

Appendix G Rock Creek IAMP Implementing Language

Clackamas County Comprehensive Plan

Chapter 5, the Transportation chapter of the Clackamas County Comprehensive Plan, is also the Clackamas County Transportation System Plan. Chapter 5 shall be amended to bring it into compliance with the IAMP by inserting the language that is underlined below.

Proposed Amendment are shown in blue text and new sections are highlighted in yellow.

TRANSPORTATION

Clackamas County's transportation system is an extensive network of public and private transportation facilities, including roads, railways, airports, waterways and trails. The system is intended to allow people to get where they need to go safely and efficiently, whether they travel by foot or by automobile, bus, train, airplane or bicycle. The system also is intended to provide for the efficient movement of goods, whether by truck, barge, train or pipeline. It is expected to serve a multitude of public needs without sacrificing air and water quality or creating noise pollution.

In recent years, rapid population growth and, ironically, the strong economy, have challenged the ability of the transportation system to balance those goals. Funding levels for roads, the backbone of the transportation system, have not kept pace with the proliferation of motor vehicles, housing and businesses, which increase the demand for road miles. The backlog of needed road maintenance and construction projects has grown larger.

At the same time, factors including the jobs/housing imbalance in the tri-county region have encouraged single occupant vehicle commuting. Given these conditions, relieving traffic congestion and protecting the environment will require strategic low-cost fixes.

This Plan focuses primarily on the County's responsibilities, 1,435 miles of road and 165 bridges. The cities and the State also own and maintain roads and bridges within

Clackamas County. All land-based modes of travel, except rail and pipeline, must share the public rights-of-way. This includes autos, trucks, buses, bicycles, and pedestrians. Safety considerations apply to travelers by all modes, and public rights-of-way must be improved and maintained to make travel safe for all. Clackamas County is also challenged by the responsibility to maintain and develop a safe and functional road network in rural areas and the need to expand a formerly rural road network to a full service urban transportation system in urban areas.

Many agencies and public and private providers as well as developers are involved in building and maintaining the County's transportation system. Metro, the region's governing body, coordinates transportation financing for many projects, sets priorities for expenditures, and sets standards for the operation and design of regional elements of the transportation system. The County coordinates with its 16 cities, transit providers and the State of Oregon. One product of that coordination is the County's Capital Improvement Plan (20-year) and a detailed 5-year program for improvement of County-owned roads and bridges.

ISSUES

- Providing transportation infrastructure to support changing land uses, and population and employment growth, while being sensitive to neighborhood needs and concerns.
- Balancing the need for maintenance and management of existing facilities with the need for building new facilities to accommodate increased trip demand.
- Monitoring the effects of transportation on employment and economic activity, especially the relationship of transportation to economic development and the ways transportation can be used as a tool to stimulate economic development.
- Improving roads to perform all the necessary functions.
- Balancing the need for mobility (through movement of traffic) with the need for access to property.
- Taking environmental needs and concerns into account.
- Balancing regional transportation needs with the need for local circulation and access.
- Providing mobility for those who choose not to drive, or who cannot drive.

- Sharing public and private costs for transportation facilities and services.
- Developing facilities for alternative modes of travel, and improving safety for travelers by all modes.
- Conserving energy.

SUMMARY OF FINDINGS AND CONCLUSIONS

1. An increasing population, a growing labor force, a strong economy and our own travel habits have increased the demand for transportation facilities, while costs for these facilities continue to rise.
2. Greater reliance on transit, bicycles, foot traffic, carpools, and other transportation modes will be necessary, along with decreased average trip length, in order to decrease energy consumption and road congestion. Use of alternative modes will decrease the need for costly road construction projects and improve air quality, neighborhood livability, and access to goods, services, and employment.
3. An improved relationship between land uses and transportation is necessary to decrease reliance on automobiles. 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.
4. Improved east/west transportation connections are needed in the urban part of the County.
5. Money for transportation projects is limited, therefore the County must make the best possible use of existing funds and existing rights-of-way in order to efficiently provide transportation to the greatest number of people.
6. 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. Federal law requires the region to implement measures that will allow the region to maintain federal air quality standards. Federal law prohibits significant degrading of air quality in the Mt. Hood Wilderness area.
7. Transportation related noise is a significant problem, especially in residential areas

adjacent to major roads.

8. Elderly, disabled and low-income residents -- a significant proportion of the County's population -- require better access to public transit and/or special transportation services.
9. The County's Capital Improvement Plan (CIP) contains the list of needed capital improvement projects that should be completed within 20 years in order to accommodate projected population and employment growth.
10. The County considered Metro's Roadway Design types and will apply them where appropriate.
11. Rural roads should be safer and improved to standard.
12. In 1999, 60% of Clackamas County residents commuted to work outside the County. The relative shortage of jobs within the County contributes to the County's transportation problems.
13. The County and the Oregon Department of Transportation (ODOT) have identified Interchange Management Areas, as shown on Map V-12, and developed an Interchange Area Management Plan (IAMP) for each Area. The intent of an IAMP is to coordinate land use and transportation facilities and protect the public's investment in the expressway / freeway interchange, which is a key component of the transportation system.

GENERAL TRANSPORTATION GOALS

- Create a safe, efficient and effective transportation system -- with multiple modes -- that balances the needs of the economy, protection of the environment, conservation of natural resources, and protection of neighborhoods.
- Work in partnership with neighboring and affected agencies in transportation planning to ensure effective and efficient results.
- Prepare a financial plan to fund the projects included in the Capital Improvement Plan (CIP).
- Use all financial means possible and take the lead in developing new funding sources to

construct needed projects.

- Work to maximize dollar return from state, regional and federal sources for County transportation projects.
- Schedule transportation system improvements to coincide with the needs of new development.

ROADWAYS

The County's roadway system, not including State highways and city streets, is an asset that, if built today (1999), would cost in excess of \$1 billion. This investment, mostly an endowment from previous generations, permits the movement of goods and people across the landscape, using the mode of our choice. Roadways provide access to virtually all property. They support old communities and serve new development. They connect rural communities and urban neighborhoods. Roadways give structure to our urban form, define our commuting patterns and influence our perceptions of what is far away or close at hand.

GOALS

- Create and maintain a safe, continuous County-wide road system, that accommodates movement by all travel modes.
- Meet the future transportation demands of the County.
- Complement the transportation networks of cities, other counties and the State.
- Implement Interchange Area Management Plans (IAMPs) developed jointly by the County and ODOT and adopted as part of the Oregon Transportation Plan by the Oregon Transportation Commission. [
- Protect the function and operation of the interchange(s) and the local street network within each Interchange Management Area.
- Ensure that any changes to the Comprehensive Plan land use designations in the Interchange Management Areas are consistent with the IAMPs.

POLICIES

Efficiency and Finance

- 1.0 Consider strategies for using the existing road system and its capacity most efficiently before building new roads or adding new capacity to existing roads. Transportation System Management techniques are a set of strategies that shall be used to make roadways operate more efficiently.

Transportation System Management (TSM) strategies include;

- Access Management
- Alternative/Modified Standards (Performance and/or Design Standards)
- Intelligent Transportation System (ITS) applications
- Operational Improvements
- Parking Standards.

- 2.0 Emphasize maintenance of existing roadways, with improvements where appropriate, to improve traffic flow and safety at a reasonable cost.
- 3.0 Determine roadway maintenance needs and priorities and develop an effective and efficient roadway maintenance program.
- 4.0 Preserve as much as possible the efficient function of the regional roadway system in development of any new roads.
- 5.0 Investigate and cooperate with other jurisdictions in establishing a transportation financing plan.
- 6.0 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, local and regional jurisdictions in their roadway planning efforts.

Needed Roadway Improvements

- 7.0 Fund and build the roadway improvement projects needed to accommodate and appropriately manage future traffic demands for the next 20 years. The list of these projects follows as Table V-1. Maps illustrating their locations are included as Maps V-1a and V-1b.
 - 7.1 Designate the Sunrise Corridor along a new alignment of Highway 212 in rural Clackamas County as a future, planned highway corridor.
 - 7.2 Pursuant to OAR 660, Division 12 that requires an exception to Statewide Planning Goal 3 (Agricultural Lands), Goal 11 (Public Facilities and

Services) and Goal 14 (Urbanization) for constructing new arterial roads on EFU lands, an exception has been taken to allow for the Arndt Road improvement listed as project numbers 265 and 266 on Table V-1. For findings of fact and statement of reasons, see File ZDO 194. (April 17, 2003)

7.3 Pursuant to OAR 660, Division 12 that requires an exception to Statewide Planning Goal 3 (Agricultural Lands), Goal 11 (Public Facilities and Services) and Goal 14 (Urbanization) for constructing new arterial roads on EFU lands, an exception has been taken to allow for the Arndt Road improvement listed as project numbers 266 and 267 on Table V-1. For findings of fact and statement of reasons, see File ZDO 195. (June 26, 2003)

8.0 Maintain a current and complete 5-year Capital Improvement Program. It shall contain needed future transportation projects in priority order, with estimated costs and assigned responsibility for funding. It should be updated and adopted periodically by the Board of County Commissioners.

Functional Classifications and Roadway Standards

9.0 Designate and develop roadways according to the functional classifications and guidelines listed in Tables V-2 and V-3 while allowing flexibility to accommodate characteristics of terrain, scenic qualities, and existing development.

10.0 Designate freeways, arterials, collectors and connectors as shown on Maps V-2a and V-2b. Roadways that do not presently exist but are shown on these maps are shown in approximate locations.

11.0 Limit zone change approvals to those that will not require a roadway as planned in the Capital Improvement Plan to be redesigned or increased to a higher functional classification in order to maintain the minimum acceptable performance evaluation Level-of-Service standard. State transportation facilities shall be evaluated according to the Oregon Highway Plan. (3/14/02)

12.0 The County shall consider the Regional Street Design Type Guidelines, as shown on Table V-4, when designing new county roads or redesigning existing county roads prior to construction or reconstruction. Map V-3 shows which roads are designated by each Design Type.

13.0 Design arterials and collectors to allow safe and convenient passage of buses in urban areas and, where necessary, rural areas.

Access Standards

- 14.0 Plan and control access onto roads within the County, as shown on Table V-5, for urban areas and according to the American Association of State Highway and Transportation Officials (AASHTO) guidelines for rural areas, for both new and existing uses, and coordinate with the Oregon Department of Transportation for access control on state highways. Access standards need to be applied in a flexible manner that maintains reasonable access to property when access cannot be denied.
- 15.0 Support the implementation of state access management standards (OAR Chapter 734 Division 51, as amended, and the Oregon Highway Plan) on state highway facilities within the Interchange Management Areas.
- 16.0 Improve highway operations and safety by supporting construction of public roads that provide reasonable alternative access within Interchange Management Areas. When reasonable access is provided, support the elimination of direct access to state highway facilities

Improvements to Serve Development

- 17.0 Require right-of-way dedication, on-site improvements to the applicable roadway standard as shown on Tables V-2 and V-3, and off-site improvements for new developments and land divisions necessary to handle expected traffic loads and travel by alternative modes.
- 18.0 Require development to be served by adequate roadway facilities. (3/14/02)
- 19.0 Require implementation of a local street network for undeveloped sites illustrated on Map V-4. Existing streets shall be extended to provide a direct, connected street system.
- 20.0 Developers of new developments and land divisions that will require construction of new streets shall provide the County with a conceptual street plan map and street cross sections responding to the other requirements of this section, and full street connections at intervals of no more than 530 feet. Exceptions may be made when a full street connection is prevented by barriers such as topography, railroads, freeways, pre-existing development or environmental constraints such as streams and wetlands.

- 21.0 Before an exception is granted to the above requirement, it shall be determined if, at a minimum, an accessway for pedestrians, bicyclists or emergency vehicles may be constructed at intervals of 330 feet. Those accessways shall be constructed unless prevented by barriers or environmental constraints.
- 22.0 Assess anticipated off-site traffic impacts caused by new developments and land divisions. The developer or subdivider may be required to participate financially or otherwise in the provision of off-site improvements, dedications or other requirements. (3/14/02)
- 23.0 Where appropriate, develop and implement neighborhood traffic circulation plans intended to improve circulation while minimizing neighborhood disruption and environmental problems.
- 24.0 Encourage a relationship between land use and roadways which decreases average trip length.
- 25.0 Discourage through trips on local, connector and collector roadways.
- 26.0 Develop neighborhood traffic calming policies that will enable the County to address inappropriate travel patterns and speeds.
- 27.0 Allow flexible roadway 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.
- 28.0 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 streets and are not maintained by the County, and don't necessarily provide connectivity.
- 29.0 Require that changes to the Comprehensive Plan land use designations within the Interchange Management Areas identified on Map V-12 must be consistent with Oregon 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, the change either shall be denied, or improvements shall be made such that the mobility standards are met.

Operating Standards

- 30.0 Evaluate capacity needs for regional roadways within Metro's boundaries using the Regional Motor Vehicle Performance Measures. The use of these measures is limited to network analysis, and priorities for funding through Metro; they are not for designing individual road improvements.
- 31.0 All arterials and collectors not in Regional Centers shall be evaluated for performance to Level-of-Service "D" as the acceptable operating standard, except as established below. All capital construction shall be designed to achieve Level-of-Service "D" or better. (4/28/05)
- a. Review of high-employment developments shall use a performance evaluation operating standard of Level-of-Service "E". (4/28/05)
 - b. Review of developments proposed on property with a Comprehensive Plan designation of Campus Industrial, Business Park, Light Industrial, General Industrial or Rural Industrial shall use a performance evaluation operating standard of Level-of-Service "E", except within the Clackamas Industrial Area and Government Camp Village where no performance evaluation operating standard shall apply. (1/25/07)
- 32.0 For state facilities within an Interchange Management Area as identified on Map V-12, implement a mobility standard for the peak two hours of 0.99 v/c at the intersection and of 0.85 v/c at the ramp ends.
- 33.0 Limit zone change approvals to those that will not reduce the Level of Service of a roadway as planned in the Capital Improvement Plan below the minimum acceptable performance evaluation Level-of-Service standard. State facilities shall be evaluated according to the Oregon Highway Plan. (3/14/02)

Building Roads

- 34.0 County road capital improvement projects outside UGBs may be designed and constructed to improve safety and bring the roads up to County standards. When projects are located within current rights-of-way, no conflicts with Goals 3 or 4 are anticipated. If the design of a project requires expansion of right-of-way into lands planned for Forest or Agricultural use, a goal exception may be necessary.
- 35.0 Road projects located outside UGBs shall be planned to support the existing

development pattern and through traffic needs, and are not planned to support or promote urbanization. Such projects will comply with Goal 11 (Transportation) to provide a safe and efficient transportation system meeting the needs of the rural area.

- 36.0 Streets and roads are an allowed use in all zoning districts. All state and County policies relating to roads shall be considered when widening or constructing new roads.
- 37.0 Consider all types of interchange designs when developing a freeway interchange project to maximize traffic flow, safety and efficiency.
- 38.0 Consider all transportation modes when building new roads or widening existing roads to maximize efficiency and safety for all users of the road.

Scenic Roads

- 39.0 Implement a County Scenic Road System.
 - 39.1 The Scenic Road designation is intended to protect recreation values, scenic features, and an open, uncluttered character along the roadway. Developments adjacent to scenic roads shall be designed with sensitivity to natural conditions. The following policies are intended to accomplish these ends:
 - a. Scenic roads shall have strict access control on new developments.
 - b. Scenic roads should have shoulders wide enough for pedestrians or bicycles.
 - c. Turnouts should 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 should 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 should be separated from the right-of-way by a landscaped buffer.
- g. Frontage roads, if any, adjacent to scenic roads should be separated by a vegetative buffer.
- h. Encourage underground placement of utilities.

39.2 The following shall be designated scenic roads: (See Map V-5).

- I-205 west of the Willamette River
- Stafford Road from Lake Oswego to Mountain Road
- Mountain Road, Canby Ferry, Locust, 37th, and Holly Street
- Schaeffer Road
- Pete's Mountain Road from Schaeffer Road to Tualatin River
- Oregon City Bypass-Newell Creek Canyon segment
- Highway 99E from Oregon City to New Era Road
- Canby-Marquam Highway from Canby to Highway 211
- Highway 211 from Canby-Marquam Highway to Estacada
- Highway 224 from Carver to Barton and from Estacada south
- Redland Road
- Clackamas River Drive
- Fischers Mill Road
- Springwater Road from Clackamas River Drive to Hayden Road
- Hayden Road
- Highway 26 east of Sandy
- Highway 35
- Old Highway 35/FS 386
- Timberline Road and West Leg Road
- Marmot/Barlow Trail Road
- Lolo Pass Road
- Salmon River Road
- Still Creek Road

- Wilsonville Road

39.3 Designate that portion of the Mt. Hood Loop in Clackamas County (Dodge Park Road, Lusted Road, Ten Eyck Road, US 26, and OR 35) as an official Oregon Scenic Byway.

TRANSPORTATION DEMAND MANAGEMENT

Strategies to achieve efficiency in the transportation system by reducing demand are collectively known as Transportation Demand Management (TDM) techniques. TDM measures can be effective tools in reducing Vehicle Miles Traveled (VMT). Implementation of TDM measures will help meet the County's Transportation Planning Rule requirement for reduction in VMT per capita over the next 20 years. In the long run these strategies can help keep costs down for new transportation facilities and improve air quality.

GOALS

- Reduce single occupant vehicle trips on the roadway network during peak travel demand periods.
- Reduce Vehicle Miles Traveled per Capita by 10% by year 2020 (using year 2000 as a base year).
- Work with businesses in Clackamas County to support their efforts in reducing single occupant vehicle commuting, which in turn will reduce Vehicle Miles Traveled per Capita.

POLICIES

- 1.0 Work with Metro and the state to explore Congestion Pricing (Value Pricing) on appropriate transportation facilities to encourage reductions in VMT.
- 2.0 Encourage employers in Clackamas County to implement a range of TDM policies to help their employees reduce VMT. Examples are, subsidized bus passes, company owned vanpools, preferred parking for carpools and vanpools, bicycle racks, and flexible work schedules.
- 3.0 Coordinate with DEQ and Tri-Met to implement TDM programs and the

Employer Commute Options (ECO) rule.

- 4.0 Provide adequate bicycle and pedestrian facilities to employment areas of Clackamas County to encourage use of alternative modes for the commute to work.
- 5.0 Work with Clackamas County employers located in concentrated employment areas to develop Transportation Management Associations (TMAs) to coordinate and support private sector TDM efforts.
- 6.0 Establish the following Year 2040 Non Single Occupancy Vehicle (SOV) modal split targets for Regional 2040 Design Types:

2040 Design Type	Non-SOV Modal Target
Regional Centers	45%
Town Centers	45%
Main Streets	45%
Station Communities	45%
Corridors	45%
Industrial Areas	40%
Intermodal Facilities	40%
Employment Areas	40%
Inner Neighborhoods	40%
Outer Neighborhoods	40%

PARKING

The setting of parking standards is a Transportation System Management (TSM) technique that is consistent with the Region 2040 Growth Concept, meets the objectives of the Transportation Planning Rule (TPR), and complies with DEQ's Air Quality Maintenance Plan.

GOAL

- Insure that parking is provided in a manner convenient to users of all transportation modes.

POLICIES

- 1.0 Set minimum and maximum limits on allowed off-street parking relative to building size, location and use, and adjacent land uses.
- 2.0 Encourage off-street parking in commercial, industrial, and high density residential areas to be at the sides or rear of buildings where practical, with buildings oriented to the street in a manner that is convenient to pedestrians and aesthetically pleasing to passers-by, but does not interfere with sight distance on the roadway, or preclude road widening.
- 3.0 Existing curbside parking along arterials and collectors may be removed to allow the striping of bike lanes, construction of travel or turning lane improvements or for increasing sight distance.
- 4.0 Allow developments along transit routes to decrease their parking area requirements if they provide pedestrian and transit amenities.
- 5.0 Allow commercial and industrial developments to decrease their parking area requirements if they provide and maintain ridesharing programs.
- 6.0 Allow shared parking where feasible, such as within mixed use development and where adjacent land uses are compatible. Such sharing of parking can be used to help satisfy compliance with parking standards.
- 7.0 Increase on-street parking in residential areas by minimizing the width of driveway curb cuts.

- 8.0 On-street parking may be prohibited in front of schools as needed to assure student safety and school security, and shall be reviewed on a school by school basis.

TRANSIT

Transit service is essential for the mobility of many County residents, and provides an attractive option for others who prefer to use it. Tri Met, transit districts in Wilsonville, Molalla and Sandy, and each of the school districts operate buses on County roads, State highways, and city streets within the County. While the County provides no transit service directly, it has some influence over the type of service provided and the way new developments interface with transit and provide amenities for transit riders.

GOALS

- Develop an integrated transit system that complements and supports the road, pedestrian, and bicycle system and encourages the use of alternative transportation modes within, to, and from the County's urban areas.
- Encourage transit ridership through development of a transit system that is fast and comfortable at low cost.
- Encourage land use patterns, development designs and street and pedestrian/bikeway improvements that support transit.
- Provide transit for people who cannot use or do not have adequate private transportation. Provide transit that is accessible to people with disabilities.
- Develop a transit system that supports residential, commercial and industrial development to help reduce new investment in roadway capacity.
- Develop a transit system that meets the County's local needs.
- Develop a system of light rail transit (LRT) routes to serve selected corridors in the north urban area of the County.

POLICIES

- 1.0 Work with transit agencies to identify existing transit deficiencies in the County, needed improvements, and park and ride lots to increase the accessibility of transit services.
- 2.0 Major developments or road construction projects along transit routes shall be required to include provisions for transit shelters, pedestrian access to transit and/or bus turnouts where appropriate.
- 3.0 Coordinate with transit providers to achieve the goal of transit service within 1/4 mile of most residences and businesses within the Portland Metropolitan UGB. More frequent service should be provided within Regional Centers and Corridors.
- 4.0 Emphasize corridor or roadway improvements to increase transit speed, convenience and comfort.
- 5.0 Coordinate and cooperate with Tri-Met and other transit agencies to provide transportation to the elderly and people with disabilities.
- 6.0 Promote park and ride lots, bus shelters and pedestrian/bikeway connections to transit.
- 7.0 Emphasize transit improvements that best meet the needs of the County, including more east-west connections and service between the County's industrial and commercial areas and medium to high density neighborhood areas.
- 8.0 Protect neighborhoods, recreation areas and pedestrian/bikeways from transportation related environmental degradation.
- 9.0 Require pedestrian and transit-supportive features and amenities and direct access to transit through the Development Review Process. Such 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. Parking should be at the rear or sides of buildings. Buildings measuring more than 100 feet along the side facing the major pedestrian/transit access should have more than one pedestrian entrance.

- 10.0 Coordinate with Tri-Met on all new residential, commercial or industrial developments to ensure appropriate integration of transit into the developments.
- 11.0 Bus routes will be improved and coordinated with financing and implementation of necessary roadway improvements and in cooperation with transit service providers.
- 12.0 Encourage Tri-Met to restructure transit service to efficiently serve local as well as regional needs.
- 13.0 Work with federal, state, and regional agencies to implement high capacity transit in the downtown Portland to Milwaukie (McLoughlin) Corridor, and the Highway 224 Corridor to Clackamas Town Center.
- 14.0 Provide high capacity transit to the Oregon City and Tualatin areas, and in the I-205 corridor including the Gateway Transit Center. The purpose is to relieve traffic congestion, provide for transportation alternatives to the automobile, and to promote the economy of the Oregon City and Tualatin areas and the I-205 Corridor.

Standards and Criteria for Major Transit Streets and Major Transit Stops

- 15.0 Major Transit Streets, for the purpose of setting standards for orientation of development to transit, shall be those streets planned for High Capacity Transit and Primary Bus as shown on Map V-6, as well as any other street that receives 20 minute or better service at the PM traffic peak.
- 16.0 Major Transit Stops shall be any transit stop along a Major Transit Street where that stop is within 250 feet of the centerline of an intersection with a public or private street. Orientation of buildings to transit at Major Transit Stops shall be accomplished by siting new commercial buildings 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 property lines.
- 17.0 Pedestrian access should be provided connecting 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.

PEDESTRIAN AND BICYCLE FACILITIES

The county completed its transportation systems planning for pedestrian and bicycle modes in 1995, to implement the state's Transportation Planning Rule (TPR). The TPR is grounded by the principles that: (3/17/04)

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. (3/17/04)
5. "Well-planned", properly designed facilities will encourage people to make trips by non-motorized modes. (3/17/04)
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. (3/17/04)

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 as supporting documents. Both master plans were prepared under the guidance of the Clackamas County Pedestrian and Bikeway Advisory Committee, which was guided by the following vision: (3/17/04)

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.

POLICIES

The first five policies below speak to how the envisioned system should be designed. The results of the system design work based on those policies are shown on the Planned Bikeway Network Map V-7a, Planned Bikeway Network Map V-7b, and Essential

Pedestrian Network Map V-8. Those pedestrian and bicycle facilities shall be constructed in the course of development, as well as added to existing communities as the Capital Improvement Program allows. Responsibility for construction falls on both the private and public sectors. These facilities shall be constructed to specified standards. Ongoing, unfinished, and project-level planning for pedestrian and bicycle facilities will continue. It will be coordinated with other jurisdictions and integrated with other transportation modes. (3/17/04)

- 1.0 Provide networked systems of walkways and bikeways connecting neighborhoods, transit stops, commercial areas, community centers, schools, parks, libraries, employment places, other major destinations, regional bikeways and walkways, and other transportation modes.
- 2.0 Identify walkway and bikeway improvements necessary to ensure direct and continuous networks of walkways and bikeways on the county road system. (3/17/04)
- 3.0 Support acquisition and development of multi-use paths on abandoned public and private rights-of-way.
- 4.0 Encourage bicycle and pedestrian access across rivers and other natural barriers.
- 5.0 Promote grid-street development patterns to provide direct routes from neighborhoods to destinations frequented by pedestrians and bicyclists.
- 6.0 Construct all walkways, bikeways, and trails as designated on maps V-7a, V-7b, and V-8. (3/17/04)
- 7.0 Construct all walkways designated in this Plan and any other walkways proposed, according to the current county design standards, the American Association of State Highway and Transportation Officials (AASHTO) standards, and the Americans with Disabilities Act (ADA) standards. (3/17/04)
- 8.0 Construct all bikeways designated in this Plan and any other bikeways proposed, according to the current standards in the Oregon Bicycle and Pedestrian Plan and the American Association of State Highway and Transportation Officials (AASHTO) standards. (3/17/04)
- 9.0 The implementation of bikeways and sidewalks shall be considered in all new collector or arterial construction or reconstruction, even if not designated on Maps V-7a, V-7b, and V-8. (3/17/04)

- 10.0 Require that new development include construction of pedestrian and bikeway connections within the development and between adjacent developments for the purpose of increasing non-motorized mobility. (3/17/04)
- 11.0 Coordinate with pedestrian, bicycle, and trail master plans of the Oregon Department of Transportation, the United States Forest Service, Metro, parks districts, and city parks departments to achieve a safe and convenient off-road trail system connecting to the on-road pedway and bikeway network. (3/17/04)
- 12.0 Coordinate the implementation of pedways and bikeways with neighboring jurisdictions and jurisdictions within the county. (3/17/04)
- 13.0 Support the continuation of the "Bikes on Transit" program on all public transit routes.
- 14.0 Require new development to provide bicycle parking, and initiate a program for adding bicycle parking in areas frequented by bicyclists.
- 15.0 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. (3/17/04)
- 16.0 Support continuation of current (or equivalent) federal, state, and local funding mechanisms to construct county pedestrian and bicycle facilities. (3/17/04)
- 17.0 Develop dedicated funding sources to implement the Clackamas County Pedestrian and Bicycle Master Plans. (3/17/04)
- 18.0 Develop routine maintenance standards and practices for pedestrian facilities and on-road and off-road bikeways, including traffic control devices. (3/17/04)
- 19.0 Inform the public of their responsibilities for sidewalk and bikeway maintenance. (3/17/04)
- 20.0 Ensure an opportunity for representative citizen involvement in the county pedestrian and bicycle planning process by sponsoring the Clackamas County Pedestrian and Bikeway Advisory Committee as a forum for public input. (3/17/04)

- 21.0 Encourage the provision of street lighting for the purpose of increasing the visibility and personal security of pedestrians and bicyclists. (3/17/04)
- 22.0 Monitor and update the Clackamas County Pedestrian and Bicycle Master Plans through data collection, evaluation, and review activities necessary to maintain and expand the programs established in these plans. (3/17/04)
- 23.0 Construct separate multi-use paths in rural areas according to American Association of State Highway and Transportation Officials (AASHTO) standards where travel lanes or wide paved shoulders along roadways may be unacceptable to pedestrians or bicyclists. (3/17/04)
- 24.0 In Unincorporated Communities, construct walkways adjacent to or within areas of development, such as schools, businesses, or employment centers near or along highways. (4/13/06)

FREIGHT, RAIL, AIR, PIPELINES AND WATER TRANSPORTATION

These modes are acknowledged as making significant contributions to the movement of people and goods that improve our quality of life. Clackamas County has a strong job base in the sectors of transportation and wholesale trade. It is important to maintain the advantages of location and transportation infrastructure that ensure leadership in these sectors.

If the County's role in freight movement is to expand within the region and nation, intermodal facilities will require expansion. National and international markets will become increasingly prominent, but the decision to keep business in the County competitive will require local support.

GOALS

- Provide efficient, cost-effective and safe movement of freight in and through the County.
- Maintain and enhance the County's competitive advantage in freight distribution through the efficient use of a flexible, continuous, multi-modal transportation network that offers competitive choices for freight movement.
- Protect and enhance public and private investments in the freight network.
- Encourage better service and inter-modal connections for passenger rail and air travel.
- Continue to use and diversify the rail system in Clackamas County through development of supportive land use, coordination between rail and other transportation modes, and encouragement of passenger rail service.
- Protect residents from safety hazards and environmental degradation caused by rail.
- Locate new airports so as to maximize safety, minimize environmental degradation, and integrate airport location with other transportation networks.
- Minimize conflicts between airports and other uses.

- Encourage freight shipment on the Willamette River while minimizing environmental degradation.

POLICIES

Freight Trucking

- 1.0 Maintain a truck circulation plan, as shown on Map V-10, for movements of freight on arterial roads where minimum impact will occur to neighborhoods, and industrial areas will have the service they need.

Rail

- 2.0 Reduce the number of at-grade crossings from those that currently exist.
- 3.0 On new or reconstructed arterials or urban collectors, prohibit at-grade crossings of heavy rail lines without traffic restrictive safety devices unless train traffic is very low.
- 4.0 Encourage use of the rail system for freight and passenger high speed rail service. Encourage additional stations for heavy rail service.
- 5.0 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.

Airports

- 6.0 Work with the Port of Portland to make the Port's facilities for passenger and freight service more accessible to County residents.
- 7.0 Work with the Port of Portland in the development of the Mulino Airport.
- 8.0 Coordinate with Marion County to implement regulations on development near the Aurora Airport.

- 9.0 Apply the following criteria when reviewing applications for new airports or expansions of existing ones.
- 9.1 Locate new public use airports within one mile of an arterial roadway. (11/01/01)
 - 9.2 Locate new public use airports at least one mile away from urban residential areas. (11/01/01)
 - 9.3 Prevent air pollution and noise generated by airports from exceeding standards of appropriate regulatory agencies.
 - 9.4 Cooperate with regulatory agencies to minimize conflicts between airports and other uses.
 - 9.5 Develop appropriate height and clear zone standards for airport facilities.
 - 9.6 Encourage establishment of heliports in industrial areas in conjunction with state and federal standards for heliport design and location.
 - 9.7 New airports, airport expansions, or expansions of airport boundaries, except those limited to use by ultralights and helicopters, shall have a runway at least 1800 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 they are 50 feet above the terrain. The runway shall be located so as to achieve at least a 20 foot clearance of the approach surface over a county, city or public road. (11/1/01)
- 10.0 The County will adopt ordinance provisions to implement regulations consistent with applicable statutes and administrative rules. (11/1/01)
- 11.0 Recognize airports in Clackamas County, classified as shown on Map V-11

Pipelines

- 12.0 Work with pipeline companies to provide safe, quiet, efficient transport of bulk

commodities.

Water Transportation

- 13.0 Maintain land transportation access to docks, boat ramps and shippers using waterways for transportation.
- 14.0 Support efforts to minimize negative impacts on water quality caused by river transportation.

TABLES & MAPS

Table V-1	20 Year Capital Improvement Needs
Table V-2	Roadway Classifications and Guidelines
Table V-3	Roadway Classifications and Guidelines (Continued)
Table V-4	Regional Street Design Types
Table V-5	Access Requirements by Functional Classification, Urban Areas Only
Map V-1a	Transportation System Plan – 20 Year Projects - Urban
Map V-1b	Transportation System Plan – 20 Year Projects - Rural
Map V-2a	Functional Classification - Urban
Map V-2b	Functional Classification - Rural
Map V-3	Regional Street Design Types
Map V-4	Undeveloped Sites Larger Than 5 Acres
Map V-5	Scenic Roads
Map V-6	Urban Area Transit Routes & Designated Transit Centers
Map V-6b	Rural Area Transit Routes & Designated Transit Centers
Map V-7a	Planned Bikeway Network, Urban

Map V-7b Planned Bikeway Network, Rural

Map V-8 Essential Pedestrian Network

Map V-9 North Clackamas Neighborhood Trails

Map V-10 Urban Area Freight Routes

Map V-11 Airports

Map V-12 Interchange Management Areas

It is the County assessment that the following Comprehensive Plan provisions in Chapter 11- CITY, SPECIAL DISTRICT AND AGENCY COORDINATION, Policy 1 is adequate to cover the required coordination and notice of proposed land use changes in the Interchange Management Areas, as shown by Map V-12

Chapter 11 - THE PLANNING PROCESS (4/13/06)

The purpose of Clackamas County's comprehensive planning process is to establish a framework for land use decisions that will meet the needs of Clackamas County residents, recognize the County's interrelationships with its cities, surrounding counties, the region, and the state, and insure that changing priorities and circumstances can be met. Coordination with other governmental agencies and refinement of this Plan and County ordinances is essential to achieve this end.

CITY, SPECIAL DISTRICT AND AGENCY COORDINATION

Clackamas County recognizes that many activities and problems spill across political boundaries, making coordination with special districts, cities, and state and federal agencies essential.

GOALS

- Provide a coordinated approach to problems which transcend local government and special purpose district boundaries or responsibilities.
- Coordinate various agency capital improvement programs with the County's Comprehensive Plan.
- Direct the activities of the various agencies toward implementation of the County's Comprehensive Plan.
- Establish specific areas adjacent to incorporated city boundaries within which the County will coordinate land use actions with the individual city, and within which formal plan agreement will be sought.

POLICIES

- 1.0 Participate in interagency coordination efforts with federal, state, Metro, special purpose districts and cities. The County will maintain an updated list of federal, state and regional agencies, cities and special districts and will invite their participation in plan revisions, ordinance adoptions, and land use actions which affect their jurisdiction or policies.
- 2.0 Request state and regional governments, cities and special districts to inform the County of needs which should be addressed in the County's planning program.
- 3.0 Encourage and assist Metro in developing and updating its regional database.
- 4.0 Actively participate with Metro in identifying regional needs and priorities and implementing functional plans.

Clackamas County Zoning and Development Ordinance (ZDO)

No amendments to the County ZDO are anticipated at this point in time. It is the County assessment that the following ZDO provisions are adequate to cover the use of Oregon Highway Plan mobility standards on State Highway facilities.

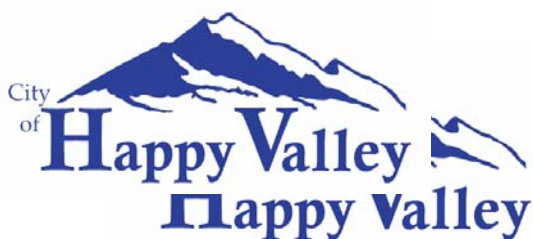
ZDO Section 1022 - Concurrency

1022.07 TRANSPORTATION FACILITIES ...

- B. As used in Subsection 1022.07(A), “adequate” means a minimum of Level-of-Service (LOS) D, except: (1/20/05) ...
 - 6. The performance standards identified in the latest edition of the Oregon Highway Plan shall apply to facilities under the jurisdiction of the State of Oregon, with the exception of those facilities identified in Subsections 1022.07(B)(1) and (2). (1/20/05)

Happy Valley Transportation System Plan Amendments

The Happy Valley Transportation System Plan shall be amended to bring it into compliance with the IAMP by inserting the following draft language.



MEMORANDUM

DATE: February 6, 2009

TO: Larry Conrad, Senior Transportation Planner

FROM: Michael D. Walter, Planning Director

SUBJECT: Sunrise Corridor IAMP

The City of Happy Valley anticipates integrating necessary Transportation System Plan (TSP) amendments, Comprehensive Plan Text Amendments and any necessary Development Code Text Amendments in order to accommodate the planned Interchange Management Area Plan (IAMP) associated with the Sunrise Corridor Plan beginning with a Planning Commission public hearing in June 2009 and followed by a City Council hearing in July 2009.

Proposed Amendment are shown in blue text and new sections are highlighted in yellow.

1. Summary

The current Happy Valley Transportation System Plan (TSP) was adopted February 21, 2006. Since that time, the City has experienced significant growth in both population and area. This growth area is primarily located on the east and south portions of the City. The primary purpose of this update is to address these changes, with a focus on:

- Ensuring that the transportation system plans in East Happy Valley can adequately serve planned citywide growth and nearby major growth areas, including Pleasant Valley, Springwater and Damascus.
- Confirming consistency with the latest Regional Transportation Plan and Statewide Planning Policies.

This plan update is aimed at fulfilling Transportation Planning Rule (TPR) requirements for comprehensive transportation planning in the cities of Oregon, and presents the investments and priorities for the Pedestrian, Bicycle, Transit, and Motor Vehicle systems along with new transportation programs to correct existing shortfalls and enhance critical services. For each travel mode, a Master Plan project map and list are identified to support the City's transportation goals and policies. Projects that are reasonably expected to be funded over the next 20 years were identified and are referred to as Action Plans.

The TSP update provides specific information regarding transportation needs to guide future transportation investment in the City and determine how land use and transportation decisions can be brought together beneficially for the City and is based on needs required to meet transportation demand based on 2025 future needs.

Plan Committees

The plan was developed in close coordination with Happy Valley city staff, citizen representatives and key representatives from the surrounding communities. Two formal committees were formed to guide in the plan development:

Technical Advisory Committee – Agency staff from Metro, the Oregon Department of Transportation, TriMet and Clackamas County participated in reviewing the technical methods and findings of the study. Four meetings were held throughout the planning process. The focus of this group was on consistency with the plans and past decisions in adjoining jurisdictions, and consensus on new recommendations for the transportation system.

Citizen Advisory Committee – Happy Valley citizen volunteers served as the representatives for the community. Five meetings were held throughout the planning process to review interim study findings and policy issues that benefited from their direction.

The committees met regularly through the plan development process to update the goals and policies, review interim work products, assist in developing and ranking transportation

solutions, and to refine master plan elements to ensure consistency with community goals.

- The Happy Valley Transportation System Plan process included the following steps:
- Inventory/Data Collection to a year 2006 baseline
- Update Goals and Policies
- Evaluate Existing Conditions and Future Travel Needs Through Forecasting
- Update Needs by Mode and Consider Alternatives
- Refine Improvement Lists to Mitigate Deficiencies by Mode For 2025 Conditions
- Determine Planning and Cost Estimates of Improvements
- Identify Financing Sources
- Produce a draft Transportation System Plan

Plan Organization

This document is divided into ten chapters and a separate Technical Appendix. The title and focus of each chapter is summarized below:

Chapter 1: Summary – This chapter provides a brief overview of the plan recommendations and presents the estimated funding needed to implement it.

Chapter 2: Goals and Policies – This chapter presents the recommended goals and policies applied to develop implementing measures for each of the travel modes.

Chapter 3: Existing Conditions – This chapter examines the current transportation system in terms of the built facilities, how well they perform and comply with existing policies, and where current deficiencies exist.

Chapter 4: Future Needs and Improvements – This chapter presents the details of how the City of Happy Valley is expected to grow over the next 20 years, and how travel demands on the city and regional facilities will change from general growth in the Metro and nearby areas.

Chapter 5: Pedestrian Plan – This chapter presents plan recommendations to enhance pedestrian facilities and focus new improvements in areas with the highest concentration of activity.

Chapter 6: Bicycle Plan – This chapter presents plan recommendations to enhance bicycle facilities and focus new improvements in areas with the highest concentration of activity.

Chapter 7: Transit Plan – This chapter makes recommendations to be considered by TriMet in their future enhancements to transit services.

Chapter 8: Motor Vehicle Plan – This chapter presents plan recommendations to provide adequate mobility and access to the city, county and state facilities as travel demands grow to 2025 levels. This chapter also recommends new street design standards, access spacing standards, functional class designations and other programs to monitor and manage travel demand.

Chapter 9: Other Modes Plan – This chapter discusses transportation issues related to rail, air and water transportation.

Chapter 10: Financing and Implementation – This chapter presents the complete estimated revenues and costs for the transportation projects and programs developed in the plan. New funding alternatives are presented to bridge the gaps between the two.

Goals and Policies

The goals and policies established in the 2006 TSP were adopted to guide transportation system development in Happy Valley. Goals are defined as brief guiding statements that describe a desired result. Policies associated with each of the individual goals describe the actions needed to move the community in the direction of completing each goal.

In addition to retaining and refining previously adopted goals and policies that are still applicable, new goals and policies have been incorporated into the TSP update to expand the vision for the City's transportation system and meet recent changes to state and regional transportation plan policies and regulations. The goals and policies of this TSP are not prioritized and are presented in Chapter 2. These goals and policies were applied in the development of this Transportation System Plan to develop implementing measures for each of the travel modes applied in the Happy Valley TSP study area.

Transportation Plans

The Happy Valley TSP update identifies projects and programs needed to support the City's goals and policies and to serve planned growth over the next 20 years. This document presents the recommended investments and priorities for the Pedestrian, Bicycle, Transit, and Motor Vehicle systems along with new transportation programs to enhance critical transportation services. For each travel mode, a Master Plan project map and list are identified to support the city's transportation goals and policies. Projects that are reasonably expected to be funded over the next 20 years were identified and are referred to as Action Plans. The following sections summarize the plan for each mode.

Pedestrian Plan

The existing pedestrian system in Happy Valley has significant needs. Sidewalks are provided in many newer residential neighborhoods, but are limited on arterials and collectors in older areas creating poor pedestrian connectivity throughout the city. Gaps within the sidewalk and trail system discourage pedestrian travel and put pedestrians at an increased safety risk by requiring them to share the roadway with vehicles in certain locations.

Based on these needs, a Pedestrian Master Plan was developed and is shown in Figure 5-1. The updated Pedestrian Master Plan costs are estimated to be \$17.1 million. The Pedestrian Master Plan will require incremental implementation. As development occurs, streets are rebuilt and other project funding opportunities (such as grant programs) arise, projects on the Master Plan will be integrated into project development.

The pedestrian goals and input from the CAC and TAC were reviewed to create a Pedestrian Action Plan, which are projects that are reasonably expected to be funded by the year 2025. The highest ranking City projects that are reasonably expected to be funded were combined with projects from other agencies identified in the RTP Financially Constrained scenario to create the project list shown in Table 1-1.

Table 1-1: Pedestrian Action Plan Projects

Project	Improvement	Potential Funding Source	Estimated Schedule	Cost (\$1,000s)
172 nd Avenue North Sidewalks*	Construct sidewalks on both sides of the roadway from Sunnyside Road to Clatsop Street. Provide signalized pedestrian crossings at all traffic signals.	Joint SDC Fund	2021-2025	\$2,690
122 nd /129 th Avenue*	Construct sidewalks on both sides of the street from Sunnyside Road to King Road	Joint SDC Fund	2016-25	\$780
162 nd Avenue Sidewalks	Construct sidewalks on both sides of the roadway from Clatsop Street to Hwy 212.	Joint SDC Fund	-	\$2,810
Clatsop Street Sidewalks	Construct sidewalks on both sides of the roadway from 162 nd Ave to 172 nd Ave.	Joint SDC Fund	-	\$420
Ridgecrest Road Sidewalks	Construct sidewalks on the south side from 132 nd Ave to Plover Dr.	Happy Valley	2010-2020	\$220
132 nd Avenue Sidewalks	Construct sidewalks on the east side of the roadway from King Road to Ridgecrest Road.	Happy Valley	2010-2020	\$80
145 th Avenue Sidewalks	Construct sidewalks on the west side of the roadway from King Road to Purple Finch Loop.	Happy Valley	2010-2020	\$180
King Road Sidewalks	Construct sidewalks on the north side of the roadway from 132 nd Avenue to 175 feet west of Regina Court	Happy Valley	2010-2020	\$130
King Road Sidewalks	Construct sidewalks on the north side of the roadway Rolling Meadows Drive to 145 th Avenue	Happy Valley	2010-2020	\$50
Total Pedestrian Project Costs				\$7,360

* Project identified in the 2004 Federal Regional Transportation Plan Financially Constrained scenario.

Bicycle Plan

The existing bike lane system on arterial and collector streets in Happy Valley does not provide adequate connections from neighborhoods to schools, parks, retail centers, or transit stops. Continuity and connectivity are key issues for bicyclists and the lack of facilities (or gaps) cause significant problems for bicyclists. Without connectivity of the bicycle system, this mode of travel is severely limited.

A Bicycle Master Plan (Figure 6-1) was developed based on these identified needs. The updated Bicycle Master Plan costs are estimated to be \$30.7 million. The Bicycle Master Plan will require incremental implementation. As development occurs, streets are rebuilt and other project funding opportunities (such as grant programs) arise, projects on the Master Plan will be integrated into project development.

The bicycle goals and input from the CAC and TAC were reviewed to create a Bicycle Action Plan, which are projects that are reasonably expected to be funded by the year 2025. The highest ranking City projects that are reasonably expected to be funded were combined with projects from other agencies identified in the RTP Financially Constrained scenario to create the project list shown in Table 1-2.

Table 1-2: Bicycle Action Plan Projects

Project	Improvement	Potential Funding Source	Estimated Schedule	Cost (\$1,000s)
172 nd Avenue North Bike Lanes*	Construct bike lanes on both sides of the roadway from Sunnyside Road to Clatsop Street.	Joint SDC Fund	2021-2025	\$1,920
122 nd /129 th Avenue*	Construct bike lanes on both sides of the street from Sunnyside Road to King Road	Joint SDC Fund	2016-25	\$640
162 nd Avenue Bike Lanes	Construct bike lanes on both sides of the roadway from Monner Road to Clatsop Street and Sunnyside Road to Highway 212.	Joint SDC Fund	-	\$2,430
Clatsop Street Bike Lanes	Construct bike lanes on both sides of the roadway from 162 nd Avenue to 172 nd Avenue.	Joint SDC Fund	-	\$300
145 th /147 th Avenue Bike Lanes*	Construct bike lanes on both sides of the roadway from Clatsop Street to Monner Road.	Metro/Other	2010-2015	\$1,040
162 nd Avenue Bike Lanes*	Construct bike lanes on both sides of the roadway from Monner Road to Sunnyside Road.	Metro/Other	2016-2025	\$390
Total Bicycle Project Costs				\$6,720**

* Project identified in the 2004 Federal Regional Transportation Plan Financially Constrained scenario.

**These project costs are included in a motor vehicle action plan.

Transit Plan

TriMet is the regional transit provider for the Portland metro area and operates three bus routes within Happy Valley today, #155, #156, and #157 (see Figure 7-1). A need for improvements to the existing transit facilities was identified to support the future household and employment growth within the study area. Based on these needs, a Transit System Master Plan was created that is shown in Figure 7-2.

A Transit Action Plan was developed to identify projects that are reasonably expected to be funded by the year 2025. The projects that are reasonably expected to be funded were combined with projects from other agencies identified in the RTP Financially Constrained scenario to create the project list shown in Table 1-3.

Table 1-3: Transit Action Plan Projects

Project	Description	Cost (\$1,000s)
Bus Stop Enhancements	Coordinate with TriMet to provide transit stop amenities including bus shelters and street lighting at all transit stops.	-
RTP Designated Major Transit Stops	To meet RTP requirements, amend development code regulations to require new retail, office, and institutional buildings on sites at major transit stops to: <ul style="list-style-type: none"> ▪ Locate buildings within 20 feet of or provide a pedestrian plaza at the major transit stops. ▪ Provide reasonably direct pedestrian connections between the transit stop and building entrances on the site. ▪ Provide a transit passenger landing pad accessible to disabled persons (if not already existing to transit agency standards). ▪ Provide an easement or dedication for a passenger shelter and underground utility connection from the new development to the transit amenity if requested by the public transit provider. ▪ Provide lighting at a transit stop (if not already existing to transit agency standards). 	\$0
Transit Corridors	Direct growth to increase the density of development along transit routes in the study area in an effort to support regional transit service goals.	-
Transit Projects to be Funded by the City		\$0

- These projects are under the jurisdiction of, and/or will be funded by, TriMet.

Motor Vehicle Plan

The TSP Update forecasted 2025 growth to identify motor vehicle system needs in Happy Valley. Without a significant investment in Transportation System Management (TSM), Travel Demand Management (TDM), and roadway improvements, several key facilities in the City would operate with congested conditions in the future.

The following sections summarize the recommended motor vehicle system plans that meet the demands of future growth and comply with local and regional planning requirements.

Transportation System Management (TSM)

Transportation System Management (TSM) focuses on low cost strategies to enhance operational performance of the transportation system by seeking solutions to immediate transportation problems, finding ways to better manage transportation, maximizing urban mobility, and treating all modes of travel as a coordinated system. TSM measures focus primarily on region wide improvements, however there are a number of TSM measures that are recommended for use in Happy Valley, which include:

Intelligent Transportation Systems (ITS): ITS focuses on increasing the efficiency of existing transportation infrastructure, which enhances the overall system performance and reduces the need to add capacity (e.g. travel lanes). Efficiency is achieved by providing services and information to travelers so they can (and will) make better travel decisions and to transportation system operators so they can better manage the system and improve system reliability.

Clackamas County has prepared an ITS plan for the urbanized area of the County. The Clackamas County ITS Plan¹ has identified arterial signal control ITS projects on major streets throughout the county. Sunnyside Road and 122nd/129th Avenue within the TSP study area have been identified for planned fiber optic cable and closed-circuit cameras at several major intersections. In order to support future ITS projects including traffic signal operations, the City of Happy Valley and Clackamas County should require the installation of 3 inch conduit along arterial and selected collector roadways during roadway improvement projects. ITS projects can require additional fiber optic cable to serve the new equipment along a roadway. A 3 inch conduit would ensure adequate wiring capacity to accommodate future ITS projects.

Neighborhood Traffic Management (NTM): Happy Valley has neighborhood traffic management elements in place, such as speed humps, on streets within the study area. The city will consider additional traffic calming measures as appropriate and work with the community to find the traffic calming solution that best meets their needs and maintains roadway function. Table 8-1 lists common NTM applications and suggests which devices may be supported by the Happy Valley Fire Department. Neighborhood traffic management projects will include coordination with emergency agency staff to assure public safety.

Access Management: Access Management is a broad set of techniques that balance the need to provide efficient, safe and timely travel with the ability to allow access to individual properties. Proper implementation of access management techniques will guarantee reduced congestion, reduced accident rates, less need for roadway widening, conservation of energy, and reduced air pollution.

¹ Clackamas County ITS Plan, DKS Associates, Inc. and Zenn Associates, February 2003.

Access management is the control or limiting of vehicular access on arterial and collector facilities to maintain the capacity of the facilities and preserve their functional integrity. Access management strives to strike a balance between maintaining the integrity of the facility and providing access to adjacent parcels. Numerous driveways can erode the capacity of arterial and collector roadways. Preservation of capacity is particularly important on higher volume roadways for maintaining traffic flow and mobility. Whereas local and neighborhood streets function to provide access, collector and arterial streets serve greater traffic volume. Numerous driveways or street intersections increase the number of conflicts and potential for collisions and decrease mobility and traffic flow. Happy Valley, as with every city, needs a balance of streets that provide access with streets that serve mobility.

Several access management strategies were identified to improve local access and mobility in Happy Valley:

- Develop specific access management plans for major and minor arterial streets in Happy Valley to maximize the capacity of the existing facilities and protect their functional integrity.
- Work with land use development applications to consolidate driveways where feasible.
- Provide left turn lanes where warranted for access onto cross streets.
- Construct raised medians to provide for right-in/right-out driveways as appropriate.

New development and roadway projects located on City street facilities will meet the recommended access spacing standards summarized in Table 1-4. Access points include public streets, private streets, and private commercial or residential driveways. A variation to the access spacing standards may be granted in areas with limited property frontage and/or environmental constraints. Any variation to these spacing standards will require an access management plan to be approved by the City engineer. The maximum access spacing listed in this table is consistent with Metro².

Table 1-4: Access Spacing Standards for City Street Facilities

Street Facility	Maximum Access Spacing	Minimum Access Spacing with Full Access	Minimum Access Spacing with Limited Access*
Major Arterial	-	1,000 feet	500 feet
Minor Arterial	-	600 feet	300 feet
Collector	530 feet	400 feet	200 feet
Neighborhood	530 feet	-	-
Local	530 feet	-	-

Note: Intersection and driveway spacing measured from centerline to centerline.

* Limited Access – Vehicles are restricted to right-in/right-out turn movements. In some cases, left-in turn movements may be permitted based on City engineer approval.

² Metro Regional Transportation Plan, 2000.

Traffic Signal Spacing: Traffic signal spacing standards have been established as part of this Happy Valley TSP update. A minimum traffic signal spacing of 1,000-feet is required for major arterial, minor arterial and collector facilities. A variation to the traffic signal spacing standard may be granted in areas with limited property frontage and/or environmental constraints. Any variation to the traffic signal spacing standard will require the approval of the City engineer.

Local Street Connectivity: Much of the local street network in Happy Valley is built but is not well connected. Multiple access opportunities for entering or exiting neighborhoods are limited. There are a number of locations where neighborhood traffic is funneled onto one single street. This type of street network results in out-of-direction travel for motorists and an imbalance of traffic volumes that impacts residential frontage.

A Local Street Connectivity Plan is shown in Figure 8-2. In most cases, the connector alignments are not specific and are aimed at reducing potential neighborhood traffic impacts by better balancing traffic flows on neighborhood routes. To protect existing neighborhoods from potential traffic impacts of extending stub end streets, connector roadways will incorporate neighborhood traffic management into their design and construction. All stub streets will have signs indicating the potential for future connectivity.

Additionally, new development that constructs new streets, or street extensions, shall meet the following connectivity standards:

- Provide full street connections with spacing of no more than 530 feet between connections except where prevented by barriers.
- Provide bike and pedestrian access ways with spacing of no more than 330 feet except where prevented by barriers.
- Limit use of cul-de-sacs and other closed-end street systems to situations where barriers prevent full street connections
- Include no close-end street longer than 200 feet or having no more than 10 dwelling units.
- Include street cross-sections demonstrating dimensions of ROW improvements, with streets designed for posted or expected speed limits.

The arrows shown on Figure 8-2 indicate priority for local and neighborhood connections only. Topography and environmental conditions limit the level of connectivity in several areas of Happy Valley. Other stub end streets in the City's road network may become cul-de-sacs, extended cul-de-sacs or provide collector or arterial connections. Pedestrian connections from the end of any stub end street that results in a cul-de-sac shall be considered mandatory as future development occurs. The goal would continue to be improved city connectivity for all modes of transportation.

Functional Classification: The proposed functional classification was developed following detailed review of the existing Happy Valley TSP, Clackamas County TSP and the Rock Creek Plan functional classification. A proposed roadway system has been developed within the planned growth areas of the TSP study area. The proposed functional classification of these roadways is shown in Figure 8-3.

The following proposed Happy Valley TSP functional classifications are inconsistent with the Clackamas County TSP and/or the Rock Creek Plan.

- 172nd Avenue changed from a minor arterial (County TSP) to a major arterial

- Monner Road changed from a local street (County TSP) to a neighborhood street
- 162nd Avenue (north of Sunnyside Road) changed from a local street (County TSP) to a collector street
- 152nd Avenue (north of Sunnyside Road) changed from a collector (County TSP and Rock Creek Plan) to a minor arterial
- Valley View Terrace changed from neighborhood street (Happy Valley TSP) to a collector street

The following revisions are recommended to the current Happy Valley TSP:

- Hagen Road changed from a neighborhood street to a local street.

Roadway Cross-Section Standards: The City of Happy Valley has current standards for street cross sections that apply citywide to residential, neighborhood, collector and minor arterial roadways. The TSP update includes several revisions and additions to the street cross-section standards for the East Happy Valley area. Alternative collector and local cross-sections have been developed to allow for flexibility in design with an emphasis on streetscape elements. A hillside collector cross-section was developed for 162nd Avenue and the east-west collector along the base of Scouter Mountain with a 12 foot path on the downhill side of the roadway and a narrower width to reduce environmental impacts. A collector cross-section with on-street parking was developed for the newly planned area east of 162nd Avenue to provide a neighborhood streetscape. Collector and local cross-sections were developed for roadways along commercial and industrial zoned parcels to provide an appropriate streetscape. Cross-sections for private streets and alleyways have also been added. The recommended roadway cross-sections are shown in Figures 8-4 through 8-8. The proposed street system standards for each functional classification are summarized in Table 1-5.

Intersection Performance Standards: Policy 5a establishes minimum intersection operating standards to be maintained for the City of Happy Valley. The City shall utilize these standards to evaluate land use actions and proposed mitigations. All public facilities shall be designed to meet these standards.

- All signalized intersections shall operate at level of service D and V/C ratio of 0.90 or better during the peak hours of analysis. Individual movements must meet level of service E and a V/C ratio of 1.0.
- All roundabout intersections shall operate at level of service D or better during the peak hours of analysis. Each approach must meet level of service E and a V/C ratio of 0.85.
- All unsignalized two-way stop controlled intersections shall operate at level of service E or better (based on average approach delay) for all side street approaches during the peak hours of analysis.
- All unsignalized all-way stop controlled intersections shall operate at level of service D or better based on average intersection delay during the peak hours of analysis.

Table 1-5: Street System Standards

Functional Classification	Desirable Maximum Volume	Right-of-way	Paved Width	Number of Lanes	Sidewalks	Bike Lanes	Parking	Landscaping	Access Limitations*
Major Arterial	-	96 feet	74 feet	5	6 feet	6 feet	none	5 foot planting strip with street trees on both sides. 10 foot planting strip (within 14 foot median area) with street trees in median.	No direct access allowed for new dwelling units fronting roadway. Consolidation of access points must be considered.
Minor Arterial	-	68 feet	48 feet	3	5 feet	6 feet	none	5 foot planting strip with street trees on both sides. 8 foot planting strip (within 12 foot median area) with street trees in median.	No direct access allowed for new dwelling units fronting roadway. Consolidation of access points must be considered.
Collector	-	56 to 68 feet	36 to 48 feet	2 or 2 plus median/center turn lane	5 feet	6 feet	none	5 foot planting strip with street trees on both sides. 8 foot planting strip (within 12 foot median area) with street trees in median.	No direct access allowed for new dwelling units fronting roadway. Consolidation of access points must be considered.
Industrial Collector	-	72 feet	52 feet	2	5 feet next to curb	6 feet	both sides	5 foot planting strip with street trees on both sides behind sidewalk.	No direct access allowed for new dwelling units fronting roadway. Consolidation of access points must be considered.
Neighborhood	1,500 vpd	54 feet	34 feet	2	5 feet	none	both sides	5 foot planting strip with street trees on both sides next to curb.	No direct property access within 50 feet of adjacent intersection.
Commercial	-	62 feet	38 feet	2	12 feet	none	both sides	Street tree wells within the sidewalk area next to curb.	No direct property access within 50 feet of adjacent intersection.
Local	1,000 vpd	48 to 52 feet	28 to 32 feet	2	5 feet	none	one side or both sides	5 foot planting strip with street trees on both sides next to curb.	No direct property access within 25 feet of adjacent intersection.
Industrial	1,000 vpd	60 feet	40 feet	2	5 feet	none	both	5 foot planting strip with street trees on both sides	No direct property access within 25 feet of adjacent

Local					next to curb		sides	behind sidewalk.	intersection.
Cul-de-sac	150 vpd	48 feet	28 feet	2	5 feet	none	both sides	5 foot planting strip with street trees on both sides next to curb.	none
Loop Turn-Around	150 vpd	48 feet	28 feet	2 with one-way loop	5 feet	none	both sides, allowed on outside of loop	5 foot planting strip with street trees on both sides next to curb.	none
Hammerhead	-	48 feet	28 feet	2	5 feet	none	both sides	5 foot planting strip with street trees on both sides next to curb.	none

Note: VPD = vehicles per day

*Access spacing standards shown in Table 1-4 and 8-2.

Traffic calming measures are appropriate on neighborhood and local streets only.

Transportation Demand Management (TDM)

Transportation Demand Management (TDM) is the general term used to describe any action that removes single occupant vehicle trips from the roadway network during peak travel demand periods. Generally, TDM focuses on reducing vehicle miles traveled and promoting alternative modes of travel for large employers of an area.

The City of Happy Valley will coordinate with Clackamas County and TriMet to implement strategies to assure that the TDM assumptions in the RTP are implemented. The City of Happy Valley will coordinate with Clackamas County and TriMet to implement the pedestrian, bicycle, and transit system improvements, which offer alternative modes of travel. The recommended TDM action plan includes:

- Support continued efforts by TriMet, Metro, ODOT, and Clackamas County to develop productive TDM measures that reduce commuter vehicle miles and peak hour trips.
- Encourage the development of high speed communication in all part of the city (fiber optic, digital cable, DSL, etc). The objective is to provide employers and residents a full range of options for conducting business and activities (such as home office, telecommuting), which can contribute to a reduction in peak hour travel on the roadway system.
- Encourage developments that effectively mix land uses to reduce vehicle trip generation. Development proposals will consider linkages (particularly non-auto) to support greater use of alternative travel modes.
- Increase industrial, commercial and institutional land uses within Happy Valley to provide additional employment opportunities and reduce the average commute length.
- Continued implementation of motor vehicle minimum and maximum parking ratios for new development.
- Continued implementation of street connectivity requirements.
- Require new development to install bicycle racks.
- Implementation of bicycle, pedestrian, transit and motor vehicle system action plans.

Sunrise Rock Creek Interchange Management Area

The Sunrise Rock Creek Interchange Area Management Plan (IAMP) is one of three IAMPs that have been prepared for new highway interchanges on the Sunrise Expressway. The purpose of an IAMP is to protect the function of the interchange over time, to ensure safe and efficient operations between connecting roadways, and to minimize the need for future major interchange improvements. The IAMP for the Sunrise Rock Creek Management Area provides ODOT mobility and access spacing standards, and an access management plan with existing and future access points.

The City of Happy Valley will coordinate with Clackamas County and ODOT to support the implementation of the Sunrise Rock Creek Interchange Area Management Plan. This effort will include the following actions.

- Proposed land use designation changes in the Rock Creek IAMP management area will evaluate the potential for impacts to the mobility of the Rock Creek

interchange and identify the need for transportation system improves to assure that mobility standards are not exceeded at the end of the planning period.

- Proposed development within the Rock Creek IAMP management area will comply with the identified access management plan to maintain safe operations of the Rock Creek Interchange. This may include property access consolidation, restriction or closure.
- Proposed future actions that would amend the local jurisdictional boundaries in the vicinity of the Rock Creek interchange will be monitored.

Roadway Improvements

The extent and nature of the recommended street improvements for Happy Valley are significant. The forecasted 2025 land use indicates significant growth in both housing and employment within the TSP study area. The portion of Happy Valley bounded loosely by Clatsop Street to the north, 145th Avenue and 162nd Avenue to the east, Highway 212 to the south and the west City limits is expected to experience moderate growth in the next 20 years. The major growth areas are the Rock Creek Area bounded by Sunnyside Road, Highway 212, 162nd Avenue and 172nd Avenue, the Scouter Mountain Area bounded by 145th Avenue, 172nd Avenue, Clatsop Street, Monner Road and Hagen Road and the 172nd Avenue corridor from Highway 212 to Foster Road.

There are a number of locations in Happy Valley where, due to the lack of alternative routes, there is an imbalance of traffic volumes that load onto one street. A well connected transportation system limits out of direction travel for motorists, bicycles and pedestrians and reduces vehicle miles traveled within the study area. Several roadway extension projects are needed to improve citywide connectivity for all modes of travel.

The 2025 Priority analysis found that significant improvements would be required at the majority of the study intersections to accommodate the forecasted growth. These improvements include traffic signal control, additional turn lanes, roadway widening, revised traffic signal phasing and traffic signal coordination. Based on these needs, a Motor Vehicle Master Plan was created that is shown in [Figure 8-11](#). The updated Motor Vehicle Master Plan costs are estimated to be \$172 million. The Motor Vehicle Master Plan will require incremental implementation. As development occurs, streets are rebuilt and other project funding opportunities (such as grant programs) arise, projects on the Master Plan will be integrated into project development.

The motor vehicle goals and input from the CAC and TAC were reviewed to create a Motor Vehicle Action Plan, which are projects that are reasonably expected to be funded by the year 2025. The highest ranking City projects that are reasonably expected to be funded were combined with projects from other agencies identified in the RTP Financially Constrained scenario to create the project list shown in Table 1-6. The construction of new collector and arterial facilities would only occur to support future development or redevelopment and would not be initiated by the City.

Table 1-6: Motor Vehicle Action Plan Projects

Project	Improvement	Potential Funding Source	Estimated Schedule	Cost (\$1,000s)
172 nd Avenue Widening North	Widen to 5-lane major arterial between Sunnyside Road and Clatsop Street.	Joint SDC Fund	2021-2025	\$21,300
122 nd /129 th Avenue Widening	Widen to 3-lane collector between Sunnyside Road and King Road and smooth curves.	Joint SDC Fund	2016-2025	\$4,800
162 nd Avenue Widening	Widen to 3-lane collector from Hagen Road to Palermo Avenue.	Joint SDC Fund	-	\$3,900
162 nd Avenue Extension South**	Construct a new 3-lane collector south of the Taralon development to Highway 212.	Joint SDC Fund	-	\$8,800
162 nd Avenue Extension North**	Construct a new 2/3-lane collector between Hagen Road and Clatsop Street.	Joint SDC Fund	-	\$14,600
Clatsop Street Extension East**	Construct a new 3-lane collector between 162 nd Avenue and 177 th Avenue.	Joint SDC Fund	-	\$3,400
Scouter Mountain Road**	Construct a new east-west collector on the south side of Scouter's Mountain between 147 th Avenue and 177 th Avenue.	Joint SDC Fund	-	\$7,600
Rock Creek Boulevard**	Construct a new 5-lane east-west major arterial from 177 th Avenue to the Sunrise Corridor Rock Creek interchange.	Joint SDC Fund	-	\$17,000
Total Motor Vehicle Project Costs				\$81,400

**These projects would only occur with development or redevelopment and would not be initiated by the City.

Trucks

Efficient truck movement plays a vital role in the economical movement of raw materials and finished products. The establishment of through truck routes provides for this efficient movement while at the same time maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. Sunnyside Road and 172nd Avenue are recommended as designated through truck routes in the TSP study area. The objective of these route designations is to allow these routes to focus on design criteria that are "truck friendly"; i.e. 12-foot travel lanes, longer access spacing, 35-foot (or larger) curb returns and pavement design that accommodates a larger share of trucks.

Other Modes

While auto, transit, bicycle and pedestrian transportation modes are the primary means of travel in Happy Valley, other modes of transportation must be considered and addressed. Future needs for alternative fuel vehicles, rail, air and water infrastructure are identified and summarized below.

Alternative Fuel Vehicles

The use of alternative fuel vehicles shall be encouraged in Happy Valley. This could be achieved by providing incentives for electric car charging spaces at key activity centers and biodiesel stations within the City. Alternative fuel vehicles would use the same right-of-way as gasoline-powered vehicles.

Rail

There are no rail facilities within the City of Happy Valley. There are not expected to be any rail facilities within the City in the near future. Due to these considerations, no policies or recommendations in this area of transportation is provided for Happy Valley.

Air

There are no airports within the City of Happy Valley. Passenger service to Happy Valley residents is provided via Portland International Airport, approximately 10 miles to the north of Happy Valley.

Water

There are no navigable waterways in the Happy Valley TSP study area. No policies or recommendations in this area of transportation are provided.

Funding

Transportation funding is commonly viewed as a user fee system where the users of the system pay for infrastructure through motor vehicle fees (such as gas tax and registration fees) or transit fares. However, a great share of motor vehicle user fees goes to road maintenance, operation and preservation of the system rather than construction of new system capacity. Much of what the public views as new construction is commonly funded (partially or fully) through property tax levies, traffic impact fees and fronting improvements to land development. The City of Happy Valley utilizes a number of mechanisms to fund construction of its transportation infrastructure, including:

- State Fuel Tax and Vehicle License Fee
- Portland General Electric Privilege Tax
- System Development Charges

Under the above funding programs, Happy Valley would collect a total revenue of \$166 million over the next 20 years. The majority of these funds are from estimated SDC fees which are based on the future land use forecasts and would be obtained from development. If the forecasted future growth does not occur than the amount of SDC revenue would be reduced drastically.

The cost estimates outlined in the Transportation System Plan to implement the Action Plans for Motor Vehicles, Transit, Bicycles and Pedestrians total \$82.1 million, and the recommended transportation operations and maintenance programs would add \$11.7 million for a total cost over 20 years of \$93.8 million. Refer to Chapter 4 through 9 for details on the individual projects by travel mode. Note that some additional projects are listed in the Action Plans that are expected to be funded by other agencies (Metro, TriMet). These non-City costs have not been included in the estimates in Table 1-7, but are identified in the master plans.

Table 1-7: Happy Valley Transportation Action Plans Costs over 20 years (2004 Dollars)

Transportation Element	Approximate Cost (\$1,000)
System Improvement Projects (Action Plans projects to be funded by the City)	
Pedestrian	\$660
Bicycle	\$0
Transit	\$0
Motor Vehicle	\$81,400
Total Capital Projects	\$82,060
Operations and Maintenance Programs and Services	
Road Maintenance (\$381,000/yr plus 150%)	\$11,430
School Safety Program (\$5,000/yr)	\$100
Neighborhood Traffic Management (\$10,000/yr)	\$200
Total Operations and Maintenance Programs	\$11,730
20 YEAR TOTAL	\$93,790

The estimated \$93.8 million for transportation capital projects and maintenance is expected to be adequately funded by the 20-year revenue estimate of \$166 million (see Table 10-1). New funding sources to allow additional project on future Action Plans will be considered.

Happy Valley will investigate the use of a street utility fee to increase capital funding for local transportation projects. Street utility fees can provide a stable source of dedicated revenue useable for transportation system operations and maintenance and/or capital construction. Rate revenues can also secure revenue bond debt if used to finance capital improvements. Street utilities can be formed by Council action, and billed through the City utility billing system. A transportation analysis of street utility fees will be conducted to determine the steps needed to establish a street utility fee, calculate potential utility fees for various land uses in the city, estimate annual revenue generation, identify priority transportation projects to be constructed and evaluate implementation of the program.

In addition, the City will actively pursue grant and other special program funding in order to mitigate the costs to its citizens of transportation capital construction.

Chapter 2 – add a Goal 9 for Interchange Management Areas and several supporting policies. The County’s suggested policies are a good start.

2. Goals and Policies

The goals and policies established by the 1998 TSP were adopted to guide transportation system development in Happy Valley. In addition to retaining and refining previously adopted policies that are still applicable, new policies have been incorporated to meet recent changes to state and regional transportation plan policies and regulations.

The following transportation-related goals and policies were developed with input from the Citizen’s Advisory Committee and Technical Advisory Committee. Some policies are provided with additional background information and explanation regarding their implementation.

Goal 1: Livability - Transportation facilities shall be planned, designed and constructed in a manner which enhances the livability of Happy Valley.

Policy 1a: Build residential and neighborhood streets to discourage speeding.

The City will develop and maintain design standards and criteria for neighborhood traffic management for use in new development as well as existing neighborhoods for City streets. Measures to be developed may include narrower streets, speed bumps, traffic circles, curving streets, diverters, enforcement and/or other measures. The neighborhood traffic management design standards shall meet the current Oregon Fire Code.

Policy 1b: Encourage pedestrian accessibility by providing safe, secure and desirable pedestrian routes.

The City will develop and maintain a pedestrian plan in Happy Valley, outlining pedestrian routes. Sidewalk standards will be developed to define various widths, as necessary, for City street types.

Policy 1c: The City shall encourage the use of alternative fuel vehicles and the use of more efficient transportation modes.

The City shall consider providing incentives to encourage development which supports the use of alternative fuel vehicles within Happy Valley (i.e. charging stations for electric cars, biodiesel stations, etc.)

Policy 1d: The City shall be open to alternative designs such as roundabouts, etc.

Goal 2: Mobility - Transportation facilities shall accommodate commercial, industrial and residential growth and provides access though and around Happy Valley.

Policy 2a: The City shall work to minimize traffic on local streets within the city by supporting improvements that limit the amount of cut-through traffic passing through Happy Valley except for on major arterials.

Policy 2b: In development of roadway projects, impacts to adjacent homes/properties will be considered, minimized, and balanced between providing a safe and efficient transportation facility.

The City shall create a balance between neighborhood impacts and traffic safety by considering varying street widths (via removal of planter strips and/or center turn lane/median or by narrowing travel lanes) as well as traffic needs when roadway improvements are made.

Policy 2c: Balance the functional classification system throughout the City.

The City shall design an appropriate balance of local, collector, and arterial streets to accommodate the mobility needs of the City. This may include designing additional arterial streets as well as maintaining the functionality of the existing classifications of streets (i.e. a collector shall function as a collector, not a local street).

Policy 2d: The City shall protect the long-term function and operation of the Rock Creek interchange at the Sunrise Expressway, OR 212 and OR 224 and the local street network within the Interchange Management Area.

Goal 3: Multi-Modal Travel - Happy Valley shall strive to achieve a balanced transportation system that reduces the number of trips by single occupant vehicles by meeting the needs of auto, bicycle, pedestrian, and transit and increasing the connectivity for alternate travel modes.

Policy 3a: Bicycle lanes must be constructed on all arterials and collectors within Happy Valley (with construction or reconstruction projects). All schools, parks, public facilities and retail areas shall have direct access to a bikeway.

The City will develop a bicycle plan which connects key activity centers (such as schools, parks, public facilities and retail areas) with adjacent access. Standards for bicycle facilities within Happy Valley will be developed and maintained. Where activity centers are on local streets, connections to bicycle lanes shall be designated.

Policy 3b: Sidewalks must be constructed on all streets within Happy Valley (with construction or reconstruction projects). All schools, parks, public facilities and retail areas shall have direct access to a sidewalk.

The City will develop a pedestrian plan which connects key activity centers with adjacent access. Standards for pedestrian facilities within Happy Valley will be developed and maintained.

Policy 3c: Bicycle and pedestrian plans shall be developed which link to existing and planned recreational trails.

The bicycle and pedestrian plans will need to indicate linkages between recreational and basic pedestrian networks.

Policy 3d: Coordinate with Tri-Met to improve transit service in Happy Valley. Fixed route transit will use arterial and collector streets in Happy Valley. Park & Ride lots will be provided to accommodate concentrated transit demands where feasible.

The Regional Transportation Plan (RTP) and Tri-Met service plan will be the guiding documents for development of Happy Valley's transit plan. The City will provide input to Tri-Met regarding their specific needs, such as maintaining the existing dial-a-ride service provided within the Happy Valley City limits or regarding desired new routes.

Policy 3e: Local streets shall be designed to encourage a reduction in trip length by providing connectivity and limiting out-of-direction travel. Connectivity shall be provided according to published Metro guidelines that improve local circulation by providing connections to activity centers and destinations. Metro's Local Street System Design Criteria calls for no more than 530 feet between local street intersections.

Wherever necessary, new streets built to provide connectivity shall incorporate traffic management design elements, particularly those which inhibit speeding.

Policy 3f: Participate in vehicle trip reduction strategies developed regionally.

DEQ and Metro are developing regional policies regarding trip reduction. Some of these policies are aimed at provision of parking and others are aimed at ridesharing (Employee Commute Options - ECO rules).

Policy 3g: Improve pedestrian access to transit as service demands increase in the future.

This includes filling in gaps in the sidewalks near transit stops, locating transit stops near building entrances and providing adequate street lighting.

Policy 3h: Pursue the expansion of the regional and local trail system with new development.

The City will coordinate regional trail development with Metro. Design standards for recreational elements will need to be developed and maintained.

Policy 3i: Implement regional alternative mode share targets to reduce the reliance on single-occupancy vehicles.

The City shall adopt the 2040 Non-SOV Modal Targets established by Metro (2004 Regional Transportation Plan, Metro, July 8, 2004, Chapter 1). Improvement in non-single-occupancy vehicle mode share will be used to demonstrate compliance with per capita travel reductions required by the State Transportation Planning Rule.

Policy 3j: Neighborhoods shall be connected to minimize out of direction travel for pedestrians and bicycles. This is achieved with a well developed local street system and off-street trail system.

The purpose of this policy is to provide accessibility within Happy Valley, with a focus on pedestrian connectivity. Pedestrian connectivity can be provided via pedestrian/bike paths between local streets and/or greenways where auto connectivity does not exist or is not feasible.

Goal 4: Safety - Happy Valley shall strive to achieve a safe transportation system by developing street standards, access management policies when constructing streets and by making street maintenance a priority.

Policy 4a: Design of streets shall relate to their intended use and function.

A functional classification system shall be developed for Happy Valley which meets the City's needs and respects needs of other agencies (Clackamas County, Metro, City of Portland). Appropriate design standards for these roadways will be developed by the appropriate jurisdiction.

Policy 4b: Safe and secure routes to schools shall be designated for each school and any new residential project shall identify the safe path to school for children.

Working with the school district and citizens, the City will need to undertake a process of defining school route.

Policy 4c: Safe and secure pedestrian and bikeways shall be designed between parks and other activity centers in Happy Valley.

Policy 4d: Street maintenance shall be a priority to improve safety in Happy Valley.

The City shall coordinate with Clackamas County for the maintenance of those facilities within the City maintained by the County.

Policy 4e: Access management standards shall be developed in conjunction with the functional classification system for Happy Valley to improve safety in Happy Valley.

Access control standards shall be developed for each street classification. These standards shall be applied to all new road construction and new development. For roadway reconstruction, existing driveways shall be compared with the standards and a reasonable attempt shall be made to comply.

Policy 4f: New roadways shall meet lighting standards. Existing roadways shall be systematically retrofitted with roadway lighting.

Priority locations for roadway lighting include schools, parks, town center. The City shall coordinate with the County lighting district.

Goal 5: Evaluation - Transportation performance measures shall be maintained in the City.

Policy 5a: Minimum intersection level of service standards shall be maintained for the City of Happy Valley. The City shall utilize these standards to evaluate land use actions and proposed mitigations. All public facilities shall be designed to meet these standards.

The intersection level of service standards shall be listed in the Land Development Code (LDC) for the City of Happy Valley.

Policy 5b: Parking ratios shall be set to provide adequate parking, while providing an incentive to limit the use of the single occupant vehicle consistent with Title 2 regional standards.

Parking standards shall be listed in the Land Development Code (LDC) for the City of Happy Valley. DEQ encourages lower parking ratios to encourage use of alternative modes (walking, biking, transit, car pooling, etc.).

Policy 5c: For purposes of compliance with OAR 660-12-060 (Transportation Planning Rule), the City will consider only improvements listed in the Financially Constrained funding scenario of the Regional Transportation Plan, and/or in the City's Capital Improvement Plan (CIP), in determining the planned capacity, function and level of service of transportation facilities and services. This policy will apply to all plan and ordinance amendments.

Goal 6: Accessibility - Develop transportation facilities which are accessible to all members of the community.

Policy 6a: Design and construct transportation facilities to meet the requirements of the Americans with Disabilities Act.

Goal 7: Cooperation - Implement the Transportation System Plan (TSP) in a coordinated manner.

Policy 7a: Coordinate and cooperate with adjacent agencies when necessary to develop transportation projects which benefit the region as a whole in addition to the City of Happy Valley.

Policy 7b: Plan transportation projects which are consistent with the amount of funding available.

Goal 8: Goods Movement - Provide for efficient movement of goods and services.

Policy 8a: All collector, neighborhood route, and local streets in Happy Valley shall limit through truck traffic.

Policy 8b: Specific arterials shall be designated as freight routes for through truck movements.

Policy 8c: Develop adjacent land uses in ways that facilitate the efficient movement of goods and services.

Chapter 8, Access Management section – add a brief description of the Sunrise IAMP study and reference the ODOT spacing standards for the Rock Creek Interchange Management Area

8. Motor Vehicle Plan

This chapter summarizes needs for the motor vehicle system for future conditions in the City of Happy Valley. It also outlines the strategies to be used in evaluating needs and recommends plans for motor vehicles (automobiles, trucks, buses and other vehicles). The Motor Vehicle modal plan is intended to be consistent with other jurisdictional plans including Metro's Regional Transportation System Plan (RTP), Clackamas County's Transportation System Plan (TSP) and the [Sunrise Interchange Area Management Plan](#).

Policies

Several policies were developed for future motor vehicle facilities in Happy Valley. These policies are aimed at providing the City with priorities to direct its funds towards motor vehicle projects that meet the goals of the City. The policies for motor vehicle facilities are:

- Policy 1a: Build residential and neighborhood streets to discourage speeding.
- Policy 1d: The City shall be open to alternative designs such as roundabouts, etc.
- Policy 2a: The City shall work to minimize traffic on local streets within the city by supporting improvements that limit the amount of cut-through traffic passing through Happy Valley except for on major arterials.
- Policy 2b: In development of roadway projects, impacts to adjacent homes/properties shall be considered, minimized, and balanced between providing a safe and efficient transportation facility.
- Policy 2c: Balance the functional classification system throughout the City.
- [Policy 2d: The City shall protect the long-term function and operation of the Rock Creek interchange at the Sunrise Expressway, OR 212 and OR 224 and the local street network within the Interchange Management Area.](#)
- Policy 3e: Local streets shall be designed to encourage a reduction in trip length by providing connectivity and limiting out-of-direction travel. Connectivity shall be provided according to published Metro street connectivity guidelines that improve local circulation by providing connections to activity centers and destinations. Metro's Local Street System Design Criteria calls for no more than 530 feet between local street intersections.
- Policy 3j: Neighborhoods shall be connected to minimize out of direction travel for pedestrians and bicycles. This is achieved with a well developed local street system and off-street trail system.

- Policy 4a: Design of streets shall relate to their intended use and function.
- Policy 4e: Access management standards shall be developed in conjunction with the functional classification system for Happy Valley to improve safety in Happy Valley.
- Policy 4f: New roadways shall meet lighting standards. Existing roadways shall be systematically retrofitted with roadway lighting.
- Policy 8a: All collector, neighborhood route, and local streets in Happy Valley shall limit through truck traffic.
- Policy 8b: Specific arterials shall be designated as freight routes for through truck movements.

Future Capacity Deficiencies

The base case analysis for the forecasted 2025 growth was essentially a no-build scenario based on the RTP Financially Constrained funding scenario. This scenario only includes transportation system improvements outside of the TSP study area that are expected to be constructed and implemented with the current funding levels. Figure 8-1 shows the forecasted demand to capacity ratio on roadways within the TSP study area for the no-build scenario. As shown in the figure, the no-build scenario transportation system does not have adequate roadway capacity to serve the expected future travel needs. Red roadway segments in Figure 8-1 indicate roadway segments that are over-capacity and do not meet either City or County traffic operating standards. The demand to capacity ratios exceed 1.0 on multiple key corridors in the study area including Sunnyside Road, 129th Avenue, 132nd Avenue, 145th/147th/152nd Avenue, Mt. Scott Boulevard, Idleman Road, Ridgecrest Road and Clatsop Street.

Strategies

To meet performance standards and serve future growth, the future transportation system needs multi-modal improvements and strategies to manage the forecasted travel demand. The extent and nature of the multi-modal improvements for Happy Valley are significant. The impact of future growth would be severe without investment in transportation improvements. Strategies for meeting automobile facility needs include the following:

- Local Circulation Enhancements
- Neighborhood Traffic Management
- Transportation Demand Management Programs to Reduce Peak Traffic for Employers in Happy Valley
- Additional Traffic Signals on Arterial/Collector Intersections
- Intelligent Transportation Systems (ITS)
- Intersection Modifications
- Transportation System Management (TSM)
- Regional Circulation Enhancements
- Mitigate all Intersections to Meet Mobility Standards
- Protect the Long-Term Function and Operation of Interchange Management Areas

Figure 8-1: No Build V/C Plot

The following sections outline the type of improvements that would be necessary as part of a long-range Motor Vehicle Master Plan. Phasing of implementation will be necessary since all of the improvements cannot be done at once. This will require prioritization of projects and periodic updating to reflect current needs. Most importantly, it will be understood that the improvements outlined in the following sections are a guide to managing growth in Happy Valley as it occurs over the next 20 years.

Transportation System Management (TSM)

Transportation System Management (TSM) focuses on low cost strategies to enhance operational performance of the transportation system by seeking solutions to immediate transportation problems, finding ways to better manage transportation, maximizing urban mobility, and treating all modes of travel as a coordinated system. These types of measures include such things as signal improvements, traffic signal coordination, traffic calming, access management, local street connectivity and intelligent transportation systems (ITS). Typically, the most significant measures that can provide tangible benefits to the traveling public are traffic signal coordination and systems.

TSM measures focus primarily on region wide improvements, however there are a number of TSM measures that could be used in a smaller scale environment such as the Happy Valley area. The following sections discuss TSM measures that could be appropriate for the Happy Valley 2025 TSP study area.

Intelligent Transportation Systems (ITS)

ITS involves the application of advanced technologies and proven management techniques to relieve congestion, enhance safety, provide services to travelers and assist transportation system operators in implementing suitable traffic management strategies. ITS focuses on increasing the efficiency of existing transportation infrastructure, which enhances the overall system performance and reduces the need to add capacity (e.g. travel lanes). Efficiency is achieved by providing services and information to travelers so they can (and will) make better travel decisions and to transportation system operators so they can better manage the system and improve system reliability.

Clackamas County has prepared an ITS plan for the urbanized area of the County. The Clackamas County ITS Plan³ has identified arterial signal control ITS projects on major streets throughout the county. Sunnyside Road and 122nd/129th Avenue within the TSP study area have been identified for planned fiber optic cable and closed-circuit cameras at several major intersections.

Other ITS projects to consider in the future may include:

- Transit signal priority
- Signal coordination and optimization
- Traffic monitoring and surveillance
- Information availability

³ Clackamas County ITS Plan, DKS Associates, Inc. and Zenn Associates, February 2003.

- Incident management

In order to support future ITS projects including traffic signal operations, the City of Happy Valley and Clackamas County should require the installation of 3 inch conduit along arterial and selected collector roadways during roadway improvement projects. ITS projects can require additional fiber optic cable to serve the new equipment along a roadway. A 3 inch conduit would ensure adequate wiring capacity to accommodate future ITS projects.

Neighborhood Traffic Management (NTM)

Happy Valley has neighborhood traffic management elements in place, such as speed humps, on streets within the study area. The city will consider additional traffic calming measures and work with the community to find the traffic calming solution that best meets their needs and maintains roadway function. Table 8-1 lists common NTM applications and suggests which devices may be supported by the Clackamas County Fire District. Neighborhood traffic management projects will include coordination with emergency agency staff to assure public safety.

Table 8-1: Traffic Calming Measures by Roadway Functional Classification

Traffic Calming Measure	Roadway Classification		
	Arterial	Collector	Neighborhood/ Local Street
Curb Extensions	Not Supported	Supported*	Traffic calming measures are acceptable on lesser emergency response routes that have connectivity (more than two accesses) and are accepted by the City of Happy Valley.
Medians	Supported	Supported	
Pavement Texture	Not Supported	Supported	
Speed Hump	Not Supported	Not Supported	
Roundabout	Supported**	Supported	
Raised Crosswalk	Not Supported	Not Supported	
Speed Cushion (provides emergency pass-through with no vertical deflection)	Not Supported	Not Supported	
Choker ⁴	Not Supported	Not Supported	
On-Street Parking	Not Supported	Not Supported	
Traffic Circle	Not Supported	Not Supported	
Diverter (with emergency vehicle pass through)	Not Supported	Not Supported	

* Only supported on roadways with on-street parking.

** In special cases to be determined by City staff.

Note: It is desirable to have all traffic calming measures meet Clackamas County Fire District guidelines including minimum street width, emergency vehicle turning radius, and accessibility/connectivity.

⁴ Chokers are not supported when they do not shadow parking. If parking is shadowed, see curb extensions.

Access Management

Access Management is a broad set of techniques that balance the need to provide efficient, safe and timely travel with the ability to allow access to individual properties. Proper implementation of access management techniques will guarantee reduced congestion, reduced accident rates, less need for roadway widening, conservation of energy, and reduced air pollution.

Access management is the control or limiting of vehicular access on arterial and collector facilities to maintain the capacity of the facilities and preserve their functional integrity. Access management strives to strike a balance between maintaining the integrity of the facility and providing access to adjacent parcels. Numerous driveways can erode the capacity of arterial and collector roadways. Preservation of capacity is particularly important on higher volume roadways for maintaining traffic flow and mobility. Whereas local and neighborhood streets function to provide access, collector and arterial streets serve greater traffic volume. Numerous driveways or street intersections increase the number of conflicts and potential for collisions and decrease mobility and traffic flow. Happy Valley, as with every city, needs a balance of streets that provide access with streets that serve mobility.

Several access management strategies were identified to improve local access and mobility in Happy Valley:

- Develop specific access management plans for major and minor arterial streets in Happy Valley to maximize the capacity of the existing facilities and protect their functional integrity.
- Work with land use development applications to consolidate driveways where feasible.
- Provide left turn lanes where warranted for access onto cross streets.
- Construct raised medians to provide for right-in/right-out driveways as appropriate.

New development and roadway projects located on City street facilities shall meet the access spacing standards summarized in Table 8-2. Access points include public streets, private streets, and private commercial or residential driveways. A variation to the access spacing standards may be granted in areas with limited property frontage and/or environmental constraints. Any variation to these spacing standards will require an access management plan to be approved by the City engineer. The maximum access spacing listed in this table is consistent with Metro⁵.

Table 8-2: Access Spacing Standards for City Street Facilities

Street Facility	Maximum Access Spacing	Minimum Access Spacing with Full Access	Minimum Access Spacing with Limited Access*
Major Arterial	-	1,000 feet	500 feet
Minor Arterial	-	600 feet	300 feet
Collector	530 feet	400 feet	200 feet

⁵ Metro Regional Transportation Plan, 2000.

Neighborhood	530 feet	-	-
Local	530 feet	-	-

Note: Intersection and driveway spacing measured from centerline to centerline.

* Limited Access – Vehicles are restricted to right-in/right-out turn movements. In some cases, left-in turn movements may be permitted.

Access management is not easy to implement and often requires long institutional memory of the impacts of short access spacing – increased collisions, reduced capacity, poor sight distance and greater pedestrian exposure to vehicle conflicts. The most common opposition response to access control is that “there are driveways all over the place at closer spacing than mine – just look out there”.

These statements are commonly made without historical reference. Many of the pre-existing driveways that do not meet access spacing requirements were put in when traffic volumes were substantially lower and no access spacing criteria were mandated. With higher and higher traffic volume in the future, the need for access control on all arterial and collector roadways is critical – the outcome of not managing access properly is additional wider roadways which have much greater impact than access control.

Traffic Signal Spacing

Traffic signal spacing standards have been established as part of this Happy Valley TSP update. Traffic signals that are spaced too closely on a corridor can result in poor operating conditions and safety issues due to the lack of adequate storage for vehicle queues. Optimum traffic signal spacing allows for the coordination of traffic signals along a corridor resulting in reduced overall vehicle delay.

A minimum traffic signal spacing of 1,000-feet is required for major arterial, minor arterial and collector facilities. A variation to the traffic signal spacing standard may be granted in areas with limited property frontage and/or environmental constraints. Any variation to the traffic signal spacing standard will require the approval of the City engineer.

Local Street Connectivity

Much of the local street network in Happy Valley is built but is not well connected. Multiple access opportunities for entering or exiting neighborhoods are limited. There are a number of locations where neighborhood traffic is funneled onto one single street. This type of street network results in out-of-direction travel for motorists and an imbalance of traffic volumes that impacts residential frontage. The outcome can result in the need for wider roads, traffic signals and turn lanes (which can negatively impact traffic flow). By providing connectivity between neighborhoods, out-of-direction travel and vehicle miles traveled (VMT) can be reduced, accessibility between various travel modes can be enhanced and traffic levels can be balanced out between various streets. Additionally, public safety response time is reduced.

Some of these local connections can contribute with other street improvements to mitigate capacity deficiencies by better dispersing traffic. Several roadway connections will be needed within neighborhood areas to reduce out of direction travel for vehicles, pedestrians and bicyclists. This is most important in the areas where a significant amount of new development is possible.

Figure 8-2 shows the proposed Street Connectivity Plan for Happy Valley. In most cases, the connector alignments are not specific and are aimed at reducing potential

neighborhood traffic impacts by better balancing traffic flows on neighborhood routes. The arrows shown in the figures represent potential connections and the general direction for the placement of the connection. In each case, the specific alignments and design will be better determined upon development review.

The criteria used for providing local connections are based on the Metro RTP requirements for new residential or mixed-use developments.

- Every 330 feet, a grid for pedestrians and bicycles
- Every 530 feet, a grid for automobiles

To protect existing neighborhoods from potential traffic impacts of extending stub end streets, connector roadways will incorporate neighborhood traffic management into their design and construction. All stub streets will have signs indicating the potential for future connectivity. Additionally, new development that constructs new streets, or street extensions, must provide a proposed street map that:

- Provides full street connections with spacing of no more than 530 feet between connections except where prevented by barriers
- Provides bike and pedestrian access ways in lieu of streets with spacing of no more than 330 feet except where prevented by barriers
- Limits use of cul-de-sacs and other closed-end street systems to situations where barriers prevent full street connections
- Includes no close-end street longer than 200 feet or having no more than 10 dwelling units
- Includes street cross-sections demonstrating dimensions of ROW improvements, with streets designed for posted or expected speed limits

The arrows shown on Figure 8-2 indicate priority for local and neighborhood connections only. Other stub end streets in the road network may become cul-de-sacs, extended cul-de-sacs or provide collector or arterial connections. Pedestrian connections from the end of any stub end street that results in a cul-de-sac will be considered mandatory as future development occurs. The goal would continue to be improved city connectivity for all modes of transportation.

Topography and environmental conditions limit the level of connectivity in several areas of Happy Valley. The area north and south of Sunnyside Road between SE 152nd Avenue and Rock Creek and the Scouter Mountain area between 145th Avenue and 162nd Avenue are recognized as being particularly challenging and may require exceptional treatment to avoid overloading of narrow local streets.

Functional Classification

The proposed functional classification of roadways was developed following detailed review of the existing Happy Valley TSP, Clackamas County TSP and the Rock Creek Plan functional classification. A proposed roadway system has been developed within the planned growth areas of the TSP study area. The proposed functional classification of these roadways is shown in Figure 8-3.

The following proposed Happy Valley TSP functional classifications are inconsistent with the Clackamas County TSP and/or the Rock Creek Plan.

- 172nd Avenue changed from a minor arterial (County TSP) to a major arterial

- Monner Road changed from a local street (County TSP) to a neighborhood street
- 162nd Avenue (north of Sunnyside Road) changed from a local street (County TSP) to a collector street
- 152nd Avenue (north of Sunnyside Road) changed from a collector (County TSP and Rock Creek Plan) to a minor arterial
- Valley View Terrace changed from neighborhood street (Happy Valley TSP) to a collector street

The following revisions are recommended to the current Happy Valley TSP:

- Hagen Road changed from a neighborhood street to a local street.

The criteria used to assess functional classification have two components: the extent of connectivity and the frequency of the facility type. Maps can be used to determine regional, city/district and neighborhood connections. The frequency or need for facilities of certain classifications is not routine or easy to package into a single criterion. While planning textbooks call for arterial spacing of a mile, collector spacing of a quarter to a half-mile, and neighborhood connections at an eighth to a sixteenth of a mile, this does not form the only basis for defining functional classification.

Changes in land use, environmental issues or barriers, topographic constraints, and demand for facilities can change the frequency for routes of certain functional classifications. While spacing standards can be a guide, they must consider other features and potential long term uses in the area (some areas would not experience significant changes in demand, where others will). It is acceptable for the city to re-classify street functional designations to have different naming conventions than the RTP street functional classifications, however, the general intent and purpose of the facility, whatever the name, will be consistent with regional, state and federal guidelines.

Figure 8-2: Local Street Connectivity

Figure 8-3: Proposed Functional Classification

Roadway Cross-Section Standards

The design characteristics of streets in Happy Valley were developed to meet the function and demand for each facility type. Because the actual design of a roadway can vary from segment to segment due to adjacent land uses and demands, the objective was to define a system that allows standardization of key characteristics to provide consistency, but also to provide criteria for application that provides some flexibility, while meeting the design standards.

Table 8-3 summarizes the proposed street characteristics for Happy Valley. Figures 8-4 through 8-8 show the cross-sections for arterials, collectors, neighborhood, local streets, alleyways and private streets in Happy Valley. Where center left turn lanes are identified (3 lane section), the actual design of the street may include sections without center turn lanes (2 lane section) near environmentally sensitive or physically constrained areas or with median treatments. The actual treatment will be determined within the design for implementation of each project.

Alternative collector and local cross-sections have been developed to allow for flexibility in design with an emphasis on streetscape elements. A hillside collector cross-section was developed for 162nd Avenue and the east-west collector along the base of Scouter Mountain with a 12 foot path on the downhill side of the roadway and a narrower width to reduce environmental impacts. A collector cross-section with on-street parking was developed for the newly planned area east of 162nd Avenue to provide a neighborhood streetscape. Collector and local cross-sections were developed for roadways along commercial and industrial zoned parcels to provide an appropriate streetscape. Cross-sections for private streets and alleyways have also been added.

Table 8-3: Proposed Street Characteristics

Street Element	Characteristic	Width/Options
Vehicle Lane Widths: (Minimum widths)	Truck Route	12 feet
	Bus Route	11 feet
	Arterial	12 feet
	Collector	12 feet
	Neighborhood	10 feet
	Local	10 feet
	Turn Lane	12 feet ⁶
On-Street Parking:		8 feet
Bicycle Lanes: (minimum widths)	New Construction	5 to 6 feet
	Reconstruction	5 to 6 feet
Sidewalks: (Minimum width)	Neighborhood/Local	5 feet
	Collector	5 feet
	Arterial	6 feet
Landscape Strips:	Required on all streets	5 feet
Medians:	5-Lane	Required
	3-Lane	Required
	2-Lane	Optional
Neighborhood Traffic Management:	Local	Not necessary
	Neighborhood	Consider if appropriate
	Collectors	Under special conditions
	Arterials	Prohibited
Transit:	Arterial/Collectors	Appropriate
	Neighborhood/Local	Only in special circumstances
	Local	Not appropriate

⁶ In constrained conditions on collector and neighborhood facilities, a minimum width of 11 feet may be considered.

The local roadway cross-sections shown in Figure 8-7A provide for a 28-foot pavement section with parking on one side of the street and a 32-foot pavement section with parking on both sides of the street. This cross-section standard is based on the recommendations of the Fire Code Applications Guide from the Oregon Fire Code⁷ and comments received from the Clackamas County Fire District #1 representatives. The intent of the local roadway cross-sections is to provide sufficient roadway width to adequately accommodate emergency vehicles.

Under some conditions a variation to the cross-sections may be requested from the City Engineer. Typical conditions that may warrant a variation include (but are not limited to) the following:

- Infill sites
- Innovative designs (roundabouts)
- Severe topographic or environmental constraints
- Existing developments and/or buildings that make it extremely difficult or impossible to meet the design standards.

Street Right-of-Way Needs

Figure 8-9 summarizes the anticipated right-of-way needs for existing and proposed roadways within the TSP planning horizon. Planning level right-of-way needs can be determined utilizing street cross-sections and the lane geometry outlined later in this chapter. Special consideration was given to the proposed roadway network with environmental constraints such as creeks and steep grades. Several proposed roadways within the Scouter Mountain Area have been identified as two-lane roadways to reduce potential environmental impacts.

Wherever arterial or collectors cross each other, planning for additional right-of-way to accommodate turn lanes will be considered within 500 feet of the intersection. Specific right-of-way needs will need to be monitored continuously through the development review process to reflect current needs and conditions. This will be necessary since more specific detail may become evident in development review which requires improvements other than those outlined in this 20 year general planning assessment of street needs.

Intersection Performance Standards

Policy 5a establishes minimum intersection operating standards to be maintained for the City of Happy Valley. The City shall utilize these standards to evaluate land use actions and proposed mitigations. All public facilities shall be designed to meet these standards.

- All signalized intersections shall operate at level of service D and V/C ratio of 0.90 or better during the peak hours of analysis. Individual movements must meet level of service E and a V/C ratio of 1.0.
- All roundabout intersections shall operate at level of service D or better during the peak hours of analysis. Each approach must meet level of service E and a V/C ratio of 0.85.

⁷ Fire Code Applications Guide, Oregon Fire Code, Metro Code Committee, revised January 2005.

- All unsignalized two-way stop controlled intersections shall operate at level of service E or better (based on average approach delay) for all side street approaches during the peak hours of analysis.
- All unsignalized all-way stop controlled intersections shall operate at level of service D or better based on average intersection delay during the peak hours of analysis.

Figure 8-4: Arterial Cross-Section

Figure 8-5A: Collector Cross-Section

Figure 8-5B: Collector Cross-Section

Figure 8-6: Neighborhood-Commercial Cross-Section

Figure 8-7A Local Cross-Section

Figure 8-7B Local Cross-Section

Figure 8-8: Cul de Sac Cross-Section

Figure 8-9 Right of Way Needs

Parking Requirements

The City of Happy Valley currently has off-street parking ratios (minimum and maximum) standards consistent with the TPR and RTP parking ratio requirements. In addition, there are several parking policies⁸ that will be considered including:

- Allow the designation of residential parking districts to protect residential areas from spillover parking generated by adjacent commercial, employment, or mixed-use areas, or other uses that generate a high demand for parking.
- Provide Metro annual parking data when requested that demonstrates compliance with the minimum and maximum parking ratios, including the application of any variances to the regional standards.
- Require parking lots more than three acres in size to provide street-like features along major driveways; including curbs, sidewalks, and street trees or planter strips. Major driveways in new residential and mixed-use areas shall meet connectivity standards for full street connections.

Transportation Demand Management (TDM)

Transportation Demand Management (TDM) is the general term used to describe any action that removes single occupant vehicle trips from the roadway network during peak travel demand periods. As growth in the Happy Valley area occurs, the number of vehicle trips and travel demand in the area will also increase. The ability to change a user's travel behavior and provide alternative mode choices will help accommodate this growth.

Generally, TDM focuses on reducing vehicle miles traveled and promoting alternative modes of travel for large employers of an area. This is due in part to the Employee Commute Options (ECO) rules that were passed by the Oregon Legislature in 1993 to help protect the health of Portland area residents from air pollution and to ensure that the area complied with the Federal Clean Air Act.⁹

Research has shown that a comprehensive set of complementary policies implemented over a large geographic area can have an effect on the number of vehicle miles traveled to/from that area.¹⁰ However, the same research indicates that in order for TDM measures to be effective, they should go beyond the low-cost, uncontroversial measures commonly used such as carpooling, transportation coordinators/associations, priority parking spaces, etc. Setting TDM goals and policies for new development will be necessary to help implement TDM measures in the future.

The more effective TDM measures include elements related to parking and congestion pricing, improved services for alternative modes of travel, and other market-based measures. However, TDM includes a wide variety of actions that are specifically tailored to the individual needs of an area. Table 8-4 provides a list of several strategies outlined in the ECO program that could be applicable to the Happy Valley area.

⁸ *Urban Growth Management Functional Plan*, Title 2: Regional Parking Policy, Metro, September 22, 2004.

⁹ Oregon Administrative Rules, Chapter 340, Division 30.

¹⁰ *The Potential for Land Use Demand Management Policies to Reduce Automobile Trips*, ODOT, by ECO Northwest, June 1992.

Table 8-4: Transportation Demand Management Strategies

Strategy	Description	Potential Trip Reduction	
Telecommuting	Employees work at home or at a work center closer to home, rather than commuting from home to work. This can be full time or on selected workdays. This can require computer equipment to be most effective.	82-91% (Full Time) 14-36% (1-2 day/wk)	
Compressed Work Week	Schedule where employees work their regular scheduled number of hours in fewer days per week.	7-9% (9 day/80 hr) 16-18% (4 day/40 hr) 32-36% (3 day/36 hr)	
Transit Pass Subsidy	For employees who take transit to work on a regular basis, the employer pays for all or part of the cost of a monthly transit pass.	19-32% (full subsidy, high transit service) 2-3% (half subsidy, medium transit service)	
Cash Out Employee Parking	An employer that has been subsidizing parking (free parking) discontinues the subsidy and charges all employees for parking. An amount equivalent to the previous subsidy is then provided to each employee, who then can decide which mode of travel to use.	<u>Reduction</u> 8-20% 5-9% 2-4%	<u>Transit</u> High Medium Low
Reduced Parking Cost for HOVs	Parking costs charged to employees are reduced for high occupancy vehicles (HOV) such as carpools and vanpools.	1-3%	
Alternative Mode Subsidy	For employees that commute to work by modes other than driving alone, the employer provides a monetary bonus to the employee.	21-34% (full subsidy of cost, high alternative modes) 2-4% (half subsidy of cost, medium alternative modes)	
Bicycle Program	Provides support services to those employees that bicycle to work. Examples include: safe/secure bicycle storage, shower facilities and subsidy of commute bicycle purchase.	0-10%	
On-site Rideshare Matching for HOVs	Employees who are interested in carpooling or vanpooling provide information to a transportation coordinator regarding their work hours, availability of a vehicle and place of residence. The coordinator then matches employees who can reasonably rideshare together.	1-2%	
Provide Vanpools	Employees that live near each other are organized into a vanpool for their trip to work. The employer may subsidize the cost of operation and maintaining the van.	15-25% (company provided van with fee) 30-40% (subsidized van)	
Gift/Awards for Alternative Mode Use	Employees are offered the opportunity to receive a gift or an award for using modes other than driving alone.	0-3%	
Walking Program	Provide support services for those who walk to work. This could include buying walking shoes or providing lockers and showers.	0-3%	
Company Cars for Business Travel	Employees are allowed to use company cars for business-related travel during the day	0-1%	
Guaranteed Ride Home Program	A company owned or leased vehicle or taxi fare is provided in the case of an emergency for employees that use alternative modes.	1-3%	
Time off with Pay for Alternative Mode Use	Employees are offered time off with pay as an incentive to use alternative modes.	1-2%	

Source: *Guidance for Estimating Trip Reductions from Commute Options*, Oregon Department of Environmental Quality, August 1996.

With many regional trips destined to, or traveling through, the Happy Valley area, region wide TDM measures should help to reduce congestion. Metro has established non-SOV

(Single Occupancy Vehicle) mode share targets to be achieved by 2040. The 2040 non-SOV model target for corridors (Sunnyside Road) is 45-55%.¹¹

The Metro 2025 Regional Demand Model provides an analysis tool for monitoring non-SOV trip percentages between the various RTP funding scenarios. The forecasted non-SOV trip percentages take into account all RTP improvement projects (including transit, pedestrian, and bicycle system improvements), as well as the TAZ performance factors (which includes an increase in parking pricing and a decrease in transit pass fees paid by individual riders). Parking factors are based on a ratio of parking costs in comparison to a South/North Draft Environmental Impact Study (DEIS) parking survey. Transit Pass factors represent the amount of full transit fare that a transit rider is expected to pay (considering ECO rule and discount downtown fares). The RTP projects included in the 2025 financially constrained and priority models for the study area are shown in Table 8-5 and Table 8-6, respectively.

Table 8-5: TDM Improvements included in the RTP Financially Constrained System*

RTP #	Location	Improvement	Jurisdiction	Time-Line	Cost (\$1,000s)
5103	County-wide	Advanced transportation system management and ITS program	Clackamas County	2004-2009	\$6,514
5211	SE 129 th to Mountain Gate Rd	Scott Creek Lane Pedestrian Improvements (construct pedestrian path and bridge crossing)	Happy Valley	2004-2009	\$104
5207	Sunnyside Rd to Mt. Talbert	Mt. Scott Trail	Clackamas County/ Happy Valley	2016-2025	\$767
5064	Clackamas TC to Oregon City	I-205 Rapid Bus	TriMet	2004-2009	-
7009	145 th /147 th Avenue	Widen to provide bike lanes from Clatsop Street to Monner Road	Clackamas County/ Happy Valley	2010-2015	\$1,040
7010	162 nd Avenue	Widen to provide bike lanes from Monner Road to Sunnyside Road	Clackamas County/ Happy Valley	2016-2025	\$393
7011	Monner Road	Widen to provide bike lanes from 147 th Avenue to 162 nd Avenue	Clackamas County/ Happy Valley	2016-2025	\$393
7022	Sunnyside Road Frequent Bus	Provide improvements that enhance new frequent bus service from Clackamas regional center to Damascus	TriMet	2010-2015	\$913
TOTAL					\$10,124

*This project list is based on the 2004 Federal Regional Transportation Plan Update.

¹¹ Based on the 2000 Metro Regional Transportation Plan, Ordinance No. 00-869A (August 10, 2000), page 1-62.

Table 8-6: Additional TDM Improvements included in the RTP Priority System*

RTP #	Location	Improvement	Jurisdiction	Time-Line	Cost (\$1,000s)
8030	Region-wide	Vehicle purchases to provide for expanded service – 3.8% per year	TriMet	2004-2025	\$546,000
8033	Region-wide	Bus operating facilities	Tri-Met	2004-2025	\$152,062
8045	Region-wide	Bus stop improvements	Tri-Met	2004-2025	\$13,212
8048	Region-wide	Transit Signal Priority	Tri-Met	2004-2025	\$83,746
8051	Region-wide	Regional Travel Options TDM Program	Tri-Met	2004-2025	\$47,124
TOTAL					\$843,584

*This project list is based on the 2004 Federal Regional Transportation Plan Update.

An analysis was performed to determine the level of non-single occupant vehicle (SOV) mode share forecasted in 2025. The travel model provides estimates of the various modes of travel that can be generally assessed at the transportation analysis zone level. Generally, the areas served by bus service have the highest levels of non-SOV mode use. The overall Happy Valley TSP study area forecasted non-SOV percentage with the RTP financially constrained improvements is 40%. Additional improvements in the RTP priority scenario increase the overall non-SOV percentage to 42%, which corresponds to an increase of approximately 2%.

These forecasted non-SOV percentages can only be achieved with significant improvements to the transportation system and implementation of trip reduction strategies. The City of Happy Valley will coordinate with Clackamas County and Tri-Met to implement strategies to assure that the TDM assumptions in the RTP are implemented. The City of Happy Valley will coordinate with Clackamas County and Tri-Met to implement the pedestrian, bicycle and transit system improvements, which offer alternative modes of travel. The recommended TDM action plan includes:

- Support continued efforts by Happy Valley, TriMet, Metro, and Clackamas County to develop productive TDM measures that reduce commuter vehicle miles and peak hour trips.
- Encourage the development of high speed communication in all part of the city (fiber optic, digital cable, DSL, etc). The objective would be to allow employers and residents the maximum opportunity to rely upon other systems for conducting business and activities than the transportation system during peak periods.
- Encourage developments that effectively mix land uses to reduce vehicle trip generation. These plans may include development linkages (particularly non-auto) that support greater use of alternative modes.
- Implement motor vehicle minimum and maximum parking ratios for new development.
- Continued implementation of street connectivity requirements.
- Work with employers to install bicycle racks.
- Implementation of bicycle, pedestrian, motor vehicle and transit system action plan.

Sunrise Rock Creek Interchange Management Area

The Sunrise Rock Creek Interchange Area Management Plan (IAMP) is one of three IAMPs that have been prepared for new highway interchanges on the Sunrise Expressway. The Sunrise Project was undertaken by ODOT and Clackamas County to address existing congestion and safety problems in the Highway 212/224 corridor to serve the growing demand for regional travel and access to the state highway system. The Sunrise Project limits extend approximately 4.9 miles from I-205 to 172nd Avenue. The Rock Creek Interchange on the Sunrise Expressway is planned where Highways 212 and 224 diverge to the east and south. The Sunrise Rock Creek IAMP Management Area is shown in Figure 8-10.

The purpose of an IAMP is to protect the function of the interchange over time, to ensure safe and efficient operations between connecting roadways, and to minimize the need for future major interchange improvements. The IAMP for the Sunrise Rock Creek Management Area provides:

- ODOT mobility standards
- Future traffic operation projections
- ODOT minimum access spacing standards
- Access Management Plan which includes all existing and future access points
- Interchange Area Management policies

The City of Happy Valley will coordinate with Clackamas County and ODOT to support the implementation of the Sunrise Rock Creek Interchange Area Management Plan. This effort will include the following actions.

- Proposed land use designation changes in the Rock Creek IAMP management area will evaluate the potential for impacts to the mobility of the Rock Creek interchange and identify the need for transportation system improves to assure that mobility standards are not exceeded at the end of the planning period.
- Proposed development within the Rock Creek IAMP management area will comply with the identified access manage plan to maintain safe operations of the Rock Creek Interchange. This may include property access consolidation, restriction or closure.
- Proposed future actions that would amend the local jurisdictional boundaries in the vicinity of the Rock Creek interchange will be monitored.

Future Intersection Capacity Analysis

The motor vehicle capacity needs within the TSP study area were determined for future conditions. This section presents the capacity analysis conducted to determine the street improvements that would be necessary as part of a long-range master plan. Phasing of implementation will be necessary since not all the improvements can be done at once. This will require prioritization of projects and periodic updating to reflect current needs. The improvements outlined in the following section are a guide to defining the types of right-of-way and street needs that will be required as development occurs.

Year 2025 traffic volume forecasts were analyzed to identify locations where evening peak hour performance will drop below minimum desirable levels. This analysis focuses on the 25 study intersections. Traffic volumes were developed as described previously (Chapter 4) and applied to existing intersection geometries. The value in reviewing the motor vehicle system performance is that it highlights where the planned system fails to meet performance standards. These locations will be reviewed to consider street improvements alternatives that could better serve planned growth.

2025 No-Build

A 2025 no-build alternative was created by removing all future capacity projects within the study area and regional facilities in the surrounding area from the 2025 financially constrained model. This scenario evaluated the impact of allowing the development of the 2025 land use forecast without constructing the supporting transportation infrastructure. The 2025 no-build traffic forecasts found that the existing roadway system in the TSP study area is insufficient to handle future capacity needs. As previously shown in Figure 8-1, the majority of roadways operate with over capacity conditions which translate to significant congestion. As expected, all study intersections operate below standard under the 2025 no-build scenario.

2025 Financially Constrained

The 2025 financially constrained scenario includes transportation improvements that are reasonably funded and likely to be constructed by the year 2025. This scenario comprises TDM improvements identified in Table 8-5 plus capacity projects identified in the RTP financially constrained system, shown in Table 8-7.

The construction of the Sunnyside Road widening project from 122nd Avenue to 172nd Avenue has been completed. The most significant project included in the financially constrained system within the study area is the 172nd Avenue widening project. This improvement widens 172nd Avenue to a five-lane facility from Highway 212 to Foster Road. The portion of the project from Sunnyside Road to Highway 212 will begin construction in early 2009. This project is fully designed and funded, therefore the existing conditions of this Plan shows the project as complete.

The Highway 224 Extension project, also known as the first phase of the Sunrise Corridor, provides a major new east-west roadway near the study area. In the financially constrained scenario, the project would construct a new four-lane facility from I-205 to 122nd Avenue. Preliminary plans provided by Clackamas County indicate that access to

the facility would be limited to ramps at I-205 and a new interchange near 122nd Avenue just north of Highway 212/224. This project does not include the extension of 122nd Avenue south of Hubbard Road.

Table 8-7: RTP Financially Constrained Motor Vehicle Capacity Improvements*

RTP #	Location	Improvement	Jurisdiction	Time-Line	Cost (\$1,000s)
5021	Highway 224 Extension (Sunrise Corridor)	Construct a new four-lane highway from I-205 to 122 nd Avenue	ODOT	2010-15	\$84,315
5066	122 nd Avenue to 172 nd Avenue	East Sunnyside Road Improvements (widen to five lanes to improve safety and accessibility to Damascus)	Clackamas County	2010-15	\$45,045
5209	122 nd /129 th Avenue	Sunnyside Road to King Road (widen to three lanes, smooth curves)	Clackamas County	2016-25	\$3,465
7000	172 nd Avenue	Widen to 5 lanes from Foster Road to Highway 212	Clackamas County	2016-25	\$8,085
TOTAL					\$132,825

* Based on 2004 Federal Regional Transportation Plan Update, and includes Financially Constrained Motor Vehicle System projects.

Table 8-8 summarizes the study intersection performance for the 2025 financially constrained scenario. Based on the analysis, the majority of the study intersections would not meet demands with the capacity improvements identified in the RTP financially constrained system. The majority of signalized and four-way stop controlled study intersections operate at LOS F with a demand to capacity ratio greater than 1.0. Most unsignalized intersections operate LOS F for the minor street approach and LOS B or worse for the major street approach.

Forecasted volumes on Sunnyside Road from Valley View Terrace to 152nd Avenue in the eastbound and westbound directions are significantly higher than existing volumes. Without a new parallel east-west route to provide additional capacity for the forecasted land use, the planned five-lane section for Sunnyside Road cannot perform adequately. Forecasted volumes within the center of Happy Valley are also considerably higher than today. The significant congestion on Sunnyside Road results in diverted trips on 122nd/129th Avenue and 152nd Avenue to the north, continuing through the City primarily on King Road, Mt. Scott Boulevard and Idleman Road.

Table 8-8: 2025 Financially Constrained Intersection Level of Service (PM Peak Hour)

Intersection	Level of Service	Delay	Volume/Capacity
Unsignalized Intersections			
172 nd Avenue/Hagen Road	C/F	>50	-
147 th Avenue/Monner Road	B/F	>50	-
162 nd Avenue/Monner Road	A/D	59.9	-
145 th Avenue/King Road	F	>50	>1.0
145 th Avenue/Ridgecrest	B/F	>50	-
145 th Avenue/Clatsop Road	B/F	>50	-
132 nd Avenue /King Road	B/F	>50	-
132 nd Avenue/Ridgecrest Road	F	>50	>1.0
132 nd Avenue/Clatsop Road	A/F	>50	-
122 nd Avenue/Spring Mountain Drive	D/F	>50	-
129 th Avenue/Mountain Gate Road	B/F	>50	-
129 th Avenue/William Otty Road	B/F	>50	-
129 th Avenue/King Road/Mt. Scott Boulevard	F	>50	>1.0
William Otty Road/Kimberly Court	C	22.0	0.85
Mt. Scott Boulevard/Idleman Road/Ridgecrest Road	F	>50	>1.0
Valley View/William Otty Road	F	>50	>1.0
Clatsop Street/162 nd Avenue	F	>50	>1.0
Vogel Road/172 nd Avenue	F	>50	>1.0
Troge Road/172 nd Avenue	F	>50	>1.0
Hemrick Road/172 nd Avenue	F	>50	>1.0
Sager Road/172 nd Avenue	F	>50	>1.0
170 th Avenue (Baxter Road)/172 nd Avenue	F	>50	>1.0
Signalized Intersections			
Sunnyside Road/Valley View Terrace	F	>80	>1.0
Sunnyside Road/122 nd Avenue	F	>80	>1.0
Sunnyside Road/132 nd Avenue	F	>80	>1.0
Sunnyside Road/142 nd Avenue	C	26.8	1.0
Sunnyside Road/147 th Avenue	F	>80	>1.0
Sunnyside Road/152 nd Avenue	F	>80	>1.0
Sunnyside Road/157 th Avenue	E	80.0	>1.0
Sunnyside Road/162 nd Avenue	F	>80	>1.0
Sunnyside Road/172 nd Avenue	F	>80	>1.0

Notes: A/A=major street LOS/minor street LOS
 Signalized and all-way stop delay = average vehicle delay in seconds for entire intersection
 Unsignalized delay = highest minor street approach delay
 *All-way stop control intersection

2025 Priority

The 2025 Priority scenario includes additional transportation improvement projects that do not have an identified funding source and may not be constructed by the year 2025. This scenario builds on the planned TDM improvements (summarized in Tables 8-5 and 8-6) and capacity improvements previously identified for the 2025 financially constrained system (Table 8-7). Table 8-9 identifies the additional capacity improvements that are included in the priority scenario.

Table 8-9: RTP Priority Motor Vehicle Capacity Improvements*

RTP #	Location	Improvement	Jurisdiction	Time-Line	Cost (\$1,000s)
5003	Sunrise Highway Unit 1, Phase 2	Construct new 4-lane facility from 122 nd Avenue and Rock Creek Junction	ODOT	2004-09	\$104,550
5005	Sunrise Highway Unit 2, Phase 1	Construct new 4-lane facility from Rock Creek Junction to 242 nd Avenue	ODOT	2004-09	\$184,800
5006	Sunrise Highway Unit 2, Phase 2	Construct new 4-lane facility from 242 nd Avenue to US 26	ODOT	2004-09	\$177,000
TOTAL					\$466,350

* Based on 2004 Federal Regional Transportation Plan Update, and includes Priority Motor Vehicle System projects.

The Sunrise Corridor project identified in the priority system would provide a significant extension to the east. The project would construct a new four-lane facility from the 122nd Avenue interchange to US 26 in Gresham. Preliminary plans provided by Clackamas County indicate that access to the facility near the study area would be limited to an interchange at the Rock Creek Junction near the Highway 212/224 split. No direct access to the Sunrise Corridor would be provided from 152nd Avenue, 162nd Avenue or 172nd Avenue.

With the addition of the priority projects, several study intersection improve to acceptable operating standards. The majority of the signalized study intersections on Sunnyside Road east of 142nd Avenue meet the level of service standard. This improvement is due in part to the reduction in east-west volume that is now traveling on the Sunrise Corridor. Although volumes are lower in the center of Happy Valley, operating conditions continue at LOS F for the minor street approach at most unsignalized study intersections. Table 8-10 summarizes the study intersection performance for the 2025 priority scenario.

Based on the 2025 priority analysis, the majority of the study intersections would not meet the City's level of service standard with the capacity improvements identified in the RTP priority system. Additional capacity improvements will be needed to provide an adequate transportation system for the forecasted land use.

Table 8-10: 2025 Priority Intersection Level of Service (PM Peak Hour)

Intersection	Level of Service	Delay	Volume/Capacity
Unsignalized Intersections			
172 nd Avenue/Hagen Road	B/F	>50	-
147 th Avenue/Monner Road	A/F	>50	-
162 nd Avenue/Monner Road	A/D	26.7	-
145 th Avenue/King Road	F	>50	>1.0
145 th Avenue/Ridgecrest	B/F	>50	-
145 th Avenue/Clatsop Road	B/F	>50	-
132 nd Avenue /King Road	A/F	>50	-
132 nd Avenue/Ridgecrest Road	F	>50	>1.0
132 nd Avenue/Clatsop Road	A/F	>50	-
122 nd Avenue/Spring Mountain Drive	B/F	>50	-
129 th Avenue/Mountain Gate Road	B/F	>50	-
129 th Avenue/William Otty Road	A/F	>50	-
129 th Avenue/King Road/Mt. Scott Boulevard	F	>50	>1.0
William Otty Road/Kimberly Court	A	9.2	0.43
Mt. Scott Boulevard/Idleman Road/Ridgecrest Road	F	>50	>1.0
Valley View/William Otty Road	F	>50	>1.0
Clatsop Street/162 nd Avenue	F	>50	>1.0
Vogel Road/172 nd Avenue	F	>50	>1.0
Troge Road/172 nd Avenue	F	>50	>1.0
Hemrick Road/172 nd Avenue	F	>50	>1.0
Sager Road/172 nd Avenue	F	>50	>1.0
170 th Avenue (Baxter Road)/172 nd Avenue	F	>50	>1.0
Signalized Intersections			
Sunnyside Road/Valley View Terrace	F	>80	>1.0
Sunnyside Road/122 nd Avenue	F	>80	>1.0
Sunnyside Road/132 nd Avenue	F	>80	>1.0
Sunnyside Road/142 nd Avenue	C	25.1	0.89
Sunnyside Road/147 th Avenue	C	30.5	0.78
Sunnyside Road/152 nd Avenue	C	32.0	0.77
Sunnyside Road/157 th Avenue	C	32.3	0.75
Sunnyside Road/162 nd Avenue	D	36.0	0.67
Sunnyside Road/172 nd Avenue	C	30.6	0.66

Notes: A/A=major street LOS/minor street LOS

Signalized and all-way stop delay = average vehicle delay in seconds for entire intersection

Unsignalized delay = highest minor street approach delay

*All-way stop control intersection

Priority Plus TSP Recommended Projects

Based on the priority system analysis, additional capacity improvements are recommended to accommodate the forecasted land use within the TSP study area. The following sections summarize the evaluation of proposed planning level roadway network, roadway extensions and intersection improvements to meet future capacity needs.

Proposed Roadway Network

The forecasted 2025 land use indicates significant growth in both housing and employment within the TSP study area. The portion of Happy Valley bounded loosely by Clatsop Street to the north, 145th Avenue and 162nd Avenue to the east, Highway 212 to the south and the west City limits is expected to experience moderate growth in the next 20 years. The major growth areas are the Rock Creek Area bounded by Sunnyside Road, Highway 212, 162nd Avenue and 172nd Avenue, the Scouter Mountain Area bounded by 145th Avenue, 172nd Avenue, Clatsop Street, Monner Road and Hagen Road and the 172nd Avenue corridor from Highway 212 to Foster Road. The recommended planning level roadway system and traffic control are shown in **Figure 8-11**.

Rock Creek Area – (bounded by Sunnyside, Highway 212, 152nd and 172nd)

The Rock Creek Area includes moderate housing growth south of Sunnyside Road and a major employment center north of Highway 212 expected to generate more than 5,000 jobs in the next 20 years. An arterial and collector roadway system was developed within the Rock Creek Area to accommodate the future motor vehicle demands. The RTP identified the Sunrise Corridor project would provide a direct regional connection to this area with the planned Rock Creek interchange to alleviate some of the future demand on Sunnyside Road. The proposed Rock Creek Area roadway system is consistent with the conceptual roadway system developed by Clackamas County for the Damascus/Boring Concept Plan.¹²

172nd Avenue would serve as the major north-south arterial in the area. The future design of 172nd Avenue from Sunnyside Road to Highway 212 was recently completed by Clackamas County. The roadway was designed with access management strategies appropriate for a major arterial including a minimum 1,000 foot traffic signal spacing and a raised center median to restrict mid-block left turn movements.

Rock Creek Boulevard would serve as a 5-lane major arterial through the employment center to connect the Sunrise Corridor Rock Creek interchange to 172nd Avenue and Damascus to the east. This would serve local demand from the employment center and provide access to the regional roadway system for trips outside the study area.

The extension of 162nd Avenue south of Sunnyside Road to Highway 212 would provide area-wide connectivity between the residential neighborhoods planned north of Sunnyside Road and the future residential and employment center planned south of Sunnyside Road. This new north-south roadway extension is needed to alleviate future demands on 172nd Avenue. The 162nd Avenue extension has several geographical challenges including a creek crossing and steep grades.

¹² Damascus/Boring Concept Plan, Draft Transportation System Recommendations, Clackamas County, June 17, 2005.

Figure 8-11: Motor Vehicle Master Plan

A supporting collector roadway system was defined within the employment center area to provide local circulation. The collector facilities were planned a minimum of 1,000 feet apart to establish desirable traffic signal spacing.

The identified roadway network within the Rock Creek Employment Area between Rock Creek and 162nd Avenue does not propose specific alignments but rather serves as a guideline for potential roadway connections. A transportation master plan will be developed for the area which considers all reasonable roadway network alternatives combined with future land use proposals to produce a balance between circulation/capacity needs and land use/environmental sensitivities in the study area.

Scouter Mountain Area – (bounded by 145th, 172nd, Clatsop, Monner and Hagen)

The Scouter Mountain Area has recently been annexed into the City with potential for future residential land use. The forecasted land use includes approximately 5,000 dwelling units on Scouter's Mountain and the adjacent area. Several geographical constraints were considered with the development of the proposed roadway system in this area. The peak elevation of Scouter Mountain is 940-feet while the elevation of the surrounding roadways (145th Avenue, Monner Road and Clatsop Street) are as low as 420-feet. As a result, finding a feasible alignment for several desired roadway connections was difficult. It was assumed that roadways with estimated grades of 12% or lower would be reasonable.

The need for an east-west collector roadway connecting 145th Avenue to 172nd Avenue was identified, however the existing contours in the area result in roadways with grades in excess of 15%. The preliminary alignment for Scouter Mountain Road was selected along the south side of Scouter's Mountain to limit the grade of the roadway and potential environmental impacts.

The extension of 162nd Avenue between Hagen Road and Clatsop Street would provide area-wide north-south connectivity and alleviate future traffic demands on 145th Avenue and 172nd Avenue. The proposed 162nd Avenue alignment is intended to follow the contours of the hillside to keep grades and environmental impacts at a minimum.

The extension of Clatsop Street from 162nd Avenue to 172nd Avenue would provide the only east-west roadway connection between the Happy Valley bowl area (west of 145th Avenue) and the 172nd Avenue corridor. The Clatsop Street extension would be located within the Baxter Road right-of-way for the majority of alignment to reduce environmental impacts.

A supporting north-south and east-west collector roadway system was defined within the area to provide local circulation. The collector facilities were planned approximately one-quarter mile apart to establish desirable traffic signal spacing. The location of the collector intersections along 172nd Avenue are coordinated with the proposed land uses.

Pleasant Valley Golf Course Area – (bounded by 162nd, 172nd, Sunnyside and Hagen)

The Pleasant Valley Golf Course and the adjacent property to the south have a potential for future residential redevelopment. The forecasted land use includes approximately 1,000 dwelling units and 300 employees within the area.

As part of this TSP update, Hagen Road from 162nd Avenue to 172nd Avenue was reclassified from a neighborhood street to a local street. The roadway currently has single family homes along the frontage resulting in significant impacts if the roadway were improved to the collector cross-section and extended further to the east and west. To reduce impacts, a new collector roadway is recommended north of Hagen Road. The new collector would be located an appropriate distance north of Hagen Road to allow for single family development along the north side of Hagen Road and a deep enough block on the south side of the new collector to allow for development. The new Scouter's Mountain Road would extend to the west connecting to 147th Avenue north of Monner Road and to the east to 177th Avenue. Hagen Road would end in a cul de sac just west of 172nd Avenue.

A supporting north-south and east-west collector roadway system was defined within the area to provide local circulation. The collector facilities were planned approximately one-quarter mile apart to establish desirable traffic signal spacing. The extension of Troge Road west of 172nd Avenue is shown with the alignment included as part of the current Pleasant Valley PUD site plans. The Sunnyside Road Improvements Phase 3B plans include a proposed traffic signal at Sunnyside Road/169th Avenue. A collector roadway is proposed from this intersection to the north continuing to 172nd Avenue north of Vogel Road to provide adequate access to the adjacent commercial land use. The east-west extension of Misty Drive from 162nd Avenue to 172nd Avenue would have several geographical challenges including a creek crossing and steep grades.

Sunrise Corridor

The 2025 Priority scenario includes the Sunrise Corridor project as a four lane expressway from I-205 to US 26. The forecasted 2025 Priority scenario volumes on Sunnyside Road between I-205 and 172nd Avenue indicate a need for additional east-west capacity in the study area. To accommodate future traffic demands, the Sunrise Corridor may require additional lanes. The Sunrise Corridor project is an on-going planning effort by ODOT. Specific project needs such as cross-section and alignment will be determined in the Supplemental Draft Environmental Impact Statement planned for completion in early 2009.

177th Avenue

The need for a north-south collector facility to the east of 172nd Avenue was identified. This new north-south roadway would alleviate future demands on 172nd Avenue by providing an adequate roadway circulation system. The proposed 177th Avenue alignment would have several geographical challenges including creek crossings and steep grades.

Roadway Extension Projects

There are a number of locations in Happy Valley where, due to the lack of alternative routes, there is an imbalance of traffic volumes that load onto one street. A well connected transportation system limits out of direction travel for motorists, bicycles and

pedestrians and reduces vehicle miles traveled within the study area. Several roadway extension projects are recommended to:

- Allow local traffic to make in-town trips using well connected streets without traveling on arterial roadways.
- Limit traffic growth on Ridgecrest Road and 132nd Avenue.
- Reduce vehicle miles traveled (VMT) within the study area by limiting out of way travel patterns for all modes.
- Provide an adequate roadway system for future local development.

An extension of Clatsop Street west of 132nd Avenue connecting to Mt. Scott Boulevard would fill in a large gap in the street system. This roadway would provide additional east-west capacity in the northern part of the City and improve connectivity for all modes of travel. The proposed connections would alleviate future traffic demands on Ridgecrest Road and 132nd Avenue. The identified Clatsop Street extension does not propose a specific roadway alignment but rather serves as a guideline for a potential roadway connection. A detailed transportation subarea analysis will be required which considers all reasonable roadway network alternatives combined with future land use proposals to produce a balance between circulation/capacity needs and land use/environmental sensitivities in the study area.

The Johnson Creek extension continues the existing roadway up the hill to Idleman Road. The proposed connections would provide an alternative route into Happy Valley from I-205 and improve connectivity for all modes of travel. The majority of this facility was constructed as part of the Altamont PUD.

Study Intersection Improvements

With the addition of the proposed roadway network and extensions described in the previous sections, the 2025 priority system plus TSP recommended project scenario was developed to forecast study intersections volumes. The operational analysis found that significant improvements would be required at the majority of the study intersections to accommodate the forecasted growth. These potential improvements include traffic signal control or roundabout control, additional turn lanes, roadway widening, access management and traffic signal coordination.

Preliminary Traffic Signal Warrants

Preliminary traffic signal warrants¹³ were evaluated at all unsignalized study intersections under year 2025 priority traffic volume conditions. The Peak Hour Warrant analysis was based on PM peak hour traffic volumes. The results of this analysis are shown in Table 8-11.

Preliminary traffic signal warrants were met at several study intersections under year 2025 priority plus traffic volume conditions. Intersections meeting PM peak hour traffic signal warrants will be analyzed at a future date based on Eight Hour Warrants before construction of a traffic signal occurs. Meeting traffic signal warrants does not guarantee that a signal will be installed, but provides criteria to be utilized along with engineering judgment. The installation of a roundabout shall also be considered at intersections with substandard performance before a traffic signal is installed.

¹³ Preliminary Signal Warrants, MUTCD Warrant 3 (Peak Hour Vehicular Volume).

Traffic signal control or roundabout control is recommended in the Motor Vehicle Master Plan at several study intersections based on the preliminary traffic signal warrant analysis to improve traffic operations and safety for both vehicles and pedestrians.

Table 8-11: 2025 Priority System PM Peak Hour Signal Warrant Analysis

Intersection	PM Peak Hour Signal Warrant Met?
172 nd Avenue/Hagen Road	No
147 th Avenue/Monner Road	No
162 nd Avenue/Monner Road	No
145 th Avenue/King Road	Yes
145 th Avenue/Ridgecrest Road	Yes
145 th Avenue/Clatsop Road	Yes
132 nd Avenue /King Road	Yes
132 nd Avenue/Ridgecrest Road	Yes
132 nd Avenue/Clatsop Road	Yes
122 nd Avenue/Spring Mountain Dr	No
129 th Avenue/Mountain Gate Road	Yes
129 th Avenue/William Otty Road	Yes
129 th Ave/King Road/Mt. Scott Blvd	Yes
William Otty Road/Kimberly Court	No
Mt. Scott Boulevard/Idleman Road/Ridgecrest Road	Yes
Valley View/William Otty Road	No
Clatsop Street/162 nd Avenue	Yes
Vogel Road/172 nd Avenue	Yes
Troge Road/172 nd Avenue	Yes
Hemrick Road/172 nd Avenue	Yes
Sager Road/172 nd Avenue	Yes
170 th Avenue (Baxter Road)/172 nd Avenue	Yes

Motor Vehicle Master Plan

The Motor Vehicle Master Plan combines both improvement projects identified in prior plans (Happy Valley TSP, Clackamas County TSP, Rock Creek Plan, Metro RTP, etc.) and those determined as the outcome of the Happy Valley TSP update analysis. These improvements are shown in **Figure 8-11** and listed below in Table 8-12. The proposed new roadways/extension projects listed in Table 8-12 have been identified (i.e. Roadway A) to correspond with the labels shown in **Figure 8-11**.

The planning level cost estimates provided are based on general unit costs for transportation improvements, but do not necessarily reflect the unique project elements that can significantly add to project costs. Each of these project costs will need further refinement to detail right-of-way requirements and costs associated with special design details as projects are pursued. The estimated cost to obtain required right-of-way was included in all of the roadway widening projects. Right-of-way costs were also included in the cost estimates for the 162nd Avenue extensions (north and south) and the Rock

Creek major arterial. The construction of these roadways would be required prior to construction of the adjacent properties to support the future development. It was assumed that the new roadway/extension projects (except the 162nd Avenue extensions and the Rock Creek major arterial) would be constructed on land dedicated by the associated development, therefore, right-of-way costs are not included in their cost estimates.

Table 8-12: Motor Vehicle Master Plan Projects

Project	Improvement	Cost (\$1,000s)
<i>Roadway Widening</i>		
Clatsop Street Widening West	Widen to 3-lane collector between 132 nd Avenue and 145 th Avenue	\$3,350
Clatsop Street Widening East	Widen to 3-lane collector between 145 th Avenue and 162 nd Avenue	\$4,450
172 nd Avenue Widening North	Widen to 5-lane major arterial between Sunnyside Road and Clatsop Street	\$21,300
Sager Road Widening	Widen to 3-lane collector between 162 nd Avenue and 172 nd Avenue	\$1,950
122 nd /129 th Avenue Widening	Widen to 3-lane collector between Sunnyside Road and King Road and smooth curves	\$4,800
King Road Widening	Widen to a 3-lane collector cross-section between 129 th Avenue and 145 th Avenue	\$3,500
132 nd Avenue Widening	Widen to 3-lane collector from Clatsop Street to King Road	\$4,550
145 th Avenue Widening	Widen to 3-lane collector from Clatsop Street to Monner Road	\$7,700
Mt. Scott Boulevard	Widen to 3-lane collector from 129 th Avenue to north City limits	\$4,450
162 nd Avenue Widening	Widen to 3-lane collector from Palermo Avenue to Sunnyside Road	\$3,900
Idleman Road Widening	Widen to 3-lane collector from Mt. Scott Boulevard to west city limits, correct roadway alignment.	\$9,250
Valley View Terrace Widening	Widen to 3-lane collector from Sunnyside Road to William Otty Road	\$1,400
<i>New Roadways/Extensions</i>		
Johnson Creek Road Extension (Roadway A)	Extend Johnson Creek Road to connect to Idleman Road.	\$1,000
Clatsop Street Extension West** (Roadway B)	Construct a new 3-lane collector between 132 nd Avenue and Mt. Scott Boulevard.	\$3,000
Clatsop Street Extension East** (Roadway C)	Construct a new 3-lane collector between 162 nd Avenue and Foster Road.	\$3,400
162 nd Avenue Extension North** (Roadway D)	Construct a new 2/3-lane collector between Hagen Road and Clatsop Street.	\$14,600
162 nd Avenue Extension South** (Roadway E)	Construct a new 3-lane collector south of the Taralon development to Highway 212.	\$8,800
Sager Road** (Roadway F)	Construct a new 3-lane east-west collector from 172 nd Avenue to Foster Road.	\$1,600
Scouter Mountain East Roadway #1** (Roadway G)	Construct a new 3-lane east-west collector from 162 nd Avenue to 172 nd Avenue. Construct a new 5-lane arterial from 172 nd Avenue to Foster Road/Tillstrom Road.	\$3,850
Scouter Mountain East Roadway #2** (Roadway H)	Construct a new 3-lane east-west collector from 162 nd Avenue to 177 th Avenue.	\$1,850

Project	Improvement	Cost (\$1,000s)
Hemrick Road Extension** (Roadway I)	Construct a new 3-lane east-west collector from 162 nd Avenue to 177 th Avenue.	\$1,700
Scouter Mountain Road** (Roadway J)	Construct a new east-west collector on the south side of Scouter's Mountain between 147 th Avenue and 177 th Avenue.	\$7,600
Troge Road Extension** (Roadway K)	Construct a new 3-lane collector between 162 nd Avenue and 177 th Avenue.	\$2,700
169 th Avenue Extension** (Roadway L)	Construct a new 3-lane collector from Sunnyside Road to 177 th Avenue	\$2,950
Misty Drive Extension** (Roadway M)	Construct a new 3-lane east-west collector from 162 nd Avenue and 177 th Avenue.	\$3,200
Rock Creek Court Extension** (Roadway N)	Construct a new 3-lane east-west collector from 172 nd Avenue and 177 th Avenue.	\$1,000
Creekwood Road Extension** (Roadway O)	Construct a new 3-lane east-west collector from 172 nd Avenue and 177 th Avenue.	\$1,000
Rock Creek Boulevard** (Roadway P)	Construct a new 5-lane east-west major arterial from 177 th Avenue to the Sunrise Corridor Rock Creek interchange.	\$17,000
Rock Creek East-West Collector** (Roadway Q)	Construct a new 3-lane east-west collector between 162 nd Avenue and 172 nd Avenue.	\$2,100
Parklane Loop** (Roadway R)	Construct a new 3-lane north-south collector from 162 nd Avenue to Rock Creek Collector	\$2,450
167 th Avenue** (Roadway S)	Construct a new 3-lane north-south collector from Rock Creek Boulevard to Rock Creek Collector	\$650
177 th Avenue** (Roadway T)	Construct a new 3-lane north-south collector from Scouter Mountain East Roadway #1 to Armstrong Circle.	\$11,950
<i>Intersection Improvements</i>		
129 th Avenue/Mt. Scott Boulevard/King Road	Install a traffic signal or roundabout, add eastbound right turn lane	\$500
129 th Avenue/Mountain Gate Road	Install a traffic signal or roundabout	\$250
Mt. Scott Boulevard/Idleman Road/Ridgecrest Road	Install a traffic signal or roundabout, improve vertical curve, align eastbound and westbound approaches	\$500
Mt. Scott Boulevard/Clatsop Street	Install a traffic signal or roundabout	\$250
145 th Avenue/Ridgecrest Road	Install a traffic signal or roundabout	\$250
145 th Avenue/King Road	Install a traffic signal or roundabout	\$250
129 th Avenue/William Otty Road	Install a traffic signal or roundabout	\$250
145 th Avenue/Clatsop Road	Install a traffic signal or roundabout	\$250
132 nd Avenue/King Road	Install a traffic signal or roundabout	\$250
132 nd Avenue/Ridgecrest Road	Install a traffic signal or roundabout	\$250
132 nd Avenue/Clatsop Road	Install a traffic signal or roundabout	\$250
Johnson Creek Road/Idleman Road	Install a traffic signal or roundabout	\$250
172 nd Avenue/Clatsop Street	Install a traffic signal or roundabout	\$250
172 nd Avenue/Sager Road	Install a traffic signal or roundabout	\$250
172 nd Avenue/Scouter Mountain East Roadway #1	Install a traffic signal or roundabout	\$250
172 nd Avenue/Scouter Mountain East Roadway #2	Install a traffic signal or roundabout	\$250

Project	Improvement	Cost (\$1,000s)
172 nd Avenue/Hemrick Road	Install a traffic signal or roundabout	\$250
172 nd Avenue/Scouter Mountain Road	Install a traffic signal or roundabout	\$250
172 nd Avenue/Troge Road	Install a traffic signal or roundabout	\$250
172 nd Avenue/169 th Avenue Extension	Install a traffic signal or roundabout	\$250
172 nd Avenue/Misty Drive	Install a traffic signal or roundabout	\$250
Sunnyside Road/169 th Avenue	Install a traffic signal or roundabout	\$250
162 nd Avenue/Clatsop Street	Install a traffic signal or roundabout	\$250
162 nd Avenue/Sager Road	Install a traffic signal or roundabout	\$250
162 nd Avenue/Scouter Mountain East Roadway #1	Install a traffic signal or roundabout	\$250
162 nd Avenue/Scouter Mountain East Roadway #2	Install a traffic signal or roundabout	\$250
162 nd Avenue/Hemrick Road	Install a traffic signal or roundabout	\$250
162 nd Avenue/Scouter Mountain Road	Install a traffic signal or roundabout	\$250
162 nd Avenue/Misty Drive	Install a traffic signal or roundabout	\$250
147 th Avenue/Scouter Mountain Road	Install a traffic signal or roundabout	\$250
162 nd Avenue/Parklane Loop	Install a traffic signal or roundabout	\$250
162 nd Avenue/Rock Creek Boulevard	Install a traffic signal or roundabout	\$250
162 nd Avenue/Rock Creek Collector	Install a traffic signal or roundabout	\$250
167 th Avenue/Rock Creek Boulevard	Install a traffic signal or roundabout	\$250
Parklane Loop/Rock Creek Boulevard	Install a traffic signal or roundabout	\$250
Total Motor Vehicle Master Plan Cost		\$172,250

**These projects would only occur with future development or redevelopment and would not be initiated by the City.
Note: Right-of-way is included in the cost estimates for the widening projects, the 162nd Avenue extensions (north and south) and the new Rock Creek major arterial roadway.

Table 8-13 summarizes study intersection capacity operations for the 2025 Priority Plus scenario with includes the recommended Motor Vehicle Master Plan projects. The recommended improvements for each study intersection are summarized in Table 8-12 above. The majority of study intersections meet City operating standards.

The 122nd Avenue/Spring Mountain Drive intersection continues to operate with LOS F for the minor street approach under the 2025 Priority Plus scenario. Based on the 2025 forecast, this intersection does not meet warrants for a traffic signal or additional turn lanes. The local street connectivity within the Spring Mountain Drive neighborhood is adequate to provide alternative routes to signalized intersection at both 122nd Avenue and Sunnyside Road. Therefore, no improvements at the 122nd Avenue/Spring Mountain Drive intersection are recommended.

The signalized study intersections on Sunnyside Road from Valley View Terrace to 152nd Avenue continue to operate below minimum performance standards under the 2025 Priority Plus scenario. Major roadway improvements to this portion of Sunnyside Road have recently been constructed. Additional roadway improvements to this newly completed construction project is not feasible within the next 20 years. Therefore, no

additional roadway projects are recommended at these intersections in the Motor Vehicle Master Plan.

The Sunnyside Road corridor within the TSP study area is forecasted to carry significant east-west volumes in the 2025 Priority Plus scenario which includes a four-lane Sunrise Corridor facility from I-205 to US 26. A large portion of the volume increase is attributed to nearby planned major growth areas, including Pleasant Valley and Damascus/Boring. Although local transportation plans (some preliminary) have been developed for these planned growth areas, their expected impacts to adjacent areas (including Happy Valley) and regional facilities will need to be addressed.

Table 8-13: 2025 Priority Plus Intersection Level of Service (PM Peak Hour)

Intersection	Level of Service	Delay	Volume/Capacity
<i>Unsignalized Intersections</i>			
172 nd Avenue/Hagen Road	-/C	16.7	-
147 th Avenue/Monner Road	A/D	32.9	-
162 nd Avenue/Monner Road	A/D	30.4	-
122 nd Avenue/Spring Mountain Drive	B/F	>50.0	-
William Otty Road/Kimberly Court	A/A	8.8	0.42
Valley View/William Otty Road	C	17.9	0.80
<i>Signalized Intersections</i>			
Sunnyside Road/Valley View Terrace	F	>80	>1.0
Sunnyside Road/122 nd Avenue	F	>80	>1.0
Sunnyside Road/132 nd Avenue	F	>80	>1.0
Sunnyside Road/142 nd Avenue	E	74.0	>1.0
Sunnyside Road/147 th Avenue	F	>80	>1.0
Sunnyside Road/152 nd Avenue	E	>80	>1.0
Sunnyside Road/157 th Avenue	C	32.0	0.65
Sunnyside Road/162 nd Avenue	C	35.0	0.66
Sunnyside Road/172 nd Avenue	D	38.8	0.75
129 th Avenue/King Road/Mt. Scott Boulevard	D	38.6	0.85
129 th Avenue/William Otty Road	B	17.0	0.66
129 th Avenue/Mountain Gate Road	B	13.0	0.79
132 nd Avenue/Ridgecrest Road	B	16.1	0.65
132 nd Avenue/Clatsop Road	B	17.5	0.59
132 nd Avenue /King Road	B	17.1	0.85
145 th Avenue/Clatsop Road	B	13.4	0.49
145 th Avenue/Ridgecrest	B	16.2	0.53
145 th Avenue/King Road	B	17.6	0.65
Mt. Scott Boulevard/Idleman Road/Ridgecrest Road	C	20.7	0.64

Clatsop Street/162 nd Avenue	C	35.0	0.66
Vogel Road/172 nd Avenue	B	17.0	0.66
Troge Road/172 nd Avenue	B	13.0	0.79
Hemrick Road/172 nd Avenue	B	13.4	0.49
Sager Road/172 nd Avenue	C	32.0	0.65
170 th Avenue (Baxter Road)/172 nd Avenue	C	20.7	0.64

Notes: A/A=major street LOS/minor street LOS

Signalized and all-way stop delay = average vehicle delay in seconds for entire intersection

Unsignalized delay = highest minor street approach delay

*All-way stop control intersection

Motor Vehicle Action Plan

A motor vehicle system action plan project list was created to identify motor vehicle projects that are reasonably expected to be funded by the year 2025, which meets the requirements of the updated Transportation Planning Rule¹⁴. Table 8-14 shows the action plan which combines projects identified in the RTP Priority scenario with additional projects that have been identified in the TSP update analysis. The construction of new collector and arterial facilities would only occur to support future development or redevelopment and would not be initiated by the City. The potential funding source serves as a guide for financing options the City should pursue. The estimated schedule is based on the RTP time line unless more current information is available.

Table 8-14: Motor Vehicle Action Plan Projects

Project	Improvement	Potential Funding Source	Estimated Schedule	Cost (\$1,000s)
172 nd Avenue Widening North	Widen to 5-lane major arterial between Sunnyside Road and Clatsop Street.	Joint SDC Fund	2021-2025	\$21,300
122 nd /129 th Avenue Widening	Widen to 3-lane collector between Sunnyside Road and King Road and smooth curves.	Joint SDC Fund	2016-2025	\$4,800
162 nd Avenue Widening	Widen to 3-lane collector from Hagen Road to Palermo Avenue.	Joint SDC Fund	-	\$3,900
162 nd Avenue Extension South**	Construct a new 3-lane collector south of the Taralon development to Highway 212.	Joint SDC Fund	-	\$8,800
162 nd Avenue Extension North**	Construct a new 2/3-lane collector between Hagen Road and Clatsop Street.	Joint SDC Fund	-	\$14,600
Clatsop Street Extension East**	Construct a new 3-lane collector between 162 nd Avenue and 177 th Avenue.	Joint SDC Fund	-	\$3,400
Scouter Mountain Road**	Construct a new east-west collector on the south side of Scouter's Mountain between 147 th Avenue and 177 th Avenue.	Joint SDC Fund	-	\$7,600
Rock Creek	Construct a new 5-lane east-west major	Joint SDC	-	\$17,000

¹⁴ OAR Chapter 660, Department of Land Conservation and Development, Division 012, Transportation Planning, adopted on March 15, 2005, effective April 2005.

Project	Improvement	Potential Funding Source	Estimated Schedule	Cost (\$1,000s)
Boulevard* *	arterial from 177 th Avenue to the Sunrise Corridor Rock Creek interchange.	Fund		
Total Motor Vehicle Project Costs				\$81,400

**These projects would only occur with development or redevelopment and would not be initiated by the City.

Trucks

Efficient truck movement plays a vital role in the economical movement of raw materials and finished products. The establishment of through truck routes provides for this efficient movement while at the same time maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. Sunnyside Road and 172nd Avenue are recommended as designated through truck routes in the TSP study area. The objective of these route designations is to allow these routes to focus on design criteria that are “truck friendly”; i.e. 12-foot travel lanes, longer access spacing, 35-foot (or larger) curb returns and pavement design that accommodates a larger share of trucks.

Damascus Transportation System Plan Amendments

The City of Damascus Transportation System Plan is currently being prepared for adoption. It shall include language to bring it into compliance with the IAMP.