

CLACKAMAS COUNTY BOARD OF COUNTY COMMISSIONERS

Study Session Worksheet

Presentation Date: 3/15  **Approx Start Time:** 2  pm

Approx Length: 60 minutes

Presentation Title: Clackamas County Active Transportation Plan

Department: DTD - Engineering Division

Presenters: Karen Buehrig, Transportation Planning Supervisor & Scott Hoelscher, Senior Planner

Other Invitees: Barb Cartmill, DTD Director
Mike Bezner, Transportation Engineering Supervisor
Lori Mastrantonio, Senior Planner

WHAT ACTION ARE YOU REQUESTING FROM THE BOARD? No action is requested of the Board. This is an information session to update the Board and answer any questions before the upcoming public hearing on the Active Transportation Plan scheduled for March 18, 2015.

EXECUTIVE SUMMARY: In October of 2012, Clackamas County was awarded a \$105,000 Transportation and Growth Management (TGM) grant from the Oregon Department of Transportation (ODOT) to develop an Active Transportation Plan (ATP). At a June 20, 2013 Business Meeting, the Board of County Commissioners approved an intergovernmental agreement with ODOT to prepare the ATP.

Active Transportation includes walking, bicycling and horseback riding. The purpose of the Clackamas County Active Transportation Plan (ATP) is to identify and prioritize the primary network of active transportation routes that connect communities and other important destinations in Clackamas County. In both the urban and rural areas of the County, 24 Principal Active Transportation (PAT) routes have been identified to provide access to services such as transit, shopping and employment centers, and to recreation and exercise. Routes were developed with the help of technical advisors and a public advisory committee, based on a set selection criteria. Each route features recommended bicycle and pedestrian facility design types, signage and other amenities to enhance the active transportation experience. The sign plan includes information on sign placement, content and design.

Adoption of the ATP includes the following components:

- **Active Transportation Policies**

Chapter 5 of the Comprehensive Plan contains the Transportation System Plan (TSP). The proposed amendments to Chapter 5 would amend six policies and add three new policies to the Active Transportation section of the TSP. In addition, one policy in the Finance and Funding section is proposed to be amended.

- **Active Transportation-Related Projects**

Chapter 5 of the Comprehensive Plan includes the County's 20-year Capital Improvement Plan, which is a list of transportation-related projects needed to address gaps and deficiencies in the transportation network. Transportation-related projects are identified in Tables 5-3(a-d) of the Comprehensive Plan. The ATP amendment package proposes to add two new active transportation projects to Table 5-3a: 20-Year Capital Projects; 17 new active transportation projects to Table 5-3c and clarifying amendments to all tables (Tables 5-3a through 5-3d).

- **Comprehensive Plan Maps 5-12a/b**

These two new maps depict the alignments of the 24 proposed Principal Active Transportation (PAT) routes. Map 5-12a shows the urban routes and Map 5-12b identifies the rural routes.

- **Active Transportation Plan Report**

The report includes a detailed analysis of the active transportation routes; a catalog of pedestrian and bicycle facility types for a range of rural and urban settings, and a signage/amenities plan for the routes. The Active Transportation Plan report is proposed to be adopted by reference in Appendix A of the Comprehensive Plan.

FINANCIAL IMPLICATIONS: None. No new funding is sought in conjunction with the proposed Active Transportation Plan and associated Comprehensive Plan amendments. The amendments associated with the Active Transportation Plan will only update the Active Transportation element of the Transportation System Plan (Chapter 5 of the Comprehensive Plan).

LEGAL/POLICY REQUIREMENTS: This is an information session only.

PUBLIC/GOVERNMENTAL PARTICIPATION: The ATP was prepared with the help of community members and active transportation stakeholders. A Stakeholder Involvement Strategy (SIS) was developed at the outset of the project in order to provide a framework for engaging these stakeholders and members of the public. At the project outset, department staff organized a 17-member Public Advisory Committee (PAC) to review materials and provide input and advice. The PAC met five times during the ATP development and included current members of the Clackamas County Pedestrian / Bikeway Advisory Committee, as well as other residents representing the geographic diversity of the County.

Public participation also included presentations and discussions with key community groups, including Citizen Planning Organizations (CPO's), Hamlets and Villages. Staff attended four meetings with County CPOs and Hamlets to share the project information and ascertain their issues, concerns and feedback on development of the Active Transportation Plan. Staff used the public input from the advisory group and public outreach to further develop and refine the ATP. Public participation also included the following: an on-line virtual open house for two weeks in February of 2014; news releases; an article in Citizen News; distribution of flyers and fact sheets and a presentation at a Community Leaders Meeting.

OPTIONS: No action is required.

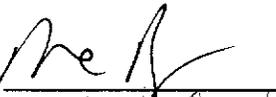
RECOMMENDATION: None. This is an informational session only.

ATTACHMENTS:

1. Comprehensive Plan Chapter 5: Transportation System Plan
2. Comprehensive Plan Table 5-3a: 20-Year Capital Projects; Table 5-3b: Preferred Projects; Table 5-3c: Long Term Capital Projects and Table 5-3d: Regional Capital Projects.
3. Comprehensive Plan Map 5-12a: Principal Active Transportation Routes: Urban and Map 5-12b: Principal Active Transportation Routes: Rural.
4. Active Transportation Plan

SUBMITTED BY:

Division Director/Head Approval



Department Director/Head Approval

M. B. Cornwell 2-25-15

County Administrator Approval _____

For information on this issue or copies of attachments, please contact Scott Hoelscher @ 503-742-4524

Chapter 5: TRANSPORTATION SYSTEM PLAN

The Clackamas County Transportation System Plan (TSP) will guide transportation related decisions and identify the transportation needs and priorities in unincorporated Clackamas County from 2013 to 2033. The TSP has been created in coordination with the County's 16 cities, the State of Oregon, area transit providers, and other affected agencies and has been vetted through an extensive public process, including a series of public outreach events and twelve Public Advisory Committee meetings. The public and county staff worked together to develop the following vision for the TSP and six goals to guide implementation of this vision:

Building on the foundation of our existing assets, we envision a well-maintained and designed transportation system that provides safety, flexibility, mobility, accessibility and connectivity for people, goods and services; is tailored to our diverse geographies; and supports future needs and land use plans.

TSP GOALS

- **Goal 1:** Provide a transportation system that optimizes benefits to the environment, the economy and the community
- **Goal 2:** Plan the transportation system to create a prosperous and adaptable economy and further the economic well-being of businesses and residents of the County.
- **Goal 3:** Tailor transportation solutions to suit the diversity of local communities.
- **Goal 4:** Promote a transportation system that maintains or improves our safety, health, and security.
- **Goal 5:** Provide an equitable transportation system.
- **Goal 6:** Promote a fiscally responsible approach to protect and improve the existing transportation system and implement a cost-effective system to meet future needs.

BACKGROUND AND ISSUES

The County's transportation system includes an extensive network of public and private transportation facilities, including roads, railways, airports, pipelines, waterways, and multi-use paths. The system is intended to allow people to travel where they need to go safely and efficiently, while also providing for efficient movement of goods. The County's transportation system is also intended to support sustainable land use patterns and policies to serve a multitude of public needs without sacrificing air and water quality or creating noise pollution.

Government agencies, public and private service providers, and developers are involved in building and maintaining the County's transportation system. Metro, Portland's metropolitan planning organization, sets general policy guidelines for design, distributes regional funding for certain types of projects within its boundary, and sets standards for the operation of the

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transportation system located within the Portland Metropolitan Urban Growth Boundary (UGB). All transportation facilities must conform to standards and guidelines outlined by federal, state and, in some cases, Metro regulatory documents.

Clackamas County faces several challenges as it attempts to continue to develop and maintain a safe and integrated transportation system, appropriate for and accessible to all potential users.

- Limited funding: Funding levels for roads, the backbone of the transportation system, have not kept pace with the mobility needs of our society. Limited funding makes it a challenge to balance the need for maintenance and management of existing facilities with the need for building new facilities to accommodate increased trip demand. As a result, the backlog of needed road maintenance and construction projects has grown larger.
- Reducing congestion: Community members help reduce traffic congestion when they choose to take the bus, join a carpool, or bicycle and walk to destinations. Reducing congestion decreases the need for costly road construction projects while improving air quality, neighborhood livability and access to goods, services and employment.

Improving the relationship between land uses and transportation can also decrease reliance on automobiles and reduce congestion. Some ways to improve this relationship are to: alter the site design of new construction at or near major transit stops; increase connectivity in transportation systems; provide better pedestrian and bicycle facilities; use land more efficiently; and encourage mixed-use developments.

- Balancing needs: All land-based modes of travel, except rail and pipeline, must share the public rights-of-way. These modes includes autos, trucks, buses, bicycles, pedestrians and, in some localities, equestrians. Balancing the need for mobility (through movement of traffic) with the need for local movement and access to individual properties often creates design and safety challenges for roadways.
- Safety: From 2005 to 2009, there were approximately 160 fatalities and 1,245 serious injuries in Clackamas County due to traffic crashes. One of the County's goals is to improve the safety of its system for all users and reduce the number and severity of crashes for future years. Developing facilities to accommodate all modes of travel will help reduce conflicts that lead to safety problems for some users. The adopted Transportation Safety Action Plan calls for a 50 percent reduction of fatal and serious injury crashes by 2022.
- Fostering economic growth: Monitoring the effects of transportation on employment and economic activity is important during both good and bad economic times. Of particular significance are the ways transportation can be used as a tool to sustain and promote economic development both in the urban industrial and commercial centers and within the county's distinctive rural economy, including agriculture, forestry and equestrian facilities.
- Addressing environmental impacts: Development of transportation infrastructure needs to be sensitive to potential impacts to neighborhoods and to the natural environment, in order to create and maintain livable communities, preserve air and water quality, and conserve energy.

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The northwest urban area of the County is within a designated Air Quality Maintenance Area (AQMA). Presently the AQMA meets state and federal air quality standards, but federal law requires the region to implement measures to maintain federal air quality standards. Federal law also prohibits significant degradation of air quality in the Mt. Hood Wilderness.

- **Ensuring accessibility:** In many areas of the County, transportation disadvantaged populations, such as the elderly, disabled or low-income residents, need improved access to public transit and special transportation services. Clackamas County will ensure that new and rebuilt roads are planned and designed to perform all necessary functions, including being accessible to those who choose not to drive or cannot drive.
- **Maintaining and improving rural area roads:** Clackamas County also is challenged by the responsibility to maintain and develop a safe and functional road network in rural areas. Upgrades to aging rural roadways are needed to enhance safety and accommodate different modes of travel.

TSP ORGANIZATION

To implement the vision and goals and to address the issues identified above, a series of policies have been created to direct the County in its efforts to build and maintain a multi-modal transportation system. Under each policy category, the countywide policies are listed first, followed by the urban policies, and the rural policies.

The policies are presented in this chapter by major topic or transportation mode as follows:

- **Foundation and Framework:** includes policies relating to coordination; safety; equity, health and sustainability; intelligent transportation systems; and transportation demand management
- **Land Use and Transportation:** includes policies relating to the integration of land use and transportation; parking; rural tourism; and scenic roads.
- **Active Transportation:** includes policies relating to pedestrian and bicycle facilities and multi-use paths.
- **Roadways:** includes policies relating to functional classification; urban and rural roadway considerations; project development; improvements to serve development; and performance evaluation and access standards.
- **Transit:** includes policies relating to transit and transit-supportive amenities.
- **Freight, Rail, Air, Pipeline and Water Transportation:** includes policies relating to general freight movement; freight trucking; rail; airports; pipelines; and water transportation.
- **Finance and Funding:** includes policies relating to funding capital transportation improvements and maintenance.
- **Transportation Projects and Plans:** includes policies relating to the 20-year and five-year capital improvement plans. Also identifies Special Transportation Plans that are adopted by reference as refinements of the TSP and plans or studies that need to be completed in the

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future to support the TSP.

- **Definitions:** relevant definitions for use within this chapter.

The TSP also contains the following components:

- The County's **20-year Capital Improvement Plan:** a complete list of needed transportation-related projects to address gaps and deficiencies in the transportation network (Tables 5-3[a-d]).
- **Tables, Maps and Figures** illustrating the transportation system and street cross sections, and presenting guidelines and standards for developing the system.
- **Background documents** including detailed findings and conclusions relating to the various components of the transportation system (Appendix B).

FOUNDATION AND FRAMEWORK

Clackamas County's transportation networks serve local communities and also tie into regional networks. Creating a transportation system that is safe and accessible for all users must be done within the context of federal, state, and regional regulations. The system needs to be responsive to new initiatives adopted by these regulatory bodies to ensure the development of a complete and sustainable transportation system. It needs to be responsive to new approaches, techniques and measures developed for assessing the performance of the system. Intelligent Transportation Systems (ITS) and Travel Demand Management (TDM) techniques are two such tools that can be effective in managing the costs of the system and enabling better performance.

Safety is consistently mentioned by citizens as one of the highest concerns related to the transportation system, regardless of individuals' preferred methods of travel. The accessibility of the transportation system for all individuals is also a primary concern. Therefore, prioritizing safety and accessibility is essential in the planning, design, operation and maintenance of the transportation system.

5.A. Compliance and Coordination Policies

- 5.A.1 Support intergovernmental partnerships needed to promote coordination and address multi-jurisdictional transportation needs.
- 5.A.2 Work collaboratively with federal, state, regional, and local agencies and with County residents to pursue the County's road safety programs and plans.
- 5.A.3 Work with state and local partners to implement the Oregon Transportation Safety Plan.
- 5.A.4 Coordinate with the Oregon Department of Transportation (ODOT) in implementing the Oregon Transportation Plan (OTP), Oregon Highway Plan (OHP), Statewide Transportation Improvement Program (STIP), and with other state transportation planning policies, guidelines and programs.
- 5.A.5 Work with the Oregon Office of Emergency Management to ensure that the TSP supports effective responses to natural and human-caused disasters and emergencies and other incidents, and access during these incidents.
- 5.A.6 **Urban** Coordinate with Metro and local governments to implement the Regional Transportation Plan (RTP), Regional Transportation Functional Plan (RTFP), Urban Growth Management Functional Plan (UGMFP), and local transportation plans.
- 5.A.7 **Rural** Pursue formation of an Area Commission on Transportation (ACT) for the portions of Clackamas County outside the Portland Metropolitan Urban Growth Boundary to facilitate a coordinated approach to addressing issues on the state transportation system.

5.B. Road Safety Policies

- 5.B.1 Update the Clackamas County Transportation Safety Action Plan (TSAP) every five years to include necessary changes and document the progress toward the plan’s goal of a 50 percent reduction in fatal and serious injury crashes by 2022.
- 5.B.2 Identify transportation system safety improvements that will reduce fatal and injury crashes for all modes of travel and meet the TSAP goal.
- 5.B.3 Address the County’s top three crash cause factors of Aggressive Driving, Young Drivers (ages 15-25) and Roadway Departure utilizing education, emergency medical services, enforcement, engineering and evaluation.
- 5.B.4 Support programs, policies, regulations and actions that increase awareness and education about the safety of the transportation system for all users.
- 5.B.5 Support programs that utilize data-driven approaches to improve safety of the transportation system.
- 5.B.6 Align County departments, external safety groups, and other public agencies toward common transportation safety goals.
- 5.B.7 Integrate roadway, safety and traffic data management, health and emergency services data sources.
- 5.B.8 Integrate Highway Safety Manual (HSM) principles into the planning, engineering, design, operation and maintenance of the transportation system.

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5.C. Equity, Health and Sustainability Policies

- 5.C.1 Support programs and projects, such as pedestrian and bike connections to transit stops, that expand and improve transportation options for residents in areas with identified transportation-disadvantaged populations.
- 5.C.2 Protect neighborhoods, recreation areas, pedestrian facilities, bikeways and sensitive land uses (such as schools, daycare centers and senior centers whose users are more vulnerable to pollution) from transportation-related environmental degradation. Coordinate transportation and land use planning and use mitigation strategies, such as physical barriers and design features, to minimize transmission of air, noise and water pollution from roads to neighboring land uses.
- 5.C.3 Work with public agencies, private businesses and developers to increase and improve infrastructure necessary to support use of vehicles that use alternative fuels.
- 5.C.4 Ensure that programs to encourage and educate people about bicycle, pedestrian, and transit transportation options are appropriate for all County residents, particularly transportation-disadvantaged populations.

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- 5.C.5 Build working partnerships between the County’s Public Health and Transportation Divisions and utilize tools, such as health impact assessments, to better connect the effects of transportation projects with the health of communities.
- 5.C.6 Support the continued provision of public transportation services to County populations that are un-served or under-served, as well as the network of community-based, transportation services for seniors and persons with disabilities.

5.D. Intelligent Transportation Systems (ITS) Policies

- 5.D.1 Implement a wide range of ITS strategies aligned with the TSP vision and goals by ensuring safe, efficient, and equitable mobility for people and goods.
- 5.D.2 Update the ITS Action Plan every five years as part of the County’s 5-Year Capital Improvement Program.

5.E. Transportation Demand Management (TDM) Policies

- 5.E.1 Implement Transportation Demand Management techniques—including education, encouragement, and enforcement—appropriate for all County residents , in order to increase efficient use of existing transportation infrastructure and minimize congestion and safety concerns by offering choices of mode, route, and time.
- 5.E.2 Support and participate in efforts by Metro, the Department of Environmental Quality (DEQ), transit providers, and any area Transportation Management Associations (TMAs) to develop, monitor and fund regional TDM programs.
- 5.E.3 Provide adequate bicycle and pedestrian facilities to employment areas to encourage use of bicycles or walking for the commute to work and to improve access to jobs for workers without cars.
- 5.E.4 Support programs that work with schools to identify safe bicycle and pedestrian routes to connect neighborhoods and schools. Seek partnerships and funding to support improvement of these routes.
- 5.E.5 **Urban** Work with County employers located in concentrated employment areas to develop Transportation Management Associations (TMAs) to coordinate and support private-sector TDM efforts and to work toward mode share targets (Table 5-1) adopted in this Plan.

5.E.6 **Urban** Establish the following year 2040 non-drive-alone targets for growth concept design types (as identified on Map IV-8):

TABLE 5-1
Year 2040 Non-Drive-Along Modal Targets

Design Type	Non-Drive-Along Modal Target
Regional Centers Station Communities Corridors	45-55% of all vehicle trips
Industrial Areas Employment Areas Neighborhoods Regionally Significant Industrial Areas	40-45% of all vehicle trips

5.E.7 **Rural** Encourage employers and schools outside urban growth boundaries to implement a range of TDM policies to help their employees and students reduce vehicle miles traveled, maximize use of existing transportation facilities, and increase walking, biking and transit use.

LAND USE AND TRANSPORTATION

Integrating transportation plans with land use plans is a key element in effective management and operation of the entire transportation system. Roads support the wide range of land activities that take place in both the urban and rural areas. Because of the diverse nature of activities and land use types found in Clackamas County, it is of particular importance that the transportation systems are designed to accommodate both urban networks and the different needs of rural area users, including providing safe routes for users of all modes to enjoy the rural area's scenic beauty, and for those participating in agri-tourism and activities related to forestry.

Planning for appropriate amounts of parking supports efficient development of the land within communities. Accommodating on-street parking and planning for off-street parking needs are Transportation System Management (TSM) techniques that are consistent with the Metro Region's 2040 Growth Concept, meet the objectives of the Transportation Planning Rule (TPR), and comply with DEQ's Air Quality Maintenance Plan.

5.F. Integration of Land Use and Transportation Policies

- 5.F.1 Land use and transportation policies shall be integrated consistent with state law regarding preservation of farm and forest lands.
- 5.F.2 Support efforts to enhance and maintain the function of State highways and County arterials through land use policies, access management strategies, and roadway improvements.
- 5.F.3 Support and promote an integrated approach to land use and transportation planning and implementation that encourages livable and sustainable communities, decreases average trip length and increases accessibility for all modes.
- 5.F.4 Support and promote transportation investments that support complete and sustainable communities as a long-term strategy to reduce reliance on long commutes out of the County to employment destinations.
- 5.F.5 Recognize the County's rural economic engine and the importance of moving goods from rural businesses (including farms, nurseries, livestock, and lumber) to distribution centers.

5.G. Parking Policies

- 5.G.1 Set minimum and, where appropriate, maximum limits on allowed off-street parking of motor vehicles relative to building size, location and use, and to adjacent land uses. In the urban area, parking standards shall be coordinated with regional parking requirements.
- 5.G.2 Require new multi-family, commercial and institutional development to provide bicycle parking.

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- 5.G.3 Allow shared parking and, where appropriate, on-street parking to be used to comply with parking standards.
- 5.G.4 **Urban** Allow the removal of existing, on-street parking along arterials and collectors to create bikeways, construct travel or turning lanes, or increase sight distance.
- 5.G.5 **Urban** Increase area for on-street parking in residential zoning districts by minimizing the width of driveway accesses.
- 5.G.6 **Urban** Encourage off-street parking in commercial, industrial, and high density residential areas to be located at the sides or rear of buildings, where practical.
- 5.G.7 **Urban** Consider allowing for decreased parking area requirements for development along transit routes, if the development provides pedestrian, bicycle and transit amenities. See Map 5-8a.
- 5.G.8 **Urban** Consider requiring shared parking within mixed-use development and where adjacent land uses are compatible.

5.H. Rural Tourism Policies

- 5.H.1 **Rural** Encourage agri-tourism and other commercial events and activities that are related to and supportive of agriculture, in accordance with the provisions of ORS 215. Mitigation of traffic impacts and other event impacts may be required to reduce the effects of these limited land uses on the County road system.

5.I. Rural Scenic Roads Policies

- 5.I.1 Implement a County Scenic Road System that is safe and attractive for all users.
- 5.I.2 Promote the protection of recreation values, scenic features and an open, uncluttered character along designated scenic roads.

Developments adjacent to scenic roads shall be designed with sensitivity to natural conditions and:

- a) Scenic roads shall have strict access control on new developments.
- b) Scenic roads should have shoulders wide enough for pedestrians or bicycles, or a separated path where feasible and when funding is available.
- c) Turnouts shall be provided where appropriate for viewpoints or recreational needs.
- d) Design review of developments adjacent to scenic roads shall require visual characteristics and signing appropriate to the setting.
- e) Buildings shall be set back a sufficient distance from the right-of-way to permit a landscaped or natural buffer zone.
- f) Parking areas adjacent to scenic roads shall be separated from the right-of-way by a landscaped buffer.
- g) Any frontage roads adjacent to scenic roads shall be separated by a vegetative buffer where feasible
- h) Underground placement of utilities shall be encouraged.

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5.1.3 The following facilities shall be designated scenic roads: *(see Map 5-1 Scenic Roads)*

- Wilsonville Road
- Stafford Road (City of Lake Oswego to Mountain Road)
- Schaeffer Road
- Pete’s Mountain Road (Schaeffer Road to the Tualatin River)
- SW Mountain Road, Canby Ferry Road, N. Locust, NE 37th, and Holly Street
- Canby-Marquam Highway (City of Canby to Hwy 211)
- Clackamas River Drive
- Springwater Road (Clackamas River Drive to Hayden Road)
- Hayden Road
- Redland Road
- Fischer’s Mill Road
- Marmot Road/Barlow Trail Road/
- Ten Eyck Road/SE Lusted Road from Ten Eyck Road to the County line.
- Lolo Pass Road
- Salmon River Road
- Still Creek Road
- Timberline Road and West Leg Road
- I-205 west of the Willamette River
- Highway 99E from Oregon City to New Era Rd
- Oregon City Bypass (Newell Creek Canyon segment)
- Highway 211 (Canby-Marquam Highway to Estacada)
- Highway 224 (Carver to Barton and south of Estacada)
- Highway 26 east of the City of Sandy
- Highway 35/Forest Service Road 386

5.1.4 Support implementation of the Oregon Scenic Byway System, including the Mt. Hood Scenic Byway and the West Cascades Scenic Byway.

ACTIVE TRANSPORTATION

Recognizing the increasing importance of having multiple ways to travel through a community and through the region has led to an increased awareness for designing transportation systems to safely enhance active transportation modes. “Active Transportation” is defined to include walking, bicycling and horseback riding.

The County completed transportation systems planning for pedestrian and bicycle modes in 1995 to implement the state’s Transportation Planning Rule (TPR), particularly the following TPR principles:

1. Land use and transportation are intimately related.
2. Over reliance should not be placed on any one transportation mode.
3. Walking and bicycling reduce the number of motorized vehicle trips.
4. Compact, mixed-use development encourages the use of non-motorized modes.
5. Well-planned, properly designed facilities will encourage people to make trips by non-motorized modes.
6. Facilities for these non-motorized modes are essential for people not having access to an automobile, and constitute desirable elements in a well-designed community that are enjoyed by people who can drive, but choose to walk or bicycle.

These principles underlie the development of the Clackamas County Pedestrian Master Plan and the Clackamas County Bicycle Master Plan, both of which are adopted by reference. Both master plans were prepared under the guidance of the Clackamas County Pedestrian and Bikeway Advisory Committee, which was guided by the following vision:

Create an environment which encourages people to bicycle and walk on networked systems that facilitate and promote the enjoyment of bicycling and walking as safe and convenient transportation modes.

[The Clackamas County Active Transportation Plan \(ATP\), adopted by reference in Appendix A, contains priority routes connecting communities in both the urban and rural portions of the County. Development of the principal active transportation routes described in the ATP would provide opportunities for residents to safely bicycle or walk to schools, parks, shopping and employment centers.](#)

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5.J. General Active Transportation Policies

- 5.J.1 Coordinate the implementation of pedestrian facilities and bikeways with neighboring jurisdictions and jurisdictions within the county.

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- 5.J.2 Ensure an opportunity for a diverse and representative citizen involvement in the county pedestrian and bicycle planning process by sponsoring the Clackamas County Pedestrian and Bikeway Advisory Committee (CCPBAC) as a forum for public input. Recruit representatives of transportation disadvantaged populations as part of this process.
- 5.J.3 Monitor and update the Clackamas County Pedestrian Master Plan, ~~and~~ Bicycle Master Plan ~~and Active Transportation Plan~~ through data collection and evaluation, and review activities necessary to maintain and expand the programs established in these plans.
- 5.J.4 Support bicycle, pedestrian and transit projects that serve the needs of transportation disadvantaged populations.
- 5.J.5 Coordinate with pedestrian, bicycle, and trail master plans, and with special transportation plans of the County, Oregon Department of Transportation, the United States Forest Service, Metro, and parks providers to achieve safe and convenient off-road, multi-use path and trail systems connecting to on-road pedestrian facilities and the bikeway networks.
- 5.J.6 Support the continuation of the “Bikes on Transit” program on all public transit routes.
- 5.J.7 Inform property owners of their responsibilities for the maintenance of sidewalks and pedestrian pathways.
- 5.J.8 Identify low traffic volume streets that are appropriate for signing as bicycle routes to enhance safety and connectivity and to supplement the system of bikeways found on the major street system.
- 5.J.9 **Rural** Support bicycle and pedestrian projects that improve access to public transit stops and provide connections to significant local destinations.

5.K. Design Policies

- 5.K.1 Require bikeways and pedestrian facilities ~~according to the applicable cross section~~ for all new ~~collector or arterial roadway~~ construction or substantial reconstruction, ~~even if not designated on the Planned Bikeway Network (Maps 5-2a and 5-2b), or on the Essential Pedestrian Network (Map 5-3),~~ allowing for flexibility to accommodate characteristics of terrain, scenic qualities, existing development, and environmental constraints, ~~and adopted Special Transportation Plans.~~
- 5.K.2 ~~Seek out Design~~ and implement innovative bicycle and pedestrian ~~facilities treatments~~ that improve the convenience and safety of these facilities. ~~Use facility types described in the Active Transportation Plan as a reference.~~
- 5.K.3 Improve the safety and appeal of walking and biking by supporting the development of bikeways and pedestrian facilities and networks on low volume or local roads and off of existing street rights-of-way.

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- 5.K.4 **Urban** Identify pedestrian facilities and bikeway improvements necessary to ensure direct and continuous networks of pedestrian facilities and bikeways on the county road system.
- 5.K.5 **Urban** Identify locations where bicycle and pedestrian access is blocked by rivers and other natural barriers and encourage the creation of bicycle and pedestrian facilities to extend across these barriers.
- 5.K.6 **Urban** Review development plans to ensure that they provide bicycle and pedestrian access.
- 5.K.7 **Urban** Create a networked system of pedestrian facilities and bikeways connecting cities, neighborhoods, commercial areas, community centers, schools, recreational facilities, employment centers, other major destinations, regional and city bikeways and pedestrian facilities, and other transportation modes. Utilize separate accessways for pedestrian facilities and bikeways where street connections are impractical or unavailable.
- 5.K.8 **Rural** Support the safe movement of equestrians in rural areas.

5.L. Construction Policies

- 5.L.1 Construct all pedestrian facilities, ~~and~~ bikeways and multi-use paths according to the current County design standards and to the applicable cross section, allowing for flexibility to accommodate characteristics of terrain, scenic qualities, existing development, and environmental constraints, and different designs identified in adopted Special Transportation Plans.
- 5.L.2 Construct all pedestrian facilities, bikeways, and multi-use paths ~~as~~ designated on the Planned Bikeway Network (Maps 5-2a and 5-2b); the Essential Pedestrian Network (Map 5-3); and the Active Transportation Plan (Maps 5-12a and 5-12b). ~~Maps 5-2a, 5-2b, and 5-3, and as adopted in Special Transportation Plans.~~
- 5.L.3 Construct interim pedestrian facilities and bikeways, as appropriate, on existing streets that are not built to applicable cross section and where the construction of full street improvements is not practicable or imminent as determined by the County Planning Director and County Road Official or County Engineer.
- 5.L.4³ **Urban** Require that new development include construction of walkways and accessways within the development and between adjacent developments, where appropriate.
- 5.L.4 ~~**Urban** Construct interim pedestrian facilities and bikeways, as appropriate, on existing streets that are not built to the applicable cross section and where the construction of full street improvements is not practicable or imminent as determined by the County Planning Director and County Road Official or County Engineer.~~

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5.L.45 **Rural** In Unincorporated Communities, construct walkways adjacent to or within areas of development (such as schools, businesses, or employment centers) and at rural transit stops.

5.M. Facilities Policies

5.M.1 Encourage the provision of appropriate, supportive facilities and services for bicyclists, including showers, lockers, bike racks on buses, bike repair and maintenance information/clinics, and secure bicycle parking.

5.M.2 Establish and maintain way-finding systems to facilitate bicycle travel.

5.M.3 **Install and maintain the signage and bicycle amenities identified in the Active Transportation Plan.**

5.M.43 **Urban** Encourage the provision of street lighting to increase the visibility and personal security of pedestrians and bicyclists.

5.N. Multi-Use Path Policies

5.N.1 Support acquisition and development of multi-use paths on abandoned public and private rights-of-way.

5.N.2 Collaborate with the appropriate service providers, such as park providers, to plan for multi-use paths that accommodate equestrian facilities where possible.

5.N.3 **Rural** Consider multi-use paths where travel lanes or wide paved shoulders along roadways may not provide adequate safety for pedestrians or bicyclists.

5.N.4 **Rural** Consider equestrian uses when designing and constructing multi-use paths. Work with local communities and interest groups to plan, develop and maintain multi-use paths that also provide equestrian features. Plan for parking areas at such multi-use paths that support parking needs of equestrians, as well as needs of other path users.

5.N.5 **Rural** Establish a program to plan, develop and maintain multi-use paths in the rural part of the County.

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ROADWAYS

The County's road system permits the movement of goods and people between communities and regions, using any of a variety of modes of travel. Roads provide access to virtually all property. They support established communities and serve new development. They connect rural communities and urban neighborhoods. Roads give structure to our urban form, define our commuting patterns and influence our perceptions of what is far away or close at hand.

Creating and maintaining a safe, continuous County-wide road system, which accommodates movement by all travel modes, means setting standards for development of new roads and redevelopment of existing roads, including design and access standards for urban and rural roads. To ensure roads continue to meet the transportation demands of the County, a method to measure the ongoing performance of the system is essential. In response to new technologies and financial constraints, recent changes have been made to these standards on the state and regional levels. These changes are reflected in this TSP.

5.O. Functional Classification and Design Policies

- 5.O.1 Designate and develop roadways according to the functional classifications and guidelines illustrated in the County Road Typical Cross Sections (Figures 5-1a through 5-1f, and Figures 5-2a through 5-2f) while allowing flexibility to accommodate characteristics of terrain, scenic qualities, environmental constraints, existing development, and adopted Special Transportation Plans.
- 5.O.2 Designate freeways, arterials, collectors and connectors as shown on Map 5-4a and Map 5-4b. Roadways that do not presently exist but are shown on these maps are shown in approximate locations.
- 5.O.3 Maintain and improve roads consistent with their functional classification, and reclassify roads as appropriate to reflect function and use.
- 5.O.4 Require changes in Comprehensive Plan designation and zoning designation to comply with the Transportation Planning Rule (OAR 660-12). Evaluations of the transportation system for this purpose shall rely on existing transportation facilities and on planned facilities found in the 20-Year Capital Projects list (Table 5-3a). State transportation facilities shall be evaluated according to the Oregon Highway Plan, Regional Transportation Plan, Transportation Planning Rule, and other applicable state requirements.
- 5.O.5 Develop and implement traffic calming strategies, appropriate for the road functional classification, that will improve the safety and convenience of travel by all modes, particularly in areas with high crash rates or high rates of bicycle and/or pedestrian activity.

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- 5.O.6 **Urban** Consider the Metro Regional Street Design Classifications when designing new county roads or redesigning existing county roads, prior to construction or reconstruction. Map 5-5 shows which roads are designated by each Design Classification.
- 5.O.7 **Urban** Minimize impacts of managing storm water by allowing for Metro’s alternative street standards, such as “green streets,” as design alternatives.
- 5.O.8 **Urban** Design arterials and collectors to allow safe and convenient passage of buses, bicycles, and pedestrians.
- 5.O.9 **Urban** Streets, alleys, bikeways, pedestrian facilities, multi-use paths, trails and transit stops are allowed uses in all urban zoning districts. Consider all state and County policies relating to these facilities when widening, improving or constructing new transportation infrastructure.
- 5.O.10 **Rural** Plan to support the existing development pattern and through traffic needs of the rural communities, and not to support or promote urbanization.
- 5.O.11 **Rural** Consistent with ORS 215.283(3) and OAR 660, Division 12, County road capital improvement projects may be designed and constructed to improve safety and bring roads up to county standards outside the UGB. If the road capital improvement project is not otherwise allowed and would require expansion of right-of-way exceeding the road improvements allowed in the Agriculture or Forest districts, a goal exception would be required for such a project, as provided for in ORS 215.283(3).
- 5.O.12 **Rural** Streets, alleys, bikeways, pedestrian facilities, multi-use paths, trails and transit stops are allowed uses in all rural zoning districts with the exception of Agricultural and Forest Districts in which they are conditionally allowed by ORS 215.213, 215.283 or OAR Chapter 660, Division 6 (Forest Lands).
- 5.O.13 **Rural** Recognize the importance of resource-related uses such as agriculture and forestry to the local economy, and the need to maintain a transportation system that provides opportunities to harvest agricultural and forest products and deliver them to market.
- 5.O.14 **Rural** Design, construct and reconstruct rural arterials and collectors to allow safe and convenient passage of trucks, buses, pedestrians and bicyclists.
- 5.O.15 **Rural** Support the safe movement of agricultural equipment in rural areas by improving existing roads to county standards and considering design features such as signs, pull-outs for slow-moving vehicles, reduced speeds, and limiting curbs where equipment may move to the shoulder or out of the right-of-way.

5.P. Project Development Policies

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- 5.P.1 Before building new roads or adding capacity to existing roads, consider Transportation System Management (TSM) strategies for using the existing road system, including associated pedestrian and bicycle facilities, and system capacity most efficiently.

TSM strategies include:

1. Access Management;
2. Alternative/Modified Standards (Performance and/or Design Standards);
3. Intelligent Transportation System (ITS) applications;
4. Operational Improvements;
5. Parking Standards;
6. Enhanced Bicycle and Pedestrian Facilities; and,
7. Road Diet (*For example, restriping a low volume, 4-lane road to a 3-lane configuration with bicycle and pedestrian facilities*).

5.Q. Access Standard Policies

- 5.Q.1 Ensure safe and convenient access for bicyclists, pedestrians, and transit users for land uses that are open to the public. Apply access management in a flexible manner to allow reasonable access and balance the needs of all roadway users.
- 5.Q.2 Improve multimodal operations and safety by ensuring that Interchange Management Areas and other access plans and projects are coordinated with multimodal connectivity standards and are designed to support safe and convenient access and travel for all modes, when appropriate.
- 5.Q.3 Support the implementation of state access management standards (OAR Chapter 734, Division 51, as amended, and the Oregon Highway Plan) on state highway facilities and within Interchange Management Areas. Coordinate with the Oregon Department of Transportation for access control on state highways.
- 5.Q.4 If feasible, allow only collectors, connectors, or other arterials to intersect arterials.
- 5.Q.5 Access Standards shall be implemented through the Zoning and Development Ordinance and the County Roadway Standards. Where access management standards are adopted by the County in Special Transportation Plans, those standards shall apply.
- 5.Q.6 Developments should be designed to place driveway accesses on streets with the lowest functional classification or the lowest traffic volume.

5.R. Policies on Improvements to Serve Development

- 5.R.1 Require new development to be served by adequate transportation facilities and access points that are designed and constructed to safely accommodate all modes of travel.
- 5.R.2 For new developments and land divisions, require right-of-way dedication, on-site frontage improvements to the applicable standards as shown in the roadway Cross Sections (Figures 5-1a through 5-1f and Figures 5-2a through 5-2f) and the County

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Roadway Standards, and off-site improvements necessary to safely handle expected traffic generated by the development and travel by active modes. Where roadway standards are adopted by the County in Special Transportation Plans, those standards shall apply.

- 5.R.3 Assess anticipated off-site traffic impacts caused by new developments. The developer may be required to participate financially or otherwise in the provision of off-site improvements, dedications or other requirements.
- 5.R.4 For new development proposed on a site identified on Map 5-6 (*Potentially Buildable Residential Sites >5 Acres in UGB*), require a conceptual street plan that is consistent with requirements of this section and provides for full street connections at intervals of no more than 530 feet, where feasible.
- 5.R.5 Require new development that will require construction of new streets to provide full street connections at intervals of no more than 530 feet, where feasible. If full street connections are not feasible at such intervals, require accessways for pedestrians, bicyclists or emergency vehicles at intervals of no more than 330 feet. Exceptions may be made where there are barriers, including topography, railroads, freeways, pre-existing development, existing easements, or environmental constraints such as streams and wetlands.
- 5.R.6 New development shall accommodate on-site traffic circulation within the boundaries of the site, not by circulating vehicles on and off the site through multiple access points using the public road system. Internal circulation plans should avoid relying on "backing out" maneuvers for new driveways onto all rural arterials and collectors.
- 5.R.7 **Urban** Require implementation of a road network for undeveloped sites illustrated on Map 5-6. Existing roads shall be extended to provide a direct, connected system.
- 5.R.8 **Urban** Where appropriate, develop and implement neighborhood traffic circulation plans for all modes intended to improve circulation while minimizing safety concerns and exposure to air and noise pollution.
- 5.R.9 **Urban** Discourage motor vehicle through-trips on local, connector and collector roads, and encourage bicycle and pedestrian travel on these roads.
- 5.R.10 **Urban** Allow flexible criteria and standards for local streets that are less than 200 feet in length, are expected to carry very low traffic volumes, and are not capable of being extended.
- 5.R.11 **Urban** Private streets may be appropriate in areas with topographic constraints that make construction of a road to County standards not feasible. Private roads are not classified as local roads and are not maintained by the County.
- 5.R.12 **Urban** Require that changes to Comprehensive Plan land use designations within the Interchange Management Areas identified on Map 5-7 be consistent with Oregon

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Administrative Rules 660-012-0060. If the land uses allowed by the new Comprehensive Plan land use designation would cause the interchange mobility standards to be exceeded, either the change shall be denied or improvements shall be made such that the mobility standards are met.

5.R.13 **Rural** Discourage through trips on rural local roadways.

5.S. Performance Evaluation Measure Policies

- 5.S.1 For County roads, establish the method of calculating roadway capacity and the impact of new development on that capacity in the County Roadway Standards.
- 5.S.2 Evaluate capacity needs for roadways within the urban area using the Regional Motor Vehicle Performance Measures shown in Table 5-2a, except as established below. All capital construction shall be designed not to exceed the maximum V/C ratio.

**Table 5-2a
PERFORMANCE EVALUATION MEASURES FOR THE URBAN AREA
Weekday Mid-day and Weekday PM Peak Periods**

Federal and State Principal Arterial Street Segments and Intersections	Maximum Volume to Capacity (V/C) Ratio		
	Mid-day One-Hour Peak	1 st Hour, PM Peak	2 nd Hour, PM Peak
OR 99E from OR 224 interchange north to county line	0.99	1.1	0.99
I-205 I-5 OR 212 OR 224 OR 213	0.90	0.99	0.99
County Street Segments and Intersections by Metro Urban Design Type <i>See Comprehensive Plan Map IV-8</i>			
Regional Centers Main Streets	0.99	1.1	0.99
Town Centers Station Communities			
Corridors Employment Areas Intermodal Facilities	0.90	0.99	0.99
Neighborhoods Industrial Areas			

- 5.S.3 Exceptions to the performance evaluation measures for review of development proposed on property within Metro’s boundary are established as follows:
 - 5.S.3.1 Within the Clackamas Industrial Area, no performance evaluation measures shall apply.
 - 5.S.3.2 For the intersections of SE Park Avenue/OR 99E, SE Park Avenue/SE Oatfield Road, and SE Park Avenue/SE 27th Street, performance evaluation measures of the Station Community Design Type shall apply.

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- 5.S.4 Evaluate capacity needs for roadways in the rural area using the performance evaluation measures shown in Table 5-2b.

Table 5-2b
PERFORMANCE EVALUATION MEASURES FOR THE RURAL AREA
Weekday, AM and PM Peak Periods

	Maximum Volume to Capacity (V/C) Ratio	
	1 st Hour, PM Peak Period	2 nd Hour, PM Peak Period
County Roads and ODOT Facilities and Intersections based on posted speed and highway classification		
Inside city UGBs	0.80 to 0.95	0.80 to 0.95
Inside Unincorporated Communities	0.70 to 0.80	0.70 to 0.80
All other Rural areas	0.70 to 0.75	0.70 to 0.75
County rural road intersections and road segments outside of rural area cities	Minimum Level of Service (LOS) or Maximum Volume/Capacity Ratio; Weekday Peak Periods	
	AM Peak Hour	PM Peak Hour
Road segments and Unsignalized Intersections	LOS E	LOS E
Signalized and Roundabout Intersections	0.90	0.90

- 5.S.5 Exception to the performance evaluation measures for review of development proposed on property in the rural area is established as follows:
- 5.S.5.1 Within Government Camp Village, no performance evaluation operating standards shall apply.
- 5.S.6 The maximum volume to capacity ratio for the ramp terminals of interchange ramps shall be v/c 0.85. (1999 Oregon Highway Plan, OHP Policy 1F Revisions, Adopted by OTC: Dec. 21, 2011).
- 5.S.7 Where more than one performance measure would apply at an intersection, the measure allowing the higher level of congestion will be used, except for ramp terminal intersections.
- 5.S.8 Evaluate transitioning from transportation concurrency to safety analysis when a traffic impact study (TIS) is required of new development.

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5.S.9 The County will work with Metro and ODOT over five years to develop Alternate Road Capacity Performance Standards, required by the Oregon Highway Plan Policy 1.F., to address the following five intersections. These intersections were forecast not to meet the Capacity Performance Standards adopted in the 2013 TSP and there were no projects identified that could make the intersections meet the standards.

- SE Harmony Road/SE Linwood Avenue
- OR 212/SE 172nd Avenue – ODOT Intersection
- OR 212/SE 282nd Avenue – ODOT Intersection
- OR 213/S. Henrici Road – ODOT Intersection (traffic signal or roundabout)
- OR 224/SE Lake Road/SE Webster Road – ODOT Intersection

TRANSIT

Public transit service is essential for the mobility of many County residents, and provides an affordable option for others who prefer to use it. The County contains five major public transportation systems. Tri-County Metropolitan Transportation District of Oregon (TriMet), the state's largest transit provider, serves generally the western, more urbanized part of the county. The County also is home to four rural transit providers: South Clackamas Transportation District (SCTD) serving the Molalla area, Sandy Area Metro (SAM), Canby Area Transit (CAT) and Wilsonville's South Metro Area Transit (SMART). Clackamas County also directly supports the Mountain Express service which provides public transit to the Hoodland area along the Highway 26 corridor east of the City of Sandy. All of these services provide public transit as well as specialized services for seniors and persons with disabilities (paratransit) as mandated by the American with Disabilities Act.

Clackamas County participates in the development and implementation of the Coordinated Human Services Transportation Plan which addresses the services available to vulnerable populations throughout the Portland metropolitan area.

The County can influence the type of service provided and the way new developments interface with transit and provide amenities for transit riders. Busses operated by the six districts, as well as each of the school districts in the county must safely share the county's roads with all other users.

5.T. Transit Policies

- 5.T.1 Work with transit agencies to identify existing transit deficiencies in the County, needed improvements, and additional park-and-ride lots needed to increase the accessibility of transit services to all potential users.
- 5.T.2 Emphasize corridor or roadway improvements that help ensure reliable and on-time transit service in the County.
- 5.T.3 Encourage transit providers to restructure transit service to efficiently serve local as well as regional needs.
- 5.T.4 Emphasize transit improvements that improve east-west connections; improve service between the County's industrial and commercial areas and neighborhoods; and best meet the needs of all County residents, employees and employers, regardless of race, age, ability, income level and geographic location.
- 5.T.5 Coordinate with all applicable transit agencies on all new residential, commercial and industrial developments to ensure appropriate integration of transit facilities and pedestrian access to transit facilities.
- 5.T.6 Require major developments and road construction projects along transit routes to include provisions for transit shelters, pedestrian access to transit and/or bus turnouts, where appropriate.

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- 5.T.7 Promote park-and-ride lots, transit shelters and pedestrian/bikeway connections to transit. Coordinate the location of these facilities with other land uses to promote shared parking and bicycle/ pedestrian-oriented transit nodes.
- 5.T.8 Coordinate and cooperate with transit agencies to provide transportation for seniors, people with disabilities, and other transportation-disadvantaged populations. Provide continued support for paratransit services as required within a three-quarter-mile distance from fixed-route transit stops.
- 5.T.9 Coordinate transit-supportive, roadway improvements with transit-providers to ensure financing and implementation of such improvements.
- 5.T.10 **Urban** Require pedestrian and transit-supportive features and amenities and direct access to transit for new development.

Pedestrian and transit supportive amenities may include pedestrian/bikeway facilities, street trees, outdoor lighting and seating, landscaping, shelters, kiosks, strict standards for signs, and visually aesthetic shapes, textures and colors. Buildings measuring more than 100 feet along the side facing the major pedestrian/transit access should have more than one pedestrian entrance. Pedestrian access should be provided to connect transit centers or transit stops on bus routes with centers of employment, shopping or medium-to-high density residential areas within one-quarter mile of these routes.

- 5.T.11 **Urban** Coordinate with transit providers to achieve the goal of transit service within one-quarter mile of most residences and businesses within the Portland Metropolitan UGB. Support more frequent service within Regional Centers, Town Centers, Station Communities, and Corridors and Main Streets.
- 5.T.12 **Urban** Work with federal, state and regional agencies to implement high capacity transit in the regional High Capacity Transit (HCT) System Plan in order to help relieve traffic congestion, provide for transportation alternatives to the automobile, and promote the County's economy. See Map 5-8c for the HCT network in the County.
- 5.T.13 **Urban** Site new commercial, institutional, and multi-family buildings at major transit stops as close as possible to transit, with a door facing the transit street or side street, and with no parking between the building and front lot lines.
- 5.T.14 **Rural** Focus safety improvements near existing or planned transit stops.

FREIGHT, RAIL, AIR, PIPELINE AND WATER TRANSPORTATION

In 2009, Clackamas County adopted “Open for Business – Economic Development Plan (EDP).” This plan provides a comprehensive guiding policy document for the County to improve, diversify and grow the economy in Clackamas County. Crucial to economic development is the infrastructure that supports the businesses and the employees that work in those businesses. Specific goals and actions called out by the Economic Development Plan include:

- Maintain mobility for people and freight in the face of expected growth; and
- Respond to the opportunities and challenges faced by its cities and rural areas, and support them in their efforts to develop quality jobs and businesses,

Freight, rail, air, pipelines and water transportation make significant contributions to the movement of people and goods; improve the quality of life; and support economic development in Clackamas County.

Policies relating to the movement of freight via roads, rail, air, pipelines or water transportation must also respond to new regulations to ensure the highest level of safety.

5.U. General Freight Policies

- 5.U.1 Coordinate the planning, development, maintenance and operation of a safe and efficient freight system for all freight modes in Clackamas County with the private sector, ODOT, Metro, the Port of Portland and the cities of Clackamas County.
- 5.U.2 Promote an inter-modal freight transportation strategy and work to improve multi-modal connections among rail, industrial areas, airports and regional roadways to promote efficient movement of people, materials, and goods.
- 5.U.3 Work with the private transportation industry, Oregon Economic Development Department, Port of Portland and others to identify and realize investment opportunities that enhance freight mobility and support the County, regional and state economy.
- 5.U.4 Make freight investments that, in coordination with the County’s economic development strategies, help retain and grow the County’s job base and strengthen the County’s overall economy.
- 5.U.5 Ensure that freight rail lines and truck routes do not have disproportionately negative impacts on sensitive land uses (places where people with increased risk of adverse impacts from exposure to noise and air pollution are likely to gather, such as schools, senior centers, hospitals, parks, housing). Prioritize mitigation efforts for current sensitive land use areas near freight rail lines and truck routes. Mitigate impacts to sensitive land uses by using vegetative buffers, establishing rail “quiet zones,” and coordinating land use plans.

5.V. Freight Trucking Policies

- 5.V.1 Support the Truck Freight Route System, while not prohibiting the use of other roads for local pickup and delivery of goods and services. (See Maps 5-9a and 5-9b).
- 5.V.2 Improve and maintain the countywide Truck Freight Route System, the Regional Transportation Plan Freight Routes and Oregon Freight Plan Routes, as shown on Maps 5-9a and 5-9b.
- 5.V.3 Consider Heavy and Oversize Freight Movement requirements on State and County facilities when developing plans for transportation improvements and land use changes along freight routes designated as ORS 366.215 Corridors, as shown on Maps 5-9c and 5-9d.
- 5.V.4 Consider the safety of all travel modes that use the Truck Freight Route System when designing improvements to this system.
- 5.V.5 Accommodate freight travel on the Truck Freight Route System by improving facility design and operations.
- 5.V.6 Identify street improvements to reduce delays and to improve travel time reliability on roadways in the Truck Freight Route system
- 5.V.7 Work to improve the safety of Truck Freight Routes for all transportation modes.
- 5.V.8 Support the development of truck layover facilities/staging areas to reduce the conflicts between parked vehicles and adjoining land uses.
- 5.V.9 Utilize Intelligent Transportation Systems (ITS) solutions to improve safety and operations of freight movement.

5.W. Rail Policies

- 5.W.1 Support the safe and efficient movement of goods by rail.
- 5.W.2 Support the reduction of the number of at-grade crossings of arterial and collector streets on main rail lines to reduce conflicts between rail use and other transportation modes, and improve safety.
- 5.W.3 On new or reconstructed arterials and urban collectors, prohibit at-grade crossings of main rail lines without traffic restrictive safety devices.
- 5.W.4 Support expansion and maintenance needed to establish reliable, higher speed (110-125 mph) freight rail service and intercity rail passenger service in the Willamette Valley.
- 5.W.5 Encourage the development of rail-accessible land uses within industrial areas adjacent to main rail lines.

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- 5.W.6 Support the development of convenient inter-modal facilities such as ramp, terminal and reload facilities for transfers from truck to rail for long-haul freight movement.
- 5.W.7 Improve the safety and operations of rail transport at at-grade rail crossings and ensure that all at-grade crossings meet the best practices for facilitating safe, multi-modal crossings, as identified in the most recent version of the “Railroad-Highway Grade Crossing Handbook” (Federal Highway Administration [FHWA]).
- 5.W.8 Identify and protect existing and abandoned rail rights-of-way for future transportation facilities and services.

5.X. Airport Policies

- 5.X.1 Coordinate with the Port of Portland, the Oregon Department of Aviation, and other affected agencies to implement the Mulino Airport Plan.
- 5.X.2 Coordinate with Marion County, the City of Wilsonville, the Oregon Department of Aviation, and other affected agencies to develop and implement the Aurora Airport Plan.
- 5.X.3 Allow new airports as conditional uses in appropriate zoning districts. Require new public use airports to be located within:
 - one mile of an arterial roadway, and
 - at least one mile away from urban residential areas.
- 5.X.4 Cooperate with the Oregon Department of Environmental Quality, Oregon Department of Aviation and Federal Aviation Administration to minimize conflicts between airports and uses of surrounding lands.
- 5.X.5 Require that new airports, airport expansions, or expansions of airport boundaries, except those limited to use by ultra-lights and helicopters, have a runway at least 1,800 feet long and control at least enough property at the end of each runway through ownership, aviation easement, or long term lease to protect their approach surfaces until the approach surfaces are 50 feet above the terrain. Require the runway to be located so as to achieve at least a 20-foot clearance of the approach surface over a county, city or public road.
- 5.X.6 Apply a Public-Use Airport and Safety overlay zoning district to public-use airports, consistent with ORS 836.600 through 836.630, and as shown on Map 5-10.
- 5.X.7 Apply a Private-Use Airport and Safety overlay zoning district to privately-owned, private-use airports that served as the base for three or more aircraft, consistent with ORS 836.600 through 836.630, and as shown on Map 5-10.
- 5.X.8 Recognize privately-owned, private-use airports that served as the base for one or two aircraft on December 31, 1994, as shown in the records of the Oregon Department of Transportation and as shown on Map 5-10.

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- 5.X.9 Encourage establishment of heliports in industrial areas in conjunction with state and federal standards for heliport design and location.
- 5.X.10 Support the role Clackamas County airports serve in supporting emergency response and disaster assistance.

5.Y. Pipeline Policy

- 5.Y.1 Work with state and federal regulatory agencies, affected communities and pipeline companies to provide safe, quiet, environmentally sensitive, and efficient transport of bulk commodities.

5.Z. Water Transportation Policies

- 5.Z.1 Maintain safe and convenient, multi-modal land access to the Canby ferry, and to public and commercial docks and boat ramps
- 5.Z.2 Support efforts to minimize noise and negative impacts caused by river transportation on air and water quality and to habitat for fish migration.
- 5.Z.3 Support the continued operation and maintenance of the Willamette Falls Locks to facilitate water transportation on the Willamette River.

FINANCE AND FUNDING

The vast majority of surface transportation funding in the United States is derived from public sources at the federal, state, and local levels and primarily includes gas and vehicle taxes and fees. For a variety of reasons, including more efficient vehicles, trends toward shortening commutes or carpooling, and a general unwillingness to raise gas tax rates, jurisdictions across the nation are facing decreasing levels of available funding for transportation projects. That, combined with rising construction costs, leads to increasing challenges in finding available funds for all the improvements that are needed to the transportation system.

One way to control costs is to spend wisely by focusing on using and maintaining the transportation systems that exist. The County also is committed to identifying and pursuing potential new funding sources for transportation improvements.

5.AA. General Finance and Funding Policies

- 5.AA.1 Support continuation of current (or equivalent) federal, state, and local funding mechanisms to construct and maintain County transportation projects. Identify and pursue new, permanent funding mechanisms to construct and maintain County transportation facilities and to support programs and projects identified in the TSP.
- 5.AA.2 Develop dedicated funding sources to implement active transportation projects, [including the Principal Active Transportation \(PAT\) network identified in the Active Transportation Plan](#).
- 5.AA.3 Establish funding for bicycle, pedestrian and transit projects that serve the needs of transportation disadvantaged populations.
- 5.AA.4 Consider a transportation system development charge methodology that calculates person trips to allow pedestrian, transit, and bicycle projects, as well as motor vehicle projects, to be funded by TSDCs.
- 5.AA.5 To the extent practical, invest unrestricted funding sources in a balanced manner between rural and urban areas.
- 5.AA.6 **Urban** Study creating a transportation facility funding program that establishes a "fee in lieu of" process that may be used by developers to pay for all on-site and off-site transportation facilities required as part of the land development process.

5.BB. Maintenance Policies

- 5.BB.1 Emphasize maintenance of existing rights-of-way, with improvements where appropriate, to improve traffic flow and safety for all transportation modes at a reasonable cost.
- 5.BB.2 Determine road maintenance needs and priorities and develop an effective and efficient road maintenance program.

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- 5.BB.3 Develop routine maintenance standards and practices for the transportation system, including traffic control devices.

TRANSPORTATION PROJECTS AND PLANS

The County's Capital Improvement Plan (CIP) includes a 20-year plan for needed transportation improvements and the 5-year programmed projects. The CIP was developed through concentrated and intense scrutiny by County staff and several advisory groups. Needed transportation projects were reviewed and analyzed with respect to how the transportation system is expected to function in 2035; how well each reflected the TSP vision and goals; and based on feedback from the public and several advisory committees. The Public Advisory Committee (PAC) developed the final recommendation to the Planning Commission on the project prioritization.

The purpose of the project prioritization was to identify a set of project that could reasonably be expected to be funded over the next 20 years. The funding forecast completed in 2012 indicates that only around 15% of the funding will be available to construct the needed projects. Therefore, the Capital Improvement Plan is divided into three project lists:

- 20-Year Capital Projects: contains the prioritized list of needed transportation projects that can reasonably be undertaken given the current estimates of available funding.
- Preferred Capital Projects: contains a second group of needed, prioritized transportation projects that the County would undertake if additional funding becomes available during the next 20 years.
- Long-Term Capital Projects: contains the remainder of the needed transportation projects. Although these projects will be needed to meet the transportation needs of the County in the next 20 years, they are not expected to be funded or constructed by the County.

The CIP will be updated as needed, and additional studies will be completed to optimize the work completed in this TSP by finding new ways to address known problems that cannot be solved by the current CIP. Special Transportation Plans include policy recommendations for a specific geographic areas or transportation facilities within the County Where conflicts exist between provisions of Special Transportation Plans and provisions of Chapter 5, provisions in the Special Transportation Plans take precedence.

5.CC. Capital Improvement Plan Policies

- 5.CC.1 Fund and build the transportation improvement projects identified as needed to accommodate and appropriately manage future transportation needs. These projects are found in the following lists: 20-Year Capital Projects (Table 5-3a); Preferred Capital Projects (Table 5-3b); and Long-Term Capital Projects (Table 5-3c). Project locations are shown on Maps 5-11a through 5-11f.
- 5.CC.2 Maintain a current and complete 5-Year Capital Improvement Program (CIP), which contains the programmed transportation projects in priority order, with estimated costs and assigned responsibility for funding. Update and adopt the 5-Year Capital

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Improvement Program periodically.

- 5.CC.3 Support the construction of prioritized, major transportation improvements in the County as identified by other jurisdictions including the Oregon Department of Transportation, Metro, cities, transit agencies and park providers. The list of needed transportation projects to be built by other jurisdictions is located in Table 5-3d. The project locations are shown on Maps 5-11a through 5-11f.

5.DD. Special Transportation Plans and Studies

5.DD.1 Designate the following as Special Transportation Plans:

- A. The SE 172nd Avenue/ SE 190th Drive Corridor Management Plan, adopted by reference in Appendix A;
- B. The Clackamas County Pedestrian Master Plan, adopted by reference in Appendix A;
- C. The Clackamas County Bicycle Master Plan, adopted by reference in Appendix A;
- D. The Clackamas County Airport Plan, adopted by reference in Appendix A;
- E. Transportation elements of the Community Plans and Design Plans included in Chapter 10.
- F. The Exception to Statewide Planning Goal 3 (Agricultural Lands), Goal 11 (Public Facilities & Services) and Goal 14 (Urbanization), pursuant to OAR 660, Division 12, to allow for the Arndt Road improvement, which is substantially complete. (For findings of fact and statement of reasons, see Board Order 2003-76.)
- G. The Exception to Statewide Planning Goal 3 (Agricultural Lands), Goal 11 (Public Facilities & Services) and Goal 14 (Urbanization), pursuant to OAR 660, Division 12, to allow for the Arndt Road improvement listed as project number 2029 on Table 5-3b and shown on Map 5-11e. (For findings of fact and statement of reasons, see Board Order 2003-104.)

[H. The Clackamas County Active Transportation Plan, adopted by reference in Appendix A;](#)

[I. The Clackamas Regional Center Pedestrian / Bicycle Connection Plan, adopted by reference in Appendix A.](#)

- 5.DD.2 Complete the following studies to develop solutions to problems that were identified during the existing and future conditions analysis of the transportation system, but could not be solved within the scope of the TSP update.

Clackamas County Comprehensive Plan

- A. Conduct an alternatives analysis and land use study to identify and consider roadway improvements to address access to I-5 within the southwest portion of the County and capacity deficiencies along Arndt Road (project #1106).
- B. Develop alternative performance standards for intersections and alternative mobility standards within the Clackamas Regional Center design plan area. Determine if this area should be designated as a multimodal, mixed-use area (MMA) as provided in the Transportation Planning Rule (OAR 660-012-0060). (project #1017)
- C. Develop a circulation study for the area west of the Clackamas Town Center and conduct a Transportation Infrastructure Analysis. (project #1018)
- D. Study the I-205 Multi-use Path gap to identify near term solutions for completing the path. (project #1026)
- E. Identify bicycle and pedestrian improvements to better connect OR 224 to the Clackamas Regional Center along 82nd Avenue. (project #1032)
- F. Work with ODOT, the City of Happy Valley and the City of Damascus to review the future need for the Sunrise Unit 2 (parallel to Highway 212, between 172nd Avenue and US 26), identified as a future, planned highway corridor.
- G. Work with ODOT, Metro, Oregon City, West Linn and any other affected jurisdiction to analyze and develop a solution to the transportation bottleneck on I-205 between Oregon City and the I-205 / Stafford Road Interchange. This process may include undertaking an Environmental Impact Statement to identify a preferred alternative that addresses the transportation congestion and facility operations issues on this portion of the I-205 corridor.

DEFINITIONS

The following definitions apply to usage within Chapter 5.

Airport, Private Use: An airport restricted, except for aircraft emergencies, to use by the owner and his invited guests. The determination as to whether an airport is private or public use is made by the Oregon Department of Aviation.

Airport, Public Use: An airport that is open to use by the flying public, with or without a request to use the airport.

Bikeway: A paved facility provided for use by cyclists. There are five types categories of bikeways.

- **Shared Roadway:** A type of bikeway where motorists and cyclists occupy the same roadway area. ~~Shared roadways are allowed on neighborhood streets and on rural roads and highways.~~ Shared lane markings should be provided in the roadway to designate the shared use of the roadway by bicyclists and motorists. On Shared Roadway facilities, bicyclists may use the full travel lane. Two types of shared roadway facilities are:

- **Bicycle Boulevard:** A bicycle facility in a network of connected low volume and low speed roads (typically local or connector roadways) where bicycles share the roadway with vehicles but bicycle movements are prioritized over vehicle movements.

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- **Advisory Lanes:** A bicycle facility where the center travel lane is shared by two-way automobile traffic and shoulder bikeways or bike lanes are provided on each side of the center lane. Vehicles may use the shoulder bikeways / bike lanes for passing but must yield to bicyclists and oncoming motorists.

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- **Shoulder Bikeway:** A bikeway which accommodates cyclists on paved roadway shoulder.

- **Bike Lane:** A section of roadway designated for exclusive bicycle use, at the same grade as the adjacent roadway. There are three types of bike lanes:

- **Buffered Bike Lane:** Bicycle lanes with a striped buffer providing greater separation from vehicles than a typical bike lane.

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- **Protected Bike Lane:** Bicycle lanes parallel to the roadway and separated from traffic by a buffer as well as by a barrier such as a landscaped buffer, parked cars or flexible bollards.

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- **Conventional Bike Lane:** A section of roadway designated for exclusive bicycle use, at the same grade as the adjacent roadway.

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- **Bike Path:** A bike lane constructed entirely separate from the roadway.

- **Cycle Track:** An exclusive "grade-separated" bike facility elevated above the street level using a low-profile curb and a distinctive pavement material. Two-way cycle tracks are physically separated cycle tracks that allow bicycle movement in both directions on one side of the road.

Clackamas County Comprehensive Plan

Truck Freight Route System: A set of identified arterials, collectors and State facilities that support the efficient movement of goods throughout the County.

Functional Classification: The process by which streets and highways are grouped into classes, or systems, according to the character of traffic service that they are intended to provide. Functional classifications found in Clackamas County and typical characteristics of each classification follow:

- **Principal Arterials:** (Freeway/Expressway and other designated Principal Arterials). Serves interregional and intraregional trips and carries heavy volume at high speed. Primarily Interstate Freeways and State Highways but also includes other roads designated as Principal Arterials. These roads make up the National Highway System.
- **Major Arterial:** Carries local and through traffic to and from destinations outside local communities and connects cities and rural centers. Moderate to heavy volume; moderate to high speed.
- **Minor Arterial:** Connects collectors to higher order roadways. Carries moderate volume at moderate speed.
- **Collector:** Principal carrier within neighborhoods or single land use areas. Links neighborhoods with major activity centers, other neighborhoods, and arterials. Generally not for through traffic. Low to moderate volume; low to moderate speed.
- **Connector:** Collects traffic from and distributes traffic to local streets within neighborhoods or industrial districts. Usually longer than local streets. Low traffic volumes and speeds. Primarily serves access and local circulation functions. Not for through traffic in urban areas.
- **Local:** Provides access to abutting property and connects to higher order roads. New local roads should intersect collectors, connectors, or, if necessary, minor arterials. Not for through traffic.
- **Alley:** May be public or private, to provide access to the rear of property. Alleys should intersect local roads or connectors. Not for through traffic

Level of service (LOS): A performance measure that represents quality of service of an intersection or roadway segment, measured on an A–F scale, with LOS A representing the best operating conditions from the traveler’s perspective and LOS F the worst.

Major Transit Stop: A transit center, major bus stop, or light rail stop, as identified on Comprehensive Plan Map 5-8a, *Transit, Urban*.

Major Transit Street: A street with a Frequent Service Bus Line, as identified on Comprehensive Plan Map 5-8a, *Transit, Urban*; existing or planned High Capacity Transit, as identified on Comprehensive Plan Map 5-8c, *High Capacity Transit (HCT) System Plan*; or both.

Mode (also “travel mode”): A particular form of travel, for example, walking, bicycling, traveling by automobile, or traveling by bus.

Multi-use Path: A paved path built for bicycle and pedestrian traffic that is physically separated from motor vehicle traffic, and can be either within the road right-of-way or within an independent right-of-way.

Pedestrian Facilities: Sidewalks, pedestrian pathways, or other facilities that are designed specifically for pedestrian use, as identified by functional classification in cross sections (Figures 5-1 through 5-3) or as determined appropriate by the County Planning Director and the County Road Official or County Engineer.

[Principal Active Transportation \(PAT\) Route: Priority routes for pedestrian and bikeway facilities which form the “spine” of the Clackamas County active transportation network that have been identified in the Active Transportation Plan. PAT Routes provide connection to key county destinations, link rural and urban communities and connect to Parkways and Bikeways as identified in the Metro Regional Active Transportation Plan. Specifics about the appropriate bikeway and/or pedestrian facility treatments for the PAT Routes are included in the Active Transportation Plan.](#)

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Trail: A hard- or soft-surfaced facility for pedestrians, bicyclists, or equestrians that is separate from vehicular traffic. Trails often go through natural areas and are designed to have a minimal impact on the natural environment.

Transportation Demand Management (TDM): Strategies to achieve efficiency in the transportation system by reducing demand.

Transportation Disadvantaged: Persons who, because of physical or mental disability, income status, or age, are unable to transport themselves or to purchase transportation and are, therefore, dependent upon others to obtain access to health care, employment, education, shopping, social activities, or other life-sustaining activities, or children who are handicapped or high-risk or at-risk.

Road: A public or private way created to provide ingress to, or egress from, one or more lots, parcels, areas or tracts of land, or that provides for travel between places by vehicles. A private way created exclusively to provide ingress and egress to land in conjunction with a forest, farm or mining use is not a “road.” The terms “street,” “access drive” and “highway” for the purposes of this Plan shall be synonymous with the term “road.”

Roadway: That portion of a road or alley that has been improved for vehicular and pedestrian traffic.

Rural: Outside the Portland Metropolitan Urban Growth Boundary and outside city limits

Urban: Inside the Portland Metropolitan Urban Growth Boundary

Clackamas County Comprehensive Plan

Volume-to-Capacity (v/c) Ratio: A volume-to-capacity ratio compares vehicle volumes (the roadway demand) with roadway supply (carrying capacity). Volume refers to the number of vehicles using a roadway at a specific time period (and length of time), while capacity is the road's ability to support that volume based on its design and number of lanes.

Table 5-3a 20-Year Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
1000	County-wide	ITS Plan Program	N/A	Develop a program to support the implementation of the County's ITS Plan and support the County's efforts to make improvements to traffic operations based on the ITS Plan.- Deploy traffic responsive signal timing, ramp metering, traffic management equipment for better routing of traffic during incidents along the three key ODOT corridors - I-205, I-5, 99E. Install signal controller upgrades and update county ITS plan.
1001	County-wide	Transportation Safety Action Plan Program	N/A	Develop a program to support the implementation of the County's TSAP and support the County's efforts to make improvements based on the outcomes of the road safety audits and other safety studies.
1002	5-11a	122nd Ave	Eagle Glen Dr to Hubbard Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1003	5-11a	122nd Ave	Sunnyside Rd to Hubbard Rd	Fill gaps in pedestrian facilities, turn lanes at Mather Rd
1004	5-11a	122nd Ave	Sunnyside Rd to Timber Valley Dr	Add bikeways and turn lanes at major intersections
1005	5-11a	132nd Ave	Sunnyside Rd to OR 212	Add bikeways, pedestrian facilities, traffic calming and turn lanes at major intersections
1006	5-11a	142nd Ave	Sunnyside Rd to OR 212	Add bikeways and pedestrian facilities
1007	5-11a	72nd Ave Multi-Use Path Connection	Thompson Rd to Harmony Rd	Construct multi-use path
1008	5-11a	82nd Dr	OR 212 to Lawnfield Rd	Fill in bikeways and pedestrian facilities gaps
1009	5-11a	85th Ave	Causey Ave to Monterey Ave	Add sidewalks and bikeways
1010	5-11a	92nd Ave	Johnson Creek Blvd to Emmert View Ct	Fill gaps in pedestrian facilities
1011	5-11a	97th Ave / Mather Rd	Lawnfield Rd to Summers Ln	Add bikeways, pedestrian facilities and eastbound left turn lanes at Mather Rd / Summers Ln
1012	5-11a	Boyer Dr	OR 213 to Fuller Rd	Construct new 2 lane roadway with turn lanes at OR 213 and Fuller Rd, bikeways and pedestrian facilities; install flashing yellow arrow for left turns on northbound and southbound approaches at OR 213 intersection.
1013	5-11a	Boyer Dr / 85th Ave / Spencer Dr	OR 213 to I-205 bike path	Add bikeways
1014	5-11a	Causey Ave	Fuller Rd to I-205	Add bikeways and shared facility markings in accordance with the Active Transportation Plan.
1015	5-11a	Clackamas Industrial area multi-modal improvements	N/A	Complete bike and pedestrian connections within the Clackamas Industrial area on Jennifer St., Evelyn St., 106 th Ave, 122 nd Ave, 130 th Ave and 135 th Ave.
1016	5-11a	Clackamas Regional Center Bike/Pedestrian Corridors	N/A	Construct pedestrian and bike improvements as described in the Clackamas Regional Center Pedestrian / Bicycle Plan
1017	5-11a	Clackamas Town Center Alternative Performance Standards Study	Clackamas Regional Center	Develop alternative performance standards for the intersections within the Clackamas Regional Center.
1018	5-11a	Clackamas Town Center Circulation Plan	West of the Town Center	Study area circulation and create plan
1019	5-11a	Flavel Dr	Alberta Ave to County boundary	Add bikeways in accordance with the Active Transportation Plan.

Table 5-3a 20-Year Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
1020	5-11a	Fuller Rd	Otty St to Johnson Creek Blvd	Add pedestrian facilities, turn lanes, on-street parking, central median and landscaping.
1021	5-11a	Fuller Rd / King Rd Improvements	Fuller Rd / King Rd intersection	Restrict access to right-in/right-out only
1022	5-11a	Harmony Rd	OR 213 to OR 224	Construct bikeways and pedestrian facilities. Linwood Ave to Aquatic Center, construct in accordance with the Active Transportation Plan.
1023	5-11a	Harmony Rd	Railroad Ave / Linwood Ave / Harmony Rd	Railroad crossing and intersection improvements based on further study of intersection operations including bikeways and pedestrian facilities to be undertake jointly by the City of Milwaukie and the County
1024	5-11a	Harmony Rd / Sunnyside Rd	Harmony Rd / Sunnyside Rd / OR 213 intersection	Extend queue storage on westbound approach and rebuild median; extend queue storage on eastbound approach and install median; convert to right-in-right-out accesses on frontage road.
1025	5-11a	I-205 Multi-Use Path Connection	Between Sunnyside Rd and Sunnybrook Blvd	Construct ADA compliant access to the commercial area from the I-205 Multi-Use Path
1026	5-11a	I-205 Multi-Use Path Gap	OR 224/OR 213 to OR 212	Study the I-205 multi-use path gap to create a plan for connection and path completion in accordance with the Active Transportation Plan
1027	5-11a	Johnson Creek Blvd	55th Ave to I-205	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1028	5-11a	Johnson Creek Blvd	Johnson Creek Blvd near 79th Pl	Add signal to either Johnson Creek Blvd and 79th Pl or 80th Ave
1029	5-11a	Johnson Creek Blvd	55th Ave to Bell Ave	Widen to 3 lanes with bikeways and pedestrian facilities
1030	5-11a	Johnson Creek Blvd	Johnson Creek Blvd / OR 213 intersection	Extend westbound left-turn lane and rebuild median; install dual northbound and southbound left-turn lanes
1031	5-11a	Johnson Creek Blvd	OR 213 to 92nd Ave	Add pedestrian facilities, restripe for bikeways
1032	5-11a	Johnson Rd	SE Lake Rd to North Clackamas Park Trail	Identify bike/pedestrian connections to fill gaps along 82nd Ave
1033	5-11a	Lake Rd	Lake Rd / International Way intersection	Add northbound right-turn lane
1034	5-11a	Linwood Ave	Monroe St to Johnson Creek Blvd	Add pedestrian facilities in accordance with the Active Transportation Plan.
1035	5-11a	Monroe St	72nd Ave to Fuller Rd	Add bikeways, pedestrian facilities and traffic calming in accordance with the Active Transportation Plan.
1036	5-11a	Monroe St / 72nd Ave / Thompson Rd / Fuller Rd	Linwood Ave to 72nd-Ave Causey Ave	Add bikeways and traffic calming in accordance with the Active Transportation Plan.
1037	5-11a	Monterey Ave	Stevens Rd to Bob Schumacher Rd	Construct collector roadway with bikeways and pedestrian facilities
1038	5-11a	Monterey Ave	OR 213 to Fuller Rd	Construct new 2 lane extension with pedestrian facilities and bikeways. Install flashing yellow arrow for left-turns on northbound and southbound approaches at OR 213 intersection.
1039	5-11a	North Clackamas Regional Park Trail	Linwood Ave to North Clackamas Park Complex	Construct multi-use path
1040	5-11a	North Clackamas Regional Parks Trail	OR 213 to Linwood Ave	Construct multi-use path
1041	5-11a	Otty Rd	OR 213 to 92nd Ave	Improve to minor arterial standard consistent with Fuller Road Station Plan; improve curb radius; add turn lanes, on-street parking, central median, landscaping, bikeways and pedestrian facilities
1042	5-11a	Otty St	Otty St / OR 213 / Otty Rd	Realign Otty St with Otty Rd at OR 213; install dual westbound left-turn lanes; install flashing yellow arrow for left-turns on northbound and southbound approaches.

Table 5-3a 20-Year Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
1043	5-11a	Southwest Connector Multi-Use Path	North Clackamas Aquatic Center access road to 82nd Ave	Construct multi-use path in accordance with the Active Transportation Plan.
1044	5-11a	Springwater Rd	OR 224 to Hattan Rd	Widen to 3 lanes with shoulders (in accordance with the Active Transportation Plan between Clackamas River Dr and Gronlund Rd) and pedestrian facilities; bridge remains two lanes
1045	5-11a	Sunnyside Rd	93rd Ave to 126th Ave	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1046	5-11a	Sunnyside Rd	Sunnyside Rd / Stevens Rd intersection	Intersection improvements, such as additional turn lanes, turn lane extensions, and/or signal timing modifications
1047	5-11a	Tolbert St Overcrossing	82nd Dr to Industrial Way	Construct new 2 lane overcrossing with bikeways and pedestrian facilities
1048	5-11b	282nd Ave	US 26 to OR 212	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1049	5-11b	Amisigger Rd / Kelso Rd	OR 224 to Kelso / Richey Rd	Add paved shoulders; turn lanes at Amisigger/OR 212 and Kelso/Richey; smooth curves.
1050	5-11b	Arrah Wanna Blvd	US 26 to Fairway Ave	Add paved shoulders
1051	5-11b	Cazadero Multi-Use Trail	Community of Boring to City of Estacada	Construct multi-use path in accordance with the Active Transportation Plan.
1052	5-11b	Compton Rd	US 26 to 352nd Ave	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1053	5-11b	Dodge Park Rd Bridge	~192 feet south of Pipeline Rd	Replace bridge nearing the end of its useful life and include paved shoulders
1054	5-11b	Eagle Creek Rd	Firwood Rd to Duus Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1055	5-11b	Eagle Creek Rd	Curran Rd to Duus Rd	Remove horizontal curve, relocate intersection, add paved shoulders and turn lanes at major intersection; investigate speed zone south of Curran Rd
1056	5-11b	Fairway Ave	Arrah Wanna Blvd to Salmon River Rd	Add paved shoulders
1057	5-11b	OR 211	OR 211 / Judd Rd intersection	Realign roadway
1058	5-11b	Richey Rd	Kelso Rd to OR 212	Add paved shoulders and left turn lane at Richey Rd and OR 212
1059	5-11b	Welches Rd	US 26 to Birdie Ln	Add paved shoulders; add pedestrian facilities in Welches rural center
1060	5-11c	Aldercrest Dr	Thiessen Rd to Oatfield Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1061	5-11c	Concord Rd	River Rd to Oatfield Rd	Fill gaps in pedestrian facilities
1062	5-11c	Concord Rd	River Rd to Oatfield Rd	Add turn lanes at major intersections
1063	5-11c	Courtney Ave	OR 99E to Oatfield Rd	Fill gaps in pedestrian facilities and bikeways
1064	5-11c	Courtney Ave	River Rd to OR 99E (McLoughlin Blvd)	Construct pedestrian facilities / complete gaps on the south side; add bikeways
1065	5-11c	Harold Ave	Concord Rd to Roethe Rd	Add pedestrian facilities and traffic calming
1066	5-11c	Hull Ave	Wilmot St to Tims View Ave	Fill gaps in pedestrian facilities
1067	5-11c	Jennings Ave	Webster Rd to OR 99E	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1068	5-11c	Jennings Ave	River Rd to Oatfield Rd	Widen to 2-lane urban minor arterial standard with bikeway and pedestrian facilities infill

Table 5-3a 20-Year Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
1069	5-11c	Oak Grove Blvd	Oatfield Rd to River Rd	Fill gaps in pedestrian facilities and bikeways
1070	5-11c	Oatfield Rd	Jennings Ave to Lake Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1071	5-11c	Oatfield Rd	Oatfield Rd / Park Rd intersection	Install traffic signal and add turn lanes
1072	5-11c	Oatfield Rd	Oatfield Rd / McNary Rd intersection	Add southbound and eastbound left-turn lanes
1073	5-11c	Oetkin Rd - Naef Rd	Thiessen Rd to River Rd	Construct bike boulevard/neighborhood greenway consistent with the Active Transportation Plan
1073-1074	5-11c	Park Ave	River Rd to OR 99E (McLoughlin Blvd)	Add pedestrian facilities
1074-1075	5-11c	River Rd	Lark St to Courtney Ave	Add pedestrian facilities
1075-1076	5-11c	River Rd	Oak Grove Blvd to Risley Ave	Fill gaps in bikeways in accordance with the Active Transportation Plan and fill gaps in pedestrian facilities
1077	5-11c	River Rd	Park Ave to Glen Echo Ave	Construct buffered bike lane in accordance with the Active Transportation Plan.
1076-1078	5-11c	School Pedways	Johnson Rd / Clackamas Rd / Webster Rd	Fill gaps in pedestrian facilities on Johnson Rd, Clackamas Rd and Webster Rd within 1/4 mile of schools
1077-1079	5-11c	Thiessen Rd	Thiessen Rd / Aldercrest Rd intersection	Add turn lanes on Thiessen Rd; consider converting to two-way stop controlled
1078-1080	5-11c	Torbank Rd	River Rd to Trolley Trail	Fill gaps in pedestrian facilities
1079-1081	5-11d	65th Ave	65th Ave / Elligsen Rd / Stafford Rd intersection	Construct roundabout
1080-1082	5-11d	Advance Rd	53rd Ave to 43rd Dr	Grade and sight distance improvements
1081-1083	5-11d	Borland Rd	Tualatin city limits to Stafford Rd	Add paved shoulders and turn lanes at major intersections
1082-1084	5-11d	Borland Rd	Stafford Rd to West Linn city limits	Add paved shoulders
1083-1085	5-11d	Carman Dr	Lake Oswego city limits to Roosevelt Ave	Add bikeways and pedestrian facilities; analyze for turn lanes
1084-1086	5-11d	Childs Rd	Sycamore Ave to 65th Ave	Transfer roadway to local jurisdiction
1085-1087	5-11d	French Prairie Bridge	Willamette River near I-5	Construct a bridge consistent in accordance with the Active Transportation Plan Connecting Clackamas Plan
1086-1088	5-11d	Rosemont Rd	Stafford Rd to West Linn	Add paved shoulders and turn lanes at major intersections
1087-1089	5-11d	Stafford Rd	I-205 to Boeckman Rd / Advance Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1088-1090	5-11d	Stafford Rd	Rosemont Rd to I-205	Add paved shoulders in accordance with the Active Transportation Plan and turn lanes at major intersections
1089-1091	5-11d	Stafford Rd	Stafford Rd / Childs Rd intersection	Install traffic signal and southbound and northbound turn lanes or roundabout
1090-1092	5-11d	Stafford Rd	Rosemont Rd to I-205	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1091-1093	5-11d	Tonquin Trail	Willamette River through Wilsonville	Construct bike / pedestrian facilities bridge pursuant to the Tonquin Trail Master Plan

Table 5-3a 20-Year Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
1092 1094	5-11d	Wilsonville Rd / Ladd Hill Rd	Wilsonville Rd / Ladd Hill Rd	Install Collision Countermeasure System
1093 1095	5-11e	Airport Rd	Airport Rd / Miley Rd intersection	Install traffic signal
1094 1096	5-11e	Barlow Rd	Barlow Rd / OR 99E intersection	Add dual left-turn lanes on southbound Barlow Rd
1095 1097	5-11e	Beavercreek Rd	Lower Highland Rd to Butte Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1096 1098	5-11e	Beavercreek Rd	Ferguson Rd to Spangler Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1097 1099	5-11e	Beavercreek Rd	Henrici Rd to Yeoman Rd/Steiner Rd	Add paved shoulders in accordance with the Active Transportation Plan and turn lanes at major intersections.
1098 1100	5-11e	Beavercreek Rd	Beavercreek Rd / Leland Rd / Kamrath Rd intersection	Construct roundabout with additional analysis
1099 1101	5-11e	Canby-Marquam Highway	Canby-Marquam Hwy / Lone Elder Rd intersection	Reconstruct intersection; install northbound left-turn lane and southbound right-turn lane
1100 1102	5-11e	Canby-Marquam Highway	~1,900 ft south of Barnards Rd	Replace bridge nearing the end of its useful life with 2-lane structure including paved shoulders
1101 1103	5-11e	Clarkes Four Corners Intersection	Beavercreek Rd / Unger Rd	Reconstruct intersection
1102 1104	5-11e	Emerald Necklace Trail	To Canby Ferry	Extend Molalla Forest Rd to Locust St in accordance with the Active Transportation Plan.
1103 1105	5-11e	Ferguson Multi-Use Path	Thayer Rd to Ferguson Rd	Multi-use path to connect Ferguson Rd to Thayer Rd
1104 1106	5-11e	Fischers Mill Rd	Fischers Mill / Hattan Rd intersection	Install eastbound left-turn lane
1105 1107	5-11e	Graves Rd/Passmore Rd/Mulino Rd/ OR 213	Graves Rd/Passmore Rd/Mulino Rd/ OR 213	Work in conjunction with the Molalla River School District, ODOT and community stake-holders to complete a safety audit to look at all options for the safe movement of Mulino Elementary School students in relation to the adjacent transportation system. Utilize the results from the audit to develop a list of projects and/or programs to maximize safety for all users.
1106 1108	5-11e	Greater Arndt Rd/I-5/Canby Access Feasibility Study	Southwest County in the vicinity of Arndt Rd/I-5/Canby	Conduct an alternatives analysis and land use study to identify and consider roadway improvements to address access to I-5 within the Southwest County and address capacity deficiencies.
1107 1109	5-11e	Hattan Rd	Hattan Rd / Gronlund Rd intersection	Install southbound right-turn lane
1108 1110	5-11e	Henrici Rd	Beavercreek Rd to Ferguson Rd	Add paved shoulders and turn lanes at major intersections. Remove horizontal and vertical curves
1109 1111	5-11e	Holly St	Territorial Rd to Canby Ferry	Add paved shoulders in accordance with the Active Transportation Plan.
1110 1112	5-11e	Hult Rd	OR 211 to Unger Rd	Re-open and improve Hult Rd
1111 1113	5-11e	Klang's Mill Bridge	~1,000 ft north of OR 211	Replace bridge nearing the end of its useful life
1112 1114	5-11e	Lone Elder Rd Bridge	~5,800 feet east of Barlow Rd	Replace bridge (nearing the end of its useful life) and include paved shoulders
1113 1115	5-11e	Maplelane Rd	Beavercreek Rd to Ferguson Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1114 1116	5-11e	Meridian Rd	Meridian Rd / Whiskey Hill Rd intersection	Limit access/egress points to and from school on NE corner of intersection

Table 5-3a 20-Year Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
1115 1117	5-11e	Molalla Ave Flooding	Just south of city of Molalla	Construct bridge to resolve flooding issues
1116 1118	5-11e	Mulino Rd	Mulino Rd / 13th Ave	Relocate intersection to south away from railroad trestle
1117 1119	5-11e	OR 170	OR 99E to Macksburg Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1118 1120	5-11e	Redland Rd	OR 213 to Hattan Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1119 1121	5-11e	Redland Rd	Redland Rd / Springwater Rd intersection	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1120 1122	5-11e	Redland Rd	Redland Rd / Holly Rd intersection	Install traffic signal and westbound and northbound left-turn lanes or roundabout
1121 1123	5-11e	Redland Rd	Redland Rd / Ferguson Rd intersection	Construct roundabout
1122 1124	5-11e	Ridge Rd	~1 miles north of Lower Highland Rd	Fix sinkhole
1123 1125	5-11e	Springwater Rd	Springwater Rd / Clackamas River Dr intersection	Install signal at Clackamas River Dr
1124 1126	5-11e	Springwater Rd	400 ft east of Hattan Rd	Construct bridge to accommodate paved shoulders
1125 1127	5-11e	Springwater Rd	Hattan Rd to Bakers Ferry Rd	Add paved shoulders in accordance with the Active Transportation Plan and turn lanes at major intersections
1126 1128	5-11e	Township Rd	Central Point Rd to Canby City limit	Add paved shoulders and turn lanes at major intersections
1127 1129	5-11e	Union Mills Rd	OR 213 to OR 211	Add turn lanes at major intersections
1128 1130	5-11e	Union Mills Rd	OR 213 to OR 211	Construct a shoulder on the south side of the roadway
1129 1131	5-11e	Upper Highland Rd	Beavercreek Rd to Lower Highland Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements

Table 5-3b Preferred Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
2000	5-11a	Bell Ave / Alberta St / 72nd Ave	King Rd to County line	Add bikeways and pedestrian facilities
2001	5-11a	Clatsop St / Luther Rd	72nd Ave to Fuller Rd	Add turn lanes and signals at OR 213 intersection; add bikeways, pedestrian facilities and traffic calming
2002	5-11a	Evelyn St	OR 224 to Jennifer St	Add bikeways and pedestrian facilities
2003	5-11a	Evelyn St / Mangan Dr	Jennifer St to Water Ave	Add bikeways
2004	5-11a	Hubbard Rd	122nd Ave to 132nd Ave	Fill gaps in pedestrian facilities
2005	5-11a	Jennifer St	82nd Dr to 135th Ave	Add pedestrian facilities
2006	5-11a	Lake Rd	Milwaukie City limits east to OR 224	Fill gaps in pedestrian facilities
2007	5-11a	Linwood Ave	Linwood Ave / Monroe St intersection	Add curbs/sidewalks, improve horizontal alignments
2008	5-11a	Linwood Ave	Queen Rd to Johnson Creek Blvd	Add bikeways in accordance with the Active Transportation Plan
2009	5-11a	Mather Rd	Summers Ln Rd to 122nd Ave	Add bikeways, pedestrian facilities and eastbound left turn lanes at Mather Rd / 122nd Ave
2010	5-11a	Monroe St / 72nd Ave / Thompson Rd	Linwood Ave to Fuller Rd	Add pedestrian facilities
2011	5-11a	Scouters Mountain / Mt Scott Loop Trail	Loop trail through Happy Valley, Damascus, Clackamas County and Portland	Construct multi-use path in accordance with the Active Transportation Plan
2012	5-11a	Stevens Rd / Stevens Way	Causey Ave to Idleman Rd	Add pedways and optional traffic calming
2013	5-11a	Strawberry Ln	Strawberry Ln / 82nd Dr intersection	Install traffic signal and eastbound turn lane
2014	5-11a	Sunnybrook Blvd	Sunnybrook Blvd / 82nd Ave intersection	Add dual southbound left-turn lanes, extend queue storage for southbound lefts and westbound lefts
2015	5-11a	Sunnyside Rd	OR 213 to 97th Ave	Modified boulevard treatment including lane redesign, medians, beautification, curb extensions, reconstructed sidewalks, landscaping, south side bikeways. Consider flashing yellow arrow for left-turns at signalized intersections.
2016	5-11b	282nd Ave	282nd / Haley Rd intersection	Install traffic signal and reduce speed limit on 282nd
2017	5-11b	362nd Ave	Skogan Rd to OR 211	Add paved shoulders
2018	5-11b	Eagle Creek Rd	OR 211 to Duus Rd	Add paved shoulders
2019	5-11b	Firwood Rd	Wildcat Mountain Dr to US 26	Add paved shoulders and turn lanes at major intersections.
2020	5-11c	Clackamas Rd	Johnson Rd and Webster Rd	Fill gaps in bikeways and pedestrian facilities
2021	5-11c	Jennings Ave	Oatfield Rd to Webster Rd	Widen to 2-lane urban minor arterial standard with bikeway and pedestrian facilities infill
2022	5-11c	Lake Oswego to Milwaukie Bridge	Between Sellwood and Oregon City	Construct bike/pedestrian crossing over the Willamette River in accordance with the Active Transportation Plan
2023	5-11c	Roots Rd	Webster Rd to McKinley Rd	Add pedestrian facilities

Table 5-3b Preferred Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
2024	5-11c	Thiessen Rd	Oatfield Rd to Webster Rd	Add bikeways and pedestrian facilities. For the Oetkin Rd to Webster Rd section, construct in accordance with the Active Transportation Plan
2025	5-11c	Webster Rd	OR 224 to Gladstone	Fill gaps in bikeways and pedestrian facilities
2026	5-11d	Advance Rd	~2,900 ft west of Mountain Rd	Realign roadway and grade improvements
2027	5-11d	Advance Rd	65th Ave to Mountain Rd	Add paved shoulders
2028	5-11d	Stafford Rd / 65th Ave	I-205 to Boeckman Rd / Advance Rd	Add paved shoulders in accordance with the Active Transportation Plan and turn lanes at major intersections
2029	5-11e	Arndt Rd Extension	Barlow to OR 99E	Construct new 2 or 3 lane roadway
2030	5-11e	Barlow Rd	Knights Bridge Rd to OR 99E	Add paved shoulders
2031	5-11e	Beavercreek Multi-Use Path	Loder Rd to Ferguson Rd	Construct multi-use path consistent with the Beavercreek Road Concept Plan
2032	5-11e	Boones Ferry Rd	Boones Ferry Rd / Butteville Rd intersection	Remove bank, remove/decrease horizontal curve
2033	5-11e	Canby—Molalla-Railroad Trail	City of Canby to City of Molalla	Construct multi-use path
2034-2033	5-11e	Dryland Rd	Macksburg Rd S to Macksburg Rd N	Realign to form one intersection at Dryland Rd
2035-2034	5-11e	Hattan Rd	Fischers Mill Rd to Gronlund Rd	Add paved shoulders and turn lanes at major intersections
2036-2035	5-11e	Henrici Rd	OR 213 to Beavercreek Rd	Add paved shoulders and turn lanes at major intersections
2037-2036	5-11e	Henrici Rd	Ferguson Rd to Redland Rd	Add paved shoulders and turn lanes at major intersections. Remove horizontal and vertical curves
2038-2037	5-11e	Molalla Forest Rd	City of Canby to City of Molalla	Pave to provide bicycle access in accordance with the Active Transportation Plan
2039-2038	5-11e	Mulino Rd (13th St segment)	Canby city limits to OR 213	Add paved shoulders and turn lanes at major intersections
2040-2039	5-11e	Newell Creek Trail / Oregon City Loop Trail	Loop around the perimeter of Oregon City	Construct multi-use path Oregon City Loop Trail consistent with the Connecting Clackamas Plan and Newell Creek Trail in accordance with the Active Transportation Plan
2041-2040	5-11e	Redland Rd	Redland Rd / Bradley Rd intersection	Install eastbound left-turn lane
2042-2041	5-11e	Redland Rd	Redland Rd / Fischers Mill Rd / Henrici Rd intersection	Install eastbound left-turn, eastbound right-turn and westbound right-turn lanes at Henrici Rd
2043-2042	5-11e	Springwater Rd	Springwater Rd / Bakers Ferry Rd intersection	Install southbound left-turn lane; realign intersection to fix skew

Table 5-3c Long Term Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
3000	5-11a	106th Ave	OR 212 to Jennifer St	Add bikeways and pedestrian facilities
3001	5-11a	152nd Ave Phase 2	Sunnyside Rd to OR 212	Add bikeways, pedestrian facilities and turn lanes at major intersections
3002	5-11a	162nd Ave	Sager Rd north to County line	Add bikeways, pedestrian facilities, turn lanes at major intersections
3003	5-11a	172nd Ave Bridge	~140 feet south of Troge Rd	Replace bridge nearing the end of its useful life
3004	5-11a	82nd Dr	OR 212 to Gladstone	Widen to 5 lane with bikeways and pedestrian facilities
3005	5-11a	84th Ave	Sunnyside Rd to Sunnybrook Blvd	Fill in bikeways and pedestrian facilities gaps
3006	5-11a	93rd Ave	Sunnyside Rd to Sunnybrook Blvd	Add bikeways in accordance with the Active Transportation Plan
3007	5-11a	Cheldelin Rd	Foster Rd to 190th Dr	Add bikeways and pedestrian facilities
3008	5-11a	Cheldelin Rd (Clatsop St extension)	172nd Ave to Foster Rd	Construct new two lane roadway with bikeways and pedestrian facilities
3009	5-11a	Cornwell Ave	OR 213 to Fuller Rd	Add pedestrian facilities; connect to I-205 Multi-Use Path
3010	5-11a	Fuller Rd	Otty Rd to King Rd / OR 213	Construct new 2 lane extension with pedestrian facilities and bikeways
3011	5-11a	Fuller Rd	Johnson Creek Blvd to County line	Add pedestrian facilities
3012	5-11a	Hillcrest St	92nd Ave to Stevens Rd	Add pedestrian facilities
3013	5-11a	I-205 Pedestrian / Bike Overpass	Between Causey Ave and Sunnyside Rd	Construct a bike / pedestrian crossing over I-205 to connect transit services, businesses and residents in accordance with the Active Transportation Plan
3014	5-11a	Idleman Rd	92nd Ave to Westview Ct	Fill gaps in bikeways and pedestrian facilities
3015	5-11a	Jennifer St	106th Ave to 130th Ave	Add bikeways
3016	5-11a	Johnson Creek Blvd	Bell Ave to OR 213	Widen to 3 lanes from Bell Ave to 76th Ave and 5 lanes from 76th Ave to 82nd Ave ; add bikeways and pedestrian facilities
3017	5-11a	King Rd	Milwaukie City Limits to 82nd Ave -Spencer Dr	Fill gaps in pedestrian facilities in accordance with the Active Transportation Plan
3018	5-11a	Lake Rd	OR 224 west to Milwaukie city limits	Add pedestrian facilities and turn lanes at major intersections
3019	5-11a	Lake Rd	Johnson Rd to Webster Rd	Fill gaps in pedestrian facilities and bikeways
3020	5-11a	Linwood Ave Bridge over Johnson Creek	Bridge	Construct bridge with bike lanes and sidewalks in accordance with the Active Transportation Plan
3021	5-11a	Luther Rd Bridge	Bridge crossing Johnson Creek	Replace bridge
3022	5-11a	Mather Rd	Mather Rd / 122nd Ave intersection	Install traffic signal or compact roundabout
3023	5-11a	Mather Rd	122nd Ave to 132nd Ave	Construct new 2 lane roadway with pedestrian facilities and bikeways
3024	5-11a	Mather Rd	Industrial Way to 98th Ave	Maintain as pedestrian facilities and bikeway. Construct undercrossing at Sunrise Expressway.
3025	5-11a	Michael Dr	72nd Ave to Fuller Ave	Fill gaps in pedestrian facilities
3026	5-11a	Phillips Creek Multi-Use Path	Causey Ave to North Clackamas Regional Parks Trail	Construct multi-use path
3027	5-11a	Sunnyside Rd	93rd Ave to OR 212	Add pedestrian facilities and bikeways in accordance with the Active Transportation Plan

Table 5-3c Long Term Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
3027 3028	5-11a	Sunnyside Rd Adaptive Signal Timing	OR 213 to 172nd Ave	Add adaptive timing to traffic signals
3028 3029	5-11a	Valley View Terrace	Sunnyside Rd to Otty Rd	Add bikeways and pedestrian facilities
3029 3030	5-11a	West 82nd Ave Parallel Road	King Rd to Luther Rd	Construct collector road parallel to OR 213 with bikeways and pedestrian facilities
3030 3031	5-11b	282nd Ave	282nd Ave / OR 212 intersection	Add second right-turn lane on 282nd Ave and additional intersection improvements as needed
3031 3032	5-11b	282nd Ave	OR 212 to Multnomah County line	Add paved shoulders
3032 3033	5-11b	352nd Ave / Dunn Rd	Bluff Rd to Bluff Rd	Add paved shoulders
3033 3034	5-11b	362nd Dr	Colorado Rd to Dubarko Rd	Remove or decrease horizontal and vertical curves
3034 3035	5-11b	362nd Dr	362nd Ave / Deming Rd intersection	Remove or decrease vertical curve, relocate intersection
3036	5-11b	Barlow Trail Rd	Marmot Rd to Lolo Pass Rd	Add paved shoulders in accordance with the Active Transportation Plan
3035 3037	5-11b	Barlow Trail Rd/ Lolo Pass Rd	Between communities of Timberline, Welches and Zig Zag	Add paved shoulders in accordance with the Active Transportation Plan
3036 3038	5-11b	Bluff Rd	Kelso Rd City of Sandy to County line	Add paved shoulders in accordance with the Active Transportation Plan
3037 3039	5-11b	Bull Run Rd	Ten Eyck Rd to Multnomah County line	Add paved shoulders and turn lanes at major intersections.
3038 3040	5-11b	Bull Run Truss	Bull Run truss between Waterworks Rd and Bowman Rd	Replace bridge nearing the end of its useful life
3039 3041	5-11b	Coalman Rd	City of Sandy Ten Eyck Rd to US 26	Add paved shoulders
3040 3042	5-11b	Compton Rd	US 26 to 352nd Ave	Remove vertical curve near Orient Dr and relocate intersection; add paved shoulders
3041 3043	5-11b	Coupland Rd	Estacada City limits to Divers Rd	Add paved shoulders and turn lanes at major intersections
3042 3044	5-11b	Eagle Creek Rd	Keegan Rd to Currin Rd	Realign Eagle Creek Rd to remove or decrease downgrade
3043 3045	5-11b	Firwood Rd	Firwood Rd / Trubel Rd intersection	Realign Trubel Rd to remove or decrease downgrade
3044 3046	5-11b	Hayden Rd	Springwater Rd to OR 211	Add paved shoulders in accordance with the Active Transportation Plan
3045 3047	5-11b	Howlett Rd	OR 211 to Wildcat Mountain Dr	Add paved shoulders
3046 3048	5-11b	Kelso Rd	Richey Rd to Orient Dr	Add paved shoulders
3047 3049	5-11b	Kelso Rd	Orient Dr to Sandy Urban Growth Boundary	Remove vertical curve, relocate intersection, add paved shoulders and turn lanes at major intersections; investigate speed zone
3048 3050	5-11b	Lolo Pass Rd	US 26 to Barlow Trail Rd	Safety analysis; add paved shoulders in accordance with the Active Transportation Plan
3051	5-11b	Marmot Rd	Ten Eyck to Barlow Trail Rd	Add paved shoulders in accordance with the Active Transportation Plan
3049 3052	5-11b	Mt Hood Aerial Transportation Link	Between Ski Bowl, Government Camp Village and Timberline Lodge	Aerial transportation link

Table 5-3c Long Term Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
3050 3053	5-11b	Orient Dr	US 26 north to County line	Add paved shoulders
3051 3054	5-11b	Porter Rd Bridge over Delph Creek	~100 ft east of Wilcox Rd	Replace bridge
3052 3055	5-11b	Salmon River Rd	US 26 to Welches Rd	Add paved shoulders
3053 3056	5-11b	Springwater Rd	Hayden Rd to OR 211	Add paved shoulders
3054 3057	5-11b	Ten Eyck Rd	Lusted Rd to City of Sandy US-26	Remove vertical curve, relocate intersection, add paved shoulders, turn lanes at major intersections; investigate speed zone. For paved shoulders between City of Sandy and Marmot Rd, refer to the Active Transportation Plan
3055 3058	5-11b	Tickle Creek Trail	Springwater Corridor to Sandy city limits	Construct multi-use path in accordance with the Active Transportation Plan
3056 3059	5-11b	Welches Rd	Birdie Ln to Salmon River Rd	Add paved shoulders
3057 3060	5-11b	Wildcat Mountain Dr	OR 224 to Firwood Rd	Add paved shoulders
3058 3061	5-11c	Aldercrest Dr	Thiessen Rd to Oatfield Rd	Add pedestrian facilities to one side of the road and bikeways
3059 3062	5-11c	Clackamas Rd	Clackamas Rd / I-205 interchange	Construct bike/pedestrian bridge over I-205
3060 3063	5-11c	Hill Rd	Oatfield Rd to Thiessen Rd	Add bikeways and pedestrian facilities
3061 3064	5-11c	Johnson Rd / McKinley Rd	OR 224 to I-205 multi-use path	Bikeway and pedestrian facilities infill. From Thiessen Rd to I-205 Multi-use Path, construct in accordance to the Active Transportation Plan
3062 3065	5-11c	McNary Rd / Mabel Ave	Oatfield Rd to Webster Rd	Add bikeways and pedestrian facilities
3063 3066	5-11c	Naef Rd	Oatfield Rd to River Rd	Add pedestrian and bicycle facilities in accordance with the Active Transportation Plan
3064 3067	5-11c	Oatfield Rd	Oatfield Rd / Hill Rd intersection	Add left-turn lanes, install signal if warranted
3065 3068	5-11c	Oatfield Rd	Milwaukie city limits to Gladstone city limits	Fill gaps in pedestrian facilities and bikeways
3066 3069	5-11c	Oatfield Ridge Connection	Between Jennings Ave and Thiessen Ave over Oatfield Ridge	Construct multi-use path
3067 3070	5-11c	Oetkin Rd / Naef Rd	Oatfield Rd to Thiessen Rd	Add bikeways in accordance with the Active Transportation Plan
3068 3071	5-11c	Portland Ave	Jennings Ave to Hull Ave	Fill gaps in pedestrian facilities
3069 3072	5-11c	Risley Ave	Arista Dr to Hager Rd	Fill gaps in pedestrian facilities
3070 3073	5-11c	River Rd	Courtney Ave to Oak Grove Blvd	Add pedestrian facilities
3071 3074	5-11c	River Rd	Risley Ave to Rinearson Rd	Add pedestrian facilities
3072 3075	5-11c	Roethe Rd	River Rd to OR 99E (McLoughlin Blvd)	Add bikeways, pedestrian facilities and traffic calming
3073 3076	5-11c	Rusk Rd	OR 224 South to Aldercrest Rd	Add pedestrian facilities on one side of the roadway and bikeways
3074 3077	5-11c	Strawberry Ln	Webster Rd to 82nd Dr	Add pedestrian facilities and fill bikeway gaps
3075 3078	5-11c	Thiessen Rd	Thiessen Rd / Hill Rd intersection	Add right-turn lane on Thiessen Rd; consider converting to two-way stop controlled or installing roundabout
3079	5-11c	Thiessen Rd	Webster Rd to Johnson Rd	Add pedestrian facilities and bikeways in accordance with the Active Transportation Plan

Table 5-3c Long Term Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
3076 3080	5-11c	View Acres Rd	Oatfield Rd to Hill Rd	Add pedestrian facilities and traffic calming
3077 3081	5-11c	Webster Rd	Webster Rd / Jennings Ave and Webster Rd / Roots Rd intersections	Construct traffic signals, turn lanes
3078 3082	5-11c	Webster Rd	Webster Rd / Strawberry Ln intersection	Add signal; construct southbound and westbound left-turn lane
3079 3083	5-11d	65th Ave	Stafford Rd to Tualatin city limits	Add paved shoulders
3080 3084	5-11d	Baker Rd	Tooze Rd to County line	Add paved shoulders
3081 3085	5-11d	Bell Rd	Ladd Hill Rd to Wilsonville Rd	Add paved shoulders
3082 3086	5-11d	Bonita Rd	Carman Dr to I-5	Add bikeways and pedestrian facilities
3083 3087	5-11d	Childs Rd	Stafford Rd to Lake Oswego city limits	Add pedestrian facilities, bikeways and turn lanes at major intersections
3084 3088	5-11d	Graham's Ferry Rd	County line to Westfall Rd	Add paved shoulders
3085 3089	5-11d	Graham's Ferry Rd	Wilsonville Rd to Wilsonville city limits	Add paved shoulders
3086 3090	5-11d	Hoffman Rd / Peach Cove Rd / Riverwood Rd	Mountain Rd to Tualatin River	Add paved shoulders
3087 3091	5-11d	Homesteader Rd	Stafford Rd to Mountain Rd	Add paved shoulders
3088 3092	5-11d	Johnson Rd	Stafford Rd to West Linn city limits	Add paved shoulders and turn lanes at major intersections
3089 3093	5-11d	Ladd Hill Rd	Wilsonville Rd to Washington County line	Add paved shoulders and turn lanes at major intersections
3090 3094	5-11d	Mountain Rd	Stafford Rd to Hoffman Rd-Canby Ferry	Add paved shoulders in accordance with the Active Transportation Plan
3091 3095	5-11d	Petes Mountain Rd	West Linn city limits to Hoffman Rd	Add paved shoulders and turn lanes at major intersections
3092 3096	5-11d	Pleasant Hill Rd / McConnell Rd / Tooze Rd	Ladd Hill Rd to Westfall Rd	Add paved shoulders
3093 3097	5-11d	Schaeffer Rd	Mountain Rd to Petes Mountain Rd	Add paved shoulders
3094 3098	5-11d	Schatz Rd / 55th Ave / Meridian Way	65th Ave to Stafford Rd	Add paved shoulders
3095 3099	5-11d	Tualatin / Lake Oswego Pedestrian and Bicycle Bridge	Tualatin River Bridge	Construct bike / pedestrian bridge
3100	5-11d	Willamette River Greenway	Lake Oswego north to County Line	Construct multi-use path in accordance with the Active Transportation Plan.
3101	5-11d	Willamette River Greenway	Canby Ferry to City of Wilsonville	Construct multi-use path in accordance with the Active Transportation Plan.
3096 3102	5-11d	Wilsonville Rd	Wilsonville Rd / Bell Rd intersection	Realign roadway and grade improvements
3097 3103	5-11d	Wilsonville Rd	Wilsonville Rd / Edminston Rd intersection	Remove bank, remove horizontal curve, relocate intersection
3098 3104	5-11d	Wilsonville Rd Bridge	~300 feet south of Bell Rd	Replace bridge nearing the end of its useful life

Table 5-3c Long Term Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
3099 3105	5-11d	Wisteria Rd / Woodbine Rd	Rosemont Rd to Johnson Rd	Add paved shoulders
3100 3106	5-11e	Airport Rd	Arndt Rd to Miley Rd	Add turn lanes at major intersections
3101 3107	5-11e	Bakers Ferry Rd	Springwater Rd to OR 224	Add paved shoulders in accordance with the Active Transportation Plan and turn lanes at major intersections; remove horizontal curve and relocate intersection from Eaden Rd to OR 224
3102 3108	5-11e	Barnards Rd	Meridian Rd to Canby-Marquam Hwy	Add paved shoulders
3103 3109	5-11e	Barnards Rd	Needy Rd to Stuwe Rd	Reconstruct bridge and widen to 36 feet
3104 3110	5-11e	Beavercreek Rd	Yeoman Rd/Steiner Rd to OR 211	Add paved shoulders
3105 3111	5-11e	Bradley Rd	Redland Rd to Holcomb Blvd	Add turn lanes at major intersections
3106 3112	5-11e	Bradley Rd	Gronlund Rd to Redland Rd	Add paved shoulders
3113	5-11e	Bremer Rd	Central Point Rd to Haines Rd	Add paved shoulders in accordance with the Active Transportation Plan
3107 3114	5-11e	Buckner Creek Rd	Gard Rd to Cochell Rd	Add paved shoulders
3115	5-11e	Butteville Rd	Willamette River to County line	Add paved shoulders in accordance with the Active Transportation Plan
3108 3116	5-11e	Canby-Marquam Highway	OR 170 / Macksburg Rd intersection	Reconstruct intersection; install southbound left-turn lane and northbound right-turn lane
3109 3117	5-11e	Canby-Marquam Highway	City of Canby to OR 211	Add paved shoulders
3110 3118	5-11e	Carus Rd	Central Point Rd to Beavercreek Rd	Add paved shoulders
3111 3119	5-11e	Casto Rd	Spangler Rd to Central Point Rd	Add paved shoulders and turn lanes at major intersections
3112 3120	5-11e	Central Point Rd	Parrish Rd to Mulino Rd	Smooth curves; add paved shoulders (Parrish Rd to Bremer Rd in accordance with the Active Transportation Plan)
3113 3121	5-11e	Clackamas River Dr	Oregon City limits to Springwater Rd	Construct bikeway in accordance with the Active Transportation Plan. Add turn lanes at Springwater Rd and Forsythe Rd.
3122	5-11e	Dryland Rd	Macksburg Rd to Toliver Rd	Add paved shoulders in accordance with the Active Transportation Plan
3123	5-11e	Eaden Rd	Bakers Ferry Rd to Springwater Rd	Add paved shoulders in accordance with the Active Transportation Plan
3114 3124	5-11e	Fellows Rd	Redland Rd to Lower Highland Rd	Add paved shoulders and turn lanes at major intersections
3115 3125	5-11e	Ferguson Rd	Beavercreek Rd and Henrici Rd	Reduce the speed limit and install traffic calming
3116 3126	5-11e	Fischers Mill Rd	Redland Rd to Springwater Rd	Add paved shoulders in accordance with the Active Transportation Plan
3117 3127	5-11e	Forsythe Rd	Oregon City line to Bradley Rd	Add paved shoulders
3118 3128	5-11e	Forsythe Rd	Oregon City limit to Bradley Rd	Add center turn lane and paved shoulders
3119 3129	5-11e	Forsythe Rd	Forsythe Rd / Victory Rd intersection	Realign, widen Victory Rd; remove or decrease curves along Forsythe Rd; relocate intersection
3120 3130	5-11e	Gard Rd	~100 ft south of Old Clarke Rd	Reconstruct bridge to accommodate paved shoulders
3121 3131	5-11e	Gronlund Rd / Hattan Rd	Bradley Rd to Springwater Rd	Add paved shoulders and turn lanes at major intersections
3132	5-11e	Haines Rd	Bremer Rd to Territorial Rd	Add paved shoulders in accordance with the Active Transportation Plan

Table 5-3c Long Term Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
3133	5-11e	Harms Rd	Kraxberger Rd to Macksburg Rd	Construct bikeway in accordance with Active Transportation Plan
3122 3134	5-11e	Henrici Rd	Between Driftwood Dr and Shore Vista Dr	Widen bridge to accommodate paved shoulders
3123 3135	5-11e	Holcomb Blvd	Edenwild Ln to Bradley Rd	Add paved shoulders and turn lanes at Holcomb Blvd / Bradley Rd
3136	5-11e	Hwy 170 / Kraxberger Rd	City of Canby to Harms Rd	Add paved shoulders in accordance with the Active Transportation Plan
3137	5-11e	Jubb Rd	Redland Rd to Springwater Rd	Add paved shoulders in accordance with the Active Transportation Plan
3124 3138	5-11e	Kamrath Rd	Carus Rd to Spangler Rd	Safety analysis at Carus Rd, add paved shoulders, remove or decrease horizontal curves north of Spangler Rd
3139	5-11e	Knights Bridge Rd / Barlow Rd / Arndt Rd	Canby boundary to Airport Rd	Add bikeway in accordance with the Active Transportation Plan
3125 3140	5-11e	Knights Bridge Rd Bridge	~3,200 feet east of Barlow Rd	Replace bridge (nearing the end of its useful life)
3126 3141	5-11e	Leland Rd	Oregon City line to Beaver Creek Rd	Add paved shoulders in accordance with the Active Transportation Plan
3127 3142	5-11e	Leland Rd	~1,000 ft north of Warnock Rd	Reconstruct bridge to accommodate paved shoulders in accordance with the Active Transportation Plan
3128 3143	5-11e	Lone Elder Rd	County line to Canby-Marquam Hwy	Add paved shoulders
3129 3144	5-11e	Lower Highland Rd	Beaver Creek Rd to Fellows Rd	Add paved shoulders and turn lanes at major intersections
3130 3145	5-11e	Macksburg Rd	Canby Marquam Hwy to OR 213	Add paved shoulders and turn lanes at major intersections
3131 3146	5-11e	Maplelane Rd	~1,800 ft west of Walker Rd	Add paved shoulders
3132 3147	5-11e	Maplelane Rd	Oregon City Urban Growth Boundary to Ferguson Rd	Add paved shoulders
3133 3148	5-11e	Mattoon Rd	Fischers Mill Rd to Redland Rd	Add paved shoulders in accordance with the Active Transportation Plan and turn lanes at major intersections; remove vertical curves, remove horizontal curves north of Redland Rd
3134 3149	5-11e	Meridian Rd	Lone Elder Rd to OR 211	Add paved shoulders
3135 3150	5-11e	Meridian Rd	Elliott Prairie Rd to Barlow Rd	Add paved shoulders; remove or decrease horizontal and vertical curves
3136 3151	5-11e	Miley Rd	Airport Rd to Eilers Rd	Add paved shoulders
3137 3152	5-11e	Molalla Ave	OR 213 to Molalla City limits	Add paved shoulders
3138 3153	5-11e	New Era Rd / Haines Rd	OR 99E to Leland Rd	Add paved shoulders
3139	5-11e	Redland Rd	Fischers Mill Rd to Springwater Rd	Add paved shoulders
3140 3154	5-11e	Redland Rd	~900 ft west of Holly Ln	Reconstruct bridge to include shoulders and bikeways
3141 3155	5-11e	Redland Rd	~400 ft west of Holly Ln	Reconstruct bridge to include shoulders and bikeways
3142 3156	5-11e	Redland Rd	Henrici Rd to Oregon City limit	Add paved shoulders and bikeway in accordance with the Active Transportation Plan
3143 3157	5-11e	Redland Rd	Henrici Rd to Springwater Rd	Add paved shoulders and turn lanes at major intersections. For the section between Mattoon Rd and Jubb Rd, see the Active Transportation Plan.
3144 3158	5-11e	Ridge Rd	Lower Highland Rd to Redland Rd	Add paved shoulders

Table 5-3c Long Term Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
3145 3159	5-11e	Rock Creek (Kropf Rd) Bridge	~3,500 ft north of Gibson Rd	Replace bridge
3146 3160	5-11e	S Killdeer Rd	Ferguson Road and Yeoman Road	Extend S Killdeer Rd to connect with S. Ivel Rd. and provide bike/pedestrian access
3147 3161	5-11e	South End Rd	Oregon City limits to OR 99E	Smooth curves; add paved shoulders
3148 3162	5-11e	Spangler Rd	Casto Rd to Beaver Creek Rd	Add paved shoulders and turn lanes at major intersections
3149 3163	5-11e	Springwater Rd	Bakers Ferry Rd to Hayden Rd	Add paved shoulders and turn lanes at major intersections. For paved shoulders between Eaden Rd and Hayden Rd, see the Active Transportation Plan.
3150 3164	5-11e	Territorial Rd	Haines Rd to OR 99E	Add bikeways in accordance with the Active Transportation plan
3151 3165	5-11e	Thayer Rd/Ferguson Rd	Oregon City line to Redland Rd	Add paved shoulders
3152 3166	5-11e	Toliver Rd	Dryland Rd to Molalla city Limits	Add paved shoulders in accordance with the Active Transportation Plan
3153 3167	5-11e	Unger Rd	Beaver Creek Rd to OR 211	Add paved shoulders and turn lanes at major intersections
3154 3168	5-11e	Union Hall Rd	Central Point Rd to El Dorado Rd	Add paved shoulders
3155 3169	5-11e	Willamette River Greenway	Oregon City to Canby	Construct multi-use path in accordance with the Active Transportation Plan.
3156 3170	5-11f	Bird Rd	Groshong Rd to Wilhoit Rd	Add paved shoulders and turn lanes at major intersections
3157 3171	5-11f	Blair Rd	Groshong Rd to Maple Grove Rd	Add paved shoulders and turn lanes at major intersections
3158 3172	5-11f	Callahan Rd S / Ramsby Rd	Dickey Prairie Rd to Fernwood Rd	Add paved shoulders and turn lanes at major intersections
3159 3173	5-11f	Dhooghe Rd	OR 211 to Fernwood Rd	Add paved shoulders and turn lanes at major intersections
3160 3174	5-11f	Fernwood Rd	Dhooghe Rd to Callahan Rd	Add paved shoulders and turn lanes at major intersections
3161 3175	5-11f	Gray's Hill Rd	Green Mountain Rd to OR 211	Add paved shoulders
3162 3176	5-11f	Maple Grove Rd	Nowlens Bridge Rd to Sawtell Rd	Add paved shoulders and turn lanes at major intersections
3163 3177	5-11f	Nowlens Bridge Rd	OR 213 to Maple Grove Rd	Add paved shoulders and turn lanes at major intersections
3164 3178	5-11f	Sawtell Rd	Maple Grove Rd to Wilhoit Rd	Add paved shoulders and turn lanes at major intersections
3165 3179	5-11f	Wildcat Rd	Wilhoit Rd to OR 213	Add paved shoulders and turn lanes at major intersections
3166 3180	5-11f	Wright Rd	OR 211 to Callahan Rd	Add paved shoulders

Table 5-3d Regional Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description	Priority
4000	County-wide	TSP Refinement	State facility locations applicable where mobility target is not met in 2035	TSP Refinement to develop alternative mobility targets for state facilities consistent with Oregon Highway Plan (OHP) 1F3.	High
4001	5-11a	I-205 / Sunnyside Road interchange	I-205 / Sunnyside Road interchange	Add dual northbound right-turns; install bike signal.	High
4002	5-11a	OR 212	OR 212 / 172nd Ave intersection	Add second eastbound left-turn lane	High
4003	5-11a	OR 212	SE 162nd to Anderson Rd	Add bikeways, pedestrian facilities ways, and landscape pedestrian facilities buffer; widen to 6 lanes within Happy Valley; add center turn lane within Damascus	High
4004	5-11a	OR 213	Sunnybrook Blvd to Portland City Limits	Extend fiberoptic communications, CCTV at key intersections and adaptive signal timing	High
4005	5-11a	OR 224	OR 224 / Lake Rd / Webster Rd intersection	Add turn-lanes, including second left-turn lane on westbound OR 224, second left-turn lane and right-turn lane on northbound SE Webster Rd, and second left-turn lane on southbound SE Lake Rd	High
4006	5-11a	OR 224	OR 224 / Johnson Rd intersection	Add second left-turn lane on westbound OR 224	High
4007	5-11a	OR 224	OR 224 / Hubbard Rd / 135th Ave intersection	Add intersection improvements, including right-turn lanes	High
4008	5-11a	OR 224	Springwater Rd / OR 224 intersection	Add signal and turn lanes on all approaches	High
4009	5-11a	OR 224	Rock Creek Junction to Midway St	Widen to four lanes; add bikeways.	High
4010	5-11a	Sunrise Project - Preliminary Engineering	Webster Rd/ OR 224 to 172nd Ave / OR 212	Preliminary engineering from Webster Rd to 172nd Ave	High
4011	5-11a	Sunrise Project - Right-of-Way	Webster Rd/ OR 224 to 172nd Ave / OR 212	Acquire right-of-way to accommodate 6 lane expressway plus auxiliary lanes	High
4012	5-11a	SunriseProject - Multi-use Path	122nd to Rock Creek Junction	Construct multi-use path from 122nd to Rock Creek Junction parallel to the Sunrise project consistent with FEIS.	High
4013	5-11b	Government Camp Loop Rd	US 26 to US 26	Add bikeways through Government Camp in accordance with the Active Transportation Plan	High
4013-4014	5-11b	OR 224	OR 224 /232nd Ave intersection	Install traffic signal or roundabout	High
4014-4015	5-11b	OR 224	Eaglecreek Rd / OR 224 intersection	Install signal	High
4015-4016	5-11c	OR 99E	Milwaukie city limit to Gladstone city limit	Add bikeways, pedestrian facilities ways, median enhancements, crosswalks and pedestrian facilities refuges	High
4016-4017	5-11d	I-205	Stafford Rd to OR 99E	Work with ODOT, Metro, Oregon City, West Linn and any other effected jurisdictions to analyze and develop a solution to the transportation bottle neck on I-205 between Oregon City and I-205 / Stafford Road Interchange. Possible solutions include widening to 3-lanes in each direction.	High
4017-4018	5-11e	I-205	Willamette River to West Linn city limit	Add southbound truck climbing lane	High
4018-	5-11e	I-205	I-205 Corridor	Corridor-wide operational improvements	High
4019-4020	5-11e	OR 211	Beavercreek Rd, Union Hall Rd to Dhooghe Rd	Widen to include shoulders, bikeways, add passing lanes where needed and turn lanes at major intersections	High

Table 5-3d Regional Capital Projects

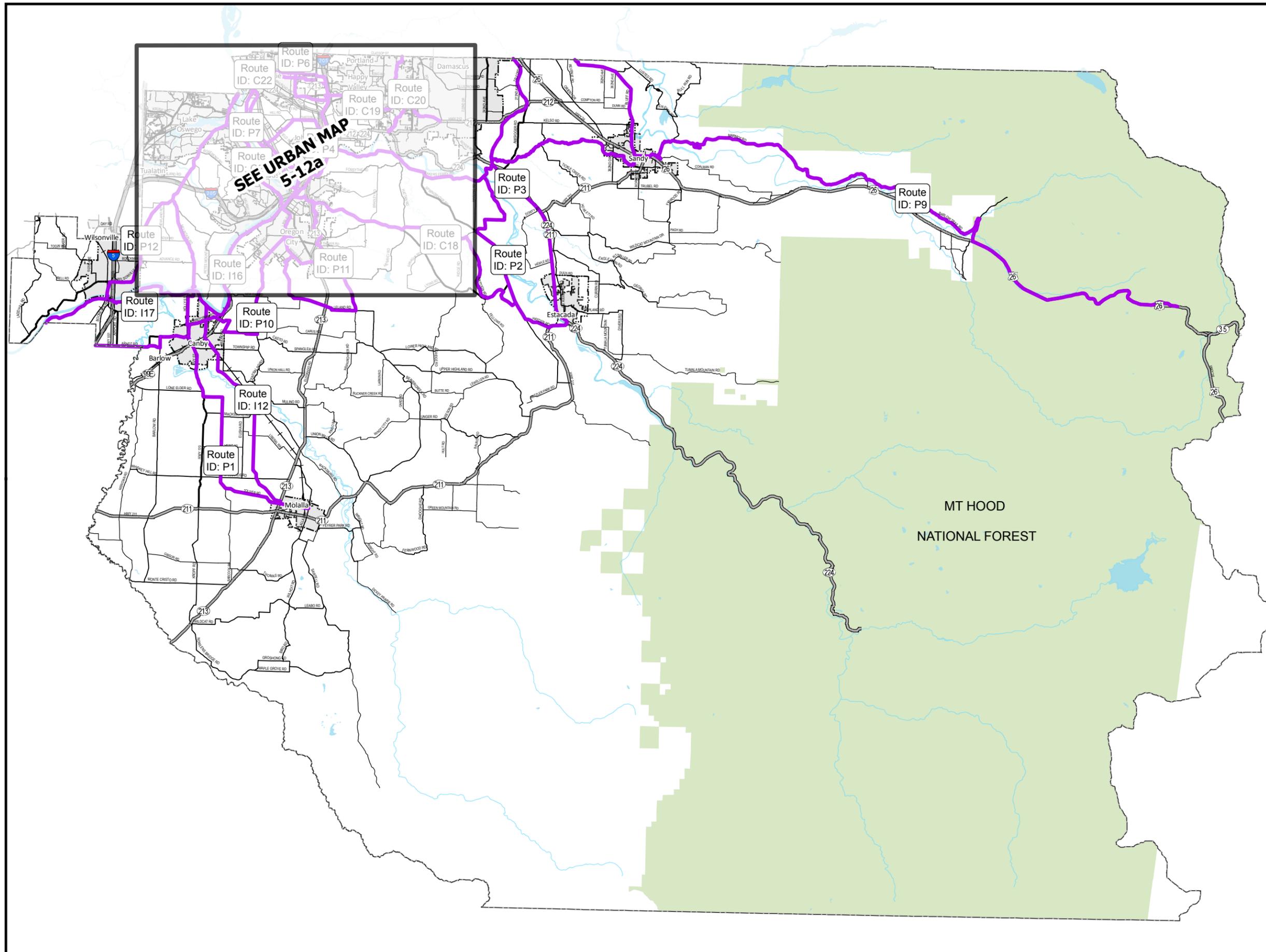
Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description	Priority
4020-4021	5-11e	OR 213	OR 213 / Spangler Rd intersection	Install traffic signal to replace existing two-way stop	High
4021-4022	5-11e	OR 213	OR 213 / Henrici Rd intersection	Install traffic signal or roundabout and additional intersection improvements as needed	High
4022-4023	5-11e	OR 213	OR 213 / Leland Rd intersection	Add northbound through auxiliary lane	High
4023-4024	5-11e	OR 213	Leland Rd / Union Hall Rd intersection	Add southbound auxiliary lane	High
4024-4025	5-11e	OR 213	Mulino to Molalla	Perform road safety audit or transportation safety review to identify appropriate safety improvements	High
4025-4026	5-11e	OR 99E	OR 99E / Barlow Rd intersection	Add left-turn lane on southbound Barlow Rd - To widen Barlow Rd to add a southbound left turn lane on the north approach would need to modify the existing railroad crossing warning system	High
4026-4027	5-11a	I-205 / Johnson Creek Blvd interchange	I-205 / Johnson Creek Blvd interchange	Add loop ramp and northbound on-ramp; realign southbound off-ramp and install dual right-turn lanes	Medium
4027-4028	5-11a	I-205 / OR 212/224 Interchange	In vicinity of Roots Rd and McKinley Ave	Connect bikeways in accordance with the Active Transportation Plan	Medium
4028-4029	5-11a	OR 212	Rock Creek Junction to 172nd	Construct climbing lane	Medium
4029-4030	5-11a	OR 212	OR 212 / SE 162nd Ave intersection	Add left-turn pockets and traffic signal	Medium
4030-4031	5-11a	OR 213	Sunnyside Rd to Sunnybrook Rd	Widen to 7 lanes with boulevard treatments	Medium
4031-4032	5-11a	OR 213	OR 213 / Harmony Rd / Sunnyside Rd intersection	Add bikeways, pedestrian facilities ways, dual northbound and southbound left-turn lanes, and lighting; convert driveways north of intersection to right-in / right-out	Medium
4032-4033	5-11a	OR 224	OR 224 / Rusk Rd off-ramp	Extend right-turn lane on OR 224	Medium
4033-4034	5-11a	OR 224	Milwaukie city limits to I-205	Construct multi-use path as parallel route to OR 224	Medium
4034-4035	5-11a	OR 224	Lake Rd / Johnson Rd / Pheasant Ct	Realign Lake Rd / Johnson Rd to provide southern OR 224 access via Pheasant Ct; add turn lanes at OR 224 / Pheasant Ct intersection; close access at Lake / Webster south of OR 224	Medium
4035-4036	5-11a	OR 99E	OR 99E / Jennings Ave intersection	Determine safe connection of Trolley Trail at OR 99E / Jennings Ave intersection	Medium
4036-	5-11a	Sunrise Project	I-205 to 172nd Ave	Construct improvements to 172nd	Medium
4037-4038	5-11b	OR 211	Hayden Rd to OR 224	Widen to rural arterial standard with shoulders, bikeways in accordance with the Active Transportation Plan and turn lanes at major intersections	Medium
4038-4039	5-11b	US 26	Govt. Camp Loop W to OR 35	Implement Finding of Mt Hood Multimodal Study including phased safety improvements	Medium
4039-4040	5-11b	US 26	OR 35 Junction to Wasco County line	Widen roadway to include bikeways /shoulders, add passing lanes where needed and turn lanes at major intersections	Medium
4040-4041	5-11e	OR 211	OR 170 (Canby-Marquam Hwy) / OR 211 intersection	Install eastbound and westbound left-turn lanes, and eastbound right-turn lane; remove or decrease horizontal curve	Medium
4041-4042	5-11e	OR 211	Marion County line to OR 170 (Canby-Marquam Hwy)	Widen to include shoulders, bikeways, add passing lanes where needed and turn lanes at major intersections	Medium
4042-4043	5-11e	OR 99E	Barlow Rd to Marion County line	Four lane widening with median, left-turn lanes from mile post 24.05	Medium

Table 5-3d Regional Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description	Priority
4043-4044	5-11e/f	OR 213	Oregon City boundary to Marion County line	Add shoulders and bikeways	Medium
4044-4045	5-11a	OR 212	I-205 to OR 224	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4045-4046	5-11a	OR 212	Within the Damascus City Limits (Armstrong Cr to 257th)	Obtain right-of-way for future 4 lane facility with planted median and 5 lanes at major intersections; build as major development occurs and apply access management to reduce number of driveways.	Low
4046-4047	5-11a	OR 213	Clatsop St to Sunnyside Rd	OR 213/82nd Avenue Boulevard Design Improvements - Widen to add sidewalks, lighting, central median, planting strips and landscaping; fill gaps in the bike and pedestrian facilities network. 2014 ODOT OR 213 paving project programmed King to OR 224.	Low
4047-4048	5-11a	OR 213 (82nd Ave)	Luther Road to Sunnybrook Blvd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4048-4049	5-11a	OR 224	Webster Rd and 82nd Ave	Provide frontage connection on the north side of OR 244	Low
4049-4050	5-11a	OR 224	Springwater Rd to 232nd Dr	Shoulder widening, horizontal realignment, realignment of roadway to bluff	Low
4050-4051	5-11b	OR 211	OR 224 to eastbound US 26	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4051-4052	5-11b	OR 211	OR 224 to Hillcockburn Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4052-4053	5-11b	OR 211	Tickle Creek Rd/OR 211 intersection	Remove or decrease horizontal curve, relocate intersection	Low
4053-4054	5-11b	OR 211	362nd Dr / OR 211 intersection	Remove or decrease vertical curve and remove vegetation	Low
4054-4055	5-11b	OR 211	Eagle Creek Rd to Tickle Creek Rd	Widen to include bikeways /shoulders and add passing /climbing lanes where needed	Low
4055-4056	5-11b	OR 211	0.14 miles east of Coop Rd to Jackknife Rd	Widen to add shoulder / bikeways; realign to remove horizontal and vertical curves	Low
4056-4057	5-11b	OR 211	Tickle Creek Rd to 362nd Dr	Widen to include bikeways /shoulders and add passing /climbing lanes where needed	Low
4057-4058	5-11b	OR 211	Bornstedt Rd to City of Sandy	Add shoulders and bikeways	Low
4058-4059	5-11b	OR 224	232nd Ave to OR 211	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4059-4060	5-11b	OR 224	Fish Creek Rd to National Forest Rd 46	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4060-4061	5-11b	OR 224	Bakers Ferry Rd / OR 224 intersection	Add eastbound right-turn lane	Low
4061-4062	5-11b	OR 224	Amisigger Rd / OR 224 intersection	Install traffic signal; add southbound and eastbound left-turn lanes and westbound right-turn lane	Low
4062-4063	5-11b	OR 224	Heiple Rd / OR 224 intersection	Add southbound right-turn lane	Low
4063-4064	5-11b	OR 224	Bakers Ferry Rd OR 212 to Estacada city limits	Widen to include shoulders and bikeways; add passing lanes where needed	Low
4064	5-11b	OR-224	OR-212 to City of Estacada	Add shoulders and bikeways	Low
4065	5-11b	US 26	US 26 / Haley Rd intersection	Develop a plan to address to address access and safety issues on US 26 at this intersection and implement that plan	Low

Table 5-3d Regional Capital Projects

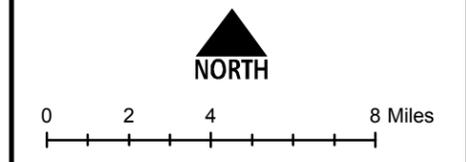
Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description	Priority
4066	5-11b	US 26	Kelso Rd to Duncan Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4067	5-11b	US 26	Duncan Rd to Langensand Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4068	5-11b	US 26	Firwood Rd to Sleepy Hollow Dr	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4069	5-11b	US 26	Rhododendron to OR 35	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4070	5-11b	US 26	US 26 / Firwood Rd intersection	Add eastbound right-turn lane	Low
4071	5-11b	US 26	US 26 / Brightwood Loop W	Add westbound right-turn lane	Low
4072	5-11b	US 26	US 26 / Brightwood Loop E	Add westbound right-turn lane	Low
4073	5-11b	US 26	Lolo Pass Rd to Govt. Camp Loop Rd. W	Implement Finding of Mt Hood Multimodal Study including ITS approach with variable speed signage	Low
4074	5-11c	OR 99E	Park Ave to Gladstone city limits	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4075	5-11d	OR 43	Lake Oswego to Portland	Develop active transportation connection consistent in accordance with the Connecting Clackamas Plan Active Transportation Plan .	Low
4076	5-11e	OR 211	Dhooghe Rd / OR 211 intersection	Remove or decrease horizontal curve, relocate intersection	Low
4077	5-11e	OR 211	OR 170 (Canby-Marquam Hwy) to City of Molalla	Add shoulders and bikeways	Low
4078	5-11e	OR 211	Needy Rd to 0.6 miles west of Needy Rd	Remove or decrease vertical curve to allow passing zone, add passing lane in one or both directions, possible relocation of intersection	Low
4079	5-11e	OR 211	Molalla city limits to Hayden Rd Estacada-city limits	Widen to rural arterial standard (2 lanes) with shoulders and bikeways	Low
4080	5-11e	OR 211	Beavercreek Rd to Upper Highland Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4081	5-11e	OR 213	OR 213 / Carus Rd intersection	Install traffic signal to replace existing two-way stop See U339	Low
4082	5-11e	OR 213	OR 213 / Beavercreek Rd intersection	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4083	5-11e	OR 213	Carus Rd / OR 213 intersection	Install southbound left-turn and right-turn lanes	Low
4084	5-11e	OR 213-	Macksburg Rd to Liberal Way	Widen shoulders to state standards-	Low
4085-	5-11e	OR 99E	Oregon City to Canby	Add shoulders and bikeways	Low
4086- 4085	5-11e	OR 99E	Sequoia Parkway to Lone Elder Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low
4087- 4086	5-11e	OR 99E	Territorial Rd to Metro boundary	Perform road safety audit or transportation safety review to identify appropriate safety improvements	Low



Principal Active Transportation Routes

Rural

-  Principal Active Transportation Routes
-  Incorporated City
-  Urban Growth Boundary



Ordinance ZDO-251
Last Amended xxxxx



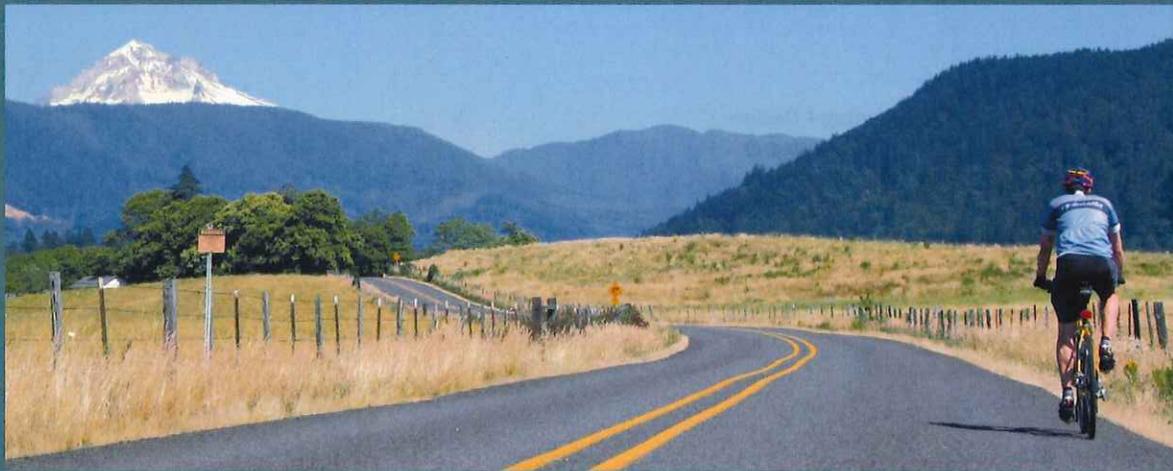
CLACKAMAS COUNTY
COMPREHENSIVE PLAN

MAP 5-12b



CLACKAMAS COUNTY

ACTIVE TRANSPORTATION PLAN



FEBRUARY 2015

DRAFT

Prepared by:



Clackamas County
Department of Transportation & Development
150 Beaver Creek Road
Oregon City, Oregon 97045
(503) 742-4500



SW 610 Alder Street, Suite 700
Portland, Oregon 97205
(503) 228-5230

With:



Alta Planning + Design
711 SE Grand Avenue
Portland, Oregon 97214
(503) 230-9862

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

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Appendix F	Additional Funding Information

PREFACE

The development of this plan was guided by the Project Management Team (PMT) made up of Clackamas County staff with input from the Oregon Department of Transportation (ODOT), a Technical Advisory Committee (TAC) and a Public Advisory Committee (PAC). Members of these committees are as follows:

Project Management Team (PMT)

- Karen Buehrig, Clackamas County Transportation Planning Supervisor
- Gail Curtis, ODOT Region 1, TGM Grant Manager
- Abbot Flatt, Clackamas County, Associate Transportation Planner
- Scott Hoelscher, Clackamas County, Project Manager
- Lori Mastrantonio, Clackamas County Multi-Modal Planner
- Susan Wright, P.E., Kittelson and Associates, Inc., Consultant Project Manager

PMT Support:

- Matt Berkow, Alta + Design
- Ellen Rogalin, Clackamas County Public & Government Affairs
- Jesse Boudart, E.I., Kittelson and Associates, Inc., Transportation Analyst

Public Advisory Committee (PAC)

Clackamas County Pedestrian / Bikeway Advisory Committee

- Gwenn Laubach Alvarez
- Naomi Angier
- Peter Goodkin
- Kelli Grover
- Dale Guenther
- Pete Ihrig
- Del Scharffenberg
- Dick Weber
- Blane Meier

At-Large Representatives:

- Ralph Goldstein: Bicycle Transportation Alliance (BTA)
- Skip Haak: Estacada Parks & Recreation Commission

- Matthew Hampton: Damascus-Boring Area Resident
- Ted Hartzell: Happy Valley Resident
- Joseph Lowe: Transportation-Disadvantaged
- Blane Meier: Bike Shop Owner
- Melinda Montecucco: Canby Bicycle and Pedestrian Advisory Committee
- Lynn Mutrie: Oregon Safe Routes to School Program
- Jack Pendleton: Canby-Molalla Area Resident
- Lesa-Kay Pinker: Pedestrian Interests
- Sally Rask: Equestrian Resident Representative
- Rob Smoot: Clackamas County Parks Board
- George Wilson: Mt. Hood Area Resident

Technical Advisory Committee (TAC)

Clackamas County

- Jae Heidenreich: Tourism & Cultural Affairs
- Scott Hoelscher: Planning & Zoning Division
- Jeroen Kok: North Clackamas Parks & Recreation District
- Lori Mastrantonio: Transportation Engineering Division
- Rick Nys: Transportation Engineering Division
- Joe Marek: Traffic Engineer

Oregon Department of Transportation (ODOT)

- Gail Curtis: Senior Planner
- Jessica Horning: Transit and Active Transportation Liaison
- Avi Tayar, P.E.

TriMet

- Jeff Owen

Metro

- Lake McTighe

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The purpose of the Clackamas County Active Transportation Plan (ATP) is to identify key active transportation routes that connect destinations and communities in Clackamas County, both rural and urban. The 23 Principal Active Transportation (PAT) routes detailed in this plan provide access to popular and needed services such as transit, shopping and employment centers, and provide safe facilities for recreation and exercise. Making the pedestrian and bicycling improvements along the PAT routes will increase active transportation opportunities, improve safety and provide more convenience for people to walk, bike and use transit in Clackamas County.

At the project outset, the following vision was developed by the Project Management Team (PMT), in conjunction with the Public Advisory Committee (PAC):

Active Transportation Vision - Clackamas County will have an interconnected, safe and equitable active transportation network accessible to and used by people who live, work, do business and play within the County.

A set of goals that support this vision for active transportation were prepared following the development of the vision. The goals for active transportation in Clackamas County include:

- ***Active Transportation Infrastructure:*** Plan an active transportation network consisting of multi-use paths, bikeways and walkways in Clackamas County to encourage more residents to bicycle or walk for recreation and transportation.
- ***Connectivity:*** Plan and develop the Principal Active Transportation routes to enhance connections to transit, schools, communities, town centers, shopping, employment, parks and other significant destinations in Clackamas County.
- ***Tourism Development:*** Create an active transportation system that will be a draw for tourists and an opportunity to promote Clackamas County as one of the premier cycling destinations in Oregon.
- ***Accessibility and Safety:*** Build an active transportation network that is accessible and safe for all ages, abilities and incomes.
- ***Improve Health:*** Plan and provide infrastructure that allows people to safely walk, run or cycle for improved health.

PLAN OVERVIEW

The Active Transportation Plan (ATP) covers both the urban and rural portions of the County and works together with the Bicycle Master Plan and the Pedestrian Master Plan to identify key active transportation facilities in Clackamas County. While the existing Bicycle and Pedestrian Master Plans provide a comprehensive assessment of bicycle and pedestrian forms of transportation, the ATP focuses on the priority routes that connect Clackamas County communities and provide access to important destinations. The ATP sets future pedestrian and bicycle infrastructure priorities by identifying

23 Principle Active Transportation (PAT) routes. The PAT routes, shown in Figure 1, are an interconnected network of off-streets trails and on-street bikeways and pedestrian facilities linking communities and destinations in Clackamas County. Due to their unique role in providing connections, the PAT routes are considered the spine of the active transportation network and the highest functional class for county bikeways and pedways. The other local, neighborhood bikeways and pedways identified in the Bicycle and Pedestrian Master Plans connect to the PAT routes and complete the county-wide network of active transportation routes.

The Clackamas County Active Transportation Plan includes three key components:

1. *Principal Active Transportation Routes*: Detailed analysis of 12 of the PAT routes, including project costs; route description; proposed facility types for various route segments; route map and description of existing facilities along the route.
2. *Facility Design Toolkit*: Catalog of pedestrian and bicycle facility types for a range of rural and urban settings. Each facility type includes a photo illustration; general description of the facility; dimensions and any design considerations unique to that facility.
3. *Signage Plan*: Description and location of amenities for PAT Routes. Recommended amenities include signage, informational kiosks and bike parking.

The Need for a Plan

Why does Clackamas County need an Active Transportation Plan? One reason is the growing popularity of bicycling for recreation as well as commuting and the subsequent need to coordinate previous plans and projects to ensure development of a cohesive active transportation system throughout the County. Second, development of an active transportation strategy and the prioritization of active transportation routes helps position the County for future grant opportunities for infrastructure improvements. Without a plan in place identifying active transportation priorities the County may miss out on opportunities for federal and/or state funding.

In addition, there are 984.4 planned bikeway miles in the Transportation System Plan (TSP) for urban and rural Clackamas County. Consequently, it is necessary to narrow down the nearly 1,000 miles of bikeways and identify the principal or most important routes in the County. Finally, the plan will increase walking and biking opportunities throughout the County and is an opportunity to position the County as a bicycling tourist destination.

Active Transportation Network

The active transportation network detailed in this plan is intended to facilitate both recreational and utilitarian transportation in urban and rural Clackamas County. The 23 Principal Active Transportation (PAT) Routes contain nearly 190 miles of on- and off-road facilities, including 67 miles of multi-use paths, 77 miles of shoulder bikeways, 20 miles of shared lane marking bikeways, 27 miles of bike lanes, and 17 miles of buffered bike lanes.

There are three PAT route categories:

1. **Principal Active Transportation Routes (PATS):** The most important routes to connect communities and key destinations in the county. Section 3 of the ATP includes a detailed analysis of these routes, including recommended facility types and a cost analysis for individual route segments.
2. **Ideal Principal Active Transportation Routes (I-PATS):** Routes that are the best or most ideal active transportation option; however, due to ownership, topographical and/or environmental constraints, I-PATs are considered visionary or long-term projects. Detailed cost and facility-type analysis are not included for the I-PATS.
3. **Connector Principal Active Transportation Routes (C-PATS):** Routes selected due to their regional significance and importance in providing connections. Detailed cost and facility type analysis are not included for C-PAT's.

Figure 1 illustrates the location of the PAT routes while Table 1 provides the route name and number, proposed facility type, route length in miles and the relative project cost.

Public Involvement

A key component of the project was outreach to and involvement of stakeholders – people and organizations that are or may be affected by increased active transportation opportunities in Clackamas County. The Principal Active Transportation routes documented in this plan were identified through a public involvement process and formalized with the project Public Advisory Committee (PAC). Primary public involvement elements included the following:

- | | |
|--|--------------------------------|
| • 17-member Public Advisory Committee | • Project Website |
| • 10-member Technical Advisory Committee | • Virtual open house |
| • Outreach to community and AT groups | • Active Transportation survey |
| • News releases/flyers/fact sheets | • Hamlet meetings |

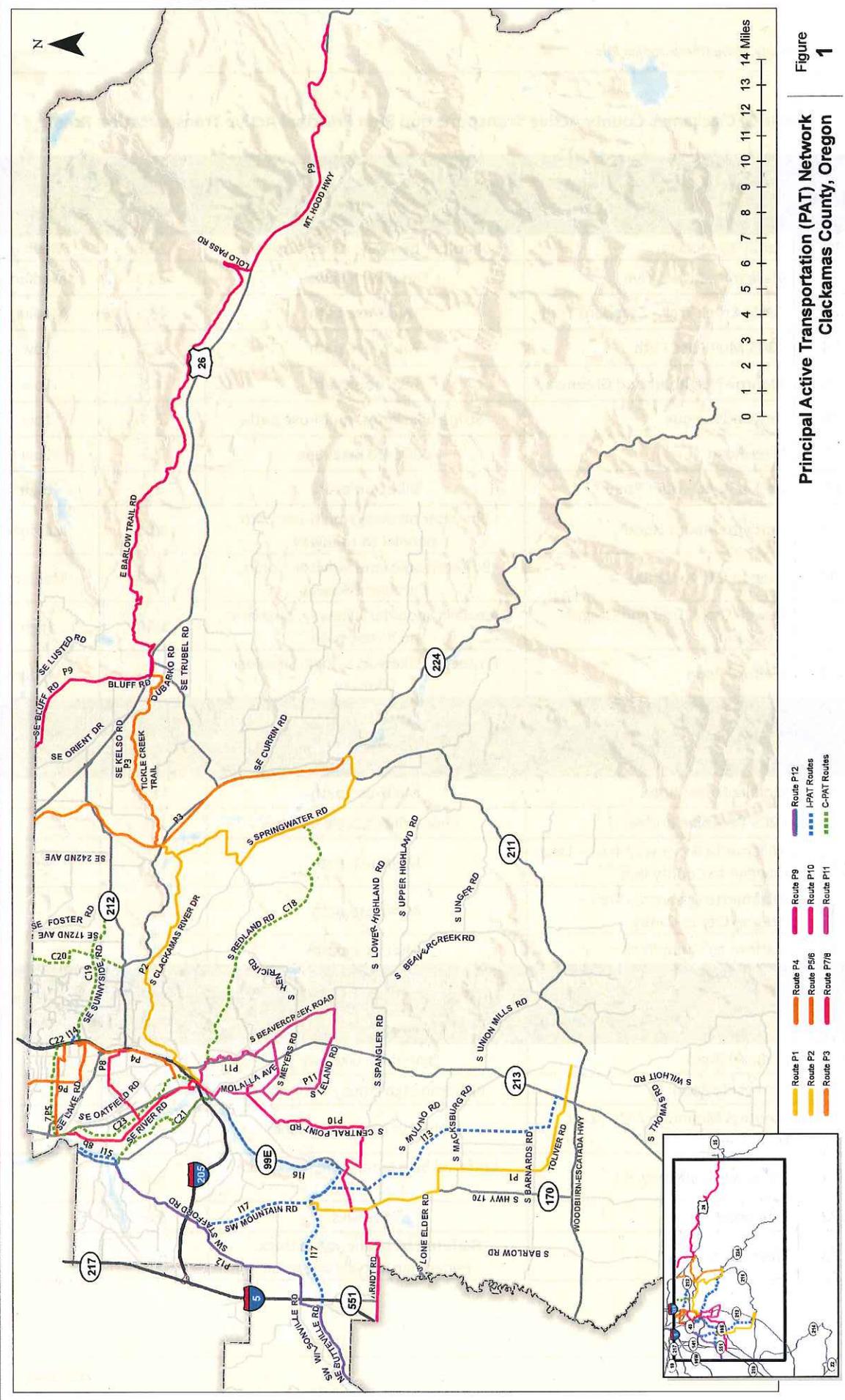
Route Development

One of the primary objectives of the Clackamas County ATP was to identify a connected active transportation network consisting of the highest priority, most important routes in both the urban and rural areas. The PAT Route network documented in this plan includes routes that were identified through a systematic process that involved public and stakeholder consultation at various stages. Key steps in the process included:

1. Development of active transportation corridors – broad swaths of land between destinations for active transportation connectivity. Within each *corridor*, potential routes that connect communities, employment centers, recreational opportunities and/or tourist destinations were identified.
2. Development and application of the following route selection criteria:
 - Route contains many community attractors

- Route serves existing demand
- Route benefits transportation-disadvantaged areas
- Route aligns with adopted plans
- Route leverages previous investment
- Route is scenic
- Route is direct
- Route is suitable given the volume of traffic or posted speed
- Route is cost effective
- Route is feasible given natural features, right of way, etc.

The route alternatives in each corridor were shared with the public through a virtual open house (VOH). Nearly 400 Clackamas County residents expressed their views and preferences on active transportation during the two-week open house. Following the VOH and application of the above route selection criteria, route candidates were refined based on input from the Technical Advisory Committee and the Public Advisory Committee and then investigated in the field to confirm their suitability for inclusion in the Active Transportation Plan. Based on this approach, a set of 23 on- and off-road active transportation routes were identified linking key destinations and municipalities throughout the county.



Principal Active Transportation (PAT) Network
Clackamas County, Oregon

Figure 1

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3001 Feet Intl
Data Source: Clackamas County GIS

Table 1: Clackamas County Active Transportation Plan Principal Active Transportation Routes

Principal Active Transportation Routes				
<i>Route #</i>	<i>Route Name</i>	<i>Proposed Facilities</i>	<i>Length (Miles)</i>	<i>Relative Project Cost</i>
P1	Canby to Molalla	Shoulder bikeway, stripe bike lane	14.8	Medium
P2	Clackamas River Drive	Shoulder bikeway	23.3	Medium
P3	Tickle Creek Trail - Cazadero Trail	Multi-use path	23.5	Medium
P4	I-205 Multi-Use Path	Multi-use path	5.1	Low
P5	Monroe Neighborhood Greenway	Bike boulevard	4.1	Low
P6	Linwood Avenue	Stripe bike lanes, multi-use path	3.9	Low
P7	River Road	Buffered bike lane	7.3	Low
P8	Oetkin Road - Naef Road	Bike boulevard	3.8	High
P9	Sandy to Mount Hood	Shoulder bikeway, multi-use path parallel to roadway	49.8	Medium
P10	Oregon City to Canby	Buffered bike lane, advisory lanes, shoulder bikeway	14.9	Medium
P11	Newell Creek Trail and Oregon City Loop	Sidewalk, shoulder bikeway, bike lane, multi-use path	18.0	High
P12	Stafford Road	Protected bikeway, bridge, shoulder bikeway	14.3	Medium
Ideal Principal Active Transportation Routes				
<i>Route #</i>	<i>Route Name</i>	<i>Proposed Facility</i>	<i>Length (Miles)</i>	<i>Relative Project Cost</i>
I-13	Molalla Forest Road	Multi-use path	11.0	-
I-14	I-205 Ped/Bike Bridge	Pedestrian-bicycle bridge	0.1	-
I-15	Willamette Greenway Trail - Lake Oswego to County line	Multi-use path	1.11	-
I-16	Willamette Greenway Trail – Oregon City to Canby	Multi-use path	8.1	-
I-17	Stafford to Canby Trail	Multi-use path	9.1	-
Connector Principal Active Transportation Routes				
<i>Route #</i>	<i>Route Name</i>	<i>Proposed Facility</i>	<i>Length (Miles)</i>	<i>Relative Project Cost</i>
C18	Redland Road	Shoulder bikeway	13.5	-
C19	Sunnyside Road	Buffered bike lanes / cycle track	5.9	-
C20	Scouters Mountain / Mt. Scott Loop Trail	Multi-use path / bike lane	4.0	-
C21	Old River Road/Hwy. 43	Buffered bike lane, cycle track, bike boulevard	6.7	-
C22	King Road	Sidewalks	4.4	-
C23	Trolley Trail	Buffered bike lane, cycle track, pedestrian/bicycle overpass	6.4	-

IMPLEMENTATION STRATEGY

The ATP identifies a series of projects that will help Clackamas County establish a countywide active transportation network. The County will work with the Oregon Department of Transportation (ODOT), Oregon State Parks, Metro and local agencies within the County to ensure coordination with adopted transportation and trail plans. Funding and development of the routes and projects identified in the ATP will require champions for each potential project from local communities and agencies in order to successfully design and construct the recommended treatments.

The key implementation considerations for completing the recommended active transportation network should focus on safety, completing system gaps and cost effectiveness. The individual projects for each of the proposed Principal Active Transportation (PAT) route segments are recommended to be incorporated into the Clackamas County Comprehensive Plan, specifically in the following Transportation System Plan (TSP) project lists:

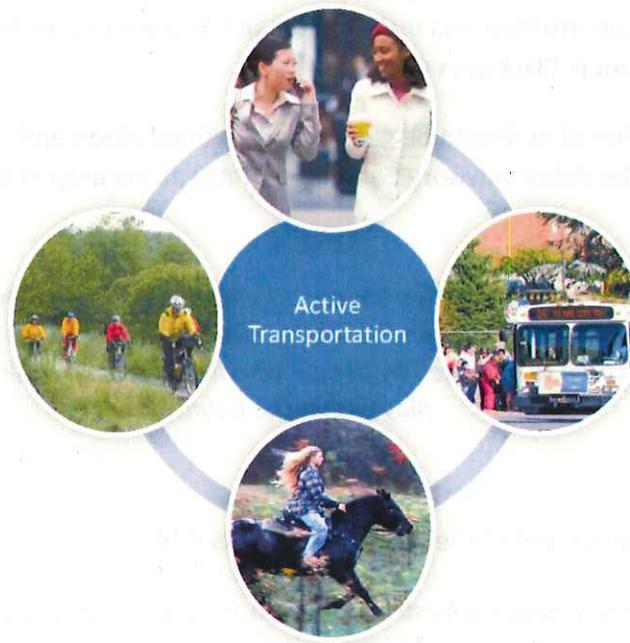
- 20-Year Capital Projects: The prioritized list of needed transportation projects that can reasonably be undertaken given the current estimates of available funding.
- Preferred Capital Projects: A second group of needed, prioritized transportation projects that the County would undertake if additional funding becomes available during the next 20 years.
- Long Term Capital Projects: The remainder of the needed transportation projects. Although these projects will be needed to meet the transportation needs of the County in the next 20 years, they are not expected to be funded or constructed by the County.

No specific funding source has been identified to implement the facility recommendations in the ATP. There are, however, a variety of funding options available at the federal, regional and local level that could be the building blocks to a comprehensive pedestrian and bicycle network. Identified potential funding sources and grant opportunities are listed in Appendix F.

1 – INTRODUCTION

1 - INTRODUCTION

Active Transportation (AT) is increasingly recognized as an important component of the transportation system. AT refers to human forms of transportation, in particular walking and bicycling. As forms of transportation, walking and bicycling are healthy, energizing, environmentally sound and low cost. AT also includes the use of mobility devices such as wheelchairs and can be combined with other transportation modes such as public transit. In some regions, AT may encompass other activities such as cross-country skiing, equestrian activities and even kayaking.



The Clackamas County Active Transportation Plan (ATP) is comprised of a set of priority active transportation routes that, when implemented, will make it safer and more convenient for people to walk and bike throughout the County.

Why does Clackamas County need an Active Transportation Plan?

As biking continues to grow in popularity for recreation as well as commuting, there is a need to coordinate previous plans and projects to ensure a cohesive active transportation system throughout the County. Second, development of an active transportation strategy and the prioritization of active transportation routes helps position the County for future grant opportunities for infrastructure improvements. Without a plan identifying active transportation priorities, the County may miss out on opportunities for federal and/or state funding. In addition, there are 984.4 miles of planned bikeways in the Transportation System Plan (TSP) for urban and rural Clackamas County. Consequently, it is necessary to narrow down the number of bikeway miles and to identify the principal or most important routes and

bikeways in the County. Finally, the plan will increase walking and biking opportunities throughout the County and help position the County as a bicycling tourist destination.

1.1 PURPOSE, GOALS AND VISION OF THE ACTIVE TRANSPORTATION PLAN

The purpose of the ATP is to identify Principal Active Transportation routes that connect destinations and communities in Clackamas County, both rural and urban. The principal routes are intended to provide access to necessary services such as transit, shopping and employment centers, and to recreation and exercise. The 23 principal routes are considered the highest priority and most important active transportation connections in the county. When fully implemented, the principal routes will increase active transportation opportunities and make it safer and, in some circumstances, possible for people to walk, bike and use transit in Clackamas County.

An active transportation plan should be guided by a defined vision and goals. The following vision was developed with the Public Advisory Committee (PAC) at the project outset:

***Active Transportation Vision** - Clackamas County will have an interconnected, safe and equitable active transportation network accessible to and used by people who live, work, do business and play within the County.*

Five goals guided development of the Clackamas County ATP:

- **Active Transportation Infrastructure:** Plan an active transportation network consisting of multi-use paths, bikeways and walkways in Clackamas County to encourage more residents to bicycle or walk for recreation and transportation.
- **Connectivity:** Plan and develop the Principal Active Transportation routes to enhance connections to transit, schools, communities, town centers, shopping, employment, parks and other significant destinations within Clackamas County.
- **Tourism Development:** Create an active transportation system that will draw tourists and promote Clackamas County as a premier cycling destination in Oregon.
- **Accessible and Safe:** Build an active transportation network that is accessible and safe for all ages, abilities and incomes.
- **Improve Health:** Plan and provide infrastructure that allows people to safely walk, run or cycle for improved health.

1.2 COMMUNITY CONTEXT

Clackamas County, located in northwest Oregon, is one of three counties that make up the Portland metropolitan region. The County land area is approximately 1,880 square miles, about half of which is national forest lands in the eastern and southern reaches of the county. Clackamas County's urban area, located in the northwest quadrant of the county, contains about 72% of the county's population in nine cities and unincorporated areas. The rural area contains five cities, two Rural Service Centers, six Rural Communities, one Resort Community and one unincorporated community near Mt. Hood, and a rural population involved in farming and forestry. The sparse settlement patterns and vast forest/farm lands outside the Urban Growth Boundary create large distances between destinations and communities in rural Clackamas County.



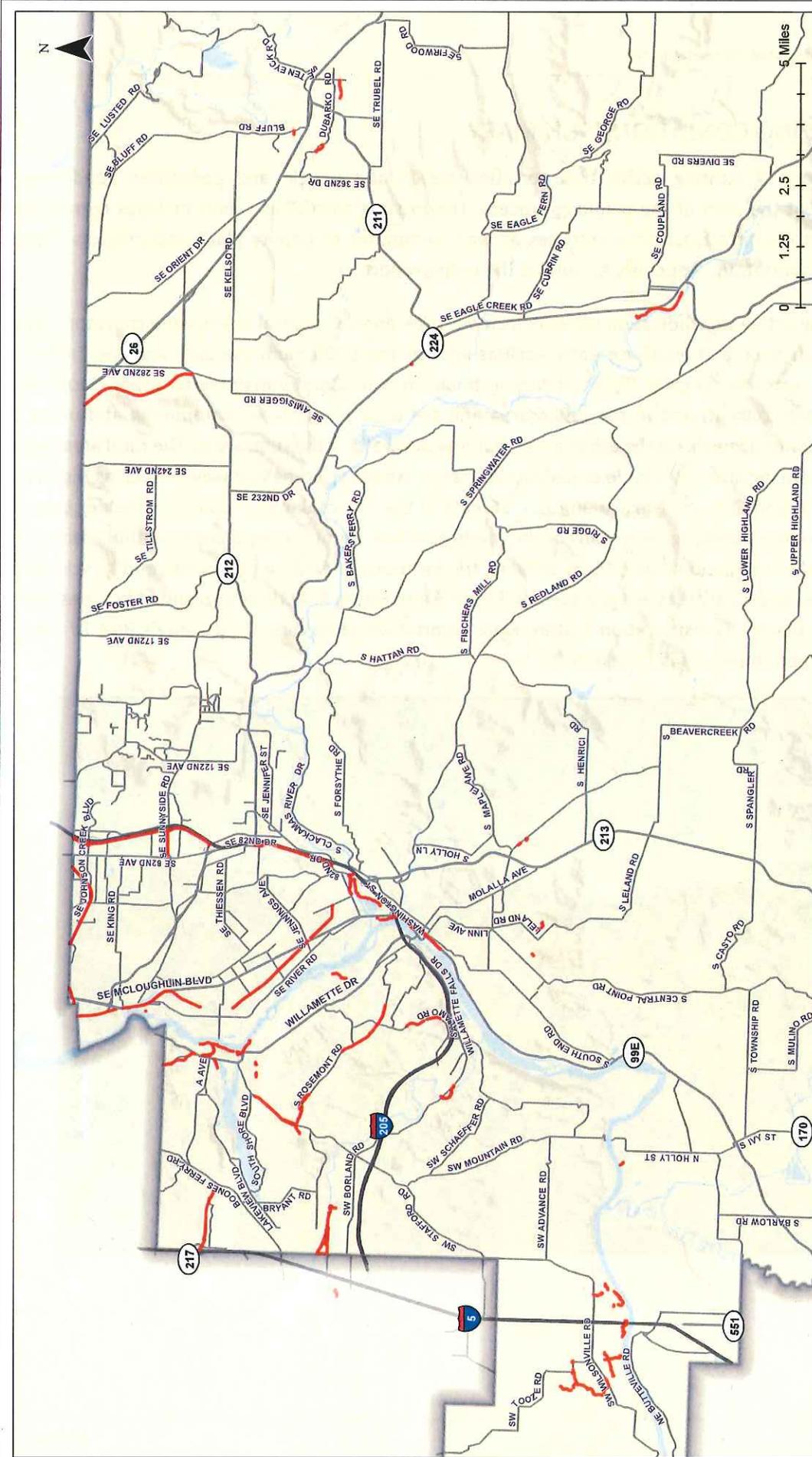
The County's topography includes low valleys, high river bluffs and the rolling agricultural fields of the northern Willamette Valley to the west, with timber stands and increasing hills and mountainous areas to the east, including the western slopes of Mt. Hood. There are many rivers in addition to the Willamette, including the Sandy, Clackamas, Molalla and Pudding. Many of the rural two-lane roads contain steep pitches and long climbs, and do not have facilities for active transportation. Figure 2 is a topographic map of Clackamas County, illustrating some of the challenges due to steep terrain in establishing a robust active transportation network.

1.3 EXISTING CONDITIONS SUMMARY

An inventory of existing active transportation assets and bicycle and pedestrian conditions was conducted at the start of the planning process. The existing conditions report includes current bicycle and pedestrian infrastructure inventories as well summaries of County plans and projects impacting active transportation. Appendix A contains the entire report.

The existing active transportation network includes bike lanes on several arterial and collector roadways in the urban area, and multi-use path facilities such as the I-205 multi-use path and the Trolley Trail. There are currently no cycle tracks or bicycle boulevards on County-maintained roads. Most existing bikeways are concentrated in the urban area and are used primarily for commuting and utility trips. There are some sidewalks in the urban areas, but few sidewalks in the rural areas. The rural areas typically lack adequate facilities for bicycle or pedestrian travel. However, some highways -- such as Highway 213 between Oregon City and Molalla and U.S. 26 east of the City of Sandy -- contain shoulder bike lanes. Rural Clackamas County, where many of the roads have low traffic volumes and beautiful scenery, has a higher level of recreational use. Maps showing the locations of existing pedestrian and bicycle facilities in the urban and rural areas are provided on Figure 3 and Figure 4. Additional planned facilities from the Clackamas County Transportation System Plan, community attractors, the County's *Bike It!* map, and other pertinent maps are in Appendix B.





Existing Paved Multi-use Paths

Clackamas County Multi-use Paths

Service Layer Credits: Sources: Esri, USGS, NOAA
Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl
Data Source: Clackamas County GIS

1.4 BENEFITS OF ACTIVE TRANSPORTATION

Active transportation benefits include health, safety, the environment, economics and tourism.

Health

Walking and biking are affordable and convenient ways to exercise. The Centers for Disease Control and Prevention (CDC) reported that in 2011-12, 34.9% of adults aged 20 and older were considered obese in the United States. With sedentary lifestyles and obesity on the rise, planning for active transportation is more important than ever. When walking and bicycling are integrated into daily activities or one short vehicle trip is replaced with active transportation, people can easily achieve the recommended 30 minutes of daily physical activity.



Safety

Safety fears prevent many people from choosing to walk or bike. Feeling and being safe while walking and cycling is an important part of a complete active transportation system. Active transportation facilities provide safety benefits for a variety of roadway users. Many built environment improvements that support walking and biking have safety benefits for all roadway users.

Environment

More transportation options result in people driving less. When walking or biking replaces a motor vehicle trip, overall harmful transportation-related emissions, noise and congestion are reduced. Transportation-related emissions such as carbon monoxide have a direct negative effect on human health; short-term exposure can exacerbate asthma and other respiratory diseases. Shifting motor vehicle trips to walking, biking or transit reduces greenhouse gas emissions and contributes to cleaner air.

Economics

Walking and biking are affordable ways to travel. The cost to an individual who owns, maintains and regularly drives a car is about 12 times higher than transportation costs for a person who relies on walking, biking and transit. By driving less, household transportation costs are reduced, keeping more money circulating in the local economy. In addition, safe bicycle and pedestrian routes to commercial districts and other activity centers encourage local shopping.

Tourism

There is potential for active transportation, in particular bicycle tourism, to generate significant economic benefit for Clackamas County.

Bicycle tourism generated \$400 million in spending in Oregon last year, including \$46 million in the Mt Hood/Columbia Gorge Region, according to recent research conducted by Dean Runyan Associates for Travel Oregon.¹ This study defines “cycling tourists” as visitors who



travel for a bicycle activity 50 miles or more from home one way. Activities by visiting cyclists included day road rides, sanctioned bicycle races, organized non-competitive group rides, independent bike touring, day mountain bike rides, organized group tours and other cycling events.

In 2012, the Travel Oregon study found that cycling tourists spent their money in the Mt Hood/Columbia Gorge Region and in Oregon on:

- Lodging and Food Services: \$20.3 million (\$174.6 million total in Oregon)
- Groceries and Snacks: \$5.8 million (\$53.5 million total in Oregon)
- Motor Fuel/Transportation/Parking: \$8 million (\$71.5 million total in Oregon)
- Bicycle Event Fees: \$4.8 million (\$31.9 million total in Oregon)
- Bike Repairs/Clothing/Accessories: \$3.8 million (\$27.9 million total in Oregon)

Clackamas County also hosts several annual bike events drawing cyclists from all over Oregon including:

- Barton Cyclocross races – 800-1100 racers and approximately 400 spectators; 1,500 total
- Sandy Ridge Mountain Biking Trail system – more than 40,000 visitors each year
- [Clackamas Cove Triathlon](#) – a first year event in 2013, drew almost 300 participants
- [Pioneer Century](#) – one of the biggest bike rides in the state and now in its 26th year, draws well over 1,000 visitors each June

¹ *The Economic Significance of Bicycle-Related Travel in Oregon: 2012*, Dean Runyan Associates

1.5 TYPES OF ACTIVE TRANSPORTATION NETWORK USERS

When developing and applying facility design guidelines for active transportation routes, it is important to consider the characteristics and preferences of potential active transportation users. The County's geographic and land use diversity translates to a variety of active transportation users. The rural areas, with rolling, forested hills and large distances between destinations, have a high number of fitness riders, recreational cyclists, cycling tourists and riders on extended bicycle tours. As noted earlier, according to the 2012 Travel Oregon study, cycling tourists engaged in day road rides, sanctioned bicycle races, organized non-competitive group rides, day mountain bike rides, organized group tours and other cycling events.

The urban areas of the County have a higher level of bicycle commuting and utility trips as well as family outing rides/walks and club rides (such as the Portland Wheelmen Touring Club). The existing bike lane network and multi-use paths such as the Trolley Trail and I-205 Multi-Use Path provide a robust commuter infrastructure.

Active transportation facilities provide residents with safe and convenient places for commuting to work, making utility trips to the grocery store, recreational cycling, family outings and general fitness endeavors. Facility users are expected to include experienced cyclists, children, seniors, equestrians and people with disabilities. For bicycle users, some jurisdictions have adopted a classification system to help guide facility design. The Utah Department of Transportation, for example, uses the following groupings to categorize bicyclists:

Group A-Advanced Bicyclists: Experienced riders who can operate under most traffic conditions. They comprise the majority of users on collector and arterial streets, and are best served by the following:

- Direct access to destination usually via the existing street and highway system
- The opportunity to operate at maximum speed with minimum delays
- Sufficient operating space on the roadway or shoulder to reduce the need for either the bicyclist or the motor vehicle to change position when passing

Group B-Basic Bicyclists: Casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles. Some will develop greater skills and progress to the advanced level, but there will always be many millions of basic bicyclists. They prefer:

- Comfortable access to destinations, preferably by a direct route, using either low-speed, low traffic-volume streets or designated bicycle facilities
- Well-defined separation of bicycles and motor vehicles on arterial and collector streets (bike lanes or shoulders) or separate bike paths

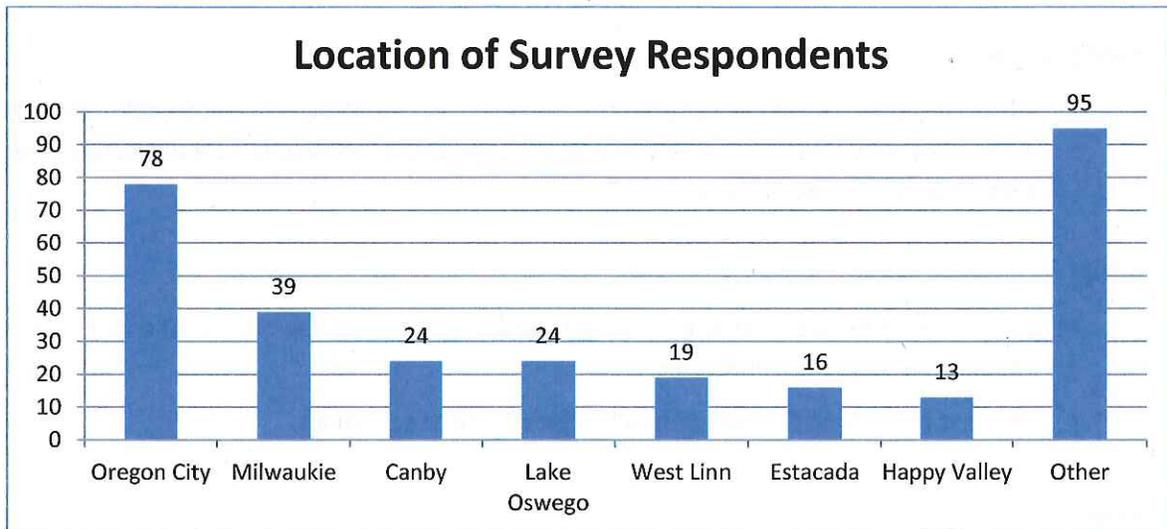
Group C-Children: These are pre-teen riders whose roadway use is initially monitored by parents. Eventually they are accorded independent access to the system. They and their parents prefer the following:

- Access to key destinations surrounding residential areas, including schools, recreation facilities, shopping and other residential areas
- Residential streets with low motor vehicle speed limits and volumes
- Well-defined separation of bicycles and motor vehicles on arterial and collector streets or separate bike paths²

The ATP may not be able to accommodate all types of bicyclists because of financial or geometric roadway constraints. However, the ATP does strive to improve upon the existing roadway network for the Group B and C bicyclists. Since the number of Group B and C bicyclists is greater than the number of Group A bicyclists, the ATP will provide a safer and a more complete bicycle network to a majority of bicyclists in Clackamas County.

1.6 SURVEY OF CLACKAMAS COUNTY USERS

An active transportation survey was available online from February 10-24, 2014. The survey received 399 responses. The table below provides an overview of the where most participants live within Clackamas County. There is a relatively high quantity of ‘other’ responses because there are many different cities, hamlets and villages in Clackamas County.



The survey included questions about people’s travel patterns and the types of facilities or policies that would encourage them to make more trips by walking, biking or taking transit. The full survey responses are included in Appendix C. A brief summary of responses follows.

² Utah Department of Transportation: *Bicycle Facilities Recommendations FHWA-RD-92-073*

Bicycle

Bicycle Trips:

- The greatest demand for facilities are for bike lanes, which may indicate people want to use the bicycle for utilitarian purposes (shopping, work, school, etc.) as well as recreation.
- Recreation is currently the most popular form of bicycle use.

Bicycle Facilities:

- People indicate they would most likely ride on multi-use paths.
- Bicycle lanes were the next most popular facility, with protected and buffered bike lanes also scoring very high.

Walking

Walking Trips:

- Proximity of destinations for walking is the leading reason people would walk more, followed by presence of sidewalks.
- Recreation is the most popular purpose for walking, and shopping is also significant.

Walking Policies:

- All walking policies are seen as effective means to make walking more enjoyable. The highest number of 'very effective' responses was from the policy "to include all transportation modes when building or rebuilding streets."

Walking Facilities:

- The presence of sidewalks and off-road trails for walkers had the highest effectiveness levels to make walking more enjoyable.
- The rest of the facilities had generally high effectiveness ratings.

Transit

- People indicated they would use more transit if it ran at a more convenient time.

1.7 PUBLIC INVOLVEMENT SUMMARY

The Clackamas County ATP was produced with the help of community members and active transportation stakeholders – people and organizations that will or may be affected by increased active transportation opportunities. A Stakeholder Involvement Strategy (SIS) was developed at the outset of the study in order to provide a framework for engaging these stakeholders and members of the public. The SIS was designed to:

- Provide a transparent decision-making process conducted through equitable and constructive public discussion and input;
- Provide early and ongoing opportunities for stakeholders to raise issues and concerns that can be considered by the project team;
- Proactively inform and engage a wide range of stakeholders in the study and decision-making process;
- Build widespread community understanding of findings and decisions, and
- Encourage the participation of all stakeholders regardless of race, ethnicity, age, disability, income or primary language.



The primary public involvement elements of the ATP are summarized below:

Public Advisory Committee (PAC): A 17-member group of Clackamas County residents met five times during the ATP development process to review materials, and provide input and advice. The PAC included current members of the Clackamas County Pedestrian/Bikeway Advisory Committee, as well as other residents representing the geographic diversity of the County.

Technical Advisory Committee (TAC): This 10-member group met four times to guide the technical development of the plan, including providing policy and technical guidance, reviewing and commenting on materials, and providing feedback on draft recommendations.

The TAC included representatives from the Oregon Department of Transportation, Metro and TriMet as well as County staff from Transportation Engineering, Planning and Zoning, Tourism and Cultural Affairs, and the North Clackamas Parks and Recreation District.

Web Page: A project web page included background documents and materials, meeting notices, agendas and minutes.

Virtual Open House: An on-line open house was hosted on the project web page for two weeks to share information and ask people to respond to specific proposals, ideas or recommendations. The virtual open house was publicized through the web page and other methods, including emails, news releases, presentations and articles in County publications.

Community Groups: Key community groups -- including Citizen Planning Organizations (CPOs), Hamlets and Villages in the County -- were informed of the progress of the project through email notifications from County staff. Information about the project was shared and discussed at a quarterly Community Leaders Meeting and four community group meetings.

News Releases/Articles/Flyers/Fact Sheets -- Printed material for the media, email and distribution at meetings were prepared by County staff to inform the public about upcoming events, the progress of the project and opportunities for input. News releases and an article in the County-wide newsletter, Citizen News, informed the public about specific activities.

2 –ROUTE DEVELOPMENT PROCESS

2 - ROUTE DEVELOPMENT

2.1 PRINCIPAL ACTIVE TRANSPORTATION ROUTES

A key component of the Active Transportation Plan is a proposed network of existing and future on- and off-road walking and biking routes. The 23 Principal Active Transportation (PAT) routes are the backbone of the active transportation network and the highest bikeway functional classification. PAT routes provide connections to key County destinations and link to Metro-designated bicycle parkways and regional bikeways. Each PAT route features bicycle and pedestrian facility design types to enhance the bicycling and pedestrian experience. Existing and future local routes will feed into the PAT routes to form a comprehensive active transportation network throughout Clackamas County.

The development of the network involved the following five general steps:

1. **Collect and Assemble Background Information** – Prepare an inventory of existing bicycle and pedestrian infrastructure and summarize the plans and projects impacting active transportation in the County.
2. **Map Destinations** – Identify and map major current and potential attractions and places that could generate significant pedestrian and bicycle traffic, including key destinations such as town centers, parks, transit stations, educational institutions and employment centers. Equestrian trailheads were also mapped.
3. **Develop Route Selection Criteria** – Develop a set of 10 qualitative and quantitative criteria to help guide the selection of the routes. The selection criteria were reviewed and refined with the Public Advisory Committee (PAC), County staff and the Technical Advisory Committee (TAC). The approach to applying the selection criteria is described below.
4. **Formalize Active Transportation Corridors** – Identify active transportation corridors-- geographic areas between two points/destinations -- to provide a framework for route development. Urban and rural maps indicating the 12 corridor locations and written descriptions are provided below. A set of on- and off-road alternative routes was identified within each corridor by the project technical team and the Public Advisory Committee.
5. **Route Evaluation and Selection** – Score and assign points to the 83 potential routes in the 12 Active Transportation Corridors based on the selection criteria developed in step 3. Based on the criteria and public feedback obtained during the two-week virtual open house, a network of Principle Active Transportation routes was created. Final route selection was presented to and confirmed by the Public Advisory Committee. *Appendix D contains the public comments on each corridor and corresponding routes, and the scoring breakdown of route criteria.*

2.2 ACTIVE TRANSPORTATION CORRIDORS

Active Transportation (AT) corridors are geographic areas (broad swaths of land) between destinations for active transportation connectivity. Twelve candidate AT corridors were identified at a Technical Advisory Committee brainstorm session and refined by the project Public Advisory Committee. With the aid of information gathered from the existing conditions report and stakeholder institutional knowledge, candidate corridors were selected based on criteria such as the amount of community attractors and ability to connect communities within a geographic area. The TAC and PAC then reviewed the candidate corridors and developed a final list of 12. A summary of the 12 AT corridors, separated between urban and rural, is provided below.

Urban Active Transportation Corridors

Stafford

The Stafford Corridor connects the cities of Lake Oswego and Wilsonville and provides a connection to Champoeg State Park - the northern terminus of the Willamette Valley Scenic Bikeway. Destinations of note include Luscher Farm, the Tualatin River and trail systems in the area including the Rosemont Trail. The corridor includes connections to Regional ATP off-street and on-street bikeways and a regional off-street parkway connecting to West Linn. Stafford Road was noted as a project in the 2005 Bicycle Transportation Alliance (BTA) Blueprint as a roadway in a rapidly growing area that is a popular route for recreational riders. Several of the destinations in the Stafford Corridor are part of a suggested bicycle recreational ride noted in the Clackamas County *Bike It!* Map.

Lake Oswego to Oregon City

This corridor connects the cities of Lake Oswego, West Linn and Oregon City. Some of the destinations within this area include Tryon Creek State Natural Area, George Rogers and Mary S. Young parks, the Willamette River and the downtown districts/town center areas of Lake Oswego, West Linn and Oregon City. There is also the potential to provide connections to the trails within those cities, as well as access along the Willamette River. The historic Oregon City/West Linn Arch Bridge provides the connection to Oregon City. Highway 43 is designated in the Regional ATP as a Bicycle Parkway. Several of the destinations in this corridor are part of a suggested bicycle recreational ride noted in the Clackamas County *Bike It!* Map.

Milwaukie to Oregon City

The Milwaukie to Oregon City north-south corridor consists of multiple destinations such as the Park Avenue MAX Orange Station (currently under construction), the Oak Grove employment center, the Trolley Trail, the City of Gladstone, the Willamette River, schools and parks, McLoughlin Boulevard (a high frequency transit corridor with many businesses and services) and River Road.

Milwaukie to Clackamas Regional Center (CRC)

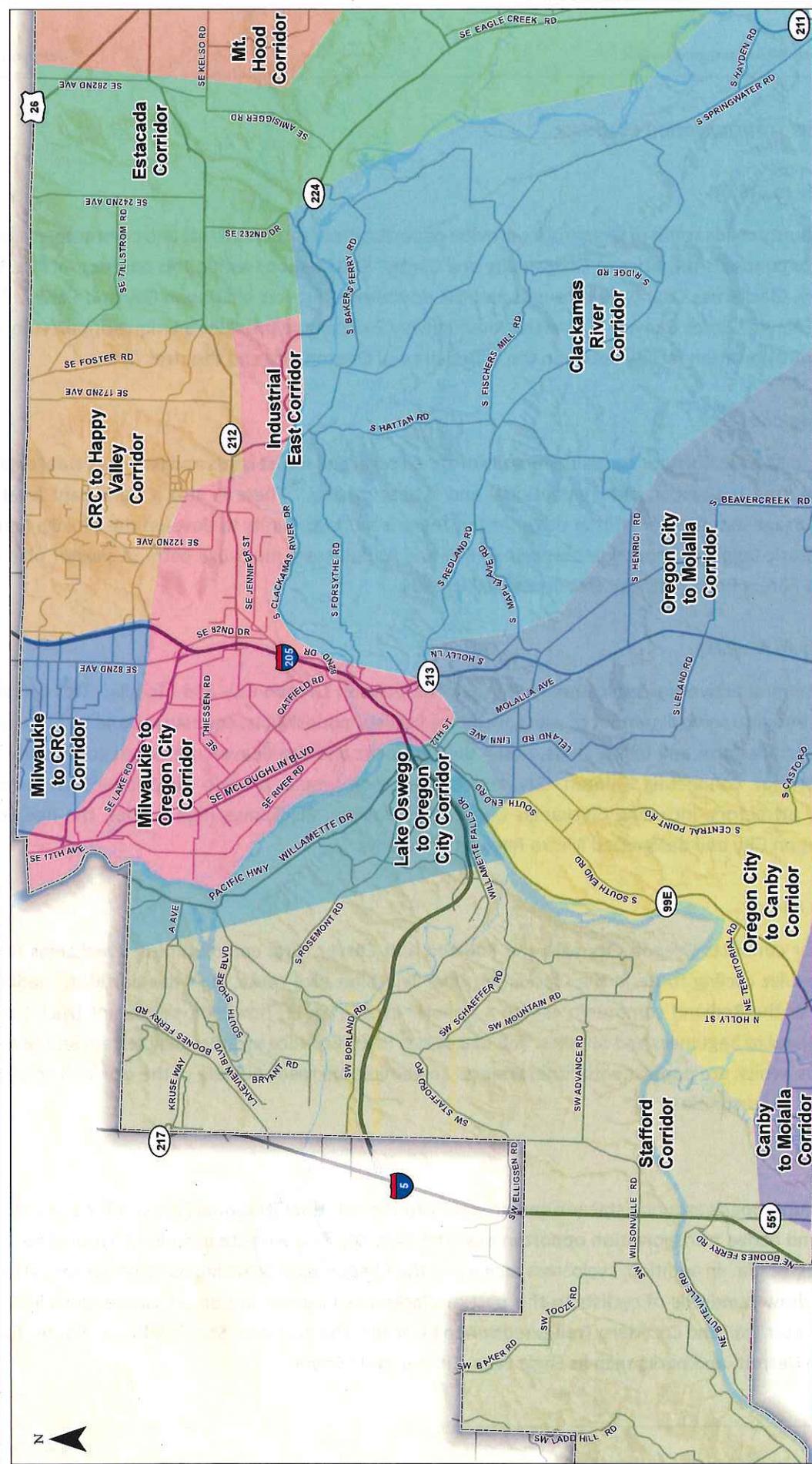
This corridor includes the city of Milwaukie/town center and connections to the MAX Orange Line scheduled to open in September 2015, the MAX Green Line, the Clackamas Regional Center area, schools, parks, Providence Milwaukie hospital, Springwater Corridor, I-205 multi-use path and an active transportation corridor previously identified as the Monroe Street bike boulevard. Linwood and King Roads are designated in the Regional ATP as Bicycle Parkways.

Clackamas Regional Center (CRC) to Happy Valley

Destinations in the CRC to Happy Valley Corridor include Kaiser Permanente Hospital, Mt. Talbert Nature Park, Mt Scott/Scouters Mountain Trail, City of Happy Valley/Town Center and Damascus. An important north/south connector in this area is the planned 172nd Avenue Corridor that will provide connections north to Portland and south to the Sunnyside and Clackamas Industrial areas. Sunnyside Road, 129th Ave., 172nd Ave. and the Sunrise Corridor Multi-Use Path are designated on the Regional ATP as Bicycle Parkways.

Industrial East

The Industrial East Corridor has the potential to provide pedestrian and bicycle facilities from the Max Green Line at Clackamas Town Center to industrial employment areas along Highway 212/224 and Jennifer Avenue. This corridor includes the first phase of the Sunrise Corridor, which includes the multi-use path connecting the I-205 multi-use path (a Regional Active Transportation (ATP) designated Bicycle Parkway) east to SE 122nd Avenue. The Sunrise multi-use path is also designated in the Regional ATP as a Bicycle Parkway.



Urban Active Transportation Corridors
Clackamas County, Oregon

Figure 5

Service Layer Credits: Sources: Esri, USGS, NOAA

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl
Data Source: Clackamas County GIS

Rural Active Transportation Corridors

Oregon City to Canby

The rural county roads south of Oregon City provide opportunities for recreational and commuter cyclists. This corridor connects the cities of Oregon City and Canby. Destinations within this corridor include the Canby Ferry, Clackamas County Fairgrounds and the downtown districts of Oregon City and Canby. The conceptual Newell Creek Canyon Trail within the Highway 213 canyon provides a unique opportunity for an active transportation facility between the hilltop area of Oregon City and the river flats.

Canby to Molalla

The Canby to Molalla Corridor consists primarily of agricultural and forest lands and two-lane rural county roads. The area is popular with recreational and fitness cyclists. There is also a significant level of equestrian usage in this area. Within this corridor, there is an opportunity to develop the Molalla Forest Road, a historic logging connection between Canby and Molalla as a multi-use path. A master plan for the Molalla Forest Road pathway was developed in 1994.

Oregon City to Molalla

There are several active transportation route options between Oregon City and Molalla. This corridor has the potential to serve a number of users, including cyclists, pedestrians, equestrians and transit users. Land uses include farm and forest lands, urban development and the Beaver Creek rural community. A mini-AT corridor connecting Oregon City and Beaver Creek would provide connections to several community attractors, including Clackamas Community College, Clackamas High School, the Red Soils area of Oregon City and designated Metro Regional Parkways.

Clackamas River

This corridor connects Oregon City with the Redland and Carver rural communities. Clackamas River Drive, a popular cycling route in the Clackamas Cove Triathlon bike route, is in this corridor. Redland Road west of the Redland community is also a popular cycling route; however, significant truck traffic limits its appeal to beginners and families. The Clackamas River Corridor includes hilly terrain and several steep climbs, which are popular with fitness riders. Lower volume roads outside of the city limits provide training ride opportunities.

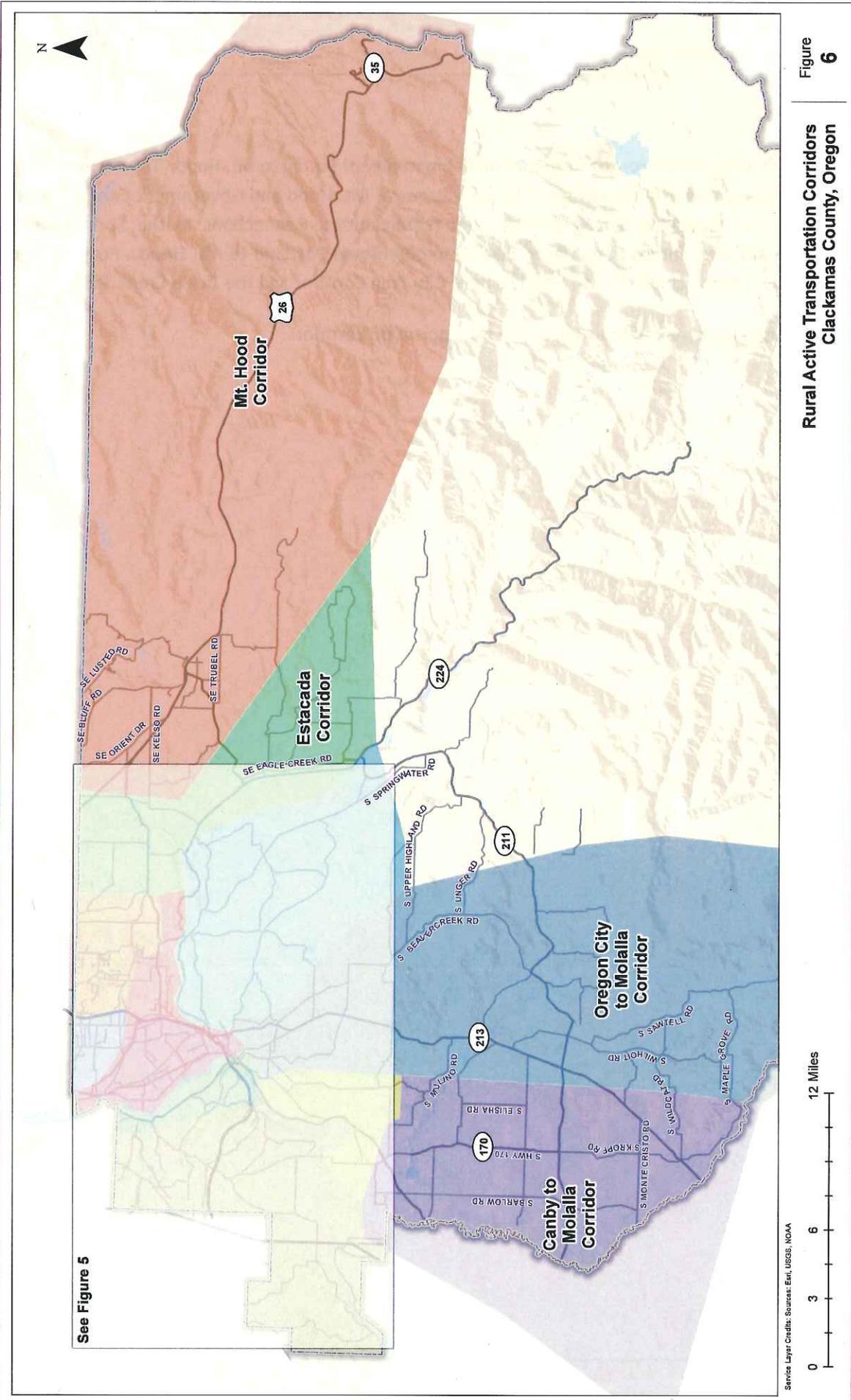
Estacada

The low-volume roads around Estacada and proximity to the Mt. Hood National Forest offer a multitude of cycling and active transportation opportunities. The Map My Ride website includes 79 routes near or leading to Estacada. In addition, cyclocross racing and the Oregon Bicycle Racing Association annual time trial series draw hundreds of cyclists to this part of Clackamas County. Important connections include the Springwater Trail and Cazadero Trail extension to Estacada; the proposed Scenic Bikeway Routes from Estacada to Detroit, and parks such as Eagle Fern, Timber and McIver.

Mt. Hood

This corridor will consider routes from the rural community of Boring to Mt. Hood. The corridor includes the city of Sandy and extends eastward to the Villages of Mt. Hood and Government Camp. There are numerous bike tourism and trail development opportunities. Connections to the Springwater and Cazadero trails offer future potential to bike from downtown Portland to Mt. Hood. Projects of note within this corridor include the Mt. Hood to Rose City Trail Corridor and the Tickle Creek Trail.

Figure 6 illustrates a map of the rural active transportation corridors.



See Figure 5

Service Layer Credits: Sources: Esri, USGS, NOAA



Rural Active Transportation Corridors
Clackamas County, Oregon

Figure 6

Coordinate System: IAD 1983 HARN StatePlane Oregon North FIPS 807 Feet Ind
Data Source: Clackamas County GIS

2.3 ROUTE SELECTION CRITERIA

Route selection criteria were established to select one Principal Active Transportation (PAT) route in each corridor. The selection criteria helped compare routes in each corridor based on safety, connectivity and equity, among other guiding principles. The intent of the route selection criteria scoring process was to rank projects on an objective, data-based (where available) set of criteria. The selection criteria were reviewed and refined with the Public Advisory Committee (PAC), County staff and the Technical Advisory Committee (TAC).

The 10 selection criteria were weighted using a 1-5 scale. For example, the “county-wide significance / community attractors” criterion was considered to have significant importance in selecting a route and was assigned a weight value of 5, whereas the scenic quality of a route was considered less critical and therefore received a weight value of 1.

The definition, scoring method and weight value for each criterion are described below in Table 2.

Table 2: Route Selection Criteria

Criteria	Score	Weight
<p>County-Wide Significance/Community Attractors</p> <p><u>Definition:</u> Whether a route goes to or connects places that attract people such as shopping centers, employment centers, parks, schools and libraries.</p> <p><u>Scoring Summary:</u> Quantitative utilizing Geographic Information Systems (GIS) software.</p>	<p>1 point = route within half mile of 0-9 community attractors.</p> <p>2 points = route within half mile of 10-19 community attractors.</p> <p>3 points = route within half mile of 20-33 community attractors.</p> <p>4 points = route within half mile of 34-59 community attractors.</p> <p>5 points = route within half mile of 60-89 community attractors.</p>	<p>5</p>

Criteria	Score	Weight
<p>Serves Existing Demand Route</p> <p><u>Definition:</u> Whether the route serves an area already frequented by walkers and/or bicyclists.</p> <p><u>Scoring Summary:</u> Applied qualitatively using the following resources: <i>Rubber to the Road</i> cycling guide; Portland Bureau of Transportation recommended recreational routes; <i>Bike IT!</i> Map; other mapping resources such as Canby Bike Map, Estacada Area Bike Map, Farm Loop Maps – Canby and Molalla; County-permitted cycling events (Pioneer Century; Oregon City Triathlon; Barlow Trail Road Ride, etc.).</p>	<p>1 point = serves no existing, designated or identified popular routes.</p> <p>3 points = serves some existing, designated or identified popular routes.</p> <p>5 points = serves many existing, designated or identified popular routes.</p>	<p>3</p>
<p>Transportation Disadvantaged Areas</p> <p><u>Definition:</u> An active transportation route should serve transportation disadvantaged users. This criterion is based on a Transportation Disadvantaged Index which takes into account a number of demographic characteristics including age, income, ethnicity, vehicle ownership, ability to speak English and proximity of freeway to a household.</p> <p><u>Scoring Summary:</u> Evaluated and scored quantitatively using GIS software.</p>	<p>1 = <20% disadvantaged or most disadvantaged area within a half mile buffer of route</p> <p>2 = 20-30% disadvantaged or most disadvantaged area within a half mile buffer of route</p> <p>3 = 30-40% disadvantaged or most disadvantaged area within a half mile buffer of route</p> <p>4 = 40-60% disadvantaged or most disadvantaged area within a half mile buffer of route</p> <p>5 = >60% disadvantaged or most disadvantaged area within a half mile buffer of route</p>	<p>2</p>

Criteria	Score	Weight
<p>Adopted Plans</p> <p><u>Definition:</u> Whether a route is already in one or more local or regional plans such as the Metro Regional Active Transportation Plan; Clackamas County TSP Tier One; adopted transportation system plans for Clackamas County municipalities and adopted rural city plans. Routes or portions of routes identified in adopted plans indicate an already-established level of community support.</p> <p><u>Scoring Summary:</u> Primarily applied qualitatively based on staff review of adopted transportation system plans for municipalities in Clackamas County. Also used GIS to determine if potential routes aligned with the Metro Regional Active Transportation Plan and Clackamas County TSP projects.</p>	<p>1 = No part of route is included in any other adopted plan.</p> <p>2 = <33% of route is included in any other adopted plan.</p> <p>3 = 33-66% of route is included in any other adopted plan.</p> <p>4 = 66-99% of route is included in any other adopted plan.</p> <p>5 = 100% of route is included in any other adopted plan.</p>	<p>3</p>
<p>Leverages Previous Investment</p> <p><u>Definition:</u> Routes with existing facilities present an opportunity to complete existing network gaps. For this criterion, routes that have existing walking or bicycling facilities have priority over routes with less or no existing facilities.</p> <p><u>Scoring Summary:</u> Evaluated and scored quantitatively depending on the percentage of the completed route.</p>	<p>1 = No part of route is improved.</p> <p>2 = <25% of route is improved.</p> <p>3 = 25-50% of route is improved.</p> <p>4 = 50-75% of route is improved.</p> <p>5 = 75-100% of route is improved.</p>	<p>2</p>
<p>Scenic Routes</p> <p><u>Definition:</u> Active transportation routes should take advantage of attractive and scenic areas. For this criterion, more scenic routes have priority over less scenic routes.</p> <p><u>Scoring Summary:</u> "Scenic" was measured based on designated Clackamas County Scenic Roads: Comprehensive Plan Map 5-1. Routes were evaluated and scored quantitatively.</p>	<p>1 = No part of route is scenic</p> <p>2 = <25% of route is scenic</p> <p>3 = 25-50% of route is scenic</p> <p>4 = 50-75% of route is scenic</p> <p>5 = 75-100% of route is scenic</p>	<p>1</p>

Criteria	Score	Weight										
<p>Direct Routes</p> <p><u>Definition:</u> The route should provide a relatively straight connection between one community/attraction and another. For this criterion, more direct routes have priority over less direct routes.</p> <p><u>Scoring Summary:</u> Qualitative analysis that involved visual inspection of draft corridor maps.</p>	<p>1 = Not very direct</p> <p>3 = Moderately direct</p> <p>5 = Most direct</p>	<p>3</p>										
<p>Suitability</p> <p><u>Definition:</u> Routes with lower traffic volumes and/or lower speeds are preferable to routes with higher traffic volumes and/or speeds.</p> <p><u>Scoring Summary:</u> Used GIS to score routes based on average daily traffic (ADT) and posted travel speed. Scores were assigned based on averaging of the two scales.</p>	<table border="0"> <tr> <td>5 = <5,000 ADT</td> <td>5 = 25 MPH</td> </tr> <tr> <td>4 = 5,000 – 10,000</td> <td>4 = 30 MPH</td> </tr> <tr> <td>3 = 10,000 – 15,000</td> <td>3 = 35 MPH</td> </tr> <tr> <td>2 = 15,000 – 20,000</td> <td>2 = 40 MPH</td> </tr> <tr> <td>1 = >20,000</td> <td>1 = >40 MPH</td> </tr> </table>	5 = <5,000 ADT	5 = 25 MPH	4 = 5,000 – 10,000	4 = 30 MPH	3 = 10,000 – 15,000	3 = 35 MPH	2 = 15,000 – 20,000	2 = 40 MPH	1 = >20,000	1 = >40 MPH	<p>3</p>
5 = <5,000 ADT	5 = 25 MPH											
4 = 5,000 – 10,000	4 = 30 MPH											
3 = 10,000 – 15,000	3 = 35 MPH											
2 = 15,000 – 20,000	2 = 40 MPH											
1 = >20,000	1 = >40 MPH											
<p>Cost Effectiveness</p> <p><u>Definition:</u> Roadway conditions along a particular route can be made safe and comfortable using cost-effective strategies.</p> <p><u>Scoring Summary:</u> Scores were assigned to routes qualitatively based on considerations such as permitting and construction costs.</p>	<p>1 = Least cost-effective. Route consists of multi-use trail for the entire (or nearly) length.</p> <p>2 = At least half of route consists of multi-use trail.</p> <p>3 = Moderately cost-effective. Likely needs shoulder widening and/or ROW purchase.</p> <p>4 = Side path or shoulder widening without ROW purchase.</p> <p>5 = Only needs striping for bike lanes, sharrows within the ROW.</p>	<p>3</p>										

Criteria	Score	Weight
<p>Feasibility</p> <p><u>Definition:</u> Whether there significant barriers such as ownership, limited right-of-way or presence of natural features that could prevent route development.</p> <p><u>Scoring Summary:</u> Scores assigned qualitatively.</p>	<p>1 = Significant barriers. ROW purchase required and significant natural features (e.g. stream or river crossing).</p> <p>2 = Purchase of ROW likely and significant natural features (e.g. stream or river crossing).</p> <p>3 = Moderate barriers. Possible, but not significant, ROW and natural resource issues.</p> <p>5 = Few barriers. Few, if any, ROW issues and no identified natural resource issues.</p>	<p>3</p>

3 – ACTIVE TRANSPORTATION NETWORK

3 - ACTIVE TRANSPORTATION NETWORK

The Active Transportation Plan process resulted in the development of an active transportation network consisting of the 23 Principal Active Transportation (PAT) routes listed in Table 3 below. PAT routes are designed to provide a high degree of comfort and safety for multiple users. They may contain a mix of on-road and off-road facility treatments and often include a combination of existing and/or planned facilities.

There are three PAT route categories:

1. **Principal Active Transportation Routes (PATS):** The most important routes to connect communities and key destinations in the county. A detailed analysis of these 12 routes, including recommended facility types and a cost analysis for individual route segments, is provided below.
2. **Ideal Principal Active Transportation Routes (I-PATS):** Due to ownership, topographical and/or environmental constraints, I-PATs are considered visionary or long-term projects. Detailed cost and facility-type analysis are not included for the 5 I-PATS.
3. **Connector Principal Active Transportation Routes (C-PATS):** Due to their regional significance and importance in providing connections, 6 additional routes were included. Detailed cost and facility type analysis are not included for C-PAT's.

Planning-level cost estimates were developed for PAT routes by segment according to the proposed facility, length and topographical/geometric features. Specific intersection treatments were not considered, meaning the total project cost may be higher. The intersection treatment will vary depending on the final proposed facility, the ability to purchase right-of-way, geometric constraints and other planning/engineering considerations. When PAT routes intersect ODOT facilities, ODOT staff will need to review the proposed crossing treatments. When steps are taken to develop final plans and designs for each PAT route, the planner/engineer should consult *Conflict Area Treatment Types* in section 5 for further guidance on the appropriate intersection crossing treatment before creating more refined intersection crossing treatments.

In general, PAT route cost estimates include low-to-high cost based on a minimum and maximum additional width. The low and high costs were developed to work with the Facility Design Toolkit (in Section 5) that recommends a minimum and maximum width for each pedestrian and bicycle facility type. The reported cost per mile for each route is provided for comparative purposes and is based on the maximum width recommendation (the high cost estimate). The cost estimates do not include ROW and intersection crossing treatments. Details on estimated ROW needs and costs are in Appendix E.

Table 3: Clackamas County Active Transportation Plan (ATP) Routes

Principal Active Transportation Routes				
<i>Route #</i>	<i>Route Name</i>	<i>Proposed Facilities</i>	<i>Length (Miles)</i>	<i>Relative Project Cost</i>
P1	Canby to Molalla	Shoulder Bikeway, Stripe Bike Lane	14.8	Medium
P2	Clackamas River Drive	Shoulder Bikeway	23.3	Medium
P3	Tickle Creek Trail - Cazadero Trail	Multi-use Path	23.5	Medium
P4	I-205 Multi-Use Path	Multi-use Path	5.1	Low
P5	Monroe Neighborhood Greenway	Bike Boulevard	4.1	Low
P6	Linwood Avenue	Stripe Bike Lanes; Multi-use Path	3.9	Low
P7	River Road	Buffered Bike Lane	7.3	Low
P8	Oetkin Road - Naef Road	Bike Boulevard	3.8	High
P9	Sandy to Mount Hood	Shoulder Bikeway and Multi-use Path Parallel to Roadway	49.8	Medium
P10	Oregon City to Canby	Buffered Bike Lane, Advisory Lanes, and Shoulder Bikeway	14.9	Medium
P11	Newell Creek Trail and Oregon City Loop	Sidewalk, Shoulder Bikeway, Bike Lane, Multi-use Path	18.0	High
P12	Stafford Road	Protected Bikeway, Bridge, Shoulder Bikeway	14.3	Medium
Ideal Principal Active Transportation Routes				
<i>Route #</i>	<i>Route Name</i>	<i>Proposed Facility</i>	<i>Length (Miles)</i>	<i>Relative Project Cost</i>
I-13	Molalla Forest Road	Multi-use Path	11.0	-
I-14	I-205 Ped/Bike Bridge	Pedestrian – Bicycle Bridge	0.1	-
I-15	Willamette Greenway Trail - Lake Oswego to County line	Multi-use Path	1.11	-
I-16	Willamette Greenway Trail – Oregon City to Canby	Multi-use Path	8.1	-
I-17	Stafford to Canby Trail	Multi-use Path	9.1	-
Connector Principal Active Transportation Routes				
<i>Route #</i>	<i>Route Name</i>	<i>Proposed Facility</i>	<i>Length (Miles)</i>	<i>Relative Project Cost</i>
C18	Redland Road	Shoulder Bikeway	13.5	-
C19	Sunnyside Road	Buffered Bike Lanes / Cycle Track	5.9	-
C20	Scouters Mountain / Mt. Scott Loop Trail	Multi-Use Path / Bike Lane	4.0	-
C21	Old River Road/Hwy. 43	Buffered Bike Lane, Cycle Track, Bike Boulevard	6.7	-
C22	King Road	Sidewalks	4.4	-
C23	Trolley Trail	Buffered Bike Lane, Cycle Track, Pedestrian/Bicycle Overpass	6.4	-

The following two sections provide an overview of the five I-PATs and the six C-PATs. Section 3.1 of this chapter focuses on the 12 PAT routes. Because they were the focus of this planning effort, the PAT route section includes a project table and figure that divides the route into logical segments and lengths for future project development and implementation. Each segment includes information regarding the project name, extent, length, facility type, reason, constraints (including any additional pavement width or right-of-way³ needed), planning considerations and estimated cost.

I-PAT – Ideal Principal Active Transportation Routes

Route I-13 - Molalla Forest Road

Built initially as a direct route for hauling forest products, the former logging road provides a safe off-road active transportation route for 3.5 miles. The Molalla Forest Road is an opportunity to augment a historic connection between Canby and Molalla.

Route I-14 - I-205 Ped/Bike Bridge

The I-205 Ped/Bike Bridge is a proposed pedestrian / bicycle crossing over Interstate 205 to connect the Clackamas Town Center and MAX Green Line with the Eagle Landing neighborhood and the employment area located east of I-205. The bridge would provide safe and convenient passage over I-205 for pedestrians and cyclists.

Route I-15 - Willamette Greenway Trail – Lake Oswego to County Line

This route is a series of multi-use trails that are recognized on the Metro Regional Trails and Greenways map. The Willamette Greenway Trail follows the east and west banks of the Willamette River from Champoeg State Park to the river's confluence with the Columbia River in north Portland. Major built segments include trails in George Rogers Park in Lake Oswego and Mary S. Young Park in West Linn. This route follows the west side of the Willamette River from downtown Lake Oswego to the county line.

Route I-16 - Willamette Greenway Trail – Oregon City to Canby Segment

This route connects Oregon City to Canby via the Willamette Greenway Trail. A shared use path on the east side of the Willamette River would provide safe, convenient active transportation between two Clackamas County communities. The Willamette Greenway Trail is recognized on the Metro Regional Trails and Greenways map.

³ Right-of-way acquisition can be a significant obstacle to project delivery. The need for additional right-of-way to implement the desired facility width is noted in the constraints column (where applicable), along with the additional right-of-way needed to implement the minimum allowable width facility in parenthesis.

Route I-17 – Stafford to Canby Trail

This route consists of two proposed regional trails: the Stafford to Canby Trail will connect the Stafford Hamlet to the Canby Ferry, while the Willamette Greenway Trail segment will provide active transportation connection from the Canby Ferry west toward the City of Wilsonville. Each trail segment is approximately 5 miles long.

C-PAT Routes – Connector Principal Active Transportation Routes***Route C18 - Redland Road***

This route connects Oregon City with the Redland and Carver rural communities as well the City of Estacada. Adding improved active transportation facilities to not only Redland Road but also Fischers Mill Road, Mattoon Road and Jubb Road would provide significant connections to east county communities.

Route C19 - Sunnyside Road

Sunnyside Road is an important east-west connector between the Clackamas Regional Center (CRC) and the cities of Happy Valley and Damascus. Improved active transportation facilities between the CRC and east county communities would provide safer transportation alternatives for bicyclists and pedestrians. Potential facility type improvements include a cycle track or buffered bike lanes.

Route C20 - Scouter's Mountain / Mt. Scott Loop Trail

Parts of the Scouter's Mountain trail system are constructed. In particular, Happy Valley has many completed segments. This trail will connect the Springwater Trail south through Happy Valley to the future Sunrise Corridor Trail. A master plan for the Mt. Scott-Scouter's Mountain Loop Trail system was completed in 2014.

Route C21 - Old River Road-Highway 43

Old River Road offers a scenic route along the Willamette River south of George Rogers Park. Combined with improved facilities on Highway 43, this route would provide a direct connection between Lake Oswego and West Linn as well as access to employment, parks and shopping.

Route C22 - King Road

King Road connecting west to Harrison Street and Lake Road and ultimately to the Trolley Trail and east to 82nd Avenue is designated in the Regional Active Transportation Plan as a Regional Bikeway and Pedestrian Parkway and is along a high ridership transit route. This route would provide a continuous

pedestrian and bicycle connection from Milwaukie to the Clackamas Regional Center area and the I-205 multi-use path.

Route C23 - Trolley Trail

The 6-mile Trolley Trail connects Milwaukie to Gladstone along a former streetcar right-of-way that operated from 1893 until 1968. The paved multi-use path provides connections to schools, parks, commercial centers, and the neighborhoods of Oak Grove and Jennings Lodge. Improving active transportation facilities near the Trolley Trail's southern terminus in Gladstone would provide a safe and convenient connection to the I-205 path located approximately one mile to the east.

3.1 PRINCIPAL ACTIVE TRANSPORTATION ROUTES

(P1) Canby to Molalla

Route Summary

Extent:	Canby Ferry to downtown Molalla
Total Length:	14.8 miles
Environment:	Suburban/Rural
Proposed Facility Type(s):	Sidewalk, shoulder bikeway, and bike lane
Expected Pedestrian Use:	Highest potential between the Canby Ferry and the City of Canby (approximately 2 miles). The route between Molalla and Canby is less likely to attract pedestrians, recreational or otherwise.
Expected Bicycle User Group:	Recreational bicyclists are expected due to the low number of trip attractors/destinations along this route.

Route Description

The route between the Canby Ferry and downtown Molalla can be largely characterized by its adjacent agricultural and pastoral lands and lower-traffic streets. In general, relatively low traffic volumes, low speeds and a number of existing facilities make this route an attractive choice for active transportation users.

Traveling north from central Canby, existing bike lanes and complete sidewalks on N Ivy Street provide a safe and comfortable connection to NE Territorial Road, which links up with N Holly Street/NE 37th Avenue, a lower traffic two-lane roadway with intermittent paved or gravel shoulders that provides access to Molalla River State Park and the Canby Ferry.

Traveling south toward the City of Molalla on Ivy Street is made more comfortable by the presence of bike lanes/paved shoulders and sidewalk on at least one side, but as NW Territorial Road begins to leave the urban core and transition into Highway 170, the sidewalks disappear. Higher traffic volumes on Highway 170 make conditions less comfortable for active transportation users until the route transitions to S Kraxberger Road and rural farm roads that connect users to the multi-use path on the south side of Toliver Road that begins east of Highway 213 in Molalla.

Proposed Facility Type

The majority of this route is along low-traffic streets. In the urban areas of both Canby and Molalla, the route takes advantage of existing facilities that support walking and biking. There are few physical constraints such as trees, utility poles and drainage ditches, so dedicated active transportation facilities such as shoulder bikeways and advisory lanes would be cost effective outside the urban areas.

The needs of pedestrians traveling in the developed areas are well accommodated in Canby by the sidewalks on both sides of N Ivy Street. In Molalla, a multi-use path on the south side of Toliver Road gives pedestrians a comfortable place to walk. Between the City of Canby and the Canby Ferry, there are intermittent gravel/paved shoulders for pedestrians to walk, though separated active transportation facilities would improve conditions considerably.

Project Segments

- **(1.01) NE 37th Avenue/N Holly Street from Canby Ferry to NE Territorial Road:** This segment would benefit from the addition of wayfinding signage and continuous paved shoulders for pedestrian and bicyclist use. An alternate solution to a shoulder bikeway would be a multi-use path, which would provide an attractive active transportation connection for users of all ages and abilities to access Molalla River Park and the Canby Ferry.
- **(1.02) N/S Ivy Street from NE Territorial Road to SE 16th Avenue:** This section of the route has active transportation facilities and only needs wayfinding signage to improve route legibility and direct people to key destinations.
- **(1.03) Canby-Marquam Hwy/Kraxberger/Dryland/Toliver Road from SE 16th Avenue to Highway 213:** This is largely a two-lane rural roadway that best serves recreational bicyclists. Shoulder bikeways and wayfinding and/or bicycle warning signage would help formalize the route and improve conditions for a variety of roadway users. There is an opportunity to provide advisory lanes on Kraxberger Road/S Harms Road between Highway 213 and S Macksburg Road. This section has very low traffic volumes and no center line stripe (a requisite for advisory bike lane applications). There are also deep drainage ditches on both sides of this roadway that would make roadway expansion more expensive.
- **(1.04) Toliver Road from Highway 213 to Molalla Avenue:** An existing multi-use path between Highway 213 and Zimmerman Lane serves pedestrians well, as does the sidewalk between Zimmerman and Molalla Avenue. There are no formal bicycle facilities between Highway 213 and Zimmerman Lane, but low speed/low traffic conditions and a constrained right-of-way make shared lane markings an attractive option. East of Zimmerman Lane, the roadway widens and there are bicycle lanes.

Table 4: Canby to Molalla (P1) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
1.01	NE 37th Avenue/N Holly Street	Canby Ferry to NE Territorial Road	1.90	None	Shoulder bikeway. A multi-use path may also be considered.	Provides active transportation connection between Canby city limits and the Canby Ferry and Molalla River State Park.	Needs 8'-10' of additional pavement width and 14' of additional ROW (10' for minimum width facility)	Transition between N Ivy and N Holly needs way-finding signage; coming from the Ferry it is not obvious what road the route follows. Wayfinding signage for Champoeg State Park needed at Territorial Rd. and Holly St.	\$4,596,000 (cost estimate for shoulder bikeway)
1.02	N/S Ivy Street	NE Territorial Road to SE 16th Avenue	1.93	Bike lanes. Sidewalks from NE Territorial to Hwy 99	Wayfinding signage; Sidewalk infill south of Hwy 99	Connects downtown Canby with residential area south of Hwy 99	-	Possibility of installing buffered bike lanes south of SW 2 nd Avenue; Narrow bike lanes just east of the Hwy 99 intersection for one block	\$198,000
1.03	Canby-Marquam Hwy/ Kraxberger/Dryland/Toliver	SE 16th Avenue to Hwy 213	9.57	None	Shoulder bikeway	Recreational connection between Canby and Molalla	Major ditches, large trees and lack of shoulders. Requires 0'-14' of additional pavement width. Needs 14'-25' of additional ROW in certain sections (10'-21' for minimum width facility)	There is an opportunity to install advisory bike lanes on Kraxberger Road	\$11,424,000
1.04	Toliver Road	Hwy 213 to Molalla Avenue	1.37	Multi-use path on south side between Hwy 213 and Molalla River School Dist. Sidewalk on at least one side east of school	Shared lane markings where there are no bike facilities (west of school). Sidewalk infill from school east to end of route in Molalla	Provides a connection between Molalla and rural areas west of Hwy 213	Needs 8' of additional pavement width	Shared lane markings may be considered on sections without bike lanes. There are bike lanes between Molalla Avenue and the school.	\$1,592,000

(P2) Clackamas River Drive

Route Summary

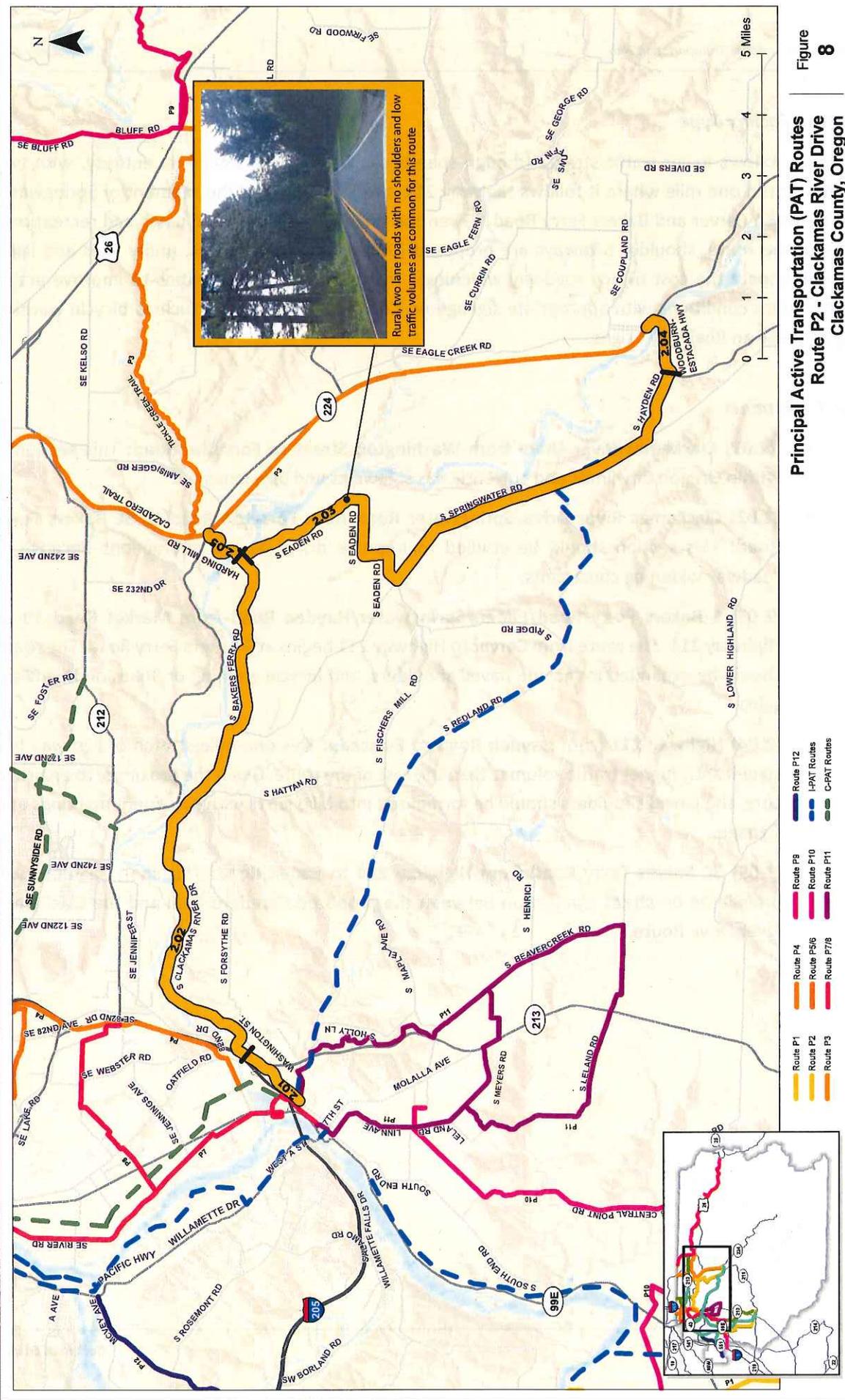
Extent:	Downtown Oregon City to Estacada
Total Length:	23.3 miles
Environment:	Rural
Proposed Facility Type(s):	Shoulder bikeway, bike lanes
Expected Pedestrian Use:	Unlikely due to large distances between destinations and overall length of the route.
Expected Bicycle User Group:	Rolling terrain and lower traffic volumes make this route a popular recreational bicycling route. Utilitarian bicycle commuters are not expected in significant numbers due to a lack of destinations.

Route Description

Clackamas River Drive is a popular cycling route east of Oregon City used for events such as the Oregon City Triathlon. There are no dedicated bicycle facilities along this route, nor is there warning signage to alert motorists to expect bicyclists on the roadway. Bicyclists share a narrow travel lane with motorists that may be traveling at high speeds, which feels unsafe or uncomfortable for the majority of bicycle users.

Once east of the Oregon City limits, this route follows a number of relatively low-traffic two-lane roadways that generally lack paved shoulders, with only the occasional gravel shoulder. The pavement width is narrow, fluctuating between 20 ft. and 22 ft., and there are numerous corners with restricted sight lines. Travel speeds are high and only the most confident bicyclists are currently riding in this environment.

For the section of this route along Clackamas River Drive, widening is not feasible due to physical constraints including steep slopes, ditches and utility lines. Traffic calming may be an alternate solution for this section, but should be used in conjunction with significant educational outreach to the public and the identification of alternate routes for non-local motorized traffic.



**Principal Active Transportation (PAT) Routes
Route P2 - Clackamas River Drive
Clackamas County, Oregon**

Figure 8

Coordinate System: NAD 1983 NAD83 StatePlane Oregon North FIPS 3601 Feet Intl
Data Source: Clackamas County GIS

Proposed Facility Type

This route follows lower traffic streets (though speeds can be high) for nearly its entirety, with two exceptions: the one mile where it follows Highway 211 into Estacada, and the segment of Springwater Road between Carver and Bakers Ferry Road. Given the relatively low traffic volumes and recreational nature of the route, shoulder bikeways are proposed (though drainage ditches, utility lines and large trees will impact the cost of any roadway widening). There are also opportunities to improve active transportation conditions with appropriate signage on Clackamas River Drive, such as bicycle warning signs or 'Bikes on Roadway' signs.

Project Segments

- **(2.01) Clackamas River Drive from Washington Street to Forsythe Road:** This section is within Oregon City limits and currently has sidewalks and bike lanes.
- **(2.02) Clackamas River Drive/Springwater Road from Forsythe Road to SE Bakers Ferry Road:** This section should be studied to improve driver-bicycle interactions because of roadway widening constraints.
- **(2.03) S Bakers Ferry Road/Eaden/Springwater/Hayden Road from Market Road 39 to Highway 211:** The route from Carver to Highway 211 begins at S Bakers Ferry Road. The roads should be expanded to include paved shoulders, and bicycle warning or 'Bikes on Roadway' signs.
- **(2.04) Highway 211 from Hayden Road to Estacada:** This one-mile stretch of highway has significantly higher traffic volumes than the rest of the route. Given the proximity to an urban core, the paved shoulders should be formalized into bike lanes with pavement markings and signage.
- **(2.05) SE Bakers Ferry Road from Highway 224 to Eaden Road:** This short segment will provide an on-street connection between the proposed Cazadero Trail and the Clackamas River Drive Route.

Table 5: Clackamas River Drive (P2) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
2.01	Clackamas River Drive	Washington Street to Forsythe Road	1.13	Complete sidewalks and bike lanes	Wayfinding Signage	Direct bicyclists to this planned bicycle route to Estacada, once implemented.	None	Segment is in Oregon City	\$3,000
2.02	Clackamas River Drive/ Springwater Road	Forsythe Road to S Bakers Ferry Road	6.85	None	None – A study to improve driver-bicycle interactions is needed	Provides a recreational bicycling opportunity. Connects Oregon City and Carver.	Narrow roadway with guard rails and no shoulders. Retaining wall would need modification. Irrigation ditches and utility lines adjacent to roadway. Needs 14' pavement width to accommodate facility.	A traffic study is needed to improve driver-bicycle interactions. Shared lane markings are not allowed on streets with speed limits above 35 mph	\$100,000
2.03	S Bakers Ferry Road/Eaden/ Springwater/Hayden Road	Springwater Road to Hwy 211	13.3	None	Shoulder bikeway	Provides a recreational bicycling opportunity. Connects Oregon City and the City of Estacada.	Ditches, utility lines and large trees adjacent to the roadway. Topography and corners create visibility concerns. Needs 11'-14' of additional pavement width and 14' of additional ROW (10' for minimum width facility) to accommodate facility.	None	\$29,161,000
2.04	Hwy 211	Hayden Road to Hwy 224	1.15	None	Bike lane	Provides a recreational bicycling opportunity. Connects Oregon City and the City of Estacada.	Ditches adjacent to roadway. Needs 8' of additional pavement width to accommodate facility.	Existing striped wide shoulders are sufficient. Add pavement markings and optional signage. High traffic speeds and volumes.	\$6,000
2.05	SE Bakers Ferry Road	Hwy 224 to Eaden Road	0.9	None	Shoulder bikeway; shared lane markings on bridge	Provides an on-street connection to the proposed Cazadero Trail.	Ditches adjacent to the roadway and a narrow bridge crossing. Needs 14' of additional pavement width to accommodate facility.	Add shared lane markings to the 300'-long bridge crossing.	\$1,657,000

(P3) Tickle Creek Trail – Cazadero Trail

Route Summary

Extent:	City of Sandy to City of Estacada
Total Length:	23.5 miles
Environment:	Rural/suburban
Proposed Facility Type(s):	Multi-use path
Expected Pedestrian Use:	Recreational and utilitarian walkers
Expected Bicycle User Group:	Recreational and utilitarian bicyclists

Route Description

This route consists of two distinct sections: the proposed Tickle Creek Trail traveling east/west and the proposed north/south-oriented Cazadero Trail. Both of these trails would provide recreational opportunities for residents of several communities including Gresham, Sandy, Estacada, Oregon City and Portland.

The Cazadero Trail is a 14-mile portion of the proposed Metro to Mt. Hood Trail, going from downtown Portland to the Pacific Crest Trail in the Mt. Hood National Forest. It will connect with the Springwater Corridor in Boring and to Timber Park in Estacada.

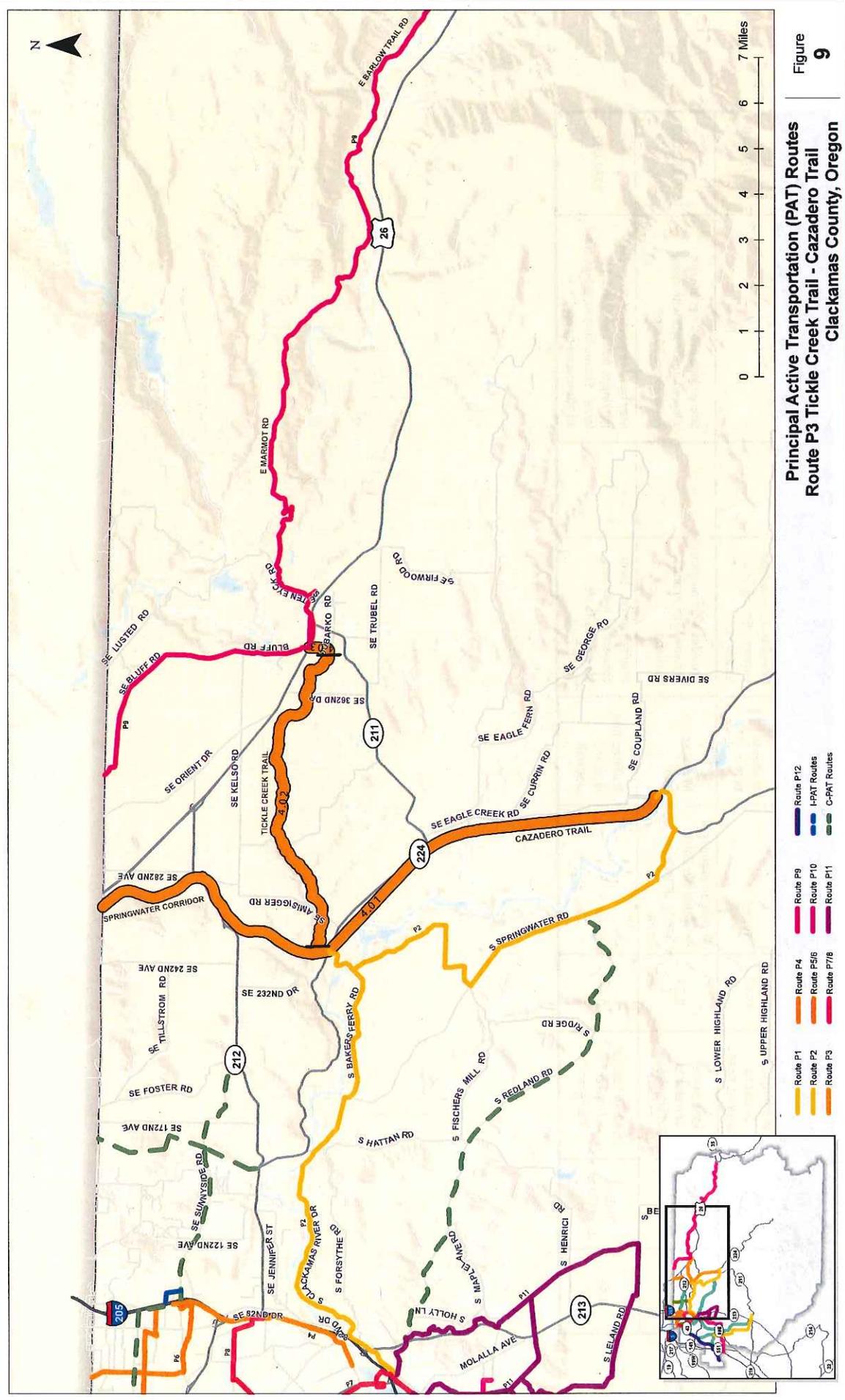
The Tickle Creek Trail is also part of Metro's Mt. Hood Connections project and consists of funding and building a trail connection between Sandy and the eastern terminus of the Springwater Corridor in Boring. The majority of the Tickle Creek Trail is a planned off-street multi-use path. A short segment (0.7 miles) will be an on-street connection between the trail and downtown Sandy.

Proposed Facility Type

Both of these routes will be off-street multi-use paths providing low-stress transportation and recreational connections between several communities. A short on-street connection between the trail and downtown Sandy can be accomplished with buffered bike lanes (may need to remove parking) or shared lane markings, and sidewalks.

Project Segments

- **(3.01) Cazadero Trail:** This section will be an off-street multi-use path.
- **(3.02) Tickle Creek Trail between the Springwater Corridor and Dubarko Road:** This section will be an off-street multi-use path.
- **(3.03) Tickle Creek Trail between Dubarko Road and Pioneer Boulevard:** Buffered bike lanes and sidewalks are recommended for the on-street section of the Tickle Creek Trail.



Principal Active Transportation (PAT) Routes
Route P3 Tickle Creek Trail - Cazadero Trail
Clackamas County, Oregon

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl
Data Source: Clackamas County GIS

Table 6: Tickle Creek Trail – Cazadero Trail (P3) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
3.01	Cazadero Trail	Washington Street to Forsythe Road	14.48	None	Multi-use path	Provides a connection between Boring and Estacada.	-	-	\$17,730,000
3.02	Tickle Creek Trail	Springwater Corridor to Dubarko Road	8.29	A portion of the trail is within the City of Sandy; otherwise, none.	Multi-use path	Provides a connection between Sandy and Portland.	-	Shared lane markings are not allowed on streets with speed limits above 35 mph.	\$10,152,000
3.03	Tickle Creek Trail	Dubarko Road to Pioneer Boulevard	0.68	None	Buffered bike lane and sidewalk	Provides an on-street connection between Sandy and Tickle Creek Trail.	-	May need removal of on-street parking to add buffered bike lanes. Shared lane markings are an alternative option.	\$782,000

(P4) I-205 Multi-Use Path

Route Summary

Extent:	Clackamas Town Center to Gladstone
Total Length:	5.1 miles
Environment:	Urban/ suburban
Proposed Facility Type(s):	Sidewalk, bike lane
Expected Pedestrian Use:	Recreational and utilitarian walkers
Expected Bicycle User Group:	Recreational and utilitarian bicyclists

Route Description

This route between Clackamas Town Center and Portland Avenue in Gladstone is of regional significance and is designated as a Bicycle Parkway in Metro's Regional Active Transportation Plan. It is a combination of on-street facilities and the existing I-205 Path, terminating just north of the bike-pedestrian bridge that connects Gladstone and Oregon City. The route provides connections to the MAX Green Line, the Clackamas Regional Center and the industrial employment centers concentrated along Highway 212/224.

This project focuses on the gap in the I-205 Path between Lawnfield Road and Highway 212/224. Of special concern is the transition from the off-street path (from the southern end of the gap near McKinley Avenue) to the on-street bike lanes on SE 82nd Drive. This transition routes bicyclists to a highway interchange over multiple slip lanes. A lack of clear wayfinding in the area makes it difficult to identify the best travel path for continuing the trip on a designated facility.

Access to the I-205 Path entrance on SE Ambler Road is also a significant challenge for active transportation users transitioning from the on-street facilities on SE 82nd Drive to the beginning of the path at Ambler Road. There is no trail crossing at this intersection to facilitate a safe crossing.

Improvements to this section of the trail and its various connections in the area will be carried out by ODOT as outlined in its Sunrise Jobs and Transportation Act (JTA) Improvements Plan. In the interim, a number of lower cost solutions that may significantly improve conditions for pedestrians and bicyclists in this area are identified below.

Proposed Facility Type

There is a possibility the I-205 Path will be re-routed with a new pedestrian/bicycle overcrossing when the Sunrise Corridor plan is implemented. The trail will continue to connect users to SE 82nd Drive, albeit with a more seamless transition from the path to on-street facilities. In the interim, the connection between the end of the I-205 path at Highway 224 and its continuation as an on-street facility along 82nd Drive could be improved.

The Highway 224 bridge overcrossing of I-205 has two sidewalks separated by jersey barriers and bike lanes. A recommendation is to re-configure the roadway so that all pedestrian and bicycle traffic is directed to the north side of the bridge on a two-way facility (similar to the Morrison Bridge crossing in Portland) and separated by a jersey barrier. This would provide a separated bicycle facility across the busy highway overcrossing, as compared to the existing on-street bike lanes which may not feel comfortable for many bicyclists. This treatment should also consider intersection crossing improvements such as a high visibility crosswalk and active warning beacons at McKinley Avenue and Highway 224 and at 82nd Drive and Highway 224, as well as striping modifications to the existing I-205 bridge.

Project Segments

- **(4.01) Arlington Street from Portland Avenue to SE 82nd Drive:** There are no bike facilities. It may be necessary to remove one or both lanes of on-street parking to accommodate bike lanes.
- **(4.02) SE 82nd Drive/I-205 Path from E Arlington Street to Highway 212 Overcrossing:** This segment is comprised of the existing bike lanes on SE 82nd Drive as well as the I-205 path from its southern terminus to the Highway 212 overcrossing.
- **(4.03) Highway 212 Overcrossing from McKinley Avenue to SE 82nd Drive:** There are on-street bike facilities, but the transitions to/from the path should be considered.
- **(4.04) SE 82nd Drive:** This segment is comprised of the bike lanes on SE 82nd Drive. If there is available pavement, a road diet should be considered to add buffered bike lanes.
- **(4.05) I-205 Path from Hwy 212 Overcrossing to CTC MAX Station:** This is the I-205 path that leads to the Clackamas Town Center MAX station.

Table 7: I-205 Multi-Use Path (P4) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
4.01	Arlington Street	Portland Avenue to SE 82 nd Drive	0.53	Sidewalk	Bike Lane	Provide a continuous bikeway connection between Gladstone bike/ped bridge and the I-205 path	Existing on-street parking on Arlington Street	There are bike lanes on SE 82 nd Drive.	\$2,000
4.02	SE 82 nd Drive/I-205 Path	E Arlington Street to Hwy 212 Overcrossing	2.0	Bike lane/multi-use path	-	-	-	-	-
4.03	Hwy 212 Overcrossing	McKinley Avenue to SE 82 nd Drive	0.2	Bike lane	Intersection Improvements and Multi-Use Path (Hwy 212 section only)	Improve non-motorized access at a difficult section of the I-205 path gap	See 'Recommended Facility Refinement' section above. ODOT recently upgraded the bike crossing here and may be less willing to make significant changes.	Not available at this time.	Not available at this time.
4.04	SE 82 nd Drive	Hwy 212 Overcrossing to I-205 path	1.24	Bike lanes	Buffered Bike Lane	Provide a more comfortable connection on SE 82 nd Drive	-	ODOT planners and engineers should be involved in the design and planning process.	\$22,000
4.05	I-205 Path	SE 82 nd Drive to CTC MAX Station	1.11	Multi-use path	-	-	-	-	Not Available at this time.

(P5) Monroe Neighborhood Greenway

Route Summary

Extent:	Highway 99 to I-205
Total Length:	4.1 miles
Environment:	Suburban
Proposed Facility Type(s):	Bike boulevard
Expected Pedestrian Use:	Utilitarian and recreational pedestrians
Expected Bicycle User Group:	Utilitarian and recreational bicyclists

Route Description

The Monroe Street Route provides connections to the future MAX Orange Line, the MAX Green Line, the I-205 Path, and a number of parks and schools. In general, increased separation between motorists and pedestrians should be considered by providing a separate sidewalk on at least one side of the street along the length of this route. This route is characterized by low traffic and low speed streets. There are bike lanes on the portion of the route along Fuller Street.

Proposed Facility Type

Bicycle boulevard treatments such as wayfinding and traffic calming are planned for this route. Milwaukie plans to develop the portion of SE Monroe Street within its city limits into a Bicycle Boulevard / Neighborhood Greenway. Clackamas County plans to develop street designs and connections to the Clackamas Regional Center area for the segment of Monroe Street in unincorporated Clackamas County.



Project Segments

- **(5.01) SE Monroe Street between Highway 99 and SE Linwood Avenue:** This section in Milwaukie is being planned as a neighborhood greenway.
- **(5.02) SE Monroe Street from SE Linwood Avenue to SE Causey Avenue:** Beginning at Linwood Avenue, the ATP recommends continuing a bike boulevard treatment along Monroe Street. The route then turns right to utilize existing bike lanes on Fuller Road. Sidewalk construction is needed on one side.
- **(5.03) SE Fuller Road between Monroe Street and Causey Avenue:** This section within unincorporated Clackamas County is served by bike lanes and sidewalks on at least one side of the road.
- **(5.04) SE Causey Avenue from SE Fuller Road to I-205 Path:** This four-block section has significantly increased housing density and vehicle traffic. Consideration should be given to improve active transportation user comfort through traffic calming, such as speed humps and shared lane markings. For the one block between SE Fuller Road and SE 82nd Avenue, the travel lanes and center turn lane should be narrowed to accommodate bike lanes. The county has considered removing the left turn lane at 85th Avenue, which could also be part of this project.

Table 8: Monroe Neighborhood Greenway (P5) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
5.01	SE Monroe Street	Hwy 99 to Linwood Avenue	2.08	-	-	-	-	This section is within the City of Milwaukie and currently planned as a neighborhood greenway.	-
5.02	SE Monroe Street	Linwood Avenue to SE Causey Avenue	1.0	-	Bike boulevard, add sidewalk to one side	Provides a continuous low-stress connection between the planned Milwaukie Bike Boulevard and the Clackamas Town Center/I-205 Path	None	Clackamas County has jurisdiction over the roadway east of Linwood. There is an opportunity to provide a pedestrian/bicycle connection cut-through at 78 th Avenue. Wayfinding signage is needed at 72 nd Avenue to keep people on the neighborhood bikeway.	\$1,235,000
5.03	SE Fuller Road	SE Monroe Street to SE Causey Avenue	0.36	Bike Lane/Sidewalk	-	-	-	-	-
5.04	SE Causey Avenue	SE Fuller Road to I-205 Path	0.62	Sidewalk	Bike boulevard /bike lane	Provides continuous low-stress connection between the planned Milwaukie Bike Boulevard and the Clackamas Town Center/I-205 Path	None	On-street parking is in high demand. The crossing at Fuller and Causey will need to be improved to facilitate a safe and comfortable crossing with a high visibility crosswalk and active warning beacons Lane narrowing on Causey between SE 82 nd Avenue and Fuller will allow for the addition of bike lanes.	\$7,000

(P6) Linwood Avenue

Route Summary

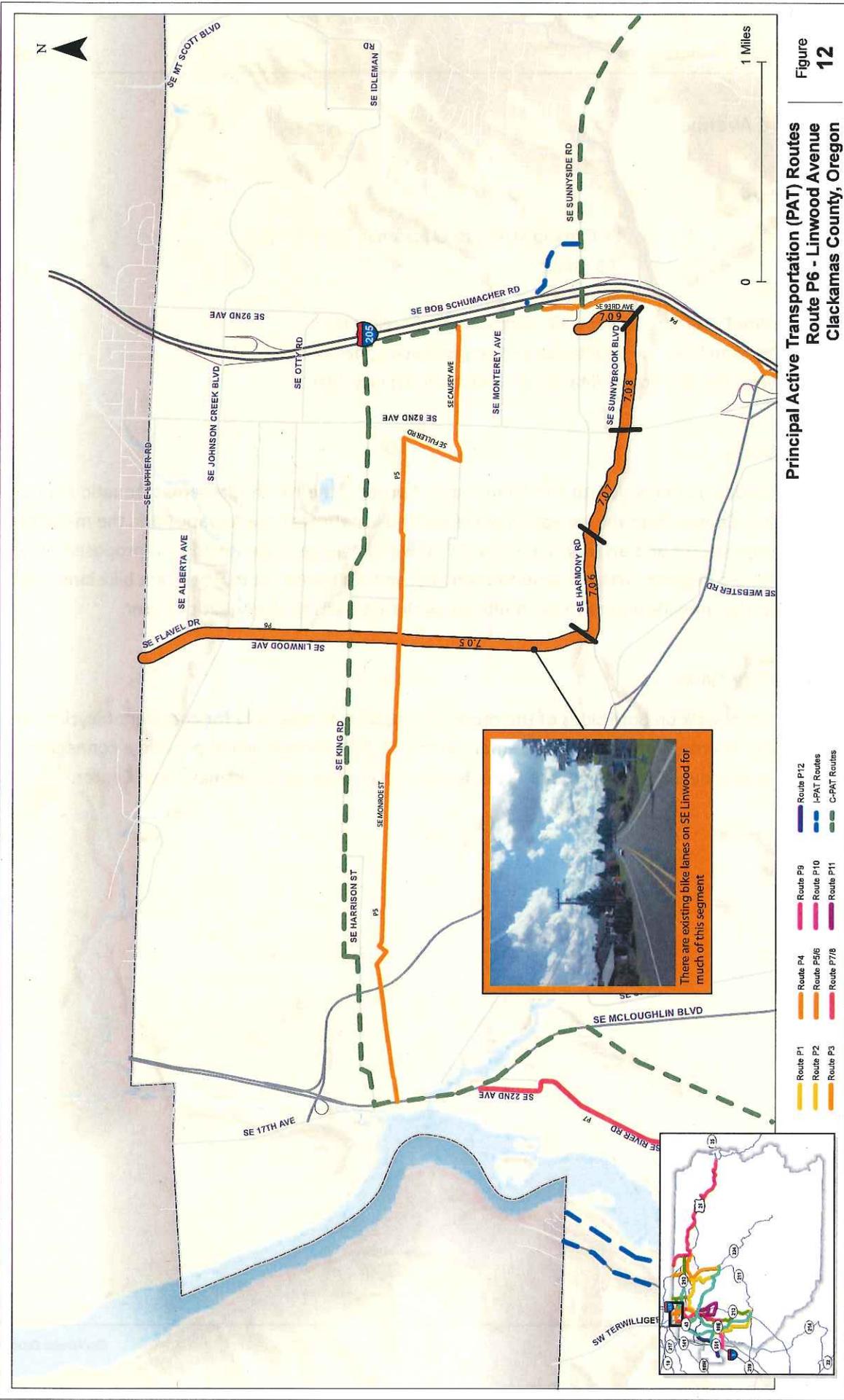
Extent:	SE Clatsop Street to Clackamas Town Center
Total Length:	3.9 miles
Environment:	Suburban
Proposed Facility Type(s):	Sidewalk, bike lane, multi-use path
Expected Pedestrian Use:	Utilitarian and recreational pedestrians
Expected Bicycle User Group:	Utilitarian and recreational bicyclists

Route Description

This route provides a connection to the Springwater Corridor, the North Clackamas Aquatic Park and Clackamas Town Center. With the exception of the multi-use path near the Aquatic Park, the majority of this route is on collector and arterial roadways. SE Linwood Avenue is identified as a proposed bicycle parkway in Metro's Regional Active Transportation Plan and is a transit route. There are bike lanes on SE Harmony Road that provide access to the multi-use path that leads to the Aquatic Center.

Proposed Facility Types

Bike lanes and sidewalk on both sides of the route will improve connectivity for confident bicyclists and pedestrians. An extension of the Aquatic Center path to SE 82nd Avenue would provide a connection to the bike lanes and sidewalks on Sunnybrook Boulevard, which leads to Clackamas Town Center.



Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl
Data Source: Clackamas County GIS

Project Segments

- **(6.05) SE Flavel Drive/SE Linwood Avenue from SE Clatsop Street to Aquatic Center:** Bike lanes would provide bicyclists with greater access to destinations to the south and an established connection to the Springwater Corridor to the north. Utility poles and large trees on the west side of Linwood could impact the development of sidewalk and roadway expansion to include bike lanes.
- **(6.06) Harmony Road from SE Linwood Avenue to Aquatic Center:** There are bike lanes. A multi-use path on Harmony Road is an alternative to expanding the roadway for buffered bike lanes.
- **(6.07) Aquatic Center Path from Aquatic Center to SE 82nd Drive:** By extending the multi-use path at the Aquatic Center to SE 82nd Drive, active transportation users can choose to continue traveling east without having to walk or bike on Harmony Road or SE 82nd Avenue.
- **(6.08) Sunnybrook Boulevard/93rd Avenue from SE 82nd Drive to Clackamas Town Center:** This section is fully built out with sidewalks and bike lanes except where it turns north on SE 93rd Avenue to connect to Clackamas Town Center.
- **(6.09) 93rd Avenue from Sunnybrook Boulevard to Clackamas Town Center:** This section has sidewalks. Bike lanes are needed to complete the bicycle route to Clackamas Town Center. Bicycle detection is needed at 93rd and Sunnyside and again at 93rd and Sunnybrook.

Table 9: Linwood Avenue (P6) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
6.05	SE Flavel Drive/ SE Linwood Avenue	SE Clatsop Street to Harmony Road	2.06	Paved shoulders/sidewalks (50% complete) on Linwood	Bike lane	Connects Milwaukie and Clackamas Town Center	Utility poles and large trees on the west side of the roadway could impact sidewalk development. Needs an additional 0'-12' of pavement width to accommodate facilities.	Linwood Ave. between Harmony and Monroe is a City of Milwaukie road.	\$826,000
6.06	SE Harmony Road	SE Linwood Avenue to Aquatic Center	0.47	Bike lane	Multi-use path	Connects Milwaukie and Clackamas Town Center	-	There is no room to convert the existing bike lanes to buffered bike lanes. However, there is room on the south side of SE Harmony Road to add a multi-use path that connects to the Aquatic Center.	\$583,000
6.07	Aquatic Center Path	SE Harmony Road to SE 82 nd Avenue	0.52	Multi-use path (partial)	Multi-use path	Connects Milwaukie and Clackamas Town Center	None	The intersection of SE 82 nd Avenue will need to be improved for pedestrian and bicyclist use. There is a MUP between Harmony Road and the Aquatic Center.	\$631,000
6.08	Sunnybrook Boulevard	SE 82 nd Drive to 93 rd Avenue	0.53	Bike lane/sidewalk	-	Connects Milwaukie and Clackamas Town Center	None	There are sidewalks and bike lanes between SE 82 nd and SE 93 rd .	-
6.09	93 rd Avenue	Sunnybrook Blvd to Clackamas Town Center	0.27	Sidewalks	Bike lane	Connects Milwaukie and Clackamas Town Center	None	Bicycle detection is needed at 93 rd and Sunnybrook and at 93 rd and Sunnybrook.	\$16,000

(P7) River Road

Route Summary

Extent:	Trolley Trail at Highway 99E to Downtown Oregon City
Total Length:	7.3 miles
Environment:	Suburban
Proposed Facility Type(s):	Sidewalk, buffered bike lane
Expected Pedestrian Use:	Recreational and local trips
Expected Bicycle User Group:	Recreational

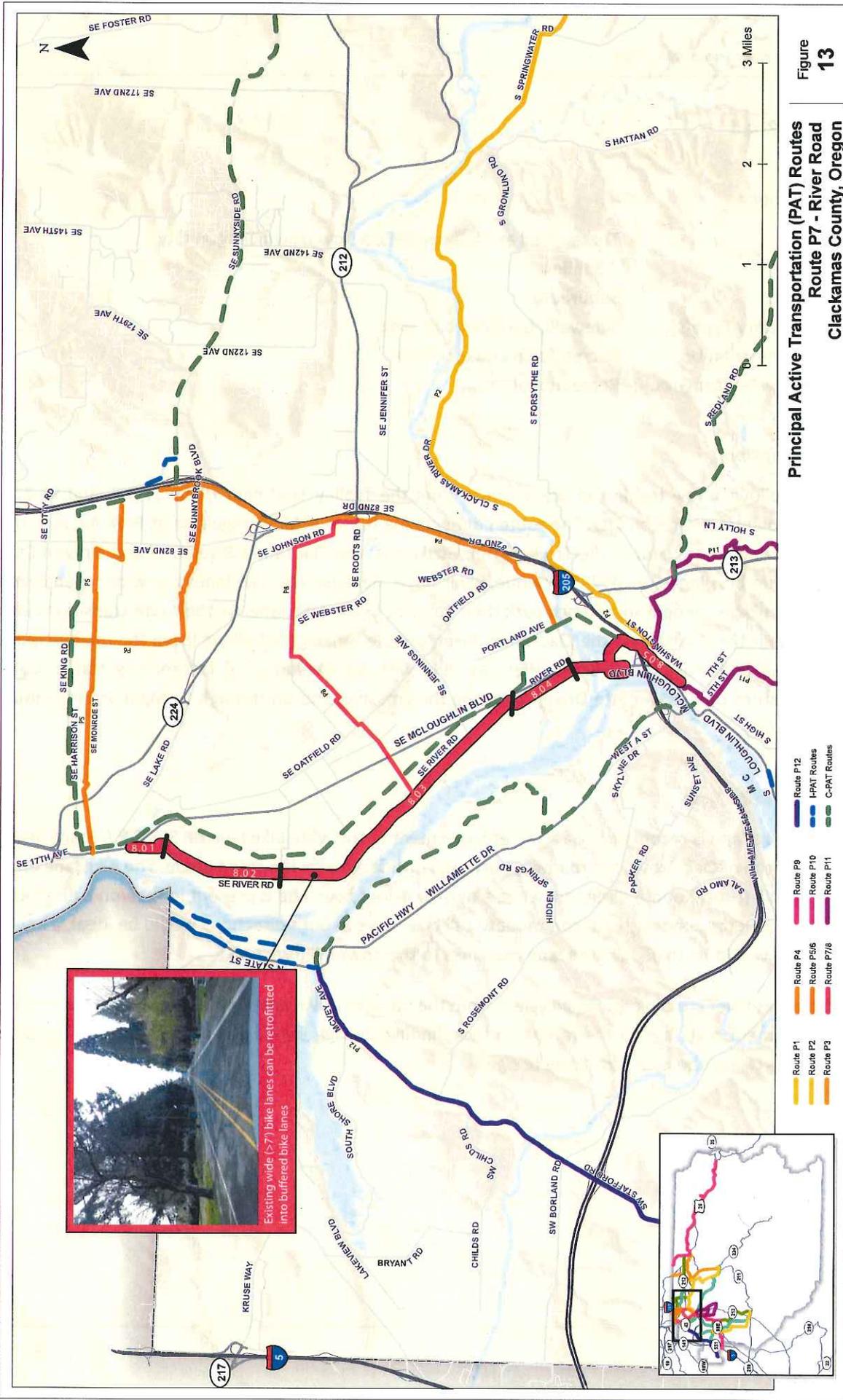
Route Description

This route follows a low traffic and scenic route from the Trolley Trail near Highway 99E and SE 22nd Avenue to downtown Oregon City. The route connects the future MAX Orange Line at Park Avenue, the Oak Grove employment center, the Trolley Trail, Gladstone, the Clackamas River Trail and Oregon City. There are wide bike lanes on SE 22nd Avenue/River Road. Because the bike lanes are wider than seven feet in many places, people sometimes park their vehicles in the bike lane. As the route transitions into Gladstone near the bridge over the Clackamas River, people walking and biking leave the relative quiet of River Road and cross the river on Highway 99E, with high volumes of fast-moving traffic. Calm conditions return on Clackamette Drive, following the crossing, and on through to Main Street leading into Oregon City.

Proposed Facility Type

A buffered bike lane is recommended as an enhancement to the wide bike lane on SE 22nd Avenue/River Road. Just south of Oak Grove, the roadway narrows considerably on the steep grade. The bike lane ends in the downhill (southbound) direction, while a narrow 4-foot bike lane is present in the uphill direction. While expanding the roadway to accommodate full bike lanes in both directions would be ideal, a lower cost solution would be to add shared lane markings to the downhill direction.

The Clackamas River crossing routes bicyclists from the on-street bike lane to the sidewalk on the bridge. Adding pavement markings to the ramps and wayfinding signage would clarify the route and lead to fewer cyclists taking the lane across the bridge.



Project Segments

- **(7.01) SE 22nd Avenue from Highway 99E to SE River Road:** The wide bike lane could be enhanced by adding a hatched buffer, thereby establishing a buffered bike lane.
- **(7.02) SE River Road from SE Lark Street to Oak Grove Boulevard:** The bike lane continues to be wide (more than 7 feet) in this section. A hatched buffer, bicycle stencil markings and no-parking signs would help reinforce that the on-street bikeway is not a parking lane.
- **(7.03) SE River Road from Oak Grove Boulevard to Glen Echo Avenue:** The roadway narrows considerably south of Oak Grove, but widens again after the steep hill near Rosebrier Court. A buffered bike lane could be added in this section with ease, except in the steep section between Oak Grove Boulevard and Rosebrier Court. An interim solution could be to add shared lane markings in the downhill direction.
- **(7.04) River Road from Glen Echo Avenue to Dunes Drive:** Traffic volumes increase and the roadway narrows where River Road terminates into Glen Echo Avenue. There are bike lanes and sidewalks. Signage and pavement markings should be added to direct bicyclists onto the bridge sidewalk.
- **(7.05) Dunes Drive/Main Street from Highway 99E to 14th Street:** Dunes Drive has bike lanes that lead downhill to the river. Where Dunes Drive transitions into Main Street, the bike lanes disappear and are replaced by narrow shoulders. Roadway expansion should be considered to accommodate buffered bike lanes in this section.

Table 10: River Road Route (P7) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
7.01	SE 22 nd Avenue	Hwy 99 to SE River Road	0.38	Bike lane	Buffered bike lane	On-street connection between Gladstone and Oregon City		There is enough pavement width to accommodate buffered bike lanes	\$6,000
7.02	SE River Road	SE Lark Street to Oak Grove Blvd	1.23	Bike lane	Buffered bike lane	On-street connection between Gladstone and Oregon City	Many driveways and intersections limit the feasibility of a cycle track.	There is enough pavement width to accommodate buffered bike lanes	\$20,000
7.03	SE River Road	Oak Grove Boulevard to Glen Echo Avenue	3.0	Bike lane	Buffered bike lane and some shoulder widening	On-street connection between Gladstone and Oregon City	Needs 16' of additional pavement width in the area between Oak Grove and Rosebrier Court	There is an uphill bike lane (4'), but no facility in the downhill direction between Oak Grove and SE Rosebrier Court; an interim solution could be to add shared lane markings in the downhill direction.	\$372,000
7.04	River Road	Glen Echo Avenue to Dunes Drive	0.75	Bike lane, sidewalks south of SE Rinearson Road, multi-use path on Hwy 99 bridge	Buffered bike lane	On-street connection between Gladstone and Oregon City	None.	There is pavement width to accommodate buffered bike lanes. The Hwy 99 bridge has a narrow multi-use path that does not comfortably accommodate pedestrians and bicyclists traveling in tandem.	\$12,000
7.05	Dunes Drive/Main Street	Hwy 99 to 14 th Street	1.94	None	Buffered bike lane	On-street connection between Gladstone and Oregon City	Narrow roadway shoulders. The roadway will need to be expanded 7' to accommodate buffered bike lanes.	None.	\$32,000

(P8) Oetkin Road - Naef Road

Route Summary

Extent:	I-205 Path to SE River Road
Total Length:	3.8 miles
Environment:	Suburban
Proposed Facility Type(s):	Sidewalk, bike boulevard, buffered bike lane
Expected Pedestrian Use:	Utilitarian and recreational
Expected Bicycle User Group:	Utilitarian and recreational

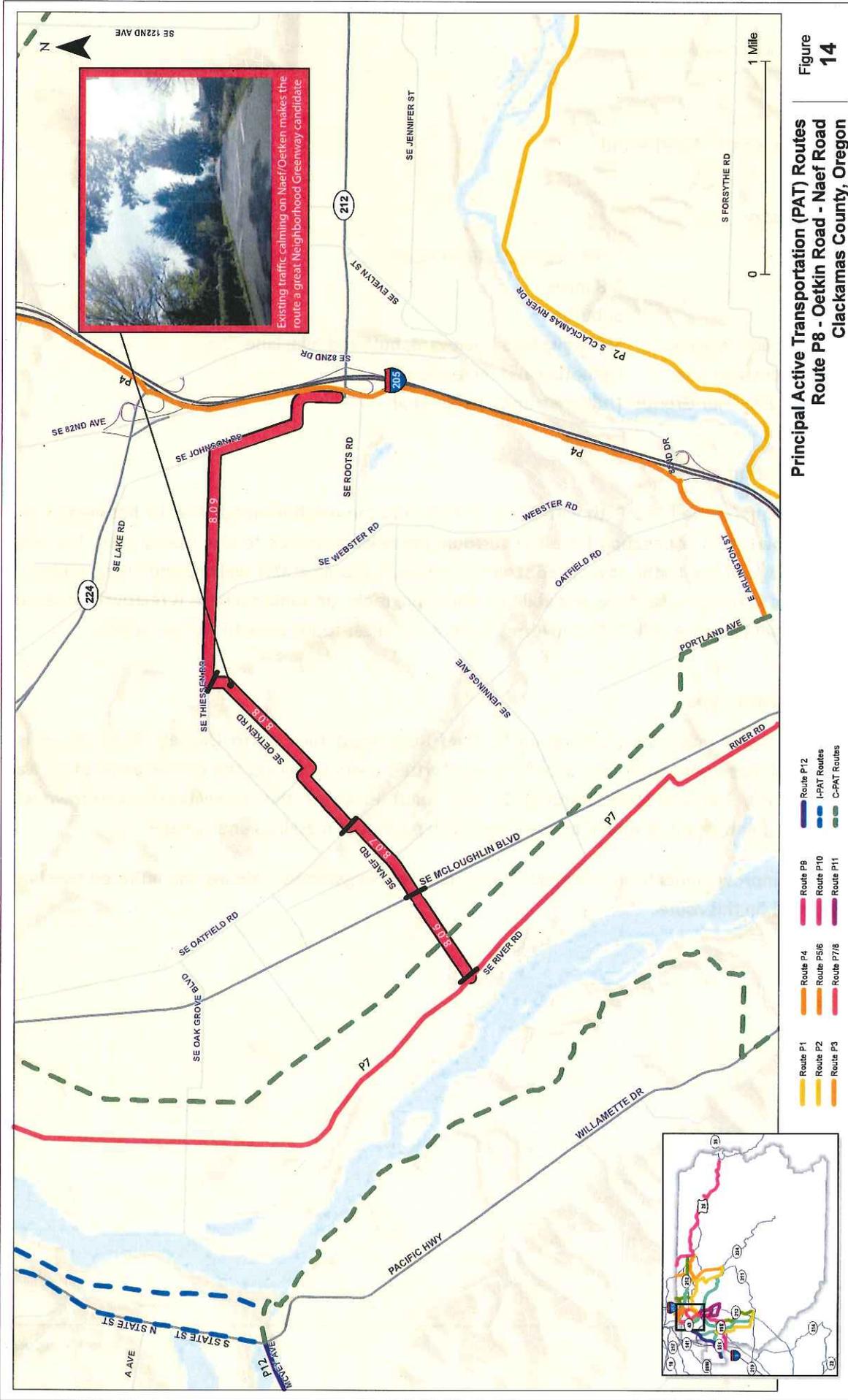
Route Description

This route connects the I-205 Path with SE River Road and the neighborhoods that lie between. It also provides a low-stress connection from the surrounding neighborhoods to the Trolley Trail. The route takes advantage of low traffic, low speed streets to provide a comfortable walking and biking route that would appeal to people of all ages and abilities. The topography on some sections is relatively steep and may be difficult for some bicyclists. However, there is no flatter route available in the vicinity.

Proposed Facility Type

While southbound motorists traveling on SE Naef Road must turn on to Oatfield Road, there is a pedestrian/bicycle connection that allows non-motorized users to access the continuation of SE Naef Road (which is a dead end street south of Oatfield Road). However, this connection is overgrown with shrubbery and unmarked. It should be enhanced with pavement markings and signage.

A variety of improvements from sidewalks, shared lane markings, traffic calming and buffered bike lanes are proposed on this route.



Principal Active Transportation (PAT) Routes
Route P8 - Oetkin Road - Naef Road
Clackamas County, Oregon

Figure 14

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 5007 Feet Intl
 Data Source: Clackamas County GIS

Project Segments

- **(8.06) SE Naef Road from SE River Road to Highway 99E:** This section provides a connection from SE River Road to the Trolley Trail. Due to low traffic volumes, a bike boulevard treatment is recommended. Bicycle detection (e.g. loop, video, infrared or push button) should be added to the intersection with Highway 99E to help bicyclists across the signalized intersection.
- **(8.07) SE Naef Road from Highway 99E to Oatfield Road:** Low traffic volumes and speeds make a bike boulevard the appropriate treatment. The visibility of the active transportation connection at Oatfield Road can be improved with signage and pavement markings.
- **(8.08) SE Naef Road/Oetkin Road from Oatfield Road to SE Thiessen Road:** SE Naef/Oetkin Road is traffic calmed in this section with speed humps. Adding pavement markings and sidewalks will further improve the route for active transportation users.
- **(8.09) SE Thiessen Road from SE Oetkin Road to I-205 Path:** Bike lanes on SE Thiessen Road lead to the I-205 Path, but traffic speeds and volumes are much higher in this section. Buffered bike lanes are recommended to increase comfort for bicyclists traveling between the I-205 Path and the proposed bike boulevard on Oetkin/Naef Road.

Table 11: Oetkin Road - Naef Road (P8) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
8.06	SE Naef Road	SE River Road to Hwy 99	0.48	Sidewalks approximately 50% complete	Bike boulevard /sidewalk	Provides a low stress connection between the I-205 path and River Road	None	-	\$2,489,000
8.07	SE Naef Road	Hwy 99 to Oatfield Road	0.46	Sidewalks mostly complete on both sides south of SE Harold Avenue	Bike boulevard /sidewalk	Provides a low stress connection between the I-205 path and River Road	None	Improved crossing at Hwy 99 necessary. There is a pedestrian / bike only connection at Naef and Oatfield that can be used to continue on Naef.	\$1,034,000
8.08	SE Naef Road/Oetkin Road	Oatfield Road to SE Thiessen Road	1.0	Traffic calming (speed humps)	Bike boulevard /sidewalk	Provides a low stress connection between the I-205 path and River Road	None	-	\$2,492,000
8.09	SE Thiessen Road	SE Oetkin Road to I-205 Path	1.84	Bike lane	Buffered bike lanes/sidewalk	Provides a low stress connection between the I-205 path and River Road. Needs 4'-10' of additional pavement width and 2' of additional ROW (0' for minimum width facility)	None	-	\$4,708,000

(P9) Sandy to Mount Hood

Route Summary

Extent:	Sandy to Government Camp (northern connection to Gresham via Bluff Road)
Total Length:	49.8 miles
Environment:	Rural
Proposed Facility Type(s):	Shoulder bikeway, shared lane markings
Expected Pedestrian Use:	Local trips near areas with higher population
Expected Bicycle User Group:	Recreational

Route Description

The Barlow Trail Route is a popular ride for recreational bicyclists that also serves as a scenic and low traffic alternative to riding on Highway 26. The route connects the City of Sandy and the Villages of Mt Hood. Connections to the planned Cazadero Trail and the existing Springwater Trail further enhance this route's recreation potential.

The proposed route in this plan connects Government Camp to Sandy and extends to the Gresham city limits. Conditions are characterized by narrow, winding low-traffic mountain roads. With the exception of the segment on U.S. 26 with wide shoulders suitable for bicycling, there are no separated facilities for walking or biking.

Pedestrians are generally not expected to use this route due to very long distances between destinations. Local trips in the population centers of Sandy and Government Camp are served by sidewalks. Therefore, no dedicated pedestrian facilities are recommended on this route.

Proposed Facility Types

This route primarily appeals to recreational bicyclists who are typically more confident riders. While the relatively low traffic volumes accommodate this rider group, shoulder bikeway would enhance the route and allow motorists to more easily pass cyclists. Irrigation ditches, trees relatively close to the roadway, fences placed within the public right-of-way and steep slopes are the most common constraints along this route for expanding the roadway to include paved shoulders. Wayfinding signage at all major decision points would help formalize this route as well.

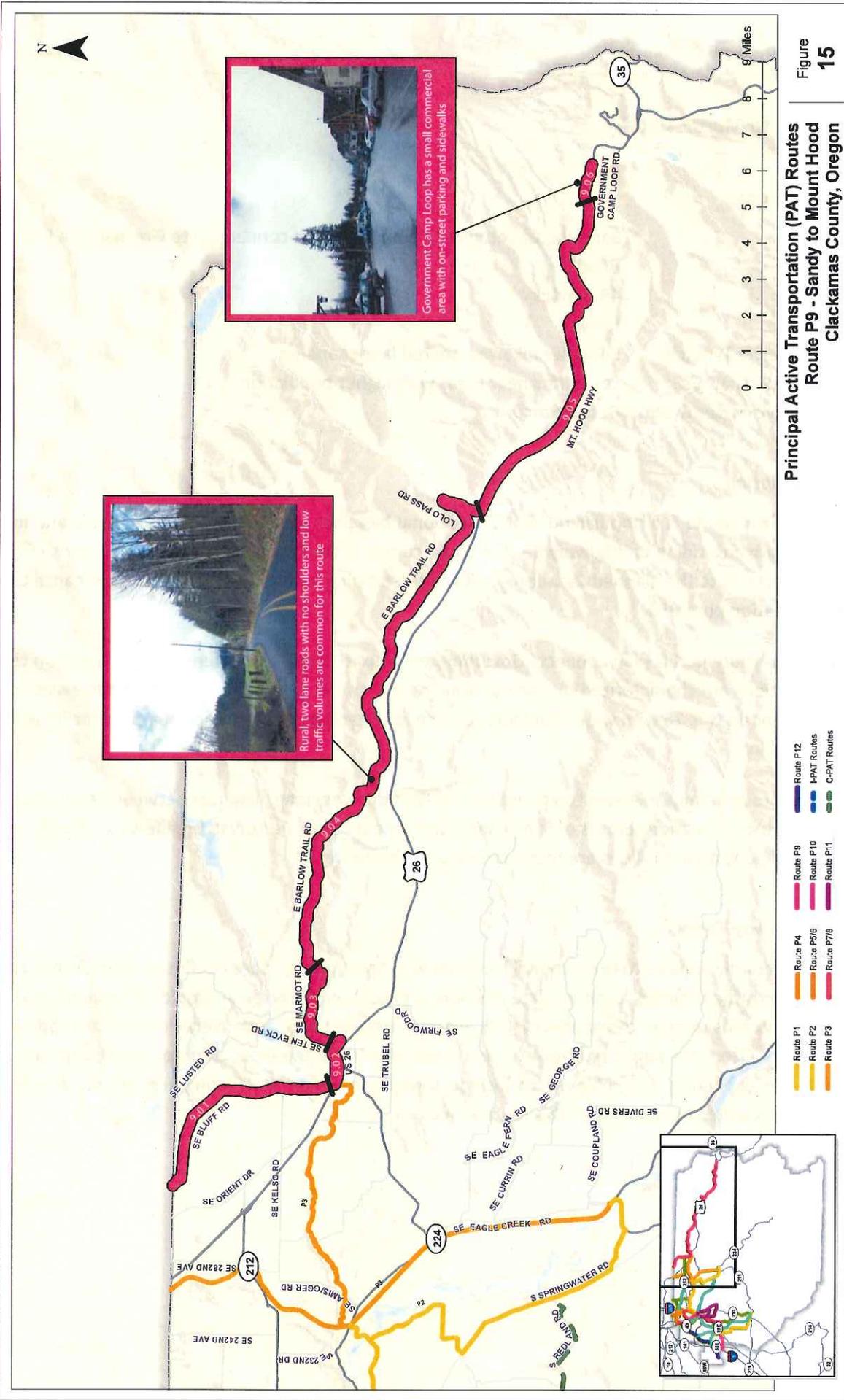


Figure 15

Projects Segments

- **(9.01) SE Bluff Road from SE 322nd Avenue to U.S. 26:** This roadway has bike lanes leading from U.S. 26 toward the Sandy River, but these facilities end where the county boundary begins at SE Kelso Road. There are few constraints for expanding the roadway to include paved shoulders where they do not currently exist.
- **(9.02) U.S. 26 Couplet (Proctor Boulevard and Pioneer Boulevard) from Ten Eyck Road to SE Bluff Road:** Within the City of Sandy, with bike lanes and complete sidewalks.
- **(9.03) Ten Eyck Road/Marmot Road from U.S. 26 to SE Shipley Road:** Ten Eyck Road has a moderate amount of traffic as motorists approach Sandy from the outlying area. This area lacks shoulders and is characterized by steep roadway grades. Shoulder bikeways would be difficult to add.
- **(9.04) SE Marmot Road/Barlow Trail/E Lolo Pass Road from SE Shipley Road to U.S. 26:** This isolated section with low traffic volumes is comprised of narrow, two-lane roadways. Expanding the roadway to include shoulder bikeways would be met with some moderate constraints, such as trees and drainage ditches. There is a higher level of housing development with greater walking and biking activity along Barlow Trail Rd. However, the roadway conditions do not change significantly in this area and no change to the proposed facility type is required.
- **(9.05) U.S. 26 from E Lolo Pass Road to Government Camp Road:** Upon leaving E Lolo Pass Road, the route continues on the higher volume and higher speed of U.S. 26 where wide shoulders accommodate bicycle travel to Government Camp.
- **(9.06) Government Camp Loop (entire roadway):** The commercial core of Government Camp has well-utilized on-street parking. Shared lane markings can be added to this section, and there is ample room to add bike lanes from the end of the commercial areas to the intersection with U.S. 26.

Table 12: Sandy to Mount Hood (P9) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
9.01	SE Bluff Road	SE 322nd Avenue to U.S. 26	4.9	Bike lanes between U.S. 26 and Kelso Road	Shoulder bikeway	Connects the outer Gresham/Troutdale area and the City of Sandy	Needs 11' of additional pavement width north of Kelso Road		\$6,423,000
9.02	U.S. 26 couplet (Proctor Boulevard and Pioneer Boulevard):	Ten Eyck Road to SE Bluff Road	0.75	Bike lane/sidewalk	-	-	-	-	-
9.03	Ten Eyck Road/SE Marmot Road	U.S. 26 to SE Shipley Road	3.72	None	Shoulder bikeway	Connects the City of Sandy and Government Camp	The roadway would need to be expanded 5'-14' to accommodate a facility. Large trees and some drainage ditches adjacent to the roadway. Retaining walls assumed necessary.	Steep terrain and higher traffic volumes on Ten Eyck Road between Sandy city limits and SE Fish Hatchery Road.	\$29,412,000
9.04	SE Marmot Road/Barlow Trail/E Lolo Pass Road	SE Shipley Road to U.S. 26	17.4	None	Shoulder bikeway	Connects the City of Sandy and Government Camp	The roadway needs to be expanded 6'-12' to accommodate a facility. Large trees and some drainage ditches adjacent to the roadway	This is a low traffic two lane roadway that is a popular route with recreational bicyclists.	\$22,539,000
9.05	U.S. 26	E Lolo Pass Road to Government Camp Road	10.4	Shoulder bikeway	-	Connects the City of Sandy and Government Camp	None	There are wide paved shoulders, but a MUP would be a terrific asset between the communities of Government Camp and Brightwood	-
9.06	Government Camp Loop	Government Camp Loop (full extent)	1.3	None	Shared lane markings	Provides a dedicated place to ride in the main commercial area of Government Camp	-	There is high demand on-street parking and no room to expand the roadway with existing commercial development.	\$11,000

(P10) Oregon City to Canby

Route Summary

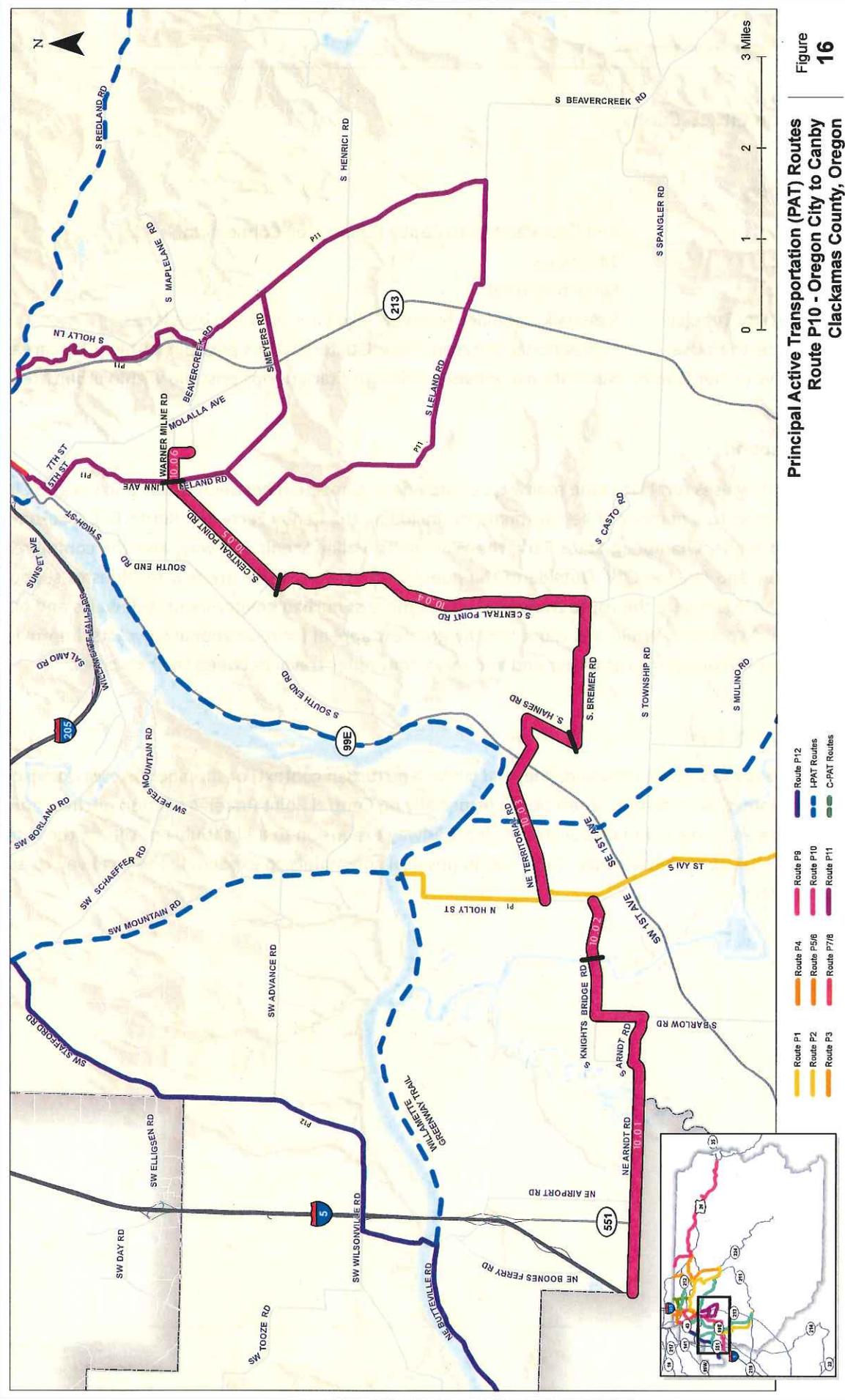
Extent:	Red Soils Campus to Canby (Champoeg Connection)
Total Length:	14.9 miles
Environment:	Suburban/rural
Proposed Facility Type(s):	Sidewalk, shoulder bikeway, bike lane, advisory bike lanes
Expected Pedestrian Use:	Recreational between cities. Utilitarian trips possible within urban areas.
Expected Bicycle User Group:	Recreational between cities. Utilitarian trips possible within urban areas.

Route Description

This route mainly uses rural two-lane roadways to provide a connection between Canby and Oregon City. It provides access to a number of key destinations, including the Canby Ferry (via Route P1), Clackamas County Fairgrounds, Champoeg State Park, the Willamette Valley Scenic Bikeway, and the commercial areas of Canby and Oregon City. Outside of the population centers, there are few facilities to support walking and biking. Where the route transitions into a more suburban environment, sidewalks and bike lanes are mostly present. While this route has the greatest appeal for recreational bicyclists, improving it could attract utilitarian trips at either end and serve commuter travel between the two cities.

Proposed Facility Type

This route spans the suburban/rural divide, and a bike lane (urban context) or shoulder bikeway/advisory lane (rural context) is preferred. Steep slopes (especially on Central Point Road), irrigation ditches, utility lines and trees are some common constraints for roadway expansion to add shoulders. Where the route is adjacent to flat agricultural lands, there are no physical constraints to expanding the roadway to add paved shoulders.



Principal Active Transportation (PAT) Routes
Route P10 - Oregon City to Canby
Clackamas County, Oregon

Figure 16

Coordinate System: NAD 1983 NADN StatePlane Oregon North FIPS 3601 Feet Intl
Data Source: Clackamas County GIS

Project Segments

- **(10.01) S Knights Bridge/S Barlow Road/Arndt Road from N Knights Bridge Road to I-5:** This rural roadway has shoulder bikeways for much of its length.
- **(10.02) N Knights Bridge Road from N Holly Street to S Knights Bridge Road:** This section within Canby city limits includes complete sidewalks and bike lanes except for a small gap in the bike lane between N Holly Street and Grant Street.
- **(10.03) South Territorial Road from Highway 99E to N Holly Street:** There are fewer constraints to roadway widening in this section, though fence encroachment and irrigation ditches are present in some areas.
- **(10.04) S Central Point Road/S Bremer Road/Territorial Road from Warner-Milne Road to Highway 99E:** Central Point Road is narrow and steep with several constraints, including drainage ditches and large trees, which impact the ability to widen the roadway to add paved shoulders for shoulder bikeways.
- **(10.05) S Central Point Road from Warner Milne Road to Parish Road:** This section within Oregon City city limits has approximately 50% complete bike lanes and sidewalks.
- **(10.06) Beavercreek Road/Warner-Milne Road from Red Soils Campus to Central Point Road:** This roadway within Oregon City city limits has bike lanes and sidewalks.

Table 13: Oregon City to Canby (P10) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
10.01	S Knights Bridge/S Barlow Road/Arndt Road	N Knights Bridge Road to I-5	4.22	Mostly shoulder bikeway, some locations without facilities	Advisory lanes or use existing shoulder bikeway	Connects Canby, the agricultural area west of Canby, Champoeg State Park and the Willamette Valley Scenic Bikeway.	Ditches constrain inexpensive roadway widening to accommodate wider shoulder bikeways.	Outreach needed to encourage positive driver-bicyclist interactions due to posted speeds of 45 mph or greater.	\$55,000
10.02	N Knights Bridge Road	N Holly Street to S Knights Bridge Road	0.66	None	Bike lane	Connects Canby and the agricultural area west of Canby	10' of additional pavement width necessary to accommodate facility.	The bridge crossing is wide enough to accommodate shoulder bikeways of 4'-5' without widening.	\$802,000
10.03	NE Territorial Road	Haines Road to N Holly Street	2.73	None	Shoulder bikeway/ advisory bike lanes between Haines Road and the beginning of urban area	Connects Oregon City and Canby	4'-14' of additional pavement width needed to accommodate facility.	None	\$2,575,000
10.04	S Central Point Road/S Bremer Road/Territorial Road	Warner-Milne Road to Haines Rd	5.13	None	Shoulder bikeway	Connects Oregon City and Canby	Steep terrain, narrow stream crossings and utility poles adjacent to roadway. Needs 13'-16' additional pavement width and 14' of additional ROW to accommodate facility.	None	\$10,158,000
10.05	S Central Point Road	Warner Milne Road to Parish Road	1.45	Bike lane and sidewalk are 50% complete	Bike lane/sidewalk	Connects Oregon City and Canby	0'-16' of additional pavement width needed to accommodate facility.	This is in urban Oregon City. A parking lane on one side of the road can be reconfigured into bike lanes on both sides.	\$1,786,000
10.06	Beavercreek Road/Warner-Milne Road	Red Soils Campus to Central Point Road	0.68	Bike lane/sidewalk	-	-	-	This is in urban Oregon City.	-

(P11) Newell Creek Trail – Oregon City Loop

Route Summary

Extent:	Loop around Oregon City
Total Length:	18.0 miles
Environment:	Suburban/rural
Proposed Facility Type(s):	Sidewalk, shoulder bikeway, bike lane, shared lane markings, multi-use path
Expected Pedestrian Use:	Utilitarian trips
Expected Bicycle User Group:	Utilitarian trips in developed areas and recreational trips outside city limits

Route Description

This route consists of two overlapping loops.

The inner loop is intended to better accommodate utilitarian walking and biking trips by connecting residential areas with key destinations such as Clackamas Community College and downtown Oregon City. There are existing or proposed (Oregon City TSP) pedestrian and bicycle facilities for the length of this inner loop.

The outer loop takes advantage of low traffic, rural, two-lane roadways to provide recreational bicyclists with an attractive ride through the agricultural lands south and east of Oregon City before bringing them back toward the urban core.

Both routes provide a connection to the future Newell Creek Trail, which will attract recreational pedestrians and bicyclists.

Proposed Facility Type

Shoulder bikeways are desirable in these more rural sections of the route. The southern section of the outer loop is on scenic rural roadways, but the roads are narrow with a significant number of adjacent physical constraints. Steep terrain, irrigation ditches and utility lines will be a challenge for expanding the roadway to accommodate paved shoulders.

Project Segments

- **(11.01) Singer Hill Road/5th Street/Linn Avenue from Downtown Oregon City to Warner-Milne Road:** This section within Oregon City's jurisdiction has bike lanes or shared lane markings for its entirety, with the exception of Singer Hill Road, which needs shared lane markings installed.
- **(11.02) Leland Road from Warner-Milne Road to Frontier Parkway:** South of Warner Milne, the route transitions to Leland Road which has planned bike lanes in the Oregon City TSP.
- **(11.03) S Leland Road from S Jessie Avenue to Highway 213:** This is a narrow roadway with steep topography and other physical constraints. A shoulder bikeway is proposed.
- **(11.04) S Leland Road from S Molalla Avenue (Highway 213) to Clackamas Community College (CCC):** This largely rural route has paved shoulders in some areas and relatively few constraints for adding shoulders where they do not currently exist.
- **(11.05) Redland Road to CCC:** This section takes advantage of the planned Newell Creek Trail.
- **(11.06) Abernethy Road/Redland Road from Washington Street to Newell Creek Trail:** This section connects Washington Street in Oregon City to the planned Newell Creek Trail.
- **(11.07) Spur Route on Meyers Road:** This provides a more direct connection between the neighborhoods on either side of Highway 213, as well as improved active transportation access to Oregon City High School and Clackamas Community College.
 - Meyers Road from Frontier Parkway to S Molalla Avenue (Highway 213): There are bike lanes on Meyers Road between Leland and Highway 213.
 - There is a planned roadway expansion of Meyers Road (east of Highway 213) between the highway and its current terminus at High School Road.

Table 14: Newell Creek Trail – Oregon City Loop (P11) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
11.01	Main Street/Singer Hill Road/Linn Avenue	Downtown Oregon City to Warner-Mline	1.98	Shared lane markings on Main Street, bike lane on Linn Avenue.	Shared lane markings on Singer Hill Road	Provides an on-street connection in bikeway gap between downtown Oregon City and neighborhoods on the bluff	None	In Oregon City. Proposed facility is based on Oregon City TSP.	\$17,000
11.02	Leland Road/Meyers Road	Warner-Mline to S Frontier Parkway	1.4	Intermittent paved shoulder and sidewalks on Leland Road, speed humps and sidewalks on Frontier, bike lane on Jessup Avenue	Bike lane/sidewalk	Offers a recreational route in the rural area southeast of Oregon City	Between 2'-12' of additional pavement width needed to accommodate facility on Leland Road.	There is a lot of residential development in this area that would support sidewalks.	\$1,702,000
11.03	S Leland Road	Jessie Avenue to Hwy 213	3.49	None	Shoulder bikeway	Offers a recreational route in the rural area southeast of Oregon City	Steep slopes with little room to easily expand roadway. Drainage ditches adjacent to roadway. 11' of additional pavement width needed to accommodate facility. Costs include long section of retaining wall.	None	\$58,111,000
11.04	S Leland Road/Beavercreek	S Molalla Avenue (Hwy 213) to CCC	4.77	Paved shoulders in some areas	Shoulder bikeway	Offers a recreational route in the rural area southeast of Oregon City	A few physical constraints for adding shoulders. Small retaining wall section assumed. 8'-12' of additional pavement width and 6' of addition ROW needed for shoulder bikeway	Needs a crossing improvement at the intersection with Hwy 213.	\$8,909,000
11.05	Newell Creek Trail	Redland Road to CCC	2.95	None	Multi-use-path	Provides a recreational opportunity between CCC and downtown Oregon City		Planned Newell Creek Trail.	\$3,613,000
11.06	Abernethy Road/Redland Road	Washington Street to Newell Creek Trail	0.94	Incomplete sidewalks on Abernethy Road	Bike lane/sidewalk	Provides a recreational opportunity between CCC and downtown Oregon City	0'-8' of additional pavement width needed to accommodate facility	Planned Newell Creek Trail;	\$1,151,000
11.07	Meyers Road	Leland Road to Frontier Pkwy	2.38	Sidewalks and bike lanes between S Beavercreek Road and High School Road and west of Hwy 213	Bike lane/sidewalk	Offers utilitarian connection between residential areas of Oregon City and the High School and CCC	West of Hwy 213, bike lane ends at Autumn. 0'-5' of additional pavement needed to accommodate facility	Meyers Road planned for expansion between the High School and Hwy 213 (Oregon City TSP).	\$925,000

(P12) Stafford Road

Route Summary

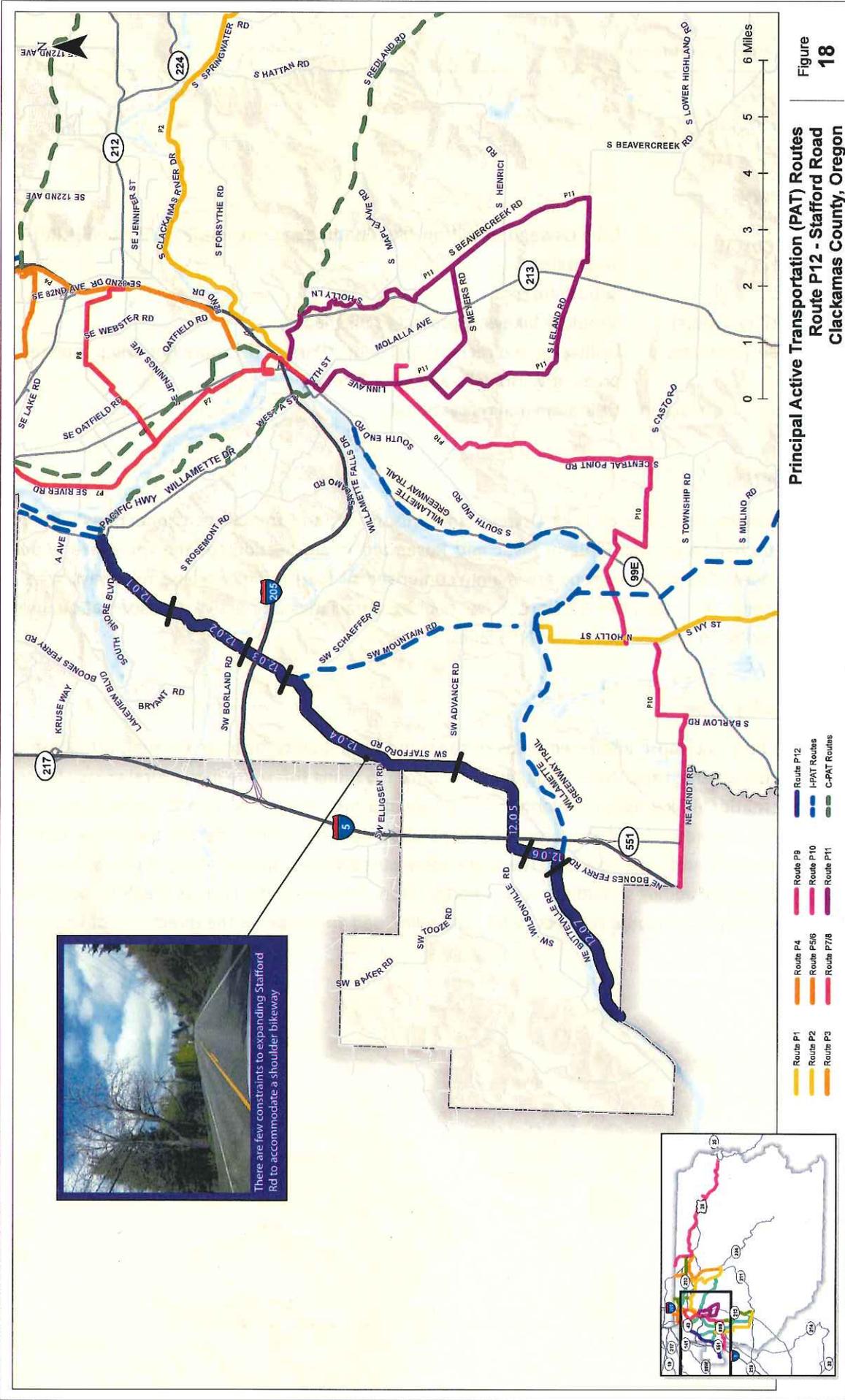
Extent:	Lake Oswego to Wilsonville (Champoeg Connection via Butteville Rd)
Total Length:	14.3 miles
Environment:	Suburban/rural
Proposed Facility Type(s):	Shoulder bikeway, protected bike lane
Expected Pedestrian Use:	Utilitarian and recreational pedestrians in the more densely populated areas of Wilsonville and Lake Oswego
Expected Bicycle User Group:	Utilitarian and recreational

Route Description

This route connects the cities of Lake Oswego and Wilsonville, and formalizes connections with trail systems at Luscher Farm, the Tualatin River and Rosemont Road. Sections of the route are popular recreational rides. The rural sections are mainly comprised of low-traffic two-lane roadways with no paved shoulders. The suburban sections have dedicated facilities for active transportation users, including sidewalks, multi-use paths and bike lanes.

Proposed Facility Type

For the most part, the more urbanized areas of the route have quality facilities serving both utilitarian and recreational walking trips. While most bicyclists currently riding this route in the rural areas are more confident recreational bicyclists, development of a shoulder bikeway on the two-lane roadways would likely appeal to a greater number of less confident bicyclists who could ride the moderate distance between Wilsonville and Lake Oswego. There are some steep slopes, mainly along Stafford Road, that will impact the cost of adding shoulders. A new bridge (French Prairie Bridge) across the Willamette River at SW Boones Ferry Road would connect to NE Butteville Road and improve the directness of this route.



Project Segments

- **(12.01) McVey Avenue/Stafford Road from Highway 43 to SW Rosemont Road:** A narrow (less than 8 feet) multi-use path on the northwest side of the roadway connects to downtown Lake Oswego. Where the multi-use path ends, bicyclists using the path continue by traveling on the sidewalk. A protected bike lane is proposed to give bicyclists a similar level of comfort as they would have using the multi-use path.
- **(12.02) Stafford Road from SW Rosemont Road to I-205:** This section has the greatest number of physical constraints, with steep slopes on at least one side.
- **(12.03/12.04) SW Stafford Road from I-205 to SW Advance Road:** SW Advance Road marks the end of the County's jurisdiction. There are no paved shoulders and some constraints for expanding the roadway to include a shoulder bikeway. Steep slopes exist in some places.
- **(12.05) SW Boones Ferry Road / SW Wilsonville Road from SW Advance Road to Willamette River:** Sidewalks and bike lanes are present, with the following exceptions on the short segment of Boones Ferry Road near the river: lack of sidewalks and bike lanes on the east side south of Bailey, lack of sidewalks on both sides south of 4th, only a wide asphalt area for bikes on the west side, and no bike lane on the east side south of 4th.
- **(12.06) French Prairie Bridge:** Proposed bridge across the Willamette River into Wilsonville.
- **(12.07) NE Butteville Road from Willamette River to County Boundary (near Butteville):** This section is on a low traffic, two-lane rural roadway. A shoulder bikeway and signage are proposed.

Table 15: Stafford Road (P12) Project List

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
12.01	McVey Avenue/Stafford Road	Hwy 43 to SW Rosemont Road	1.84	Multi-use path from Hwy 43 to McVey Road (narrow, suitable for pedestrian use only); sidewalks on the one block west of Hwy 43	Protected Bike Lane	Provides a low-stress physically separated connection between residential areas and Lake Oswego	20' of additional pavement width and 14' of additional ROW (6' for minimum width facility) needed to accommodate facility. Many driveways to re-build. New retaining walls needed starting at Kilenny Road and 400' to the south. Electrical transmission lines run along the west side of road. Ditch along east side from Rosemont to South Shore would need to be shifted		\$6,205,000
12.02	Stafford Road	SW Rosemont Road to I-205	1.96	Small section of sidewalks near Stafford Primary School; paved shoulder in some sections	Shoulder Bikeway	Connect Lake Oswego and Wilsonville	0'-9' of additional pavement width needed to accommodate facility.	None	\$1,791,000
12.03	SW Stafford Road	I-205 interchange area	0.35	Short segment of bike lane from Trail Road to I-205	Shoulder Bikeway	Connect Lake Oswego and Wilsonville	0'-14' of pavement width and 24' of additional ROW width (20' for minimum width facility) needed to accommodate facility.	None	\$376,000
12.04	SW Stafford Road	I-205 to Advance Road	4.21	None	Shoulder Bikeway	Connect Lake Oswego and Wilsonville	Ditches and utility lines adjacent to roadway. 0'-12' of additional pavement width needed to accommodate facility.	None	\$5,457,000
12.05	SW Boones Ferry Road/ SW Wilsonville Road	Advance Road to the Willamette River	2.73	Sidewalks and bike lanes, except short segment of Boones Ferry Road near the river	Complete few sidewalk and bike lane gaps	Connect Lake Oswego and Wilsonville	2' of additional ROW (0' for minimum width facility) needed to accommodate facility.	Boones Ferry Road near the river lacks sidewalks and bike lanes on the east side south of Bailey. Sidewalks on both sides south of 4th, has only a wide AC area for bikes on west side, and no bike lane on the east side south of 4 th .	\$6,799,000

Project Number	Project Name	Extent	Length (Miles)	Existing Facility	Proposed Facility	Reason for Project	Constraints	Planning Considerations	Estimated Cost
12.06	French Prairie Bridge	NE Butteville Road to SW Boones Ferry Road	0.19	None	Proposed new bridge across the Willamette River	Connects Lake Oswego and Wilsonville		A planned bridge (French Prairie Bridge) at the end of SW Boones Ferry Road would connect to Butteville Road (below). The bridge is not included in the cost estimate for this project.	-
12.07	NE Butteville Road	NE Butteville Road to County Boundary (near Butteville)	3.26	None	Shoulder bikeway	Connects Lake Oswego and Wilsonville	13'-14' pavement width needed to accommodate facility		\$5,136,000

Table 16 illustrates the low, high and total cost per mile for all PAT routes studied. These are planning-level cost estimates, excluding potential right-of-way acquisition costs, and a more thorough engineering study will be needed to determine the final project cost. *Information related to right-of-way costs and needs is in Appendix E.*

Table 16: PAT Route Cost Estimate Summary

Route #ID	Route	Pedestrian/Bicycle Improvement	Total Length (Miles)	Estimated Low Cost (\$)	Estimated High Cost (\$)	Estimated Cost per Mile	Relative Cost
P1	Canby to Molalla	Sidewalk, Shoulder Bikeway, and Bike Lane	14.8	\$9,865,000	\$17,810,000	\$1,201,000	Medium
P2	Clackamas River Drive	Shoulder Bikeway and Bike Lane	23.3	\$15,158,000	\$30,927,000	\$1,327,000	Medium
P3	Tickle Creek Trail - Cazadero Trail	Multi-Use Path	23.5	\$16,912,000	\$28,664,000	\$1,222,000	Medium
P4	I-205 Multi-Use Path	Sidewalk, Bike Lane	5.1	-	\$24,000	\$5,000	Low
P5	Monroe Neighborhood Greenway	Bike Boulevard, Sidewalk (one side)	4.1	-	\$1,242,000	\$305,000	Low
P6	Linwood Avenue	Sidewalk, Bike Lane, Multi-Use Path	3.9	\$1,639,000	\$2,056,000	\$536,000	Low
P7	River Road	Sidewalk, Buffered Bike Lane	7.3	\$13,000	\$442,000	\$61,000	Low
P8	Oetkin Road - Naef Road	Sidewalk, Bike Boulevard, Multi-Use Path, Buffered Bike Lane	3.8	\$5,333,000	\$10,723,000	\$2,816,000	High
P9	Sandy to Mount Hood	Shoulder Bikeway, Shared Lane Markings	49.8	\$25,798,000	\$58,385,000	\$1,172,000	Medium
P10	Oregon City to Canby	Sidewalk, Shoulder Bikeway, Bike Lane, Advisory Lanes	14.9	\$8,957,000	\$15,376,000	\$1,033,000	Medium
P11	Newell Creek Trail and Oregon City Loop	Sidewalk, Shoulder Bikeway, Bike Lane, Shared Lane Markings	18.0	\$9,163,000	\$74,428,000	\$4,127,000	High
P12	Stafford Road	Shoulder Bikeway, Protected Bike Lane	14.3	\$12,653,000	\$25,764,000	\$1,799,000	Medium

3.2 SHOULDER WIDENING VS. MULTI-USE PATH COST

A shoulder bikeway is a common proposed facility type for many of the rural PAT routes in section 3; however, shoulder widening can be very costly to construct. Extra pavement cannot be added to the existing shoulder (or lack of shoulder) without excavation because a strong foundation for the new pavement must be established. For example, to widen to a 6-foot shoulder from a 3-foot shoulder, the existing 3-foot shoulder is excavated, any existing pavement is removed, a foundation is established and the shoulder pavement is laid. In addition, ditches and drainage may need to be shifted and reconstructed. For these reasons, construction of a two-way multi-use path on one side of the roadway may cost only marginally more than two-sided shoulder widening and be more comfortable in rural areas for cyclists and pedestrians.

Based on planning level cost estimates, the construction of a multi-use path on one side of the roadway will cost 10-20% more per mile than widening a shoulder on both sides of the road⁴. Based on the relatively high cost of adding a shoulder, constructing a multi-use path for 10-20% more per mile may be worth the extra cost. Exhibit 1 illustrates a two-way multi-use path adjacent to the roadway, which includes a grassy area in between the multi-use path (left) and the roadway (right).

Exhibit 1: Rural side path



A multi-use path parallel to a roadway should also include high quality treatments at intersections and driveway crossings raising the visibility of bicyclists and pedestrians. Also, a multi-use path parallel to a

⁴ Based on a shoulder widening project of 3' to 6' on both sides of the roadway compared with an existing 3' shoulder and constructing a 10' side path. 2' minimum roadway shoulders are still desirable. Right-of-way costs are not included.

roadway may not be suitable if there are frequent and high volume intersections intersecting the multi-use path.

In summary, while constructing a wider shoulder does provide a benefit to cycling, a multi-use path is likely to provide more benefit to cycling and walking as compared with a shoulder. A multi-use path parallel to a roadway should be considered during project planning and implementation as an alternative to a shoulder bikeway.

3.3 AUGMENTING THE ACTIVE TRANSPORTATION NETWORK

Constrained roadway funding and the high cost of some pedestrian and bicycle facility types present significant challenges to full development of the infrastructure improvements identified in the Active Transportation Plan. Achieving the vision identified in Chapter 1 and meeting the goals will require incremental changes to the transportation network and a concerted effort to engage and educate community members on transportation safety. Despite limited resources, there are opportunities to expand the active transportation network and increase active transportation levels using the following three-pronged approach:

- 1) Basic Signing and Markings
- 2) Rural and Urban Active Streets – Roadway Space Sharing
- 3) Everyone is Your Neighbor – Active Transportation Education

Basic Signing and Markings

For bicyclists, signage is an important first step toward improved roadway conditions. On-pavement bike lane markings, warning signage, wayfinding signs and other appropriate signing can be an important first step to encourage active transportation users and raise awareness and acceptance of cycling.

Efforts that support basic maintenance such as sidewalk repair, ADA compliance improvements, bike lane signing and striping are other important elements. Pedestrian wayfinding signs in the urban area and multi-use path signs can also help create community awareness and direct users, especially those unfamiliar with the area. Metro has created the Intertwine Regional Trails Signage Guidelines, which are a useful tool for integrating signing into the built environment.

Rural and Urban Active Streets – Roadway Space Sharing

As the Portland Metro area continues to grow and more people engage in physical activity for transportation, health and recreational purposes, increased space sharing for various transportation modes is inevitable. Limited resources require a level of creativity to create shared spaces that accommodate multiple transportation modes. Sharing the limited spaces and creating a high level of safety for all users presents many challenges and opportunities. Innovative solutions are necessary in order to achieve the necessary goals for mobility and safety. Many great examples exist for multi-modal sharing, particularly in urban environments. One such example is the Neighborhood Greenway or Bike

Boulevard concept where streets with low vehicle traffic volumes and speeds are designated and designed to give priority to bicycle and pedestrian travel.

Rural environments require a slightly different approach. Determining exactly what that approach is in different settings creates an opportunity to examine what can work best. Making pedestrians feel welcome and safe on a street with no sidewalks and with no cost-effective means to add facilities is a challenge. One cost-effective concept is that of an “active street,” where walking areas are designated with pavement markings and, through education, neighbors honor the markings. Such efforts could be a follow-up project to support the ATP. Similar to the urban challenges, the rural challenges add the component of speed and narrower roadways. While mostly an issue for cycling, there are some pockets of pedestrian activity in rural centers and unincorporated rural communities such as Beaver Creek and Redland. Creative solutions need to be developed through a rural roads sharing initiative that could present various concepts that could be used throughout the County.

Everyone is Your Neighbor – Active Transportation Education

Certainly infrastructure is needed to help create a level of comfort and safety for many modes of transportation, but education and overall acceptance of alternative transportation modes are vital. The importance of transportation education and safety programs cannot be understated. This includes not only educating adults and children about how to walk and bicycle safely in all environments and conditions, but also driver education so all users of the road can safely navigate within shared space.

As noted in the County’s *Drive to Zero* campaign supporting the Clackamas County Transportation Safety Action Plan, culture change is a strong focus of reducing fatal and injury crashes. Building a community-wide sense of care and compassion for neighbors will lead to different attitudes and, it is hoped, safer habits when engaged in activities on the transportation system. As the need to share limited transportation corridor space continues to increase, higher levels of tolerance and patience are necessary. Setting goals with the community and following through with commitments is the key to building trust and a team approach.

Active Transportation Pilot Projects

The following pilot projects will consider suburban and rural roadway sharing concepts and entail examination of best practices for creative suburban and rural modal-sharing focused on situations of fiscal constraints. Development of cross-sections, signing and educational plans would be products associated with the four pilot projects.

- **McLoughlin Area Plan Active Transportation Corridors Plan** – Using the existing planning documents, create a network of connected corridors to better welcome active transportation. Engage the community to build capacity and support for health using the McLoughlin Health Impact Assessment/Road Safety Audit (HIA/RSA) results. Engage and partner with ODOT to create design concepts for friendlier crossing opportunities of McLoughlin Boulevard.

- **Villages at Mount Hood Active Transportation Corridors Plan** – Cycle Tourism is growing in this part of the County. Whether on the road, off-road from Zig Zag to Government Camp or on the vast network of trails at Sandy Ridge, change is occurring. The roadway system in this area is largely rural with one travel lane in each direction and limited shoulders. Funding prospects for traditional improvements are elusive. Through education, pavement marking, signing and other treatments, a template for Rural Shared Roadways can be created.
- **Clackamas River Drive Roadway Sharing Project** – A review of the Strava Heat Map shows Clackamas River Drive as a high-use facility. With construction of the Sunrise Corridor, improvements to the Highway 212 corridor may create the opportunity to down-class Clackamas River Drive and create a Rural Shared Roadway for motorized vehicles, bicycles, and perhaps even walkers and joggers. Development of cross-sectional concepts and building community support would be elements of this project.

Some ideas to increase the number of bicyclists and pedestrians include:

- Install an actuated beacon to alert drivers of pedestrians or bicyclists are on the road.
 - Construct turn-outs in strategic locations.
 - Implement a “sting operation” in conjunction with the Sheriff’s department to help curtail unlawful driving and pedestrian/bicyclist harassment.
 - Assess the posted speed limit and its influence on driver behavior.
- **Holly Lane-Newell Creek Canyon Active Transportation Corridor Study – Connecting Oregon City Communities through the Rural Interface** – Holly Lane has been the subject of much discussion as a rural interface between communities in Oregon City. In addition, Newell Creek Canyon, a natural area largely owned by Metro, is aligned parallel to Holly Lane. Active transportation between the Park Place area and Beaver Creek Master Plan area of Oregon City provides a unique opportunity to blend a rural roadway and forested wild space as part of an active transportation corridor to create high levels of active transportation opportunities while improving the safety of a road that is the center of this community-to-community rural interface. Partners in this study would include the County, Oregon City, Metro and the Holly Lane community. Building upon existing plans and coordinating with the Metro Newell Creek planning efforts, corridors, connections and multi-model safety could be addressed.

4 – ACTIVE TRANSPORTATION SIGNAGE AND AMENITIES

4 – ACTIVE TRANSPORTATION SIGNAGE AND AMENITIES

The addition of amenities along the PAT routes is a key element of the active transportation network design. Signage and amenities help to brand or identify routes that constitute the active transportation network. Recommended PAT route amenities include signage, informational kiosks, bike hubs, bike pods and bike parking. The ATP recommends signage along five of the recommended PAT routes and other amenities for nine of the recommended PAT routes.

4.1 BICYCLE SIGNAGE

PAT route signage should include wayfinding signs as well as traffic warning/regulatory signs such as “Bikes on Roadway” or “Bike Lane Ends” signs. Wayfinding signs will provide navigational assistance, while the addition of warning/regulatory signs should encourage active transportation users, and raise awareness and acceptance of cycling in the County. The type of bicycle wayfinding signage proposed for the urban PAT routes is shown in Exhibit 2 below. The 24-inch x 30-inch ODOT-approved sign includes approximate ride time and distance to significant destinations. Installation of this sign on PAT routes will ensure consistency with existing signs in the County and adjacent jurisdictions including Milwaukie and Portland. In the rural areas, due to distance between destinations and variation in rate of speed, ride time has been dropped from the wayfinding signs. An example of a rural wayfinding sign is shown in Exhibit 3.



Exhibit 2: Urban Bicycle Wayfinding Sign



Exhibit 3: Rural Bicycle Wayfinding Sign

Bike Wayfinding Sign Guidelines

- Each sign can hold up to three destinations.
- The straight ahead destination shall be listed on top, the left destination in the middle and the right destination on the bottom.
- For a destination with a straight arrow, the arrow shall be placed to the left of the destination; for a destination with a left arrow, the arrow shall be placed to the left of the destination, and for a destination with a right arrow, the right arrow shall be placed to the right of a destination.
- Signs are typically placed in the public right-of-way. In rural settings, consideration should be given to agricultural lands. Signs should not be placed adjacent to cultivated farm lands because this can conflict with tractors and large equipment accessing and working in the fields.
- Signs should be placed at major intersections, high bicycle traffic areas and at important wayfinding decision points / directional changes in route or anywhere else a cyclist faces a decision point.
- Distance from intersection: Signs shall be placed at a distance to allow adequate notification of left or right turns.
- Frequency: Sign spacing and overall quantity is critical. Signs should be frequent enough so cyclists can find destinations, but not so numerous that they clutter the environment. Periodic signs at regular, predictable intervals are recommended. (Note: Urban areas typically need more signs per mile than rural areas because of more route intersections and more decision points.)

Bicycle Regulatory Signs

In addition to wayfinding signage, the ATP recommends warning or regulatory signs on selected PAT routes. The addition of regulatory signs such as "Bikes on Roadway" should provide encouragement to active transportation users and raise awareness and acceptance of cycling in the County. Warning signs such as "Bike Lane Ends" can be used to highlight route conditions that may pose a potential safety issue for network users.

On some bikeways in the region, "Share the Road" signs have been added. Due to the ambiguity and various interpretations of "Share the road," the ATP recommends moving toward alternative signs. Possible options include a standard bicycle symbol with "In Lane"; "May Use Full Lane" or "On Roadway." The "May Use Full Lane" signs should be used in lower speed urban environments where there is no separated bicycle facility. For example, where painted sharrows are installed, the "May Use Full Lane" sign would be appropriate. Three alternatives to the "Share the Road" sign are shown in Exhibit 4. The specific type of regulatory/warning sign should be determined when the sign plans for the PAT routes is implemented.



Exhibit 4: Approved MUTCD Signs.

4.2 PEDESTRIAN AND TRAIL SIGNAGE

Pedestrian wayfinding signs should be installed in areas with high amounts of pedestrian traffic such as the terminus of Routes P6: Linwood Avenue near the MAX Green Line. Signage for multi-use trails will be considered when trail development occurs. The following guidelines should be considered when signing pedestrian facilities and multi-use trails:

- Consider the Intertwine Regional Trails Signage Guidelines when signing off-street regional multi-use trails:
[.http://library.oregonmetro.gov/files/intertwine_regional_trail_signage_guidlines.pdf](http://library.oregonmetro.gov/files/intertwine_regional_trail_signage_guidlines.pdf)
- Consider the Intertwine Regional Trails Signage Guidelines when signing on-street facilities that serve as the primary routes connecting one regional trail segment to the next. An example of an Intertwine sign type that can be used along street right-of-way that connects off-street trail segments is shown in Exhibit 5.
- Trailhead signs conforming to Intertwine Signage Guidelines with a map of the entire route should be placed at origin/destination points such as trailheads and entry points to multi-use paths. An example of a trailhead sign conforming to Intertwine Signage Guidelines is shown in Exhibit 6.
- As funding becomes available, route maps or way-finding kiosks providing a map and other pertinent route information should be installed at the start / end points of each of the 12 PAT routes.
- To enhance the sense of place and provide navigational assistance, “on-street pedestrian” directional signs should be considered in the street right-of-way to provide direction in town centers and regional centers.

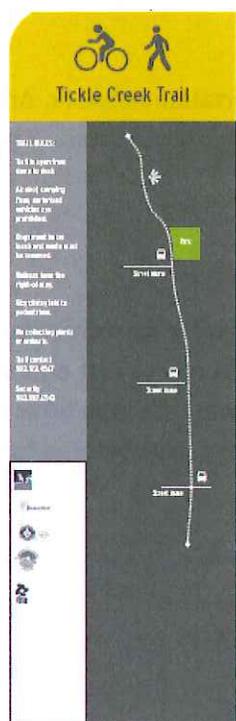


Exhibit 5: Trailhead Sign

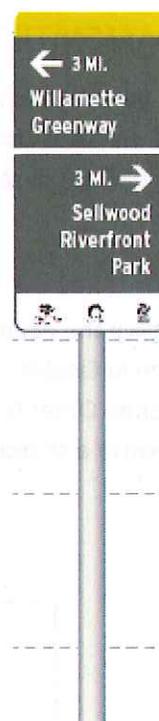


Exhibit 6: On-Street Directional

4.3 PAT ROUTE SIGNAGE

The ATP recommends a total of 51 bicycle wayfinding signs and 26 warning/regulatory signs along the six PAT routes identified in Table 17. Figure 19 shows individual PAT route maps with proposed sign placement and detailed images indicating precise sign placement on an aerial photograph as well as sign mock-ups.

Table 17: Principal Active Transportation (PAT) Routes: Recommended Signage

Principal Active Transportation Routes: Recommended Signage			
Route #	Route Name	Sign Type	Quantity
P1	Canby to Molalla	Wayfinding / Traffic Warning, Regulatory	1 Wayfinding 10 Bicycle Warning
P2	Clackamas River Drive	Wayfinding / Traffic Warning, Regulatory	5 Wayfinding 7 Bicycle Warning
P7	River Road	Wayfinding	25 Wayfinding
P8	Oetkin Road - Naef Road	Wayfinding	20 Wayfinding
P9	Sandy to Mount Hood	Traffic Warning, Regulatory	10 Bicycle Warning

4.4 PAT ROUTE AMENITIES

Providing PAT route amenities is a key element of an active transportation network. Amenities such as informational kiosks enhance user experience and enjoyment of the PAT routes. The four types of amenities recommended are described below.

Bike Hub

Day Use Bike Hubs serve the needs of all levels of cyclists, whether cycling for recreation, commuting or utility trips. As shown in Exhibit 7, a Bike Hub gives cyclists an opportunity to rest on a sheltered bench away from the elements. Other features of a Bike Hub may include a work stand so bikes can be serviced, wayfinding information or a charging station for cell phones. Bike Hubs can be tailored for each particular site.

Exhibit 7: Bike Hub



Bike Pod

Bike Pods are similar to Bike Hubs, but designed for the long distance cyclist and overnight camping. Bike Pods are appropriate at locations where overnight camping is allowed, such as Barton County Park or McIver State Park. As shown in Exhibit 8, a Bike Pod features amenities that would meet the needs of a cyclist on an extended bike tour. In addition to the Bike Hub features, a Bike Pod may include a covered rest shelter, picnic table, water source to refill water bottles, and lockers for food and valuables.

Exhibit 8: Bike Pod



Informational Kiosk

PAT routes can also benefit from information kiosks or trailhead signs such as the Intertwine sign shown in Exhibit 9. There are opportunities on several PAT routes for information kiosks used in conjunction with the Intertwine Sign Guidelines.

Exhibit 9: Information Kiosk



Bike Parking

Bike parking is an important element in building an integrated active transportation network. The lack of bicycle parking has the potential to be a barrier to making a trip by bicycle. Pursuant to Section 1015 of the Clackamas County Zoning and Development Ordinance (ZDO), bicycle parking is a requirement of all new construction. However, even with the ZDO requirement there is still the possibility for a significant gap in bicycle parking. For the PAT routes, bike parking can be combined with other amenities or installed separately.

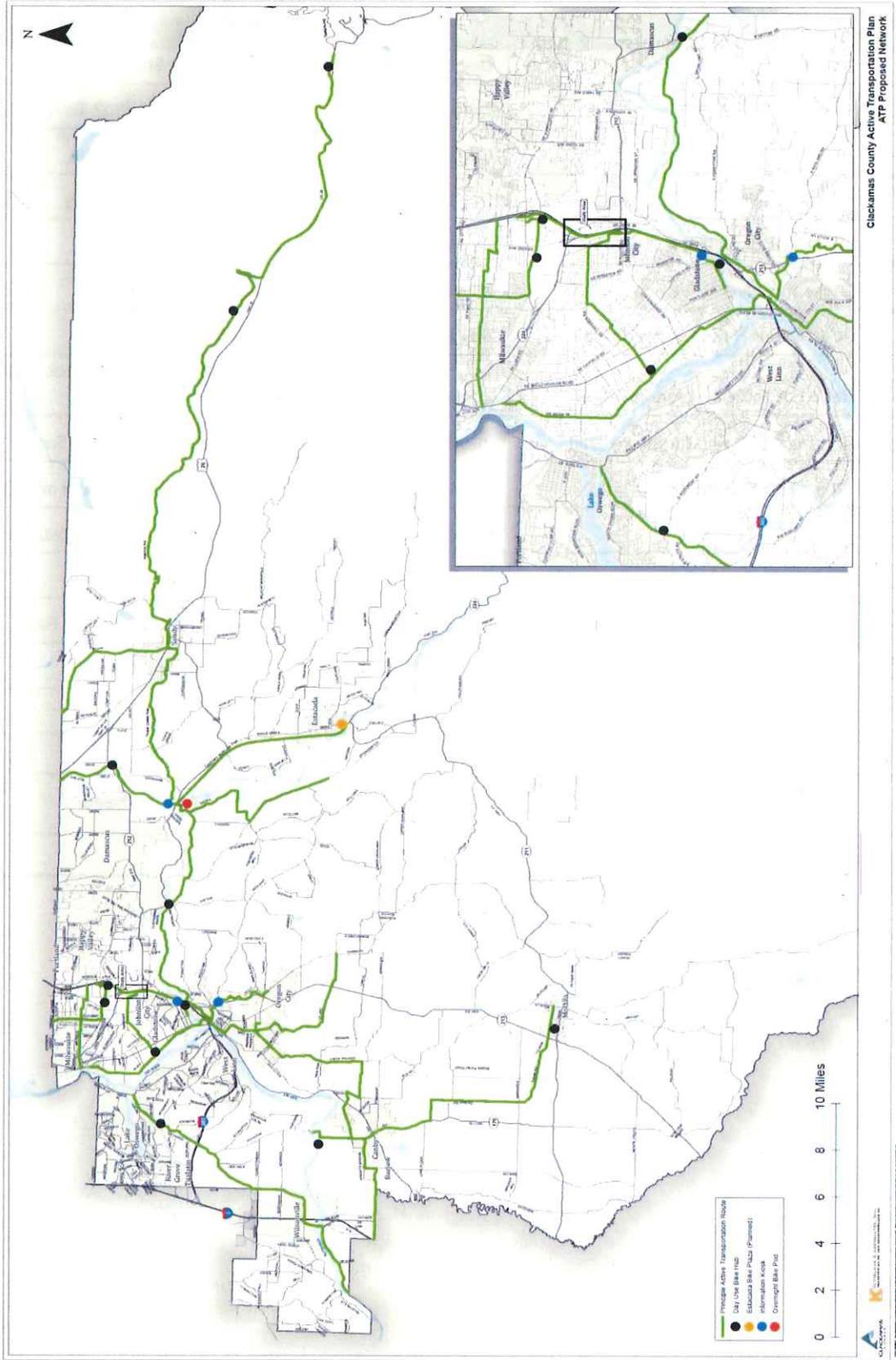
Amenity Locations

Recommended amenities for the PAT routes are shown in Table 18. The recommended amenities include 11 Day Use Bike Hubs; one Bike Pod and three Information Kiosks. A County map with an urban in-set showing the location of the recommended amenities is in Figure 19.

Table 18: Active Transportation Amenities

<i>Amenity #</i>	<i>Route</i>	<i>Type</i>	<i>Location</i>
P1 - a	Canby to Molalla	Day Use Bike Hub	Molalla River State Park
P1 - b	Canby to Molalla	Day Use Bike Hub	Molalla City Park (902 Toliver Rd)
P1 - c	Canby to Molalla	Day Use Bike Hub	Canby Ferry – south side
P1 - d	Canby to Molalla	Day Use Bike Hub	Wait Park – City of Canby
P2 - a	Clackamas River Drive	Day Use Bike Hub	Carver Park
P2 - b	Clackamas River Drive	Bike Pod	Barton Park
P3 - a	Tickle Creek Trail - Cazadero Trail	Day Use Bike Hub	Boring Station Trailhead
P3 - b	Tickle Creek Trail - Cazadero Trail	Information Kiosk	Intersection of Tickle Creek Trail and Cazadero Trail
P3 - c	Tickle Creek Trail – Cazadero Trail	Information Kiosk	Tickle Creek Trailhead in Sandy
P4 - a	I-205 Multi-Use Path	Day Use Bike Hub	Intersection of I-205 path and Costco path
P4 - b	I-205 Multi-Use Path	Information Kiosk	Start of I-205 Path in Gladstone
P4 - c	I-205 Multi-Use Path	Day Use Bike Hub	Cross Park
P6 - a	Linwood Avenue	Day Use Bike Hub	Aquatic Center Multi-Use Path
P8 - a	Oetkin Road – Naef Road	Day Use Bike Hub	Stringfield Family Park
P9 - a	Sandy to Mount Hood	Day Use Bike Hub	Sandy Ridge Trailhead
P10 - b	Oregon City to Canby	Day Use Bike Hub	Government Camp
P11 - a	Newell Creek Trail and Oregon City Loop	Information Kiosk	Newell Creek Trailhead
P12 - a	Stafford Road	Day Use Bike Hub	Luscher Farms

Figure 19: Map of all amenities placed on active transportation network



5 – FACILITY DESIGN TOOLKIT

5 – FACILITY DESIGN TOOLKIT

The following information is provided for your reference and is not intended to be a substitute for professional advice. The information is provided as a general guide only and is not intended to be a substitute for professional advice. The information is provided as a general guide only and is not intended to be a substitute for professional advice.

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5 - FACILITY DESIGN TOOLKIT

This Facility Design Toolkit provides a catalog of facility types used to develop specific route recommendations that can be referenced during project planning and implementation.

The ATP identifies PAT routes that provide the highest level of protection with the vulnerable road user in mind, but also recognizes the need to balance this with the extent to which each route connects key destinations in the most direct way possible, prioritizes lower speed/volume routes, includes aesthetic/scenic features, cost effectiveness and overall feasibility (*see PAT Route Selection Criteria*).

The ATP also recognizes that the presence of a pedestrian or bicycle facility alone does not necessarily result in a user feeling safe or comfortable on a facility. There are complex interactions between the pedestrian and bicycle facilities and vehicles on the roadway. Sometimes a facility may be considered comfortable only if there are other treatments such as lighting and roadway crossings (e.g., marked crosswalks, curb extensions, ramps, median refuge islands, flashing beacons, pedestrian or bicycle signals, countdown signal heads, etc.). In addition to enhanced roadway crossings, comfort and security can be improved for bicyclists by applying treatments that increase awareness of motorists and bicyclists in conflict areas (such as colored pavement, driveway crossing markings, bicycle boxes at intersections, etc.). Additional information and design considerations of conflict area treatments are provided following the facility design types for pedestrians and bicyclists.

5.1 FACILITY SELECTION PROCESS

The interaction between the facility design type, the built environment and conflict area treatments should be considered when planning for a safe and comfortable pedestrian/bicycle environment considering that the interaction of these factors will likely maximize the quality and, ultimately, effectiveness of the facility. Selection and design of conflict area treatments will occur during ATP implementation phases.

In addition to considering the context of the facility, the ATP facility types also reflect the suitability for application by Clackamas County roadway classifications in both urban and rural areas. There are three basic steps to choose the appropriate facility type, as shown below. Table 19, which specifies which facility type is appropriate for each roadway classification, lists facility types in preferential order to reflect the PAT's goal to prioritize facility types that provide greater separation between auto and non-motorized road users to minimize auto-pedestrian/bicyclist encounters. Additional information in the catalog related to design considerations can be referenced when determining the highest quality feasible facility type for a particular route segment among the options listed.



Table 19: Facility Design Types by Roadway Functional Classification

Functional Classification	Urban	Rural
N/A	Multi-use path	Multi-use path
Major Arterial	Multi-use path adjacent to roadway	Multi-use path adjacent to roadway
	Raised cycle track	
	Two-way cycle track	
	Protected bike lane	
	Buffered bike lane	Buffered bikeway
	Bike lane	Shoulder bikeway
	Sidewalk or pedestrian path	Pedestrian path
Minor Arterial	Multi-use path adjacent to roadway	Multi-use path adjacent to roadway
	Raised cycle track	
	Two-way cycle track	
	Protected bike lane	
	Buffered bike lane	Buffered bikeway
	Bike lane	Shoulder bikeway
	Sidewalk or pedestrian path	Pedestrian path
Collector	Multi-use path adjacent to roadway	Multi-use path adjacent to roadway
	Raised cycle track	
	Two-way cycle track	
	Protected bike lane	
	Buffered bike lane	Buffered bikeway
	Bike lane	Shoulder bikeway
	Advisory lanes	Advisory lanes
	Shared lane markings	Shared lane markings
	Sidewalk or pedestrian path	Pedestrian path
Connector	Multi-use path adjacent to roadway	Multi-use path adjacent to roadway
	Two-way cycle track	
	Protected bike lane	
	Buffered bike lane	Buffered bikeway
	Bike lane	Shoulder bikeway
	Advisory lanes	Advisory lanes
	Bicycle boulevard	Bicycle boulevard
	Shared lane markings	Shared lane markings
	Sidewalk or pedestrian path	Pedestrian path
Local	Advisory lanes	Advisory lanes
	Bicycle boulevard	Bicycle boulevard
	Shared lane markings	Shared lane markings
	Sidewalk or pedestrian path	Pedestrian path

Potential Phasing Options

There are certain contexts in which the preferred facility treatment may not be initially feasible. In these situations, a near-term solution for a corridor may provide benefits to bicyclists and pedestrians prior to implementation of the preferred, long-term solution. For example, a near-term treatment could be to stripe a buffered bicycle lane in a constrained right-of-way by restriping the roadway and reducing the vehicle travel lane widths; whereas the preferred treatment for both pedestrians and bicyclists is a buffered bicycle lane and a sidewalk or multi-use path adjacent to the roadway. Similarly, there could be low volume rural roadways where a minimum width shoulder bikeway could be striped in one direction (providing a separated space for pedestrians and one direction of bicyclists) as an interim treatment; whereas the preferred treatment would be standard-width shoulder bikeways in both directions. The ATP identifies the preferred treatment for each PAT route while at the same time offering the County the flexibility to respond to opportunities to implement near-term, low-cost treatments that improve conditions for pedestrians or bicyclists prior to implementation of the preferred solution.

In addition to phasing options, different facility types may be warranted on each side of the roadway. Consideration of hybrid options of the facility types (or multiple facility types on one roadway) can be made segment by segment based on existing conditions and constraints as part of facility design during the ATP implementation phases.

Facility Design Types

The following catalog provides pedestrian and bicycle facility types for a range of rural and urban settings, with varying levels of separation and buffer from traffic, and varying roadway speeds and traffic volumes. Each facility type includes:

- Photo illustration (urban and rural example, if applicable)
- General description of the type and intent of the facility
- Facility dimensions – both preferred and minimum widths
- Special design considerations unique to that facility type
- References to national publications that may provide useful in facility design and application
- Applicability/suitability in the following environments (either an “x” in the check box or specified value)
 - Urban areas⁵
 - Rural areas
 - Accommodation of pedestrians

⁵ The urban areas are assumed to be any area within the Metro boundary. Outside the Metro boundary, urban areas are assumed to include incorporated areas (including Barlow, Canby, Estacada, Molalla and Sandy) and rural centers (including Beaver Creek, Boring, Brightwood, Colton, Government Camp, Mulino, Redland, Rhododendron, Welches and Zig Zag). Clackamas County's current roadway standards include a bikeway (bike lane, shoulder lane or bike path) and pedway (sidewalk or pedestrian path) in each of these urban area types. The roadway standards in rural areas include bikeways only.

- Accommodation of bicyclists
- Compatibility with the Metro's August 2013 Draft Regional Active Transportation Plan (Regional ATP) Bicycle Parkway designations
- Compatibility with the Regional ATP Bikeway designations
- Applicability to speeds of the roadway environment
- Applicability to vehicle volumes of the roadway environment

Table 20 summarizes the applicability/suitability for each facility type in the catalog. The bicycle facility types are generally ordered from the highest level of separation from traffic (to attract the broadest range of users) to the least level of protection. Different facility types may be warranted on each side of the roadway due to right-of-way, topographic or other constraints. Consideration of hybrid options of the facility types (or multiple facility types on one roadway) can be made on a segment-by-segment basis based on existing conditions and constraints as part of facility design during the ATP implementation phases.

The design for PAT routes or segments along Oregon Department of Transportation (ODOT) facilities should be coordinated with the ODOT Pedestrian and Bicycle Facility Specialist or Regional Bicycle and Pedestrian Coordinator to determine if a design exception is required⁶.

⁶ ODOT has adopted AASHTO standards but also considers FHWA's endorsement of the use of the NACTO Urban Bikeway Guide in their "Design Flexibility" memorandum.

Table 20: Facility Type Application Overview

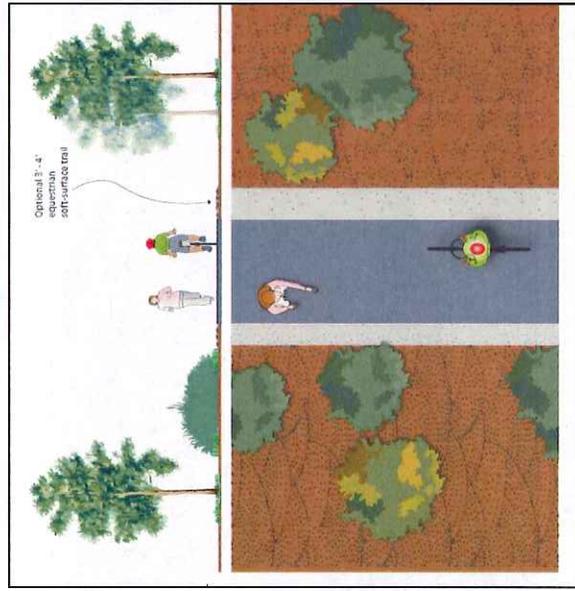
Facility Type	Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway ¹	Metro Regional Bikeway ²	Posted Speed Limit Thresholds	Vehicle Volume Thresholds
Multi-Use Path	X	X	X	X	X	X	N/A	N/A
Multi-Use Path Parallel to Roadway	X	X	X	X	X	X	N/A	N/A
Raised Cycle Track	X			X	X	X	Above 45 mph, greater separation of bicyclist from traffic desirable	N/A
Two-Way Cycle Track	X			X	X	X	Above 45 mph, greater separation of bicyclist from traffic desirable	N/A
Protected Bike Lane	X			X	X	X	Above 45 mph, greater separation of bicyclist from traffic desirable	N/A
Buffered Bike Lane	X	X		X	X	X	Urban: Above 40 mph, greater separation desirable Rural: Above 45 mph, greater separation desirable	Above 10,000 ADT, greater separation desirable
Bike Lane	X			X	X	X	Above 40 mph, greater separation of bicyclist from traffic desirable	Above 7,000 ADT, greater separation of bicyclist from traffic desirable
Shoulder Bikeway		X	X (in rural areas only)	X			Above 45 mph, greater separation of bicyclist from traffic desirable	Above 5,000 ADT, greater separation of bicyclist from traffic desirable
Advisory Lanes	X	X	X (in rural areas only)	X			Urban: Up to 30 mph Rural: Up to 40 mph	Urban: Up to 5,000 ADT Rural: Up to 3,000 ADT
Bicycle Boulevard	X			X	X	X	Up to 25 mph	Up to 3,000 ADT
Shared Lane Markings	X	X		X			Up to 30 mph	Up to 3,000 ADT
Sidewalk	X		X				N/A	N/A
Pedestrian Path	X	X	X				N/A	N/A

¹Metro Bicycle Parkway - The highest functional class for bicycle facilities which are high quality routes, the highways for bicycle travel, and connect to and through regional centers. Parkways can be any type of facility designed to parkway standards, including off-street shared use paths, separated in-street bikeways and bicycle boulevards. Shared use path bicycle parkways are also pedestrian parkways. The Metro Active Transportation Plan Functional Classification System has three levels of bicycle parkways which should be reviewed for most appropriate treatment.

²Metro Regional Bikeway - High-quality routes with seamless connections to bicycle parkways. Regional bikeways can be any type of facility, including off-street trails, bike lanes and bicycle boulevards. On-street regional bikeways located on arterial and collector streets are designed to provide separation from traffic on streets with higher auto speeds and volumes. The Metro Active Transportation Plan Functional Classification System has three levels of regional bikeways which should be reviewed for most appropriate treatment.

5.2 FACILITY TYPES

Multi-Use Paths



Description

- Bi-directional pathways in their own right-of-way for use by pedestrians, bicyclists and equestrians.
- Desirable for users of all skill levels preferring separation from traffic.

Dimensions

- 18-20' or greater preferred in urban and suburban areas high use areas with frequent trail access and mix of pedestrian and bicycle uses.
- 12' wide or greater recommended for most situations.
- 8' minimum in rural or suburban areas with limited trail access locations, longer segments and lower proportion of pedestrians.
- 2' gravel shoulder should be provided on each side; 3-4' soft-surface adjacent to one side of trail to accommodate equestrians, if desired.
- 10' minimum vertical clearance required.

Design Considerations

- Best suited in areas where roadway crossings can be minimized (e.g., parallel to travel barriers such as highways, railroad tracks, utility easements, natural areas, etc.)
- Terminate path where it is easily accessible to the street system, preferably at a controlled intersection or dead-end street.
- Provide high-visibility treatments (markings and signage) for crossings and transitions.

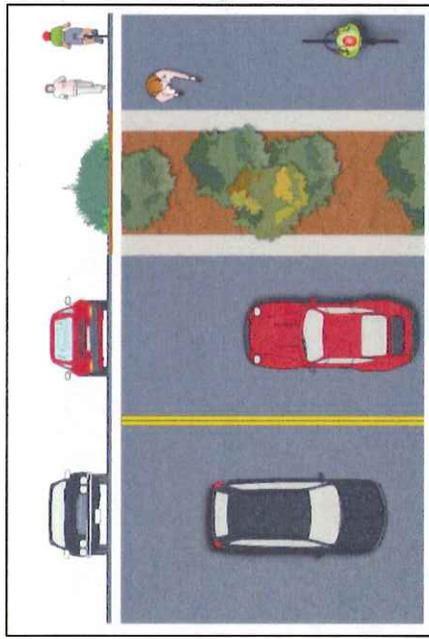
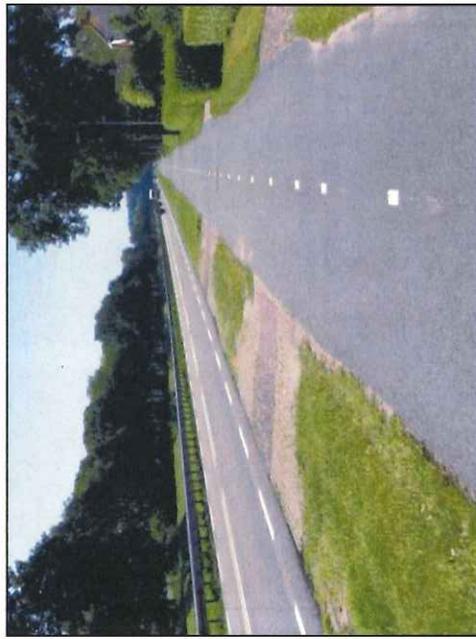
Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities; Metro Greenway Trails; ODOT Highway Design Manual

Applicability/Suitability

Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
X	X	X	X	X	X	N/A	N/A

Multi-Use Path Adjacent to Roadway



Description

- Bi-directional pathways next to roadways. Typically in the roadway right-of-way and for use by pedestrians and bicyclists.
- Desirable for users of all skill levels preferring separation from traffic.
- Pedestrians could have a separated sidewalk in urban areas.

Dimensions

- 18-20' or greater preferred in urban and suburban high use areas with frequent trail access and mix of pedestrian and bicycle uses.
- 12' wide or greater recommended for most situations.
- 8' minimum in rural or suburban areas with limited trail access locations, longer segments and lower proportion of pedestrians (10' minimum along ODOT facilities).
- Should be curb-separated from the roadway (in urban areas) and buffered with a minimum 5' landscape buffer (10' buffer desirable) or physical barrier.

Design Considerations

- Best suited for roadways with minimal side streets and driveways.
- Provide high quality and high visibility treatments at intersections and driveway crossings.

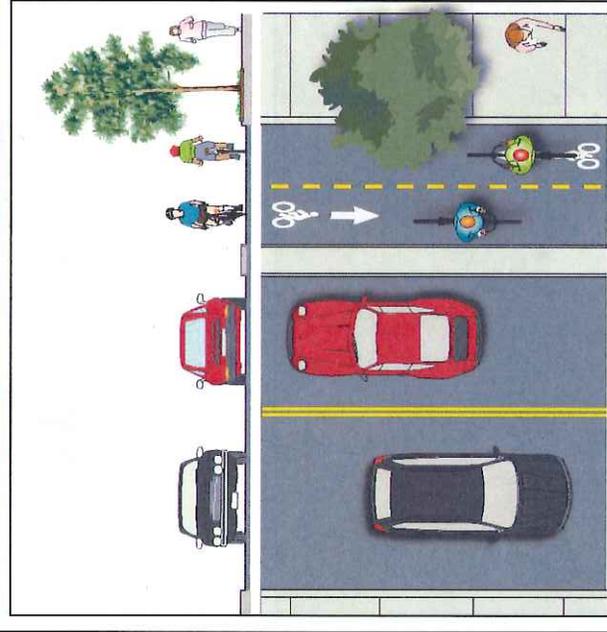
Additional Guidance

- NACTO Urban Bikeway Design Guide; AASHTO Guide for the Development of Bicycle Facilities; Metro Greenway Trails; ODOT Highway Design Manual

Applicability/Suitability

	Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
	X	X	X	X	X	X	N/A	N/A

Two-Way Cycle Track



Description

- Bi-directional bicycle pathways next to roadways typically protected by parked cars for use by bicyclists.
- Useful for two-way bicycle traffic on one-way streets.

Dimensions

- 12' preferred.
- 10' minimum in areas with low bicycle volumes or with constrained right-of-way.

Design Considerations

- Best suited for roadways with limited to no driveways and controlled intersections.
- Recommended for roads with posted speeds up to 45 mph. For posted speeds of 50 mph or greater, mixed-use paths preferable.
- Special markings or signage may be needed at driveways and intersections alerting drivers to two-way bicycle traffic.
- Provide separated pedestrian facilities such as a sidewalk or pedestrian path.

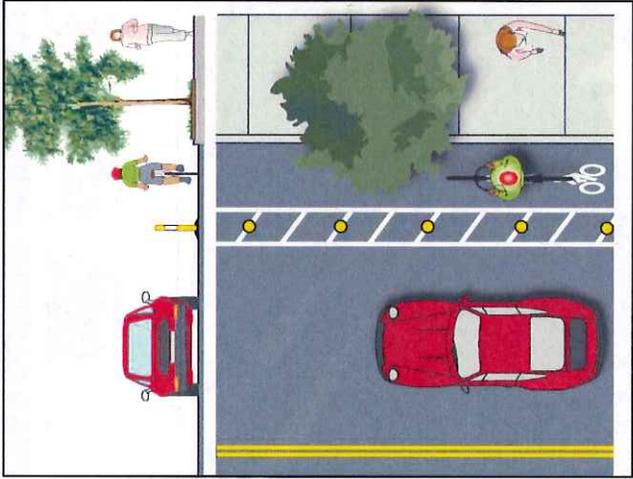
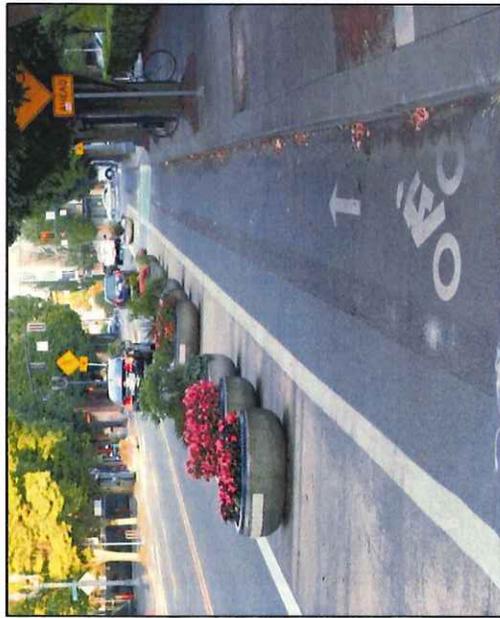
Additional Guidance

- NACTO Urban Bikeway Design Guide; CROW Design Manual for Bicycle Traffic

Applicability/Suitability

	Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
	X			X	X	X	Greater separation preferred above 45 mph	N/A

Protected Bike Lane



Description

- Bicycle lanes parallel to the roadway and separated from traffic by a buffer as well as by a barrier such as a landscaped buffer, parked cars or flexible bollards.

Dimensions

- 8' preferred.
- 6' minimum in areas with low bicycle volumes or with constrained right-of-way.
- 2'-3' buffer or greater plus barrier treatment. Wider buffer may be required on ODOT facilities (see ODOT Highway Design Manual guidance for Protected Bike Lanes).

Design Considerations

- Best suited for roadways with minimum driveways and side streets.
- Recommended for roads with posted speeds up to 45 mph. For posted speeds of 50 mph or greater, mixed-use paths preferable.
- Provide high visibility treatments at intersections and transition areas.
- Intersection treatments such as bike signals and/or two-stage left-turn pavement markings may be needed.
- Provide separated pedestrian facilities such as a sidewalk or pedestrian path.

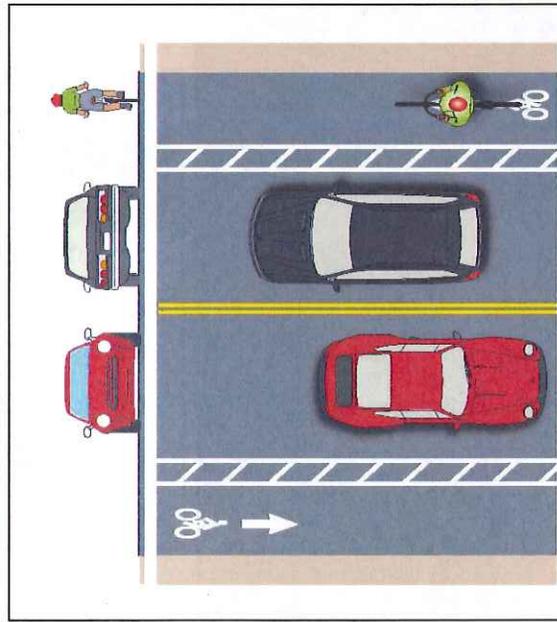
Additional Guidance

- NACTO Urban Bikeway Design Guide; ODOT Highway Design Manual; ODOT Bicycle and Pedestrian Design Guide

Applicability/Suitability

	Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
	X			X	X	X	Greater separation preferred above 45 mph	N/A

Buffered Bike Lane



Description

- Bicycle lanes with a striped buffer providing greater separation from vehicles than a typical bike lane.
- 6' bike lane plus buffer preferred; wider bike lane widths may be warranted in urban, high bicycle volume areas.
- 5' minimum bike lane width plus buffer in rural or suburban areas where bicycle volumes are low or in areas with constrained right-of-way.
- 2'-3' buffer area. Wider buffer width is preferred with progressively increasing speeds or volumes. Wider buffer may be required on ODOT facilities (see ODOT HDM guidance).
- Provide separated pedestrian facilities such as a sidewalk or pedestrian path.

Dimensions

Design Considerations

Urban	Rural
<ul style="list-style-type: none"> • Recommended for roads with posted speeds up to 40 mph and up to 10,000 average daily vehicle trips (ADT). • For posted speeds above 45 mph or with 10,000 ADT and greater, protected bikeways, cycle tracks or mixed-use paths preferable. 	<ul style="list-style-type: none"> • Recommended for roads with posted speeds up to 45 mph and up to 10,000 average daily vehicle trips (ADT). • For posted speeds of 50 mph or with 10,000 ADT and greater, mixed-use paths preferable.

- Applicable anywhere a bike lane or shoulder bikeway is suitable and where adequate pavement width exists or can be provided.

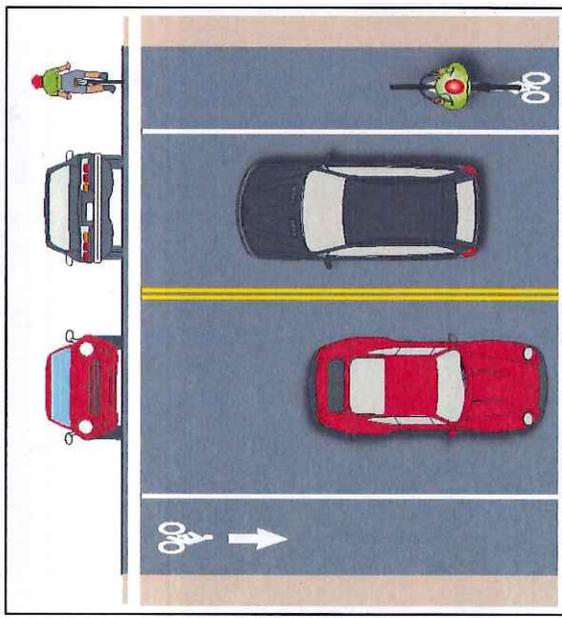
Additional Guidance

- NACTO Urban Bikeway Design Guide; London Cycling Design Standards; ODOT Highway Design Manual; ODOT Bicycle and Pedestrian Design Guide

Applicability/Suitability

Urban	Rural	Pedestrian	Bicyclist	Metro Parkway	Metro Regional Bikeway	Speed	Volume
X	X		X	X	X	Greater separation preferred above 45 mph in urban areas and 50 mph in rural areas	Greater separation preferred above 10,000 ADT

Bike Lane



Description

- On-street facility with a designated space for bicycle travel.

Dimensions

- 7' maximum without buffer.

Design Considerations

- Minimum facility recommended at posted speeds of 25 mph or higher and over 3,000 average daily trips (ADT).
- Recommended for roads with posted speeds up to 40 mph and up to 7,000 ADT. For higher speeds and volumes, buffered or protected bike lanes, cycle tracks, or mixed-use paths are preferable.
- Colored pavement or other conflict area treatments preferred in conflict areas.
- Provide separated pedestrian facilities such as a sidewalk or pedestrian path.

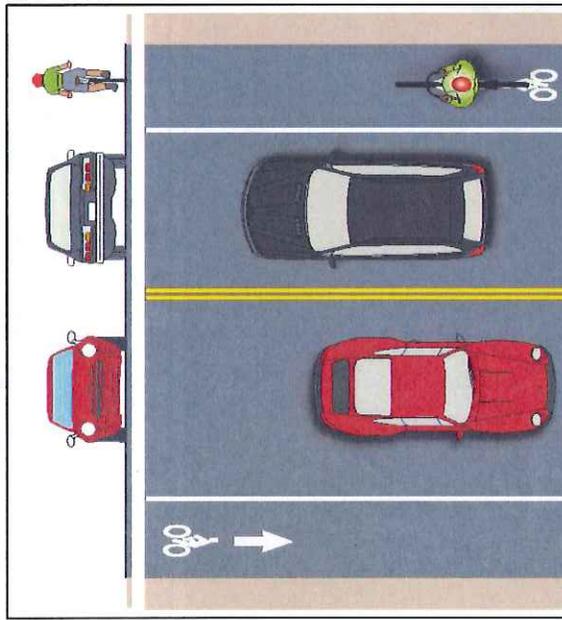
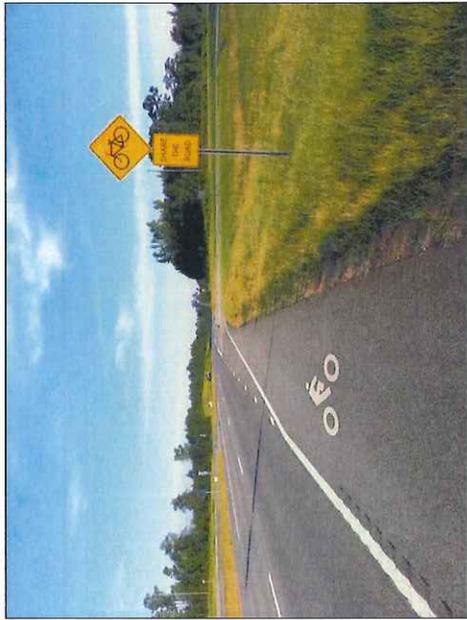
Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities; NACTO Urban Bikeway Design Guide; ODOT Highway Design Manual; ODOT Bicycle and Pedestrian Design Guide

Applicability/Suitability

	Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
	X			X	X	X	Greater separation preferred above 40 mph	Greater separation preferred above 7,000 ADT

Shoulder Bikeway



Description

- On-street facility that provides a designated space for bicycle and/or pedestrian travel.
- Typically applied on rural roadways.

Dimensions

- 6' preferred.
- 4' minimum in areas with constrained right-of-way.

Design Considerations

- Minimum facility recommended at posted speeds of 25 mph or higher and over 3,000 average daily trips (ADT).
- Recommended for roads with posted speeds up to 45 mph and up to 5,000 ADT. For higher speeds and volumes, buffered bike lanes or mixed-use paths preferable.
- Consider bicycle friendly rumble strips or profiled striping.

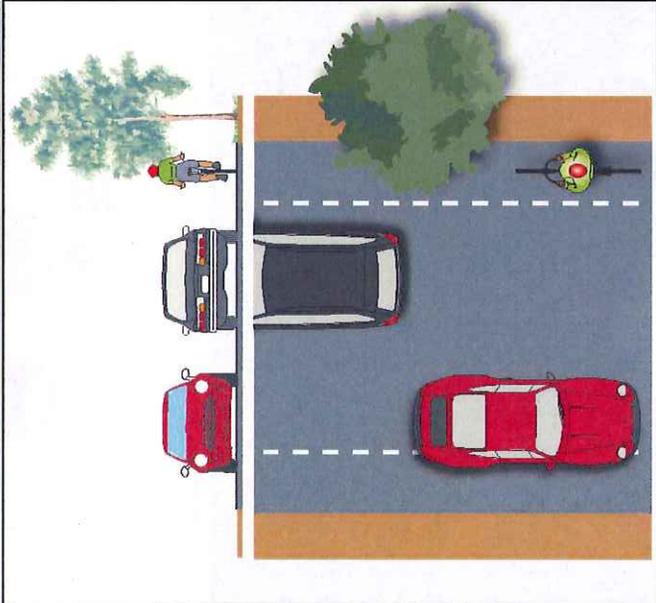
Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities; ODOT Highway Design Manual

Applicability/Suitability

Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
	X	X	X			Greater separation preferred above 45 mph	Greater separation preferred above 5,000 ADT

Advisory Lanes



Description

- Center travel lane is shared by two-way traffic. No center stripe provided.
- Vehicles may use the shoulder bikeways for passing, but must yield to bicyclists and oncoming motorists.

Dimensions

- Dashed line 5' (minimum) to 7' (preferred) from curb or edge of pavement if on-street parking provided and depending on right-of-way constraints.
- 13' to 18' two-way motor vehicle center lane width depending on right-of-way constraints.

Design Considerations

- | | |
|--------------|--|
| <i>Urban</i> | <ul style="list-style-type: none"> • Recommended for roads with posted speeds up to 30 mph and up to 5,000 average daily vehicle trips (ADT). • Provide separated pedestrian facilities such as a sidewalk or pedestrian path. |
| <i>Rural</i> | <ul style="list-style-type: none"> • Recommended for roads with posted speeds up to 40 mph and up to 3,000 average daily vehicle trips (ADT). |

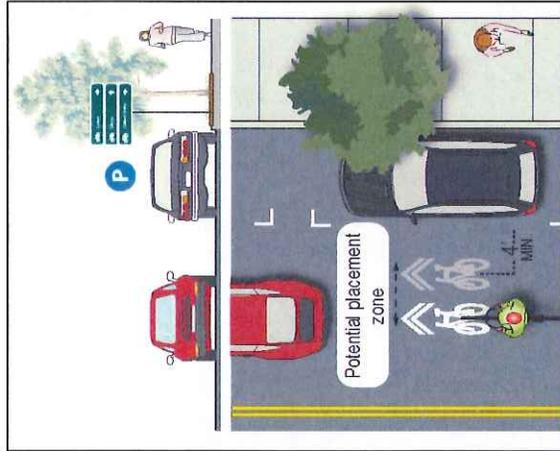
Additional Guidance

- CROW Design Manual for Bicycle Traffic; London Bicycle Design Standards; U.S. case studies available

Applicability/Suitability

	Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
	X	X		X	X	X	Up to 30 mph in urban areas and 40 mph in rural areas	Up to 5,000 ADT in urban areas and 3,000 ADT in rural areas

Bicycle Boulevard



Description

- A bicycle facility in a network of connected low volume and low speed roads (typically local roadways or connector roadways) where bicycles share the roadway with vehicles, but bicycle movements are prioritized over vehicle movements. The network should include routes that are parallel to higher order roadways.
- Traffic calming elements such as speed humps, traffic circles, mini-roundabouts and traffic diverters should be provided to keep vehicle speeds and volumes low.

Dimensions

- Bike boulevard or shared lane markings preferred to be at least 4' from edge of curb or on-street parking.
- Shared lane marking dimensions in MUTCD Section 9C.07.

Design Considerations

- Not recommended for roadways with posted speeds above 25 mph or volumes greater than 3,000 Average Daily Trips (ADT).
- Wayfinding signs are recommended on bicycle boulevards that meander through a local street network.
- Provide separated pedestrian facilities such as a sidewalk or pedestrian path.

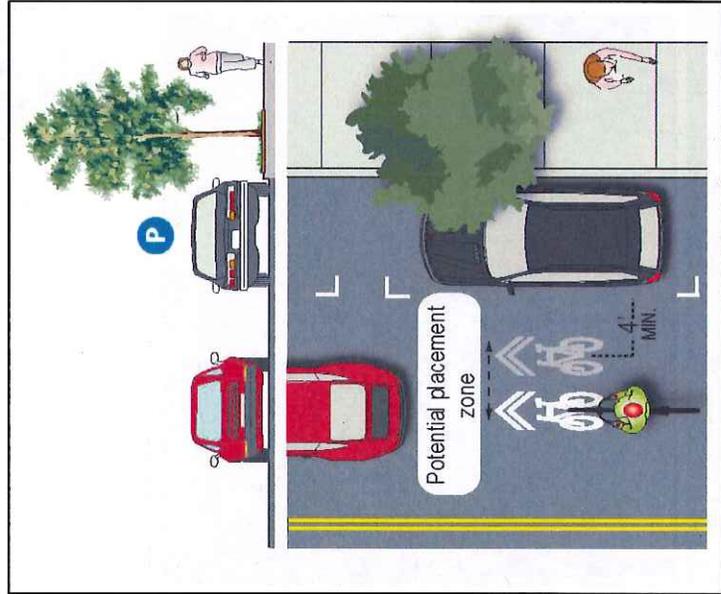
Additional Guidance

- NACTO Urban Bikeway Design Guide; Manual on Uniform Traffic Control Devices (MUTCD)

Applicability/Suitability

		Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
		X	X		X	X	X	Up to 25 mph	Up to 3,000 ADT

Shared Lane Roadways



Description

- A facility where bicycles share the roadway with vehicles. Shared lane markings should be provided in the roadway to designate the shared use of the roadway by bicyclists and motorists.

Dimensions

- Markings preferred to be at least 4' from edge of curb or on-street parking.
- Shared lane marking dimensions in MUTCD Section 9C.07.

Design Considerations

- Not recommended for roadways with posted speeds above 30 mph or volumes greater than 3,000 Average Daily Trips (ADT).
- May be suitable above 3,000 ADT in urban areas where the travel speed is 20 mph or less (such as in a downtown environment).
- Provide separated pedestrian facilities such as a sidewalk or pedestrian path.

Additional Guidance

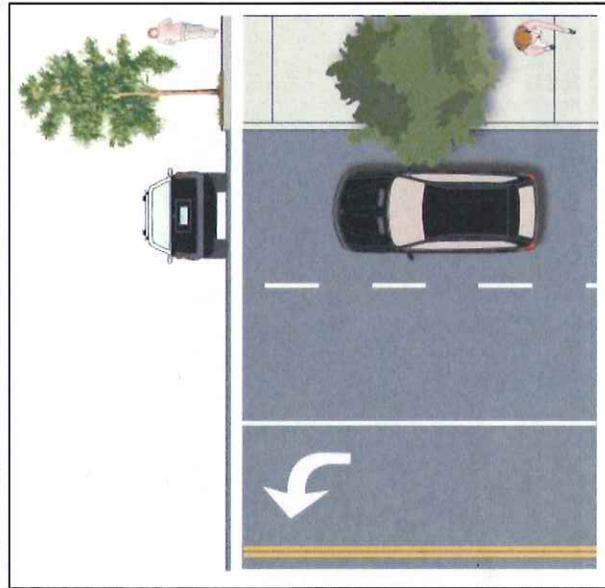
- NACTO Urban Bikeway Design Guide; Manual on Uniform Traffic Control Devices (MUTCD)

Applicability/Suitability

	Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
	X	X		X			Up to 30 mph	Up to 3,000 ADT unless speeds below 20 mph

5.3 PEDESTRIAN FACILITY TYPES

Sidewalk



Description

- A dedicated pedestrian walking path adjacent to the roadway.
- Separated from traffic by a curb and landscape buffer (preferred) typically consisting of street trees.

Dimensions

- 8' on collector or arterial roadways classified as commercial or institutional sidewalk (see Clackamas County Zoning and Development Ordinance [ZDO] 1007-10).
- 6' preferred unless ZDO requires more.
- 5' minimum in areas with low pedestrian volume and constrained right-of-way.
- On ODOT facilities a 6' sidewalk plus a 4' buffer or 8' sidewalk without buffer is required.
- 10' sidewalks required in Central Business Districts, Special Transportation Areas and traditional downtowns; 14-16' sidewalks required in high use business areas.

Design Considerations

- Should be built to Americans with Disabilities Act (ADA) standards.
- High quality transitions/crossings are advised such as refuge islands, rectangular rapid flashing beacons, pedestrian hybrid beacons, high visibility crosswalks, lighting, etc.

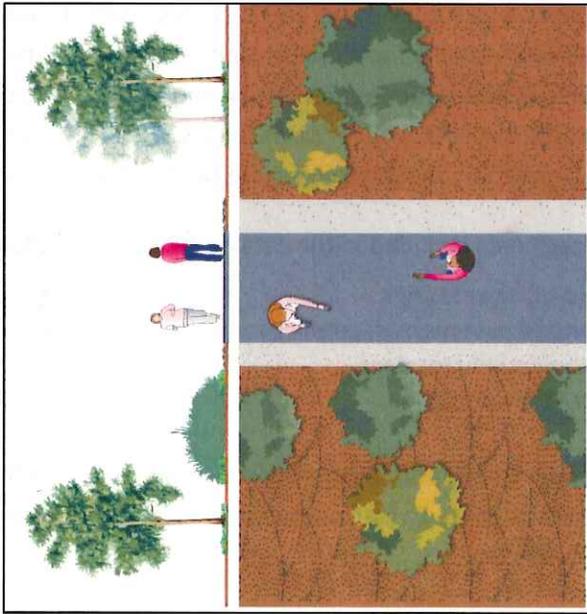
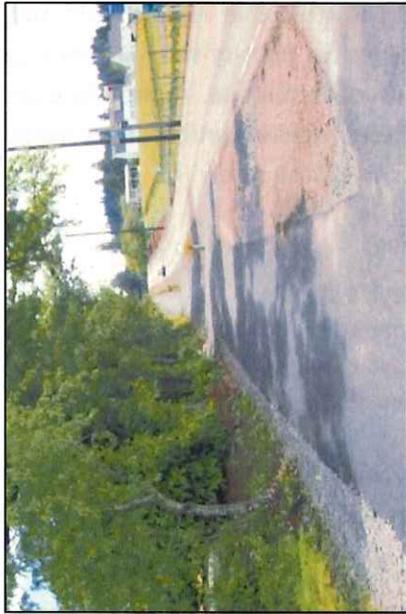
Additional Guidance

- Clackamas County ZDO; FHWA Designing Sidewalks and Trails for Access; ODOT Highway Design Manual; ODOT Bicycle and Pedestrian Design Guide

Applicability/Suitability

Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
X		X				N/A	N/A

Pedestrian Path



Description

- Can be provided adjacent to a roadway in lieu of a sidewalk in a constrained or rural area where separate facilities are provided for bicyclists.
- A multi-use path is preferred if safe bicycle facilities are not provided adjacent to the pedestrian path or along the roadway.

Dimensions

- 8' preferred in pedestrian volume areas.
- 6' minimum in suburban or rural areas with low pedestrian use.

Design Considerations

- Usually excludes bicycle travel.
- Although pedestrian-only paths may be intended for pedestrian-only travel, they will often still be used by bicyclists. Separate bicycle facilities should be provided to connect the origins and destinations served by the pedestrian-only path.
- Should be built to ADA standards.
- High quality transitions/crossings are advised such as refuge islands, rectangular rapid flashing beacons, pedestrian hybrid beacons, high visibility crosswalks, lighting, etc.

Additional Guidance

- Clackamas County Zoning and Development Ordinance; FHWA Designing Sidewalks and Trails for Access; ODOT Highway Design Manual

Applicability/Suitability

Urban	Rural	Pedestrian	Bicyclist	Metro Bicycle Parkway	Metro Regional Bikeway	Speed	Volume
X	X	X				N/A	N/A

Additional Protected Bikeway Considerations

As shown in the catalog, buffered bike lanes, protected bike lanes, raised cycle tracks and multi-use paths use different design features to create physical separation between bicyclists and vehicle traffic. The protected facilities may use a variety of separation treatments including flexible bollards (i.e. candle sticks), textured pavement, bollards or on-street parking. The use of a mountable curb to separate the vehicle travel lane from the bicycle lane typifies a raised cycle track that can be located adjacent to the travel lane or behind on-street parking. Separating a cycle track from the travel lane with a continuous landscape strip can also make the facility comparable to a multi-use path adjacent to the roadway.

The design features often used as buffers between vehicles and bicyclists include:

- Striping and/or paint
- Textured pavement
- Skipped rumble strip or profiled striping on fog line (rural area only)
- Flexible bollards (candle sticks)
- Mountable curb
- On-street parking
- Landscaping
- Water treatment facility (i.e., green street treatment)

CONFLICT AREA TREATMENT TYPES

Careful consideration for addressing potential motorist/pedestrian/bicyclist conflict areas at intersections, crossings and transitions between facility types will be part of the facility design process. Conflict areas pose significant deterrents for many users and can result in a decision not to use a facility. The ATP recognizes these challenges and includes conflict area treatments that reduce potential for conflict by improving visibility for bicyclists and motorists, delineating clear right-of-way, facilitating eye contact between conflicting modes and setting behavior expectations for each mode. Appropriate design treatments can both increase a driver's awareness of bicyclists and pedestrians in conflict areas and guide the bicyclist or pedestrian on how to navigate the intersection or conflict area safely.

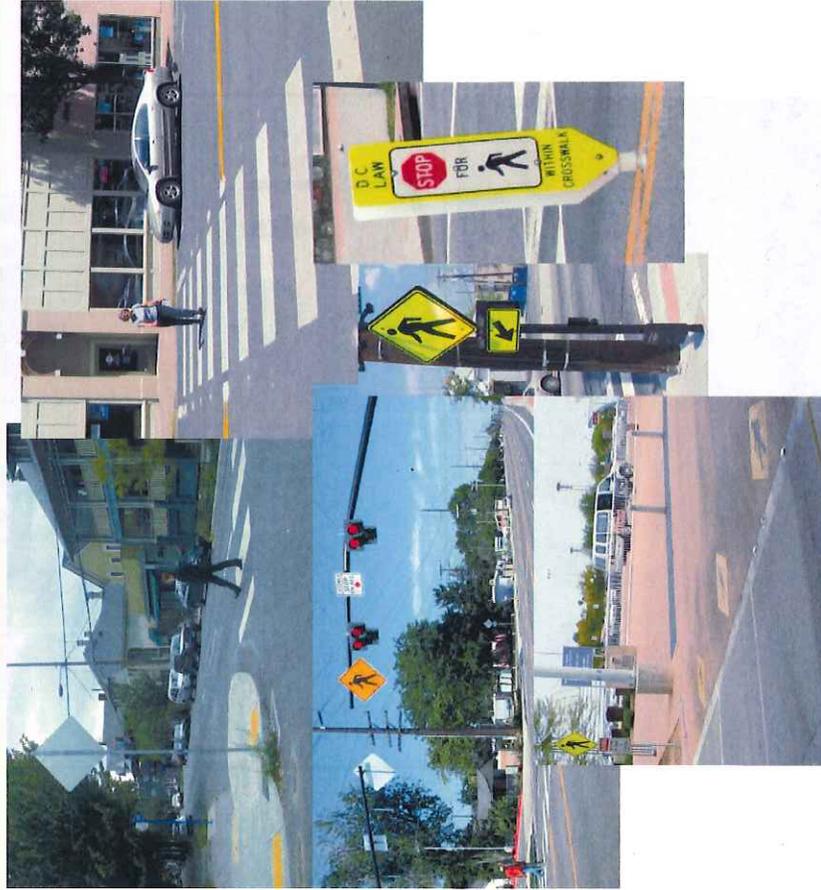
Conflict area treatments included in the catalog include the following:

- | | |
|-------------------------------------|--------------------------------|
| ▪ Mid-block crossings | ▪ Bicycle signals |
| ▪ Colored pavement in conflict zone | ▪ Uphill/downhill markings |
| ▪ Intersection crossings | ▪ Bicycle box |
| ▪ Driveway crossings | ▪ Two-stage left-turn markings |

Mid-block crossing treatments address pedestrian and bicyclist conflicts with vehicles. The other treatments generally apply to both urban and rural environments and are primarily used to address vehicle-bicycle conflicts.

5.4 CONFLICT AREA TREATMENT TYPES

Mid-Block Roadway Crossings



Description

- Ideally, crossings should occur at signalized or stop-controlled intersections to maximize user safety.

Treatments may include:

- Raised median/refuge island
- Rectangular rapid flashing beacon
- Pedestrian hybrid beacon
- High visibility crosswalks
- Raised crosswalk
- In-street "Yield to Pedestrians" signs
- Bulb-outs/curb extensions
- Lighting

Dimensions

- Varies depending on treatment type.

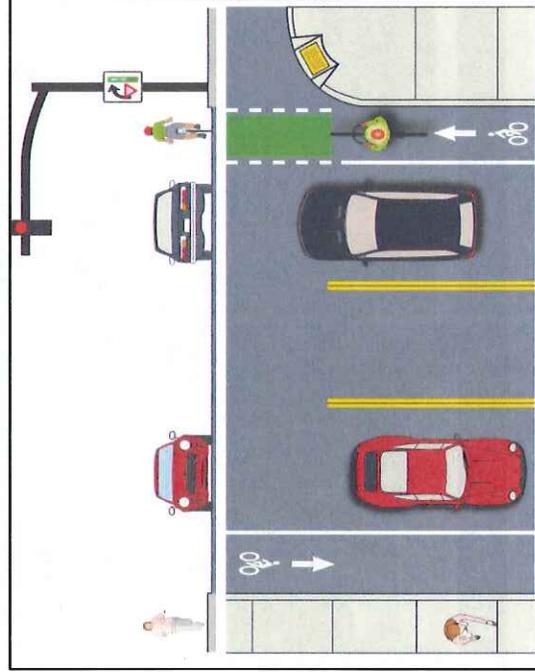
Design Considerations

- There may be locations where the desired PAT route will warrant a crossing at an uncontrolled or mid-block location. In these circumstances, signage and striping, changes in the roadway geometry and/or installation of pedestrian signals are preferred.

Additional Guidance

- NACTO Urban Bikeway Design Guide; Manual on Uniform Traffic Control Devices; AASHTO Guide for the Development of Bicycle Facilities

Colored Pavement in Conflict Zone



Description

- Colored pavement can be used to indicate where motorists and bicyclists may potentially cross paths due to turning movements (primarily due to right-turning vehicles).

Dimensions

- Width of marking is the same as pedestrian/bicycle pavement through marking.

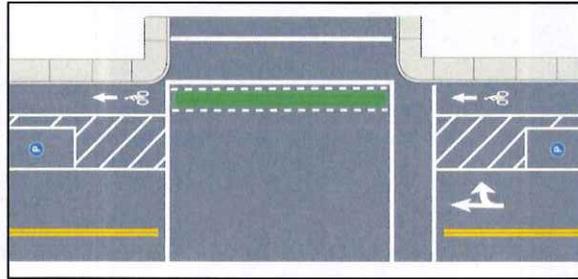
Design Considerations

- Green color thermoplastic is best for longevity. Paint can work if the surface is prepared correctly and markings are placed with consideration for vehicle wheel tracks.
- 'Skip striping' is an alternate striping treatment instead of solid green pavement in the actual conflict area.
- Can be accompanied by 'Yield to Bikes' signs.

Additional Guidance

- NACTO Urban Bikeway Design Guide; MUTCD

Intersection Crossing Markings



Description

- Colored pavement indicates motorists and/or bicyclists may potentially cross paths. Can be colored pavement or a skip-stripped bike lane through the intersection.

Dimensions

- Width of marking is the same as pedestrian/bicycle pavement through marking.

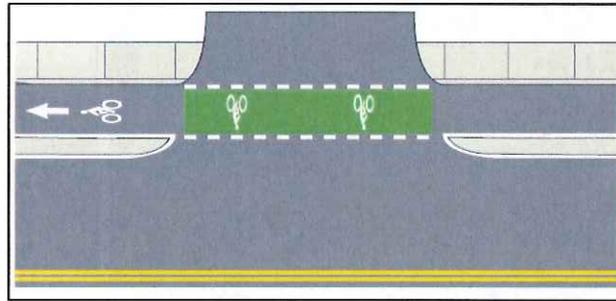
Design Considerations

- Green color thermoplastic is best for longevity.
- Paint can work if the surface is prepared correctly and markings are placed with consideration for vehicle wheel tracks.
- Chevrons and/or shared lane markings can be used.

Additional Guidance

- NACTO Urban Bikeway Design Guide; MUTCD; AASHTO Guide for the Development of Bicycle Facilities

Driveway Crossings



Description

- Colored pavement or bicycle stencils indicate to motorists a bicyclist may be passing through a driveway.

Dimensions

- Width of marking is the same as pedestrian/bicycle pavement through marking.

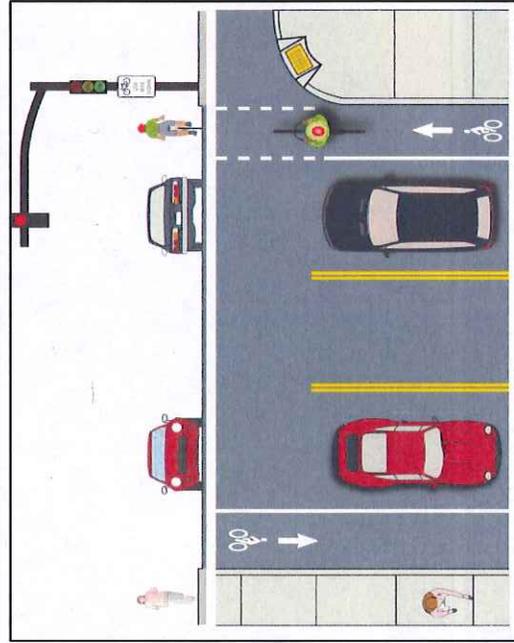
Design Considerations

- Green color thermoplastic is best for longevity.
- Can be accompanied by 'Yield to Bikes' signs.
- 'Skip striping' may be used instead of the solid green pavement.
- Rotates bicycle stencils can be used in combination or alone.
- Usage is preferred at high entrance/exit vehicle volume locations.

Additional Guidance

- NACTO Urban Bikeway Design Guide; MUTCD; AASHTO Guide for the Development of Bicycle Facilities

Bicycle Signals



Description

- Bicycle traffic signals can be used to provide a separate signal phase or queue jump for bicyclists separate from motorists.
- They are often used to separate right-turn vehicle traffic from through bicyclist traffic and to facilitate a diagonal crossing of an intersection for a multi-use path crossing or trail head.

Dimensions

- 12" bike signal heads are typically used on the far side of the intersection.
- 4" or greater bike signal heads may be used on the near side of the intersection for added visibility.

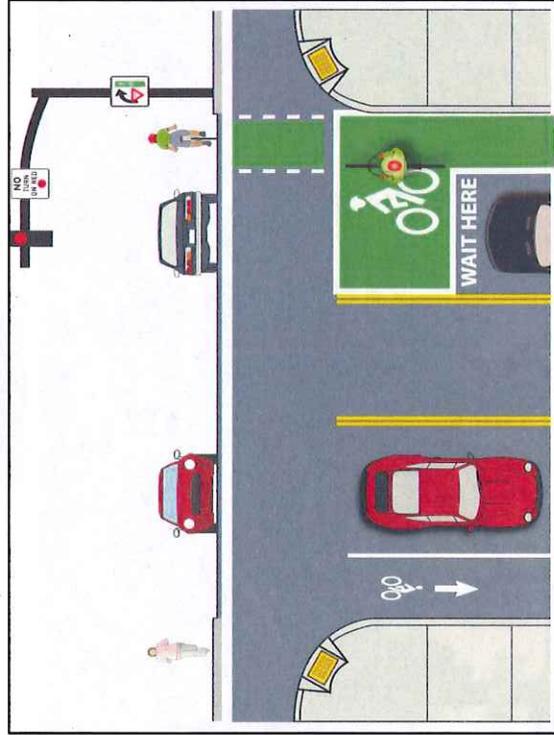
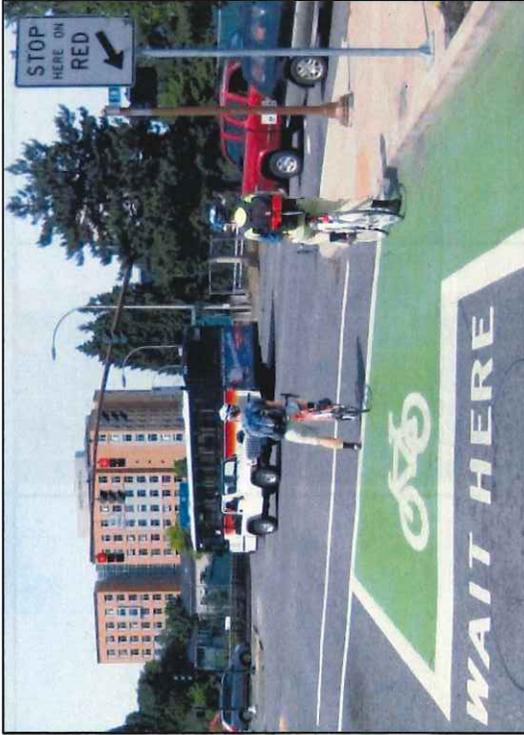
Design Considerations

- Signal may be accompanied by 'Yield to Bikes' or 'No Turn on Red' signs.
- Average waiting time of less than 20 seconds is desirable to reduce bicyclist waiting time and increase bicyclist signal compliance.
- In-roadway bicycle loop detectors or bike signal actuation is preferable.
- The bicycle signal phase needs to provide adequate clearance time based on bicycle speeds.

Additional Guidance

- NACTO Urban Bikeway Design Guide; AASHTO Guide for the Development of Bicycle Facilities; CROW Design Manual for Bicycle Traffic
- Bicycle traffic signals are still experimental.

Bicycle Box



Description

- In locations with relatively high bicycle traffic, a bike box allows bicyclists to queue in front of motorists for increased visibility.

Dimensions

- Transverse lines should be used to create 10' to 16'-deep bike box indicating where motor vehicles are required to stop.
- A bike stencil should be centered between the crosswalk line and stop line.

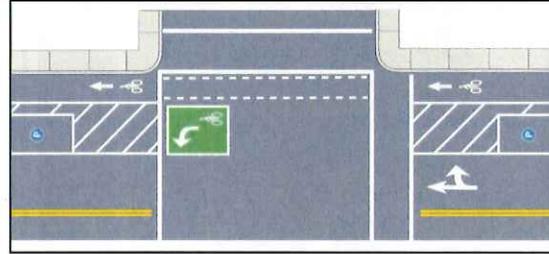
Design Considerations

- Applicable at locations with frequent vehicle right turns or bicyclist left-turns.

Additional Guidance

- NACTO Urban Bikeway Design Guide; MUTCD
- Bike boxes have interim FHWA approval.

Two Stage Left-Turn Marking



Description

- In a two-stage left turn, bicyclists proceed straight through the intersection with the green signal and wait in a queue box on the cross street to proceed through the intersection on its next green signal.
- This provides a safe and easy alternative to difficult left-turns in high traffic volumes or in multiple lanes of traffic.

Dimensions

- A left-turn bike box should be approximately 10' by 10' to hold one or more left-turning vehicles.

Design Considerations

- Good for high volume intersections with high bicyclist left-turn volumes.
- Colored pavement and bike stencil are preferred to increase visibility of left-turn bike box.

Additional Guidance

- NACTO Urban Bikeway Design Guide; MUTCD



CLACKAMAS COUNTY
ACTIVE TRANSPORTATION PLAN

6 – APPENDIX



APPENDIX A – EXISTING CONDITIONS REPORT



CLACKAMAS COUNTY
ACTIVE TRANSPORTATION PLAN

APPENDIX B - ATP MAPS



APPENDIX C – SURVEY OF CLACKMAS COUNTY
USERS



CLACKAMAS COUNTY
ACTIVE TRANSPORTATION PLAN

APPENDIX D – ROUTE SCORING RESULTS AND
PUBLIC COMMENTS



APPENDIX E – PAT COST ESTIMATES



APPENDIX F – ADDITIONAL FUNDING INFORMATION



CLACKAMAS COUNTY
ACTIVE TRANSPORTATION PLAN

Board of Commissioners
Study Session
March 3, 2015



CLACKAMAS
COUNTY



– BACKGROUND

**– PROJECT SUMMARY &
PLAN DEVELOPMENT**

– ADOPTION ELEMENTS

– QUESTIONS



The Active Transportation Plan *DOES*:

- Prioritize routes through a public involvement process
- Identify potential projects if/when grant funding becomes available

The Active Transportation Plan *DOES NOT*:

- Allocate any funding for active transportation projects

ATP Study Area



10 20 Miles



CLACKAMAS COUNTY

ACTIVE TRANSPORTATION PLAN

Plan for bike & pedestrian on-and off-street facilities that will make our roadways safer for all users.





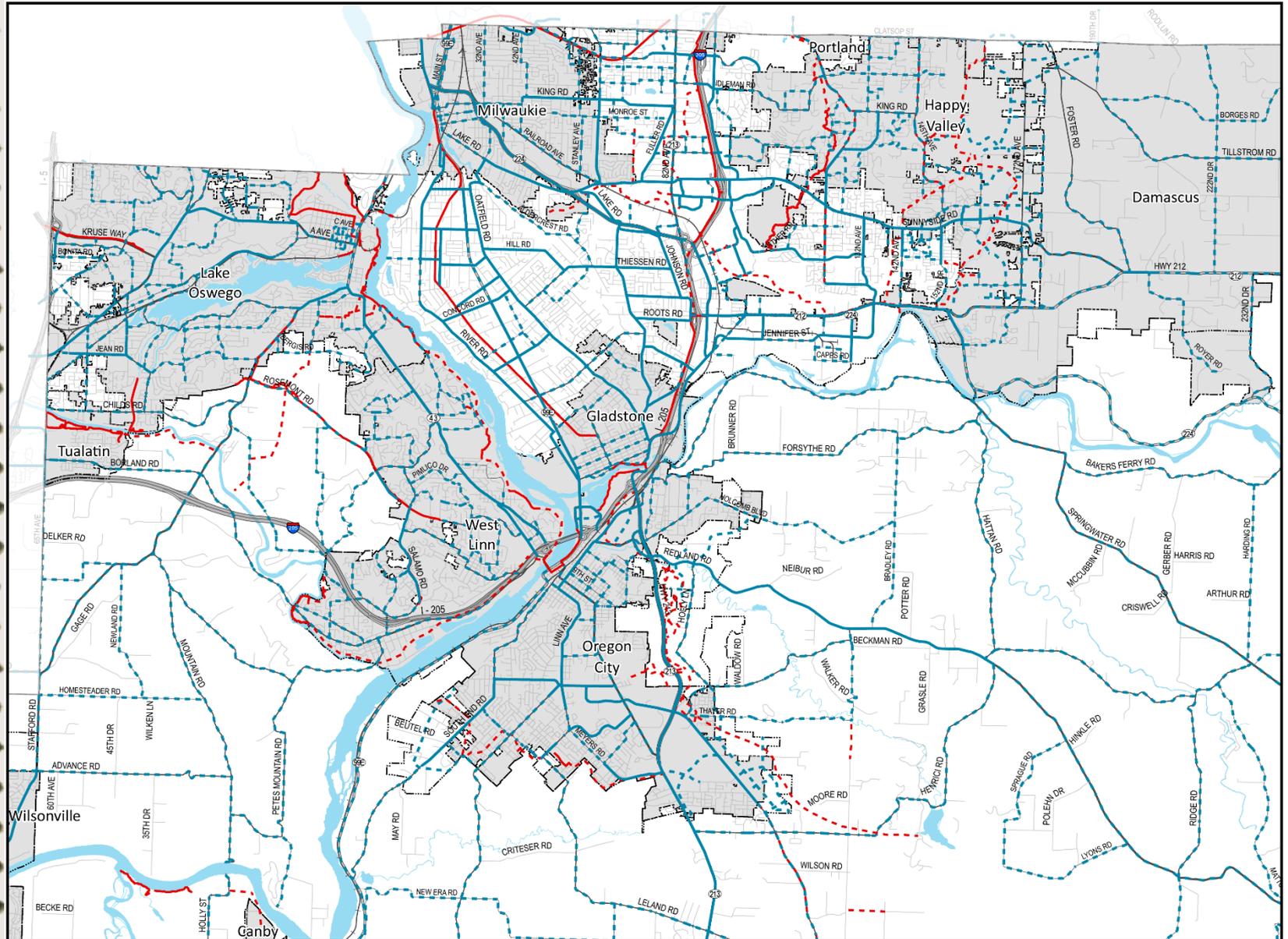
CLACKAMAS COUNTY *ACTIVE TRANSPORTATION PLAN*

Purpose:

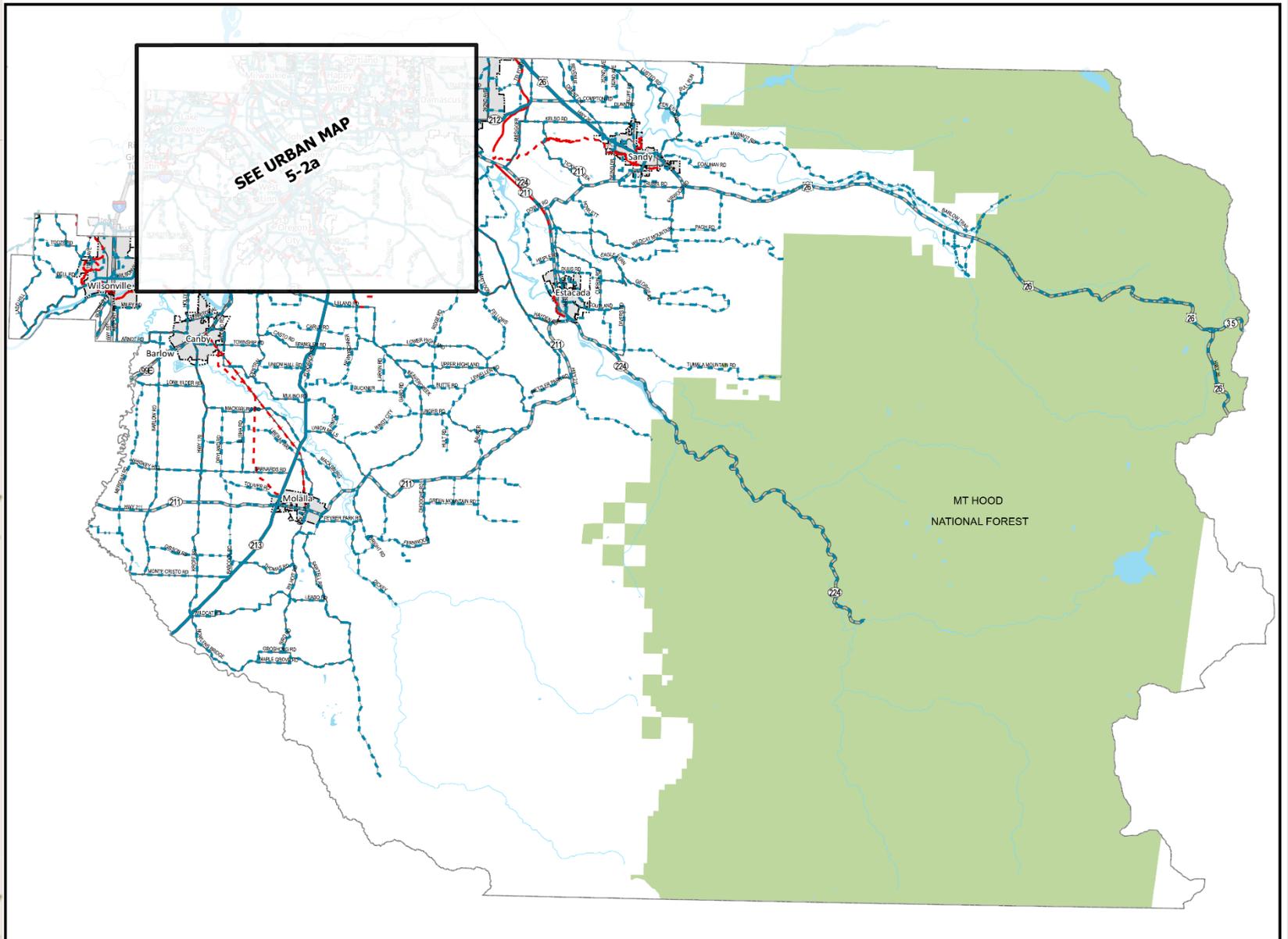
- ✓ *Identify* the principal network of active transportation routes that connect communities and destinations in Clackamas County, both rural and urban.
- ✓ *Identify* appropriate facility types for active transportation routes, such as shoulder bikeway; buffered bike lane; shared use path; etc.



Map 5-2a: Planned Bikeway Network - Urban



Map 5-2b: Planned Bikeway Network – Rural

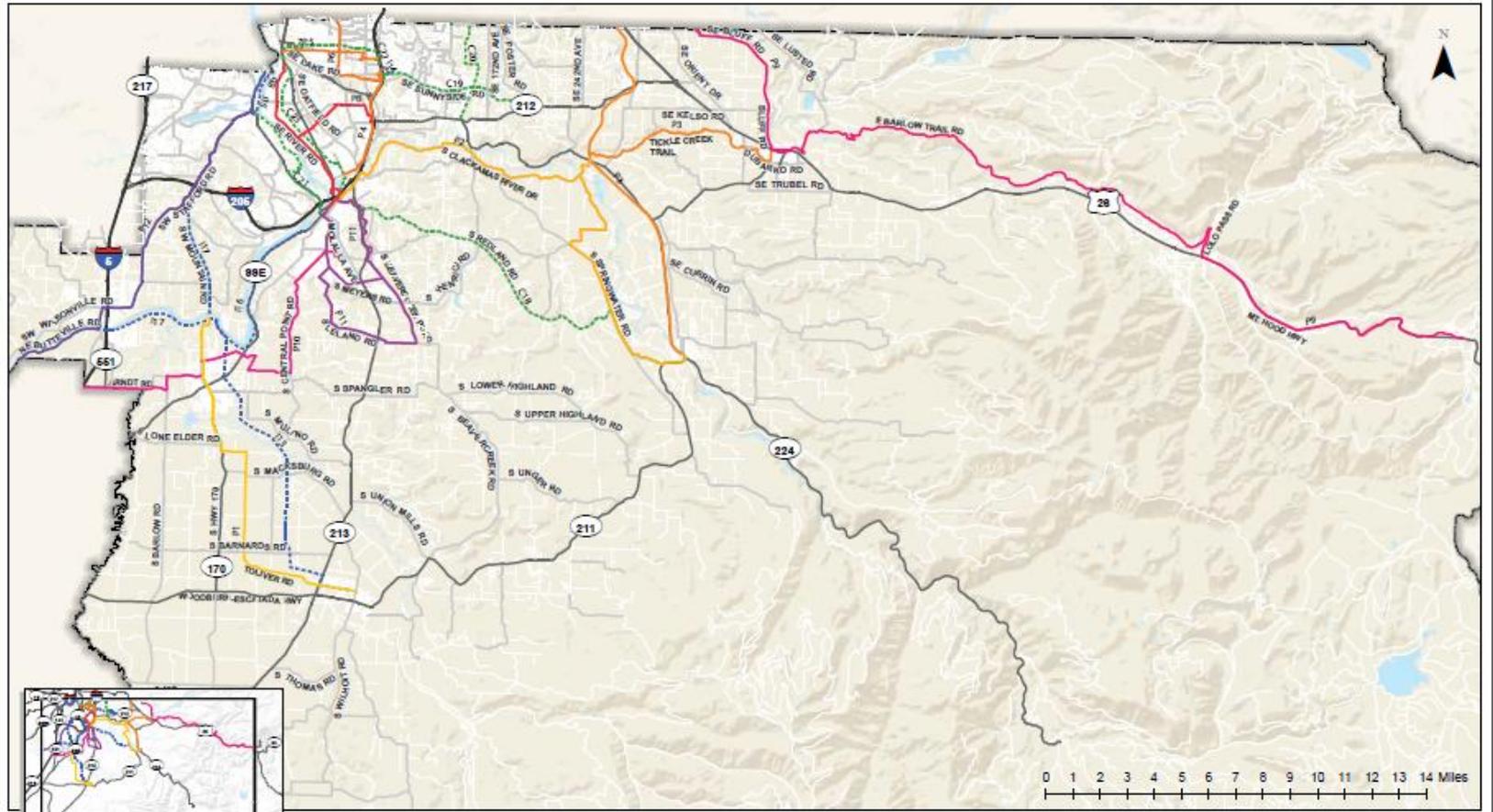




CLACKAMAS COUNTY

ACTIVE TRANSPORTATION PLAN

Clackamas County Active Transportation Plan



- Route P1
- Route P4
- Route P9
- Route P12
- Route P2
- Route P5/E
- Route P10
- I-PAT Routes
- Route P3
- Route P7/B
- Route P11
- C-PAT Routes

Principal Active Transportation (PAT) Network
Clackamas County, Oregon

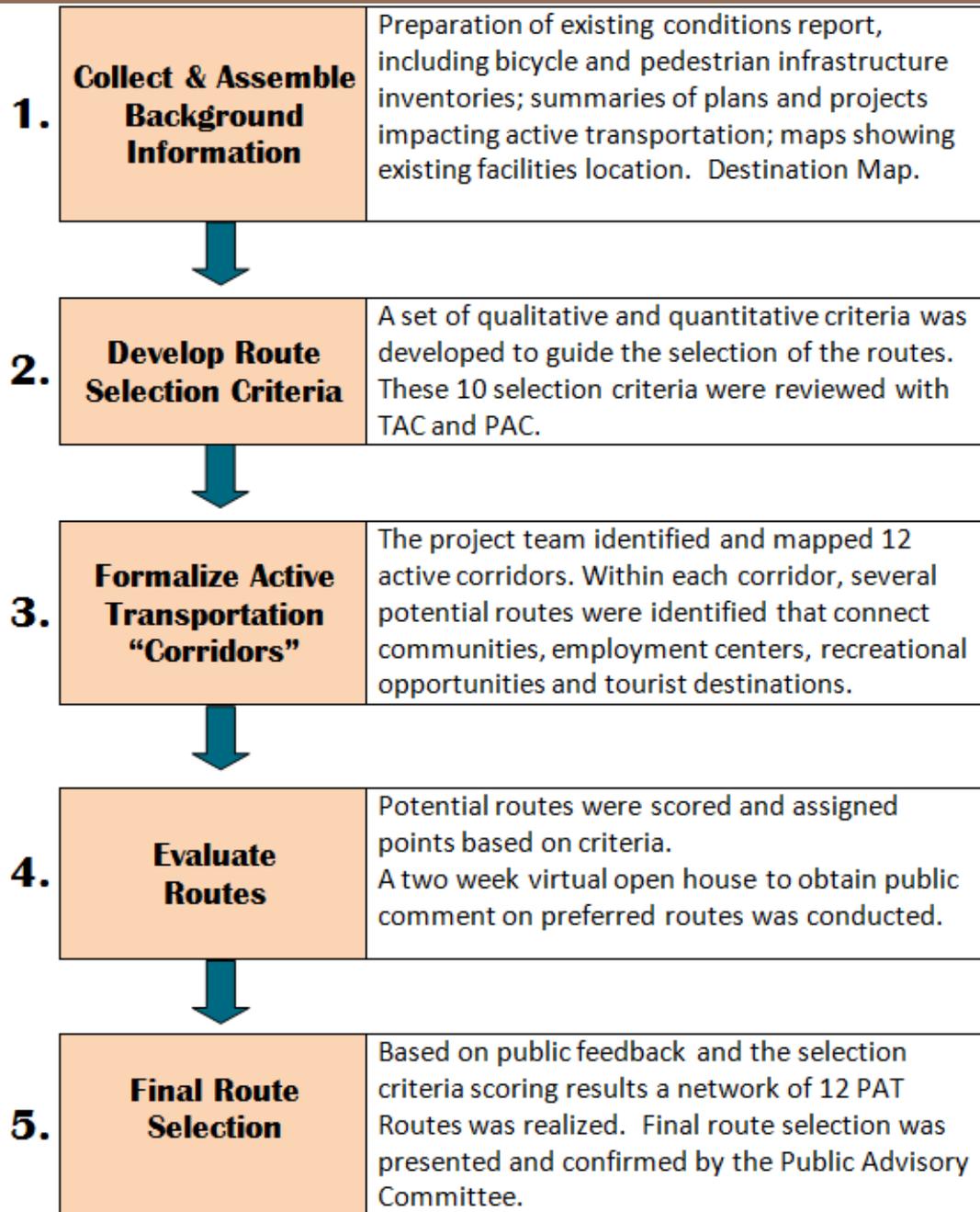
Figure
1



ATP identifies...

24 routes that connect communities:

- **12** Principal Active Transportation Routes (PATS)
- **5** Ideal Principal Active Transportation Routes (I-PATS)
- **7** Connector Principal Active Transportation Routes (C-PATS)



PUBLIC OUTREACH

- Public Advisory Committee (PAC)
- News releases
- Fact sheet/flyers
- Webpage
- Virtual open house



PUBLIC OUTREACH

(continued)



- **Neighborhood / Community Meetings**
 - Information sent to all active CPO's, Hamlets and Villages with offer to meet.
 - Presentations/group discussions at Stafford, Mulino and Beaver creek hamlets and Eagle Creek CPO
 - Community Leaders Meeting
 - North Clackamas Chamber of Commerce
 - Clackamas County Transportation Advisory Committee (CTAC)
 - Committee for Citizen Involvement (CCI)

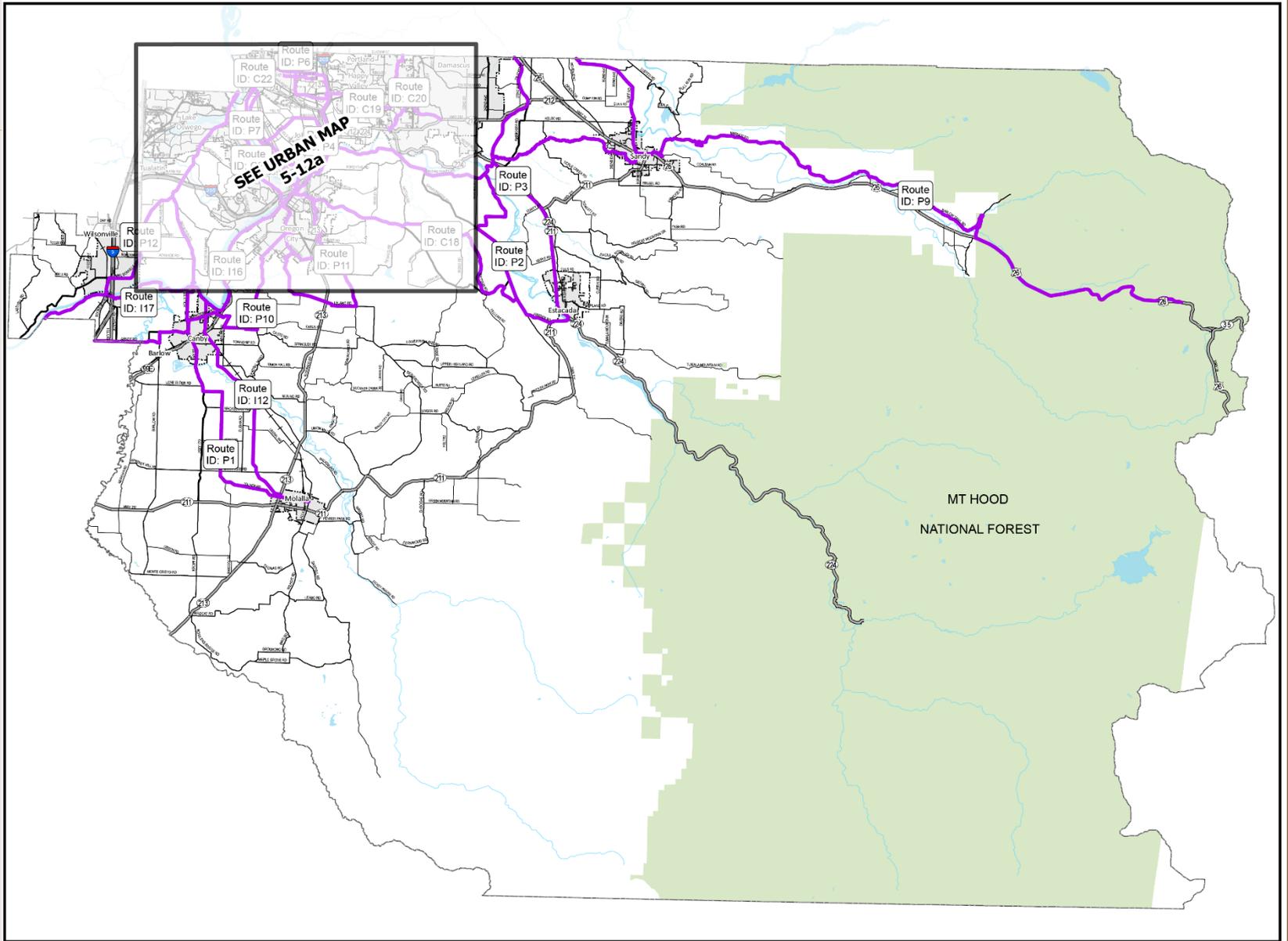
Plan Adoption Elements

- Comprehensive Plan policies
- Comprehensive Plan maps
- Active Transportation projects
- Active Transportation Plan report

Chapter 5 Policies

- Propose to amend 7 policies
 - Construct facilities on new Maps 5-12a and 5-12b
 - Design bicycle and pedestrian facilities according to the Active Transportation Plan “Facility Type Report”
 - Monitor and update the Active Transportation Plan
- Propose to add 2 policies
 - Signage and amenities
 - Rural multi-use paths

Map 5-12b - Principal Active Transportation Routes: Rural





- Table 5-3a: 20-Year Capital Projects: 2 new projects
- Table 5-3c: Long-Term Capital Projects: 17 new projects
- Table 5-3b/d: Preferred/Regional Projects: clarification

Clackamas County Comprehensive Plan
Table 5-3a 20-Year Capital Projects

Project ID	Map	Project Name / Street Name	Segment / Locations	Project Description
1067	5-11c	Jennings Ave	Webster Rd to OR 99E	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1068	5-11c	Jennings Ave	River Rd to Oatfield Rd	Widen to 2-lane urban minor arterial standard with bikeway and pedestrian facilities infill
1069	5-11c	Oak Grove Blvd	Oatfield Rd to River Rd	Fill gaps in pedestrian facilities and bikeways
1070	5-11c	Oatfield Rd	Jennings Ave to Lake Rd	Perform road safety audit or transportation safety review to identify appropriate safety improvements
1071	5-11c	Oatfield Rd	Oatfield Rd / Park Rd intersection	Install traffic signal and add turn lanes
1072	5-11c	Oatfield Rd	Oatfield Rd / McNary Rd intersection	Add southbound and eastbound left-turn lanes
1073	5-11c	Oetkin Rd - Naef Rd	Thiessen Rd to River Rd	Construct bike boulevard/neighborhood greenway consistent with the Active Transportation Plan
1074	5-11c	Park Ave	River Rd to OR 99E (McLoughlin Blvd)	Add pedestrian facilities
1075	5-11c	River Rd	Lark St to Courtney Ave	Add pedestrian facilities
1076	5-11c	River Rd	Oak Grove Blvd to Risley Ave	Fill gaps in bikeways in accordance with the Active Transportation Plan and fill gaps in pedestrian facilities
1077	5-11c	River Rd	Park Ave to Glen Echo Ave	Construct buffered bike lane in accordance with the Active Transportation Plan.



CLACKAMAS COUNTY *ACTIVE TRANSPORTATION PLAN*

Active Transportation Plan Report: Adopt by reference in Appendix A



Components of Active Transportation Plan Report

— Active Transportation Network

- Route descriptions
- Map details
- Cost analysis



— Signage & Amenities

- Bike parking
- Informational kiosks
- Wayfinding & regulatory signs



— Facility Design Toolkit

- 14 design types
- Dimensions
- Design considerations





Questions

