO-PC)	Metro will form a TSMO Policy Committee to include representatives from Regional Travel Options (RTO), TransPort, Regional Freight TAC, TPAC, and other private sector stakeholders. TSMO-PC will primarily advise TPAC on TSMO investment priorities and governance/service delivery issues. An example of this is the update of signal timing plans funded by the federal stimulus program, where Metro led the effort to submit an application and the signal timing plans were developed by member agencies. The RTO subcommittee and TransPort will continue to act on transportation demand management and ITS program coordination, respectively.	√		
2	Inclusion in Regional	TSMO will use RTP and Functional Plan to leverage results through local policies, codes and Capital Improvement		√	

Item	Action	Descriptions	Year 1	Year 1-5	Long Term
	Transportation Plan (RTP) and Functional Plan requirements of local Transportation System Plans (TSPs) related to TSMO in RTP	Project (CIP) investment decisions. TSMO policies will take affect incrementally as local TSPs are updated, and Metro would provide guidance and support to local governments during the TSP update process.			
3	Public-private partnerships for TSMO projects	The TSMO PC will explore barriers and opportunities for use of public-private partnerships for TSMO projects and identify a process for supporting and funding new ideas. However, before public-private partnerships can be implemented, it is necessary to address issues related to the sale and use of public information to private entities, shared risk on investment outcomes, use/disclosure of proprietary information, privacy concerns, capital purchased with federal funds, maintenance, and more.		√	
4	Formalization of TSMO implementation roles and relationships	Formal relationships through intergovernmental agreements and memorandums of understanding as necessary. For example, this will occur when setting up incident management teams. It is necessary to realize economy of scale benefits while recognizing intra-regional political and institutional differences that vary across geographic and programmatic boundaries (e.g., cities may be ready to integrate ITS operational platforms but not incident response teams). A good example is the Cooperative Telecommunications Infrastructure Committee (CTIC), which brings technical staff together who are dedicated to planning and operating the communication systems.		√	
5	Development of corridor management associations	The TSMO PC will explore the development of corridor management associations to guide on-going implementation of system and demand management strategies. It will need both to recognize differential levels of investment by the region in some corridors over others and that integrating corridor management solutions is affected by political factors		√	
6	Support TSMO staff/institutional development	The TSMO PC will be responsible to develop a best management practices for operations, staff training/workforce development through higher education institutions, coordinate peer exchanges, implement certification programs, cost accounting systems, and common performance/benefit measures. Both public agencies as well as private concerns need all these to build capacity in the region to sustain TSMO investment and ensure it delivers benefits to its full potential.		√	
7	Tie TSMO to regional climate action plan	In the longer term, Metro will tie TSMO to a regional climate action plan. This could be done, for example, by tapping Cap and Trade resources and including TSMO in cost/benefit analysis. Metro will also assess TSMO's role in meeting greenhouse gas (GHG) reduction goals.			√
8	Joint operating agreements	Set up joint operating agreements to allow more efficient allocation of resources and properly define roles and	√		

Item	Action	Descriptions	Year 1	Year 1-5	Long Term
		responsibilities of agencies. As an example, the City of Portland already operates several ODOT traffic signals throughout the system. This allows ODOT to focus on issues more consistent with its goals of maintaining mobility on key facilities within the service area of Region 1. As another example, ODOT established a multi-agency freeway management system with open coordination and contributions from several stakeholder groups, allowing access to cameras for local purposes. Furthermore, statewide and regional signal system procurement and ITS on-call consulting services contracts exist that allow multiple agencies to procure ITS equipment through a common procurement effort.			
9	Regular TSMO reports	Publish regular reports documenting the implementation of TSMO projects. In order to follow the progression of the TSMO Refinement Plan, annual reports need to document implemented projects and performance outcomes.	√		
10	Focus on 24/7 customer service provision	A Transportation Management Center (TMC) requires 24/7 operations to allow for fast response to transportation incidents and emergencies, even during midnight. Support of 24/7 operations would need staff resources.			√
12	Operations and management accounted for in formal planning process	This allows transportation systems to be efficiently utilized from the beginning of construction. It is also more cost-effective to discuss TSMO in the early stage of the planning process than if it was to be integrated later as an added feature.	√		

Finance recommendations

Addressing funding needs and barriers is also an important step to ensure successful implementation of TSMO strategies. Funding will continue to come from a variety of sources at the federal, state, regional, and local levels. The challenge is to increase funding for TSMO solutions and maintain a consistent funding stream. The Regional TSMO Plan identifies operations-oriented projects that the Metropolitan Transportation Improvement Program (MTIP) should include or that agencies can pursue through future initiatives like the ODOT Operations Innovation Grant Program. The MTIP provides an opportunity to include specific projects that will offer measurable, operational benefits. Stakeholder agencies recognize that coming together to coordinate management of the transportation system provides advantages to acquiring highly competitive MTIP funds for TSMO Plan initiatives. Multi-agency programs, such as those identified through the RCTO process, are seen as high priorities across the region. Table 5 list recommended actions to advance funding objectives.

Table 5: Fiscal Measure Recommendations

Item	Action	Year 1	Year 1-5	Long Term
1	Work to increase use of federal funds for TSMO (both capital and operations)	√	√	√
2	Develop TSMO funding strategy to support regional systems like traveler information, rideshare matching, ITS network, PORTAL		√	
3	Tie operations capital to on-going Operations & Maintenance funding – establish MTIP review criteria for on-going O&M support of TDM/TSM capital investments		√	
4	Work with finance managers in partner agencies to adopt outcomes-focused budgeting		√	
5	Request separate RTO and TSMO funds for program and capital infrastructure funds in MTIP process		√	
7	Identify and develop new funding sources for TSMO capital and operations		√	
8	Investigate regional and sub-regional opportunities for group purchasing agreements		√	
9	Continually align regional TSMO priorities with regional policies to make the case of additional funding		√	
11	Work with regional partners to gain commitment for funding ongoing operations		√	
12	Consider operations and management as separate and sustainable budget category		√	