

APPENDIX 2

PLEASANT VALLEY TRANSPORTATION SYSTEM PLAN

Chapter 7. Transportation System Plan

Introduction

The purpose of the Pleasant Valley Transportation System Plan (TSP) is to establish a framework for addressing the transportation needs for this new urban community as urbanization occurs with the implementation of the Pleasant Valley Plan District. It is important that this TSP works within the framework provided by other related state, regional and local plans.

The Pleasant Valley TSP is not intended to be a “stand-alone” TSP but rather will be used by the Cities of Gresham and Portland to amend their respective Transportation System Plans specific to Pleasant Valley. For the City of Gresham it will amend Volume 4 – Transportation System Plan, Gresham Community Development Plan

Transportation System Plan

- Section 1 -- Planning Framework
- Section 2 -- Policies and Strategies
- Section 3 -- System Inventory and Assessment
- Section 4 -- Forecast and Alternatives
- Section 5 -- System Plans
- Section 6 -- Implementation – Projects and Funding

Plans for new urban areas must follow the requirements and guidelines of Title 11 of Metro’s Urban Growth Management Functional Plan. Title 11 requires the following concerning transportation:

A conceptual transportation plan consistent with the applicable provisions of the Regional Transportation Plan, Title 6.4 of Regional Transportation Plan [replaced Title 6 of the Urban Growth Management Functional Plan], and that is also consistent with the protection of natural resources either identified in acknowledged comprehensive plan inventories or as required by Title 3 of the Urban Growth Management Functional Plan. The plan shall, consistent with OAR Chapter 660 Division 11, including preliminary cost estimates and funding strategies, including likely financing approaches.

An urban growth diagram ... showing ... general locations of arterial, collector, and essential streets.

A conceptual facilities and services plan for transportation was developed as part of the *Concept Plan* project. Needed transportation facilities for the planned new urban uses were identified, rough cost estimates and likely funding strategies were developed, and a map depicting the general location arterial, collector and connecting local streets was included.

As a follow up to the concept planning, the *Implementation Plan* further defines the transportation system for the area by including the following elements:

- Functional Classification for Streets
- Street Design Types
- Connectivity Plan
- Bike and Trail Plan
- Illustrative Street Plan
- Transit Plan

The *Implementation Plan* project also identified transportation elements for a Public Facility Plan, consistent with Oregon Administrative Rules, specifically OAR 660-011-00. These elements are similar to those required for a Transportation System Plan, consistent with Oregon Administrative Rules, specifically OAR 660-012-00. Key requirements of the Transportation System Planning Rule include:

- A determination of transportation needs
- A road system of arterials and collectors and standards for the layout of local streets and other important non-collector street connections
- A public transportation plan
- A bicycle and pedestrian plan
- A transportation financing program including a list of planned transportation facilities and major improvement; a general estimate of the timing for facilities and improvements; a determination of rough cost estimates; and policies to guide selection of facility and improvement projects.

A key component to the successful implementation of the Transportation System Plan is the coordination of the multiple government agencies involved in Pleasant Valley, most notably the cities of Gresham and Portland. A March 2004 Gresham and Portland IGA provides a map showing future governance and urban services boundary for the two jurisdictions and generally provides the urban services will be provided by Gresham in areas that Gresham annexes (Area A) and by Portland in areas Portland annexes (Area B). Transportation services currently involved agreements with Multnomah County, which currently controls public roads in Pleasant Valley. The future status of roads in Pleasant Valley is part of an on-going discussion between Gresham and Portland. For planning purposes, the TSP assumes all major roads in Area A will belong to Gresham and conform to City of Gresham street design standards.

For the remainder of Pleasant Valley, which is in Clackamas County (Area C), a final decision on who will provide transportation services to most of this area has not yet been determined. The Cities of Portland and Gresham can serve this area, but do not have agreements in place with the county for doing so.

For planning purposes and to demonstrate that the area can urbanize in a manner that complies with Goal 11, the TSP assumes the cities of Portland and Gresham will serve the balance of Area C. The cities have plans in place that demonstrate its capacity to serve Area C. It can be noted that Clackamas County is a potential transportation service provider in Area C

The proposed Pleasant Valley TSP combines the results of the *Concept Plan* transportation inventory, needs analysis and the goals and policies development that resulted in conceptual transportation plan with the results of the *Implementation Plan* that details street classifications, street designs, connectivity and bike/pedestrian plans along and a public facility plan.

Section 1 -- Planning Framework

Background

Pleasant Valley is an area that was added to the region's urban growth boundary in December 1998 to accommodate forecasted population growth in the region. Pleasant Valley is planned as a new, urban community. It is 1,532 acres located south and east of the current city limits for Gresham and Portland. The City of Gresham, in partnership with the City of Portland, has been working with its regional partners and the community since 1998 to create a plan for the future urbanization of this rural area. This extensive planning process has created a vision and a plan for the transition of a rural community of 800 residents into an urban community of approximately 12,000 residents and 5,000 jobs.

Over the last four years the Pleasant Valley Plan District (Plan District) has been drafted. Crafted during the Pleasant Valley Concept Plan (Concept Plan) project and the follow-up Pleasant Valley Implementation Plan (Implementation Plan) project, it was created with the help of public input from open houses and community forums, numerous advisory committees, and staff from both the cities of Gresham and Portland and other agencies. The *Concept Plan* project created maps and text that provide a blueprint for future development of the area located south of Gresham and east of Portland. The *Implementation Plan* project provided a "bridge" document between the *Concept Plan* and these *Comprehensive Plan Amendments*.

On May 14, 2002, the Pleasant Valley Concept Plan Steering Committee endorsed a Concept Plan and set of Implementation Strategies for the valley. The central theme of the plan is to create an urban community through the integration of land use, transportation and natural resource elements. The Concept Plan has been refined into the Plan District. The Plan District consists of a map of proposed comprehensive plan designations, with associated code text, and other maps, diagrams and background findings.

The Plan District will fulfill the goal of the Concept Plan to create a quality living environment, with a sense of place that is unique to Pleasant Valley. To achieve this goal, the Plan District will implement compact mixed-use neighborhoods, a town center, neighborhood edges and centers, a variety of housing options, transportation alternatives, pedestrian friendly urban design and the integration of the natural environment into the design of the community. Critical to the sense of place in Pleasant Valley are the valley's natural resources and extensive network of streams and wetlands. The Plan District will allow the valley to develop in such a way that minimizes impact on these natural features, while allowing these features to enhance the built environment.

The *Pleasant Valley Concept and Implementation Plans* projects addressed the entire 1,532-acre study area to achieve the overall goal of "creating a complete community." The cities of Gresham and Portland have agreed to adopt similar policies and development code to achieve this goal. In addition, the cities reached an agreement on future governance that entails Gresham annexing about 1,004 acres and Portland about 268 acres in Multnomah County. No service or governance agreement exists in Clackamas County. However, the cities did agree upon a boundary if such an agreement was reached that provided for Gresham and Portland governance. If that happened about 197 acres are Gresham annexation areas and about 38 acres are Portland annexation areas. The remaining 25 acres is a separate area in Clackamas County that has an existing mobile home park and that has been partially annexed by the City of Happy Valley.

The Pleasant Valley Plan District provides the basis for a land use plan that is consistent with the goals of the Concept Plan. The central theme of creating an urban community through the integration of land use,

transportation and natural resource protection is reflected by the following key elements of the Plan District:

- A mixed-use town center as the focus of retail, civic and related uses.
- A variety of housing organized in eight neighborhoods. The variety includes low, medium and high-density housing with standards that guide how variety is planned within neighborhoods.
- Planned housing that is 50 percent attached, 50 percent detached and has an overall density of 10 dwelling units per net residential acre. The estimated housing capacity is approximately 5,000 dwellings.
- Two 5-acre mixed-use neighborhood centers.
- Employment opportunities provided in the town center, mixed-use employment district and general employment districts and as home-based jobs. Employment capacity is estimated at approximately 5,000 jobs.
- A framework for protection, restoration and enhancement of the area's streams, floodplains, wetlands, riparian areas and major tree groves through the designation of areas as "environmentally sensitive and restoration areas" (ESRAs).
- Designation of a "neighborhood transition design area" adjacent to the ESRA so that neighborhood development is compatible with adjacent green corridors.
- A new elementary school and middle school located adjacent to 162nd Avenue.
- Nine neighborhood parks dispersed throughout and a 29-acre community park centrally located between the utility easements north of Kelley Creek.
- A "green" stormwater management system intended to capture and filter stormwater close to the source through extensive tree planting throughout the valley, "green" street designs, swale conveyance and filtration of run-off, and strategically placed stormwater management facilities.
- A network of trails including east-west regional trails paralleling Kelley Creek and north-south regional trails following the BPA power line easement.
- A reorganization of the valley's arterial and collector street system to create a connected network that will serve urban levels of land use and all modes of travel.
- Re-designation of Foster Road from arterial to local street status between Jenne Road and Pleasant Valley Elementary School. The intent is to preserve the two-lane tree-lined character of Foster Road and to support restoration efforts where Mitchell Creek and other tributaries flow into Kelley Creek.
- A network of transit streets that serve three mixed-use centers and seven nodes of attached housing.
- The location of major roads away from important historic resources and "park blocks" that connect the town center to the historic central section of Foster Road.

Planning Context for Transportation

Regional Context

Adopted in 1995, the 2040 Growth Concept establishes the region's policy for regional growth and development. Pleasant Valley is almost equal distance between the two largest regional centers in this part of the region: the Gresham and the Clackamas regional centers. The same is true for the two closest

town centers: Lents and Damascus. Each of the region's centers is unique, and Pleasant Valley's town center will have its own individual scale and character.

Pleasant Valley enjoys a unique geographical location within a series of lava domes and wooded buttes in the southeast portion of the Portland metropolitan region. The area also contains a significant number of environmentally sensitive streams and wetlands, including Kelley and Mitchell creeks. While these natural features provide scenic vistas and recreational opportunities, they also provide challenges from a transportation perspective.

Pleasant Valley is connected to its surrounding landscape. Powell Butte, Butler Ridge and the western ridgeline provide a dramatic framing of the valley. Kelley Creek and its tributaries are key water features that connect the surrounding watershed to Johnson Creek and have influenced historical land use patterns. Kelley Creek also serves as a regional migration route for large and small animals traveling between the buttes. These features underlie a strong sense of place that residents of the valley expressed during the Concept Plan process and in previous interviews.

The Concept Plan study area extends to the regional urban growth boundary located about 2,000 feet south of the Multnomah-Clackamas County line. However, Pleasant Valley's landscape, social and historical connections extend south to the Damascus area.

Pleasant Valley Concept Plan

The Concept Plan was developed by a 23-member Steering Committee representing residents and property owners; Portland, Gresham and Happy Valley planning commissions; Multnomah and Clackamas counties; citizen advisory committees, business and neighborhood associations; Centennial School District, watershed councils, and environmental/livability organizations. The committee met 15 times between November 2000 and May 2002.

The major steps in the process were:

- Inventory of base conditions and projections of land use, transportation, natural resource and infrastructure needs.
- Establishment of project goals.
- Development of four alternative concept plans.
- Evaluation of alternatives and preparation of a hybrid Concept Plan.
- Refinement of the Concept Plan and preparation of implementation strategies.
- Endorsement of the final Concept Plan and implementation strategies.

The following is a summary of the key parts of the project approach:

Integration of Land Use, Transportation and Natural Resources. The integration of these themes is the central unifying concept for the plan. It was implemented on all levels: staffing, inventory, joint work team meetings, communications with the public and evaluation of alternatives on various issues.

Consensus Decision Making. The Steering Committee adopted "operating principles" that included a model for making decisions by consensus. The definition of consensus: "You either support the proposed action or can live with it." The committee took votes on some issues where there was not full consensus – minority viewpoints were recorded.

Project Partners. The process was a partnership of the cities of Gresham, Happy Valley and Portland, Metro, and Clackamas and Multnomah counties. Staff from these partnering governments worked together on the project's six work teams.

Working With the Community at Each Milestone. Five community forums were held to involve the public at each stage of the process and allow the public to participate in preparation of recommendations before final action by the Steering Committee. The forums, held on Saturday mornings, included open house display of working maps, presentation and large group discussion, small group discussion and exit questionnaires.

Subwatershed Planning. Pleasant Valley is at the headwaters of the Johnson Creek watershed. The tributaries to Johnson and Kelley creeks that flow through Pleasant Valley comprise eight individual “sub” watersheds that were used in the planning process. The subwatersheds were the basis for extensive information gathering and subsequent modeling of runoff under both “green” practices and traditional piped stormwater management.

Transportation Modeling and Regional Coordination. The land use alternatives and the hybrid Concept Plan were analyzed in Metro’s regional transportation model. Key assumptions included the transportation facility improvements that are adopted in the Regional Transportation Plan and urbanization of the Damascus area as evaluated by Clackamas County in the Damascus Concept Planning Study. The modeling was the basis for street alignments and classifications, transit routing, signal locations and recommendations for further study.

Green Streets. The Concept Plan includes “green” street designs as developed by Metro that are intended to reduce environmental impacts on streams from street runoff and contribute to community livability through creation of walkable tree-lined streets.

Compliance with Metro Title 11. Concept plans must follow the requirements and guidelines of Title 11 of Metro’s Urban Growth Management Functional Plan. The project work plan was organized around the topical elements of Title 11. The Steering Committee endorsed using Title 11 in the evaluation of the plan alternatives.

Coordination with State and Federal Agencies. The project began with an outreach effort to 20 state and federal agencies, including 12 interviews. As with the citizen effort, each agency was invited to participate at each major milestone. Supplemental contacts were made with agencies to involve them in meetings with the project work teams.

The Concept Plan process provided extensive opportunities for citizens to participate. These opportunities included input during many of the Steering Committee meetings, participation in five community forums and the design charrette and submittal of written comments.

Citizen input covered many topics and many levels of detail. Many citizens were concerned that the transportation system would not be adequate to carry the estimated levels of traffic in the future. This concern was coupled with support for specific elements of the plan’s proposed transportation system.

A number of goals endorsed by the Steering Committee on May 2, 2001, reflect the vision and values underlying the Pleasant Valley Plan District. They were endorsed at the end of the project inventory phase, just prior to the design charrette. They were subsequently used in evaluating the four plan alternatives.

The transportation goal was:

H. Provide transportation choices. Pleasant Valley will be a community where it is safe, convenient and inviting to walk and ride a bike. The plan will set the stage for future community-level transit service that connects to regional transit service, including street designs, land use types and densities that support transit. Recommendations will be developed to correct transportation safety issues, to address through traffic and to provide adequate capacity for future growth. The plan will coordinate with surrounding jurisdictions to create effective regional connections and a balanced regional transportation system. A well-connected street system will be planned, using a variety of street types that reinforce a sense of community and provide

adequate routes for travel. Streets will accommodate walking and biking, with special pedestrian features on major transit streets.

Other goals were to:

A. Create a community. The plan will create a “place” that has a unique sense of identity and cohesiveness. The sense of community will be fostered, in part, by providing a wide range of transportation choices and living, working, shopping, recreational, civic, educational, worship, open space and other opportunities. Community refers to the broader Concept Plan area, recognizing that it has (and will have) unique areas within it. Community also refers to Pleasant Valley’s relationship to the region – relationships with Portland, Gresham and Happy Valley, Multnomah and Clackamas counties, and the unique regional landscape that frames Pleasant Valley.

B. Create a town center as the heart of the community. A mixed-use town center will be the focus of retail, civic and related uses, and services that serve the daily needs of the local community. The town center will be served by a multi-modal transportation system. Housing will be incorporated into mixed-use buildings and/or adjacent apartments and townhomes. A central green or plaza will be included as a community gathering space. Streets and buildings will be designed to emphasize a lively pedestrian-oriented character for the town center. The town center will have strong connections to adjacent neighborhoods and commercial services that are centralized and convenient to pedestrian-oriented shopping.

C. Integrate schools and civic uses into the community. The number, type and location of schools will be coordinated with the Centennial School District. Schools and civic uses will be integrated with adjacent neighborhoods and connected by a system of bicycle and pedestrian routes. The number, type and location of mixed-use centers will be considered as schools and civic uses are integrated into the plan.

D. Celebrate Pleasant Valley’s cultural and natural history. The plan will retain the best of the past and incorporate the area’s cultural and natural history, as appropriate, into the new community form. Important cultural and natural names, places and themes will be included.

E. Preserve, restore and enhance natural resources. The plan will identify, protect, restore and enhance significant natural resource areas, including stream corridors, forested areas and buttes. Resource areas will provide the basis for identifying buildable and nonbuildable areas, and will serve as open space amenities for the community. Resource protection will include strategies to protect endangered species, water quality and the aquifer. Resource protection and enhancement will be a shared responsibility and partnership of property owners, governments and developers.

F. Use “green” development practices. The plan will incorporate community design and infrastructure plans that produce minimal impacts on the environment, including flooding and water quality within Johnson Creek. The plan will incorporate guidelines for stormwater quality and quantity and resource management for each subwatershed, and will also enhance natural hydrologic systems as a fundamental part of managing drainage and water quality. The plan will incorporate green street designs. The plan will integrate green infrastructure with land use design and natural resource protection. The plan will incorporate energy-savings measures.

G. Locate and develop parks and open spaces throughout the community. Neighborhood parks, small green spaces and open spaces will be within a short walk of all homes. A network of bicycle and pedestrian routes, equestrian trails and multi-use paths will connect the parks and open spaces. The park and trail system will be connected to the Springwater Trail, Powell Butte and other regional trails and greenspaces.

I. Provide housing choices. A variety of housing choices will be provided, with a focus on home ownership options. Housing options will accommodate a variety of demographic and income needs, including appropriate affordable choices and housing for seniors. The plan will provide for an overall

average residential density of 10 dwelling units per net residential acre (i.e., including only residential land), based on a mix of densities. Walkable neighborhoods will form the organizing structure for residential land use. Natural features will help define neighborhood form and character.

J. Provide and coordinate opportunities to work in and near Pleasant Valley. The plan will identify opportunities for home-based work and employment areas within Pleasant Valley. A range of employment opportunities will be considered, including retail and other employment. The plan also will consider the relationship of Pleasant Valley to existing employment centers in the East Metro area and potential new employment areas near Damascus.

Pleasant Valley Concept Transportation Plan

The key elements of the transportation plan (as integrated with land use and natural resources) are to:

- Create a network of arterial, collector, neighborhood connector and local streets that accommodates travel demand and provides multiple routes for travel. Key new street extensions and connections include:
 - 172nd Avenue extension north to Giese Road
 - Giese Road west to Foster Road
 - Clatsop Street west to Cheldelin Road
 - 182nd Avenue south to Cheldelin
 - Butler Road west to 190th Avenue
 - Sager Road east to Foster Road
 - Long-term arterial connection from 172nd to 190th Avenue south of the study area.
- Upgrade existing streets and design all new streets to accommodate biking and walking, with special pedestrian amenities on transit streets. Upgrade intersections with safety issues identified as part of the inventory work.
- Provide regional and community transit service on key roads in Pleasant Valley, with direct connections to Happy Valley, Clackamas regional center, Damascus, Lents, Gresham, the Columbia Corridor and downtown Portland. Transit streets include 172nd Avenue, Giese Road, 182nd Avenue, 190th Avenue, a new east-west collector south of Giese Road and Clatsop Street-Cheldelin Road.
- Provide a logical and connected street system that connects directly to community destinations while also avoiding the ESRA where possible. Plan for a local street system that complements the arterial and collector street system, and meets regional connectivity requirements.
- Use “green” street designs that are an integral part of the stormwater management system and provide walkable tree-lined streets.
- Downgrade the function of Foster and Richey roads to serve as local access streets and develop a strategy to disconnect and potentially vacate these streets in the confluence area of Kelley Creek.
- Plan for a long-term major arterial connection south of the study area from 172nd Avenue to 190th Avenue to serve long-term regional mobility needs if future urbanization occurs in Damascus. This will be evaluated more fully by Metro as part of urban area planning for the Damascus area.
- Evaluate needed capacity improvements to address long-term travel demand for key gateway routes if future urbanization occurs in Damascus. This will be evaluated as part of a Powell/Foster corridor study (beginning in summer 2002), continued Damascus area planning, and the next Regional Transportation Plan update.

Transportation and Community Systems Preservation (TCSP)

The Pleasant Valley Concept Plan was initiated under a federal highway TCSP grant. It was a pilot project – the specific goal being to link a balanced land use plan and a multi-modal transportation system with an efficient circulation system with good connection in an environmentally constrained area. Environmental considerations included creating strategies to help protect steelhead and cutthroat trout salmonoids, minimize stormwater runoff in the Johnson Creek watershed and avoid further degradation of water quality.

Acknowledging the TCSP goals, the Steering Committee adopted a series of purpose statements. Included, as a purpose, was to “determine land use and transportation patterns minimizing the impact to environmentally sensitive areas” and to “link with regional context such as the regional transportation system, the Johnson Creek watershed and the Gresham Regional Center.”

Metro Powell/Foster Corridor Refinement Plan

Metro, along with the cities of Gresham and Portland, Multnomah County and Clackamas Counties; TriMet and the Oregon Department of Transportation has been conducting the Powell/Foster Corridor Transportation study. The overall goal of the project was to define and preliminarily evaluate an initial range of multi-modal alternatives that will accommodate the 2020 corridor travel demand in a way that supports the 2040 Concept Plan. This work serves as a first phase of a multi-modal corridor plan and refinement plan for the Powell/Foster transportation corridor.

The study was funded under a Transportation and Growth Management program grant and concluded in June 2003. Because the study area included portions of the Pleasant Valley Concept area, Gresham Pleasant Valley project staff participated on the Powell/Foster Technical Advisory Committee (TAC). Similarly, Metro Powell/Foster staff participated on the Pleasant Valley TAC, Stakeholder Advisory Group and public forums.

An existing conditions and needs analysis identified Jenne Road / 174th Avenue from Powell Boulevard to Foster Road as a particular trouble spot in achieving needed capacity between Pleasant Valley and points north. Jenne Road, in Pleasant Valley, has a functional classification as a minor arterial street. As there were concerns about widening Jenne Road (due to severe slopes, adjacent riparian habitat areas and existing substandard curves), three new options to Jenne Road was created and modeled:

Two-lane option. Jenne Road widened to include one lane in each direction plus turn pockets as needed from Powell Boulevard to Foster Road.

Extra southbound lane option. Jenne widened to three lanes with one lane northbound and two lanes southbound.

New road option. Construct a new two-lane road with turn pockets near 174th from Jenne to Giese and add turn pockets to Jenne as needed. This option would create a new 172nd/174th Avenue from the Springwater Trail to the proposed SE Giese Road in the Pleasant Valley project area. A preliminary engineering sketch would have the new road utilize the existing Platt Road north of McKinley Road and then go south to Giese Road creating a new stream crossing. It would be a two-lane road with turn pockets as needed. It would likely connect at Giese Road to the west of the proposed town center. With this option Jenne Road would become classified as a local street.

Preliminary findings of the modeling, as reported by Metro, include:

- Reconstructing Jenne and building a new road would range in cost from \$7 to \$16 million.
- The extra southbound direction lane option would only address traffic congestion in one direction.

- Constructing a new road would relieve congestion on Jenne and improve north-south connections, but it would increase traffic on Southeast 174th south of Powell.
- If a new road was built, it could be designed as a “green street” that helps to protect, enhance and restore the natural environment.
- Any of the options would require some property acquisition. The new road would impact more undeveloped property.
- Widening Jenne would affect a more sensitive environmental area, but the new roadway would require an additional stream crossing.
- All options would need to be evaluated in the context of the Pleasant Valley planning efforts (see comment below).
- Gresham, Portland and Metro should jointly further evaluate these options as part of future transportation system planning for Pleasant Valley.

It should be noted that Option 3 could significantly affect the design of the land uses and circulation in the Town Center area. The evaluation of Option 3 should be conducted with two major components that support the traffic impact perspective:

1. A review of the land use, natural resource and urban design implications of the options.
2. Opportunities to comment by Pleasant Valley stakeholders.

Section 2 – Policies and Strategies

Background

The Metro Council brought the Pleasant Valley area into the Urban Growth Boundary (UGB) in December 1998. When land is brought into the UGB, Title 11 of the Metro Urban Growth Management Functional Plan requires that the added territory be brought into a city's comprehensive plan prior to urbanization with the intent to promote the integration of the new land into existing communities.

Title 11 requires a series of comprehensive plan amendments, including maps, that address provisions for annexation; housing; commercial and industrial development; transportation; natural resource protection and restoration; public facilities and services including parks and open spaces; and schools.

In 1998, a partnership of jurisdictions sponsored a series of citizen and affected parties meetings concerning Pleasant Valley. A set of preliminary planning goals was developed as part of this process. The goals addressed a town center, housing, transportation, natural resources, neighborhoods and schools. The goal for transportation stated:

The area has inadequate rural road improvements and suffers from traffic congestion and unsafe road conditions and driving behaviors. Development of the area should be timed to coincide with road improvements. The transportation plan should include a system of local collectors and arterials that will provide sufficient north-south and east-west connectivity. Transit bus service should be included in any transportation plan. Other modes of transportation should also be available. Some of the roads in the area may be difficult to widen without significant environmental impacts. In some cases, a realignment or replacement should be considered. In general, roads should be planned and designed for speeds consistent with local uses rather than regional through traffic. For example, Foster Road provides for slower, safer speeds, particularly in the town center area. Biking and walking should be safely accommodated on all arterials and collectors.

Transportation Goal, Policies, Strategies

A transportation work team conducted a number of sessions during the Pleasant Valley Concept Plan process. The transportation work team consisted of transportation planning, land use planning and traffic engineering professionals from the Cities of Gresham and Portland, Multnomah and Clackamas Counties, Metro, TriMet, the Oregon Department of Transportation and DKS Associates (a private consultant firm).

The transportation work team identified four principles for a well-planned street system to help prevent traffic congestion, while promoting walking, transit and bicycling. Good design can also avoid the effects of heavy traffic on neighborhood safety and the environments.

Principle 1 – Spread out the Traffic. When designing streets it is important to not only consider the roadway's traffic function, but also other modes of travel and character of the surrounding community that the street will serve. Well designed arterial, collector and local streets are a good starting point for spreading out traffic in communities, and avoiding overly wide streets as a community and its neighborhoods grow.

Principle 2 – Design for Livability. The design of our streets directly affects our quality of life. Street design can promote community livability by emphasizing local travel needs and creating a safe, inviting space for community activity. Street design elements such as sidewalks, crosswalks, landscaped sidewalk buffers, bikeways, on-street parking, street trees, landscaping, street lighting, bus shelters, benches and corner curb extensions provide an environment that is not only attractive, but can slow traffic and encourage walking, bicycling and use of transit. Metro's handbook *Creating Livable Streets* provides examples of better design. Additionally streets can be designed to be "green", where features like streets,

landscaped swales and special paving materials can be used to limit stormwater runoff, which, in turn, helps protect stream habitat. Metro's *Green Streets* handbook is a resource for green street design and issues.

Principle 3 – Connectivity Works. On average, each household generates 10-12 automobile trips per day. A well-connected street system with reasonably direct connections encourages walking, bicycling, and transit use, and can reduce the number and length of these automobile trips. In well-connected street systems, local traffic is more dispersed, rather than focused on arterials where it combines with through-traffic to create congestion. With a well-connected system that provides multiple routes to local destinations, any single street will be less likely to be overburdened by excessive traffic. Police and fire response also benefits from a well-connected street system. Other benefits include: travel is more direct, better serves the development of main street and town centers as alternatives to commercial strip development, ideal for walking and biking because of more direct routes that are safer streets, allows streets to be narrower reducing costs, saving energy and reducing stormwater runoff, and allows for more frequent transit stops and ease of walking to transit stops.

Principle 4 – Copy What Works. There are a number of good street system examples in the Metro region. Older areas such as Laurelhurst (Portland), East Hill and Southeast Roberts (Gresham), Eastmoreland (Portland) and newer areas such as Fairview Village (Fairview), Tualatin Commons (Tualatin) and Orenco Station (Hillsboro).

GOAL

Pleasant Valley will be a community where a wide range of safe and convenient transportation choices are provided.

POLICIES

1. Pleasant Valley will be a community where it is safe, convenient, and inviting to walk, ride a bike and use transit. The network of streets shall accommodate walking and biking, with special pedestrian features on transit streets.
2. The community will be served by a balanced transportation system that serves all modes of travel and is coordinated with Gresham, Portland, Happy Valley, Clackamas County, Multnomah County, TriMet, ODOT, Metro and other transportation service providers to provide effective regional connections to the Pleasant Valley community.
3. The community will be served by community level transit service that connects to regional transit service, and include street designs, land use types, patterns and densities and pedestrian and bicycle improvements that support transit.
4. An efficient, well-connected street system will be planned, using a variety of street types that reinforce a sense of community, provide adequate routes for travel by all modes and preserve adequate right-of-way to serve future transportation needs.
5. Existing transportation safety issues will be addressed.
6. The Pleasant Valley Plan District map will serve as the basis for providing opportunities for through-travel on arterial streets and local access to community destinations on collectors, neighborhood connectors and local streets.
7. The plan district will provide a bicycle and pedestrian system that provides for safe, convenient, attractive and accessible bicycle and pedestrian routes on all streets. These routes shall connect the multi-use trail and parks and open spaces system, and to major activity centers such as schools, civic uses, neighborhood centers, employment areas and the town center.

8. The plan district will provide a multi-use trail system to serve as important off-street bicycle and pedestrian connections to schools, parks, commercial areas and neighborhoods within the Pleasant Valley community, particularly in areas near the confluence of Kelley and Mitchell creeks where streams limit street connectivity.
9. Transportation plans will use green street designs, as described in Metro's handbook titled *Green Streets: Innovative Solutions for Stormwater and Stream Crossings* and *Trees for Green Streets* as a resource in the development and design of streets.

ACTION MEASURES

1. As a near-term objective, downgrade the function of Foster and Richey roads in the confluence area of Kelley Creek to serve as local access streets. As a long-term objective, develop a strategy to disconnect and potentially vacate the vehicular function of these street segments while maintaining the opportunity for a local trail opportunity.
2. Establish street design standards that respect the characteristics of the surrounding land uses, natural features, and other community amenities. All streets shall be designed to support adjacent land uses, accommodate pedestrians and bicyclists and include green streets design elements that help minimize stormwater runoff. Design shall be based on the Pleasant Valley Street Designs adopted in the Pleasant Valley Concept Plan Implementation Strategies. In developing street designs utilize Metro publications *Creating Livable Streets*, *Green Streets: Innovative Solutions for Stormwater and Stream Crossings* and *Trees for Green Streets*. The plan district street design standards shall provide for:
 - a. Planting and preservation of trees in the street rights-of-way.
 - b. Continuous sidewalks along both sides of all arterial, collector, and local streets. Sidewalks should connect to side streets and adjacent sidewalks and buildings. Pervious sidewalk treatments should be considered.
 - c. Landscaped buffer separating travel lanes from sidewalks.
 - d. Direct and logical pedestrian crossings at transit stops and marked crossings at major transit stops.
 - e. Short and direct public right-of-way routes to connect residential uses with nearby commercial services, schools, parks and other neighborhood facilities.
 - f. Street design elements that discourage traffic infiltration and excessive speeds on local streets, such as curb extensions, on-street parking, and wider sidewalks and narrowed travel lanes.
 - g. Secure bicycle storage facilities such as bicycle racks and other park and lock accommodations at major destination points including the town center, transit center, recreation areas and office, commercial and employment centers.
 - h. Minimize impervious area and utilize the natural drainage system where practical.
 - i. Designing bridges to serve as civic gateways or focal points in the community. Establishing guidelines to help determine most appropriate stream crossing solution for each individual crossing.
 - j. Locating road and multi-use path stream crossing alignments to have the lowest level of impact on a stream or ESRA. Locational considerations shall include crossings perpendicular to the stream and along narrow stream segments. Trail crossings shall consider the needs of equestrians, where appropriate, and pedestrian and bicycle travel.

3. Adopt a local street network plan that includes functional classifications for streets, street design types, connectivity plan and standards and a bike and trail plan for the plan district. The local street network plan will:
 - a. Consider opportunities to incrementally extend streets from nearby areas.
 - b. Limit the use of cul-de-sac designs and other closed end street systems to situations where barriers such as existing development, topography and environmental constraints prevent full street connections.
 - c. Provide bicycle and pedestrian accessways where full street connections cannot be provided.
 - d. Investigate off-street bike and pedestrian connections where needed to link major community destinations, such as the town center, transit center, recreation areas and office, commercial and employment centers.
4. Realign 172nd Avenue as it passes through Kelley Creek ESRA to not follow creek and reduce impact area by keeping it as far west of confluence as practical and minimizing the bridge footprint in the creek and adjacent riparian area.
5. The plan district will allow for and encourage:
 - a. Efficient use of on-street parking to help reduce off-street parking needs
 - b. Shared parking agreements to reduce the size and number of parking lots
 - c. Shared driveways between adjacent development projects
 - d. Minimizing impervious area when developing parking lots
6. Educate business groups, employees, and residents about trip reduction strategies, and work with business groups, residents, and employees to develop and implement travel demand management programs, such as carpool matching, vanpool matching, flexible work hours, transit subsidies, parking management, bikes on transit and telecommuting to reduce peak-hour single occupant vehicles in Pleasant Valley.
7. Gresham, in coordination with Portland, will work with Metro, ODOT, Multnomah County, Clackamas County and other agencies as appropriate to:
 - a. Investigate needed safety and capacity improvements to address future travel demand in the Foster Road and Powell Boulevard corridors and implement study recommendations.
 - b. Evaluate the long-term need for an arterial connection between 172nd Avenue and 190th Avenue as part of urban area planning that responds to future urban growth boundary decisions.
 - c. Implement needed transportation improvements to serve Pleasant Valley and correct existing safety issues.
 - d. Implement regional corridor study recommendations and projects identified in the Regional Transportation Plan for key gateway routes, such as Sunnyside Road, Foster Road, Powell Boulevard, 172nd Avenue and 190th Avenue.
8. Expand the TriMet service boundary to include areas within Clackamas County to allow TriMet to serve this area. Work with TriMet to develop a transit plan for Pleasant Valley that:
 - a. Establishes a transit hub within the town center zoning district that provides transfer opportunities between regional and community transit routes
 - b. Implements recommended community and regional transit service.

- c. Determines appropriate locations and design of bus loading areas and transit preferential treatments such as reserved bus lanes and signal pre-emption to enhance transit usage and public safety and to promote the smooth flow of traffic.
 - d. That, with other transit service providers, and employers and social service agencies' efforts enhances access for elderly, economically disadvantaged, and people with disabilities.
9. Work with emergency service providers to designate emergency access routes.
10. Develop and implement a public facility and capital improvement plan that identifies, prioritizes and adequately funds transportation improvement, operation and maintenance needs.
- a. Consider system development charges, traffic impact fees, local improvement district fees, parking fees, street utility fees and other fee mechanisms to help pay for transportation improvements, including transit.
 - b. Apply for federal, state and regional funds through the Metropolitan Transportation Improvement Program (MTIP).
 - c. Encourage creative partnerships (e.g., federal, state, regional, multiple jurisdiction, private) to fund transportation improvements.
 - d. Develop a right-of-way preservation strategy for 172nd Avenue, Giese Road, 190th Avenue, and Clatsop Street extension to Cheldelin Road.
11. Work with Metro to amend the Regional Transportation Plan to reflect Pleasant Valley Plan District recommendations, including:
- a. Motor vehicle functional classification system, transit system, pedestrian system, bicycle system and street design classification system.
 - b. Transportation improvements and rough cost estimates.

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Section 3 – System Inventory and Assessment

Background

Existing transportation conditions were evaluated by a transportation work team that consists of planning and transportation staff from Portland, Gresham, Multnomah and Clackamas counties, TriMet, Metro, the Oregon Department of Transportation and consultants as part of the Pleasant Valley Concept Plan. The initial task of the work team was to develop a baseline inventory of the existing transportation system. The team conducted an inventory of the existing road network and transportation improvements identified in local and regional plans, and identified a preliminary list of issues for consideration as part of the Pleasant Valley Concept Plan process.

Transportation Conditions

During the past 30 years this farming community has evolved into a rural residential area. The area is currently served by a transportation system that was designed primarily to serve the farm-to-market travel needs of the agricultural uses that once occupied the valley. Foster Road, 172nd Avenue, Jenne Road, 190th Avenue, 182nd Avenue and Sunnyside Road are the primary routes that connect Pleasant Valley to other parts of the region.

Traffic volumes

Most travel out of Pleasant Valley is via Foster Road, which is limited in its ability to accommodate future traffic growth. Foster Road carries as many as 25,000 vehicles per day west of Jenne Road and 9,900 vehicles per day east of Jenne Road. (See Figure 2)

Jenne Road, which carries approximately 10,300 vehicles per day north of Foster Road, experiences a significant amount of traffic due to the lack of arterial street connections between Pleasant Valley and Gresham. 172nd Avenue also provides an important north-south connection for travel between Highway 212 and Foster Road. 172nd Avenue carries approximately 6,900 vehicles per day north of Sunnyside Road and 3,500 vehicles per day south of Sunnyside Road. Figure 1 shows one-way and two-way traffic volumes on major streets in Pleasant Valley.

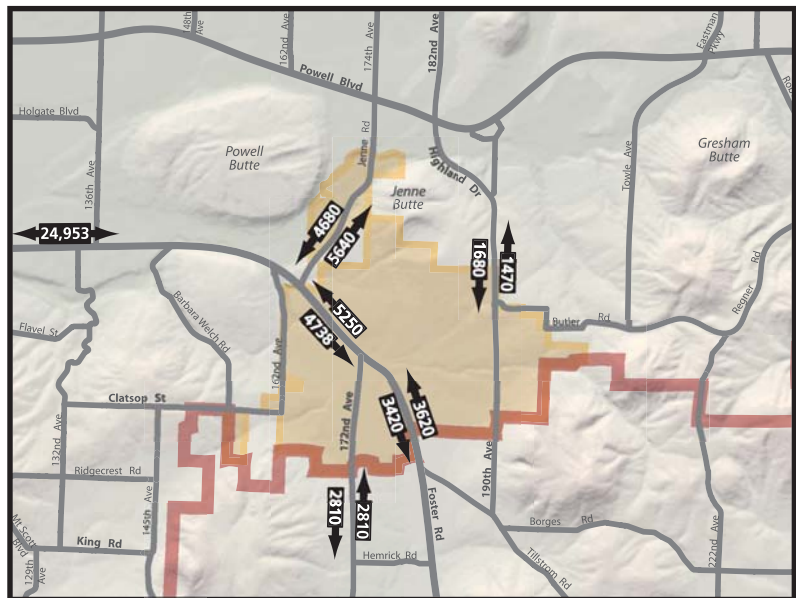


Figure 1. One-way and two-way traffic volumes on major streets in Pleasant Valley

Data sources: Data for Foster Road west of 136th Avenue is from 2000 City of Portland traffic counts. Data for Jenne Road is from 1996 Multnomah County traffic counts. Data for Foster Road between Richey Road and Cheldelin Road is from 1996 Multnomah County traffic counts. Data for Foster Road between 162nd Avenue and 172nd Avenue is from 1998 Multnomah County traffic counts. Data for 172nd Avenue from Foster Road to the Multnomah County line is from 1997 traffic counts.

Safety

Safety issues exist throughout the area due to topography, awkward intersections with difficult sight distances, and high speeds and traffic volumes. More than 20 intersections were identified by participants

in the first community forum as being unsafe because of one or more of these issues. In addition, many individuals indicated they often travel significantly out of direction to avoid congested locations and routes or intersections they feel are dangerous.

Transit travel

Pleasant Valley is not currently served by transit service. The nearest transit center and park-and-ride lot locations are Clackamas Town Center and Gresham regional center. The closest TriMet bus routes are the 157, which provides hourly service between Happy Valley and Clackamas Town Center, and the 82, which provides hourly service between Rockwood and Gresham.

Bicycle and pedestrian travel

Currently, bicyclists and pedestrians share roadways with motor vehicle traffic in Pleasant Valley. Bicycle and pedestrian travel is made difficult by limited connectivity in the area, narrow shoulders, high traffic volumes on major streets and difficult intersections. Few people walk in the area because of dispersed land-use patterns and a lack of pedestrian facilities. Metro's 1999 Bike There map designates Sunnyside, Foster and Jenne roads as caution areas for travel by bicycle. The Springwater Corridor Trail is the only multi-use trail serving the area. Other potential trail connections will be considered as part of the Pleasant Valley Concept Plan process.

Pleasant Valley Transportation Issues

This section identifies seven key transportation issues identified by the transportation work team and community forum participants. Each issue is followed by a general discussion of ideas the work team identified for further consideration as part of the planning process.

Issue 1: Develop a network of arterial and collector streets adequate to serve future growth in Pleasant Valley, while protecting environmentally sensitive areas and adjacent neighborhoods and rural reserves from the effects of urbanization.

Traffic analysis conducted as part of the update to the Regional Transportation Plan (RTP) demonstrated that future growth in Damascus and Pleasant Valley would likely have widespread effects on the regional transportation system, despite significant improvements to the primary routes serving the area. Additional analysis will be conducted as part of the Pleasant Valley Concept Plan process. It will be important to design the transportation system in a manner that supports the land use goals of the community, protects the natural features that define the area and improves community access by all modes of travel by providing a variety of travel choices. It will be equally important to locate the land uses in a manner that the transportation system can best serve it.

Issue 2: Currently, most travel out of Pleasant Valley is via Foster Road, which is limited in its ability to accommodate future growth in traffic. The cost of any improvements in the Foster Road corridor will likely be high due to topographic and environmental constraints.

Foster Road is an important connection between the Damascus/Pleasant Valley area and employment areas in the I-205 corridor and Portland. Foster Road has two functional segments. The first segment, from Portland central city to I-205, experiences significant levels of congestion today. The second segment, from I-205 to Pleasant Valley, is expected to experience heavy travel demand in the future.

Four related concerns have been identified for the eastern portion of Foster Road. First, intersections at 162nd/Foster Road and Jenne Road/Foster Road have safety problems today that need to be addressed. Next, environmental and topographic constraints limit future capacity expansion of Foster Road east of I-205. In addition, I-205 experiences significant congestion

today and directing most traffic to I-205 from Pleasant Valley via Foster Road will likely have significant implications for I-205 in the future. Finally, RTP analysis showed that despite widening Foster Road to five lanes from I-205 to Damascus and implementation of high quality bus service and a limited arterial and collector street network, the corridor experienced significant levels of traffic congestion. Any improvements to Foster Road will need to be evaluated in the context of the environmental and community impacts.

If an additional north/south route is provided (such as Foster/190th to 182nd Avenue) and the function and capacity of Powell Boulevard east of I-205 is upgraded to serve longer trips, then Foster Road could function more like a collector in the town center area. This strategy would be consistent with the RTP. Foster Road could be relocated/realigned to orient traffic onto north/south routes (i.e., 162nd Avenue or 190th Avenue). The potential for a new north/south connection east of Foster Road could also be examined. The location and shape of the Pleasant Valley town center should be designed in the context of the function of Foster Road.

The RTP recommended evaluation of street connectivity, potential parallel route improvements, system management strategies and rapid bus service along Foster Road. RTP analysis showed rapid bus service is expected to generate good ridership levels. Any transit improvements should include improvements to the pedestrian environment along the road, bus priority treatment at signals and improved access to bus stops.

Issue 3: Safety issues exist for all modes of travel due to topography, awkward intersections and high speeds and traffic volumes. Walking and biking is also made difficult due to a lack of facilities for these modes of travel.

Safety issues exist throughout the area due to topography, awkward intersections with difficult sight distances, and high speeds and traffic volumes. More than 20 intersections were identified by participants in the first community forum as being unsafe because of one or more of these issues. In addition, many individuals indicated they often travel significantly out of direction to avoid congested locations and routes or intersections they feel are dangerous. Cut-through traffic on existing roads was also identified as a significant issue.

Issue 4: 172nd Avenue could serve as an important link between the future Sunrise Highway to the south and the Columbia Corridor via 182nd Avenue to the north. Regional transit service in this corridor could also link Pleasant Valley neighborhoods to the commercial services in the town center and the Gresham and Clackamas regional centers.

Currently, 172nd Avenue is a narrow two-lane farm-to-market road. The 2000 RTP evaluated the comparative advantages of 172nd Avenue over Foster Road (east of 172nd Avenue) as the primary connection to Highway 212. 172nd Avenue has fewer topographic constraints, and provides more direct access to planned industrial areas along Highway 212. 172nd Avenue is also more centrally located to the Pleasant Valley/Damascus area. Based on this evaluation, the 2000 RTP upgraded 172nd Avenue to be a Major Arterial. This change in classification could transform this route into the north/south spine for the area, linking Pleasant Valley to the future Sunrise Corridor Highway to the south and Gresham and the Columbia Corridor via 182nd Avenue to the north. The location and shape of the Pleasant Valley town center should be designed in the context of the function of 172nd Avenue. The RTP recommended providing parallel routes to 172nd Avenue and more direct regional bus service linking Gresham, Pleasant Valley and Clackamas along the Sunnyside Road/172nd Avenue/Towle Road/Eastman Parkway alignment.

Issue 5: The existing street system is not adequate to serve future town center growth. Connect Pleasant Valley to major streets in Gresham, Portland and Happy Valley in a manner that provides alternatives to Foster Road while protecting existing neighborhoods from traffic infiltration.

Additional connections and improvements to existing streets are needed to increase access from Pleasant Valley to other parts of the region. Currently, there is a lack of north/south arterial routes serving this area, which could create significant traffic congestion in the future without additional street connections in Pleasant Valley. An evaluation of new north/south street connections would need to address the potential impact of traffic generated in the Pleasant Valley area on adjacent neighborhoods. A number of potential connections could take pressure off the Jenne Road route that is currently used. Possible connections to be examined include: 172nd Avenue extension to 190th, Foster Road to Towle Road and 172nd Avenue to 162nd Avenue around Powell Butte. 162nd Avenue is one of the few north/south routes that connect to the Columbia Corridor employment area. The area around the base of Powell Butte has significant topographic and environmental constraints. Highland Drive is currently a three-lane collector street that connects SW Gresham to Powell Boulevard and 182nd Avenue. The route traverses Jenne Butte and crosses Johnson Creek.

Pleasant Valley also lacks an adequate number of east/west arterial routes to serve this area. It will be important to identify potential east/west connections to improve access from the Pleasant Valley area to Clackamas regional center area to reduce demand for Sunnyside Road to the south. The current Happy Valley TSP identifies only one potential east-west connection to the Pleasant Valley area given environmental and topographic constraints. The committee felt the planning process should address the Scouter's mountain "island," potentially using the future street plan for Pleasant Valley to define the edges of this rural reserve. One possible connection could be an extension of Clatsop Street to Foster Road.

RTP analysis showed that expanded transit service via Sunnyside Road and 172nd Avenue was promising in combination with improvements to parallel routes and widening Sunnyside Road between the Clackamas regional center and Pleasant Valley. The RTP recommended evaluation of additional street connectivity, potential parallel route improvements and system management strategies along the eastern portions of Sunnyside Road.

As new arterial street connections are identified, it will be necessary to balance land use and transportation planning to keep neighborhood infiltration to a minimum. Implementation strategies could include measures within these adjoining neighborhoods to make them less attractive to through-traffic intrusion.

Issue 6: By providing local circulation and access from growing neighborhoods to the town center, community level transit service will be an important component of serving travel needs in Pleasant Valley.

Pleasant Valley is not currently served by transit service. Implementation of more locally oriented transit service and connecting local service to regional service will need to be addressed as part of the transportation plan for the area, including connections to Gresham transit center, Clackamas transit center and downtown Portland. Some sort of a transit hub could be established as part of the land use and transportation plan for the town center to serve that important connection.

Issue 7: The topography of Pleasant Valley and the need to protect streams will require an emphasis on providing bicycle and pedestrian connections where full street connections are not possible. These connections could be further complemented by multi-use trails that connect Pleasant Valley neighborhoods to schools, parks, commercial services, existing multi-use trails and Damascus. As a result, bicycle and pedestrian access and safety, including an extended trail system, will also need to be addressed as part of the transportation plan for this area.

Street connectivity within the town center is important, and should complement the broader goals of tying together existing and future streets so that the town center has a high level of

connectivity. Improved street connectivity can help keep local auto trips on local streets without placing an undue burden on the arterial streets like Foster Road and Sunnyside Road, and provides better access for pedestrians, bicycles and transit users. With an interconnected system that provides multiple routes to local destinations, any single street will be less likely to be overburdened by excessive traffic. Emergency response vehicles also benefit from a well-connected street system.

Community forum discussions revealed that many people drive to access the Powell Butte and Springwater Corridor trail systems and share a desire to have a network of sidewalks, bike facilities and multi-use trails linked to existing trails systems. Better equestrian access to trails and natural areas in Pleasant Valley was also identified as important to many people during the first community forum. In addition, a safer equestrian crossing at SE 162nd Avenue and Foster Road to improve access to Powell Butte has been identified as a need.

Green street designs help reduce impervious surface and incorporate on-site stormwater management within the right-of-way through the use of vegetative filter strips, swales, linear detention basins, infiltration trenches, permeable pavement and tree planting. Street alignments should follow natural contours and features as much as possible, which can help optimize implementation of green street designs. Metro has studied green streets over the same timeline as the Pleasant Valley Concept Plan study using Pleasant Valley as a case study. It recommends innovative approaches to stormwater management and stream crossings using green streets in its handbook – Green Streets – Innovative Solutions for Stormwater and Stream Crossing. Also published by Metro is the Trees for Green Streets – An illustrated guide handbook.

Metro's Green Streets manual states that bridges are preferred for all stream crossings but they tend to be a more expensive option than culverts. It notes that bridges tend to become more economically justifiable when required hydraulic opening exceeds 15 feet in span (active channel width) or 10 feet in diameter. It also notes that bridges are preferred for fish passage when stream channel slopes exceed 5 percent. A bridge design principle is that bridge abutments, piers and foots should be located outside the bankfull channel.

Section 4 – Forecasts and Alternatives

Summary

The year 2020 forecast travel volumes were simulated using the Metro regional travel demand model. For travel forecasting, land use assumptions are broken down into geographic areas called transportation analysis zones (TAZs). Typically, a TAZ encompasses commercial districts, community areas or neighborhoods within its boundaries. These TAZ areas form the basis for estimating travel for each person.

Population and employment information is assigned to each TAZ based on the adopted comprehensive plans, or, in the case of Pleasant Valley, on the alternative concept plan designations. The travel model translates these assumptions into person trips on the transportation system. Traffic volume projections from these simulations help identify future road needs and alternative arterial and collector street networks. Due to limitations with the regional model, it is not possible to effectively analyze walking, biking or local street traffic volumes.

The 2020 priority system of improvements adopted in the Regional Transportation Plan served as the basis for the future road and transit network assumed for this analysis, with the addition of a more detailed street network for Pleasant Valley and Damascus.

Household and Employment Assumptions for Pleasant Valley and Damascus

Pleasant Valley Household and Employment Assumptions

Household and employment assumptions for Pleasant Valley were developed using Geographic Information Systems (GIS). The capacity for households and employment was calculated and assigned to TAZs for traffic analysis. Table 1 provides a detailed summary of the household and employment assumptions by TAZ for the March Hybrid Concept Plan. Table 2 summarizes household and employment information for the March hybrid that was modeled and the final concept plan endorsed by the Pleasant Valley Steering Committee on May 14, 2002. A traffic analysis of the May 14, 2002 Pleasant Valley Concept Plan was not performed because the March hybrid plan and the final Concept Plan have the same major road system and only a very minor difference in land use assumptions. Figure 2 shows the TAZ boundaries used for analysis of this part of the region.

Table 2. Pleasant Valley 2020 Land Use Forecasts

Land Use	2020 March Hybrid	Final Concept Plan
Households	5,092	5,048
Retail Employees	556	495
Other Employees	4,608	4,498

Source: OTAK and Metro

Table 1. Summary of March Hybrid Concept Plan Household and Employment Assumptions for Refined 1260 TAZs

Refined 1260 TAZ	Households	Retail Jobs	Non-Retail Jobs
476*	1,277	0	217
539*	463	0	46
564	421	41	65
565*	553	70	397
580*	304	0	30
581*	861	0	199
1300*	537	0	201
1305*	977	0	162
1306	420	41	65
1307	830	104	596
1308	1,382	174	993
1309	577	10	106
1310*	577	10	106

* indicates portion of Pleasant Valley study area is located in TAZ.

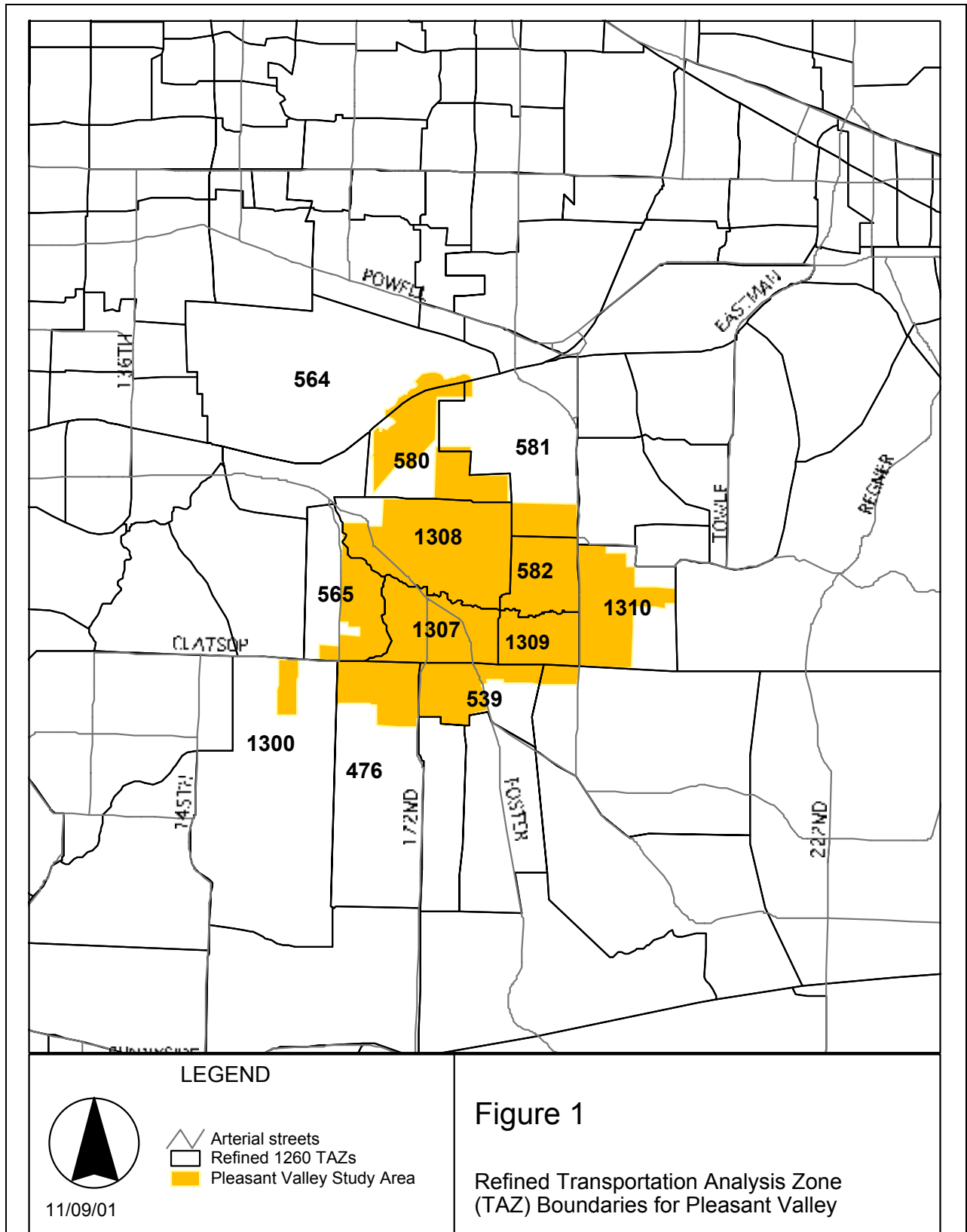


Figure 2. Refined Transportation Analysis Zone (TAZ) Boundaries for Pleasant Valley

Damascus Household and Employment Assumptions

Household and employment assumptions from Test Scenario 2 of the Damascus Concept Planning Study were used for purposes of modeling with two exceptions:

- **Additional housing is assumed to meet regional requirements.** As modeled in the Damascus Study, Test Scenario 2 provided 9 dwelling units per buildable residential acre for a total of 10,372 dwelling units within the Damascus study area. This does not meet the regional requirement for a minimum of 10 dwelling units per buildable residential acre. In order to meet the regional requirement and for purposes of Pleasant Valley modeling, the dwelling unit assumption for Test Scenario 2 was factored up 10 percent, to a total of 11,409 dwelling units. The increase in dwelling units was assumed within and adjacent to the two town centers identified in Test Scenario 2.
- **Southwest corner of the study area is assumed to be employment.** As modeled in the Damascus study, Test Scenario 2 provided 11,651 jobs. The Damascus study found that the southwest corner of the study area included the largest sites with the greatest opportunity for land assembly to create strategic employment sites. In Test Scenario 1, the southwest corner was assumed to provide nearly 3,000 jobs. In addition, the 2040 Growth Concept identifies this area as employment. Test Scenario 2 assumed neighborhoods in the southwest corner of the study area. Based on these two factors, the southwest corner of the study area will be assumed to be employment uses for purposes of Pleasant Valley modeling, adding the nearly 3,000 jobs assumed in Test Scenario 1. This change in land use assumptions increases the amount of employment within the study area to 13,170 jobs. The 574 dwelling units assumed in Test Scenario 2 will be assumed within and adjacent to the two town centers.

Table 3. Damascus Land Use Summary

Land Use	2000	2020
Households	1,481	11,409
Retail Employees	238	2,869
Other Employees	950	10,301

Source: Damascus Concept Planning Study with modifications explained above.

Transportation Assumptions for Pleasant Valley and Damascus

Pleasant Valley arterial and collector street network

In Pleasant Valley, a system of arterial and collector streets was developed for modeling purposes. Figure 3 shows the transportation network and corresponding 2-Hour PM Volumes. Table 4 summarizes arterial and collector assumptions.

Table 4. Pleasant Valley Transportation Summary

Key Roads	Number of lanes	Speeds
Major arterials	4 lanes with turn lanes	20-35 mph
Minor arterials	2 lanes with turn lanes	20-35 mph
Collectors	2 lanes with turn lanes	20-35 mph

Note: Speeds vary by land use. Speeds are assumed to be 20-25 mph in town centers and near parks and schools. Speeds are assumed to be 35 mph in other areas. Speed assumptions do not have a significant impact on travel behavior in the model, but are intended to simulate driver behavior given free-flow traffic conditions (as opposed to posted speed).

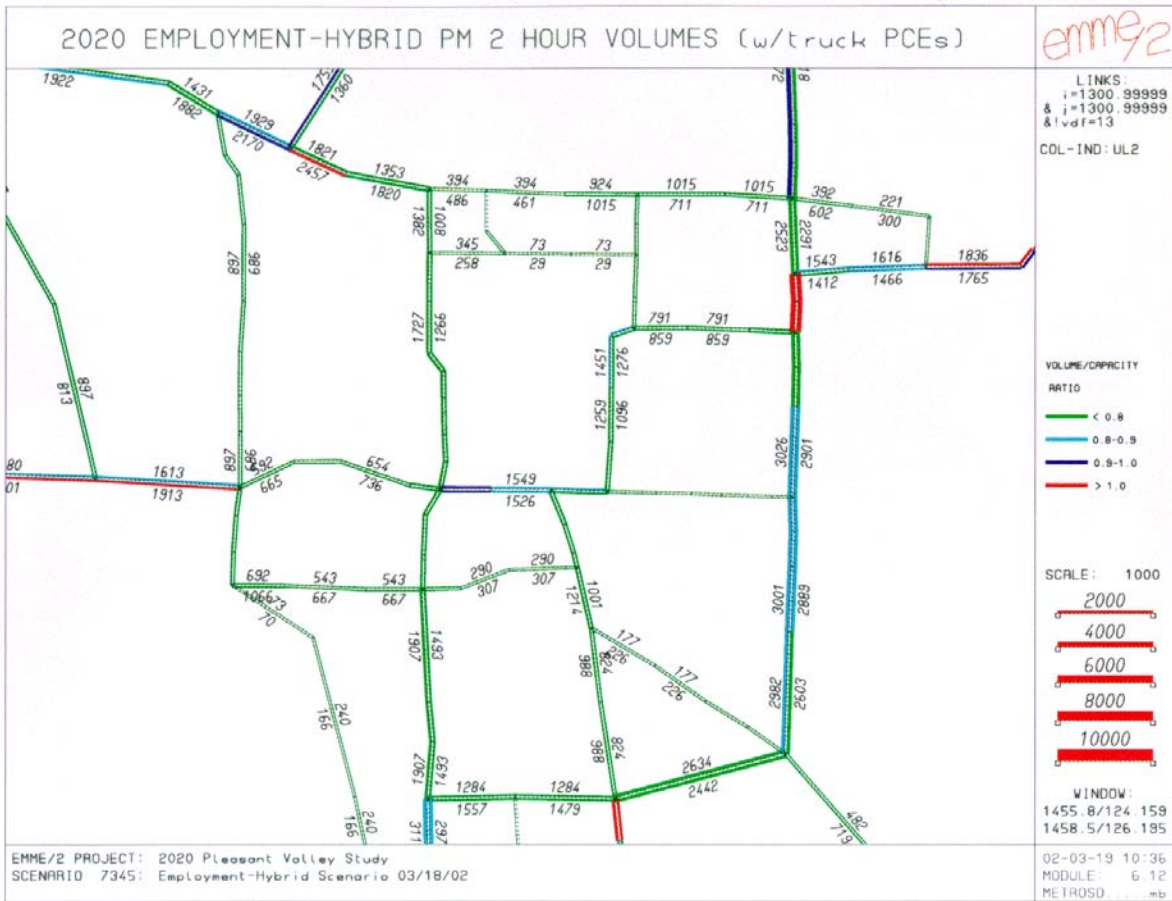


Figure 3. March Hybrid Pleasant Valley 2-hour PM Volumes

Damascus arterial and collector street network

In Damascus, the street network assumptions also include several east-west and north-south collector streets that were modeled as part of the Damascus study. Though these are conceptual in nature, they are roughly equal in spacing and capacity to streets being tested in the Pleasant Valley study. Figure 3 shows the transportation network assumed for the Damascus area and the corresponding 2-hour PM volumes. Table 5 summarizes assumptions for key roads in Damascus. The assumptions for Foster Road and

Table 5. Damascus Transportation Summary

Key Roads	Number of lanes	Speeds
Foster Road	2 lanes with turn lanes	20-35 mph
172nd Avenue	4 lanes with turn lanes	20-35 mph
Sunnyside Road	4 lanes with turn lanes west of 172 nd Ave. 2 lanes with turn lanes east of 172 nd Ave.	20-40 mph
Sunrise Corridor	4 lane freeway with interchanges at Hwy. 224, 172 nd Ave., 242 nd Ave. and US 26	55 mph
Highway 212	4 lanes with turn lanes	35-40 mph

172nd Avenue are the same across both study areas. The assumptions for the Sunrise Corridor and Highway 212 are consistent with the Regional Transportation Plan.

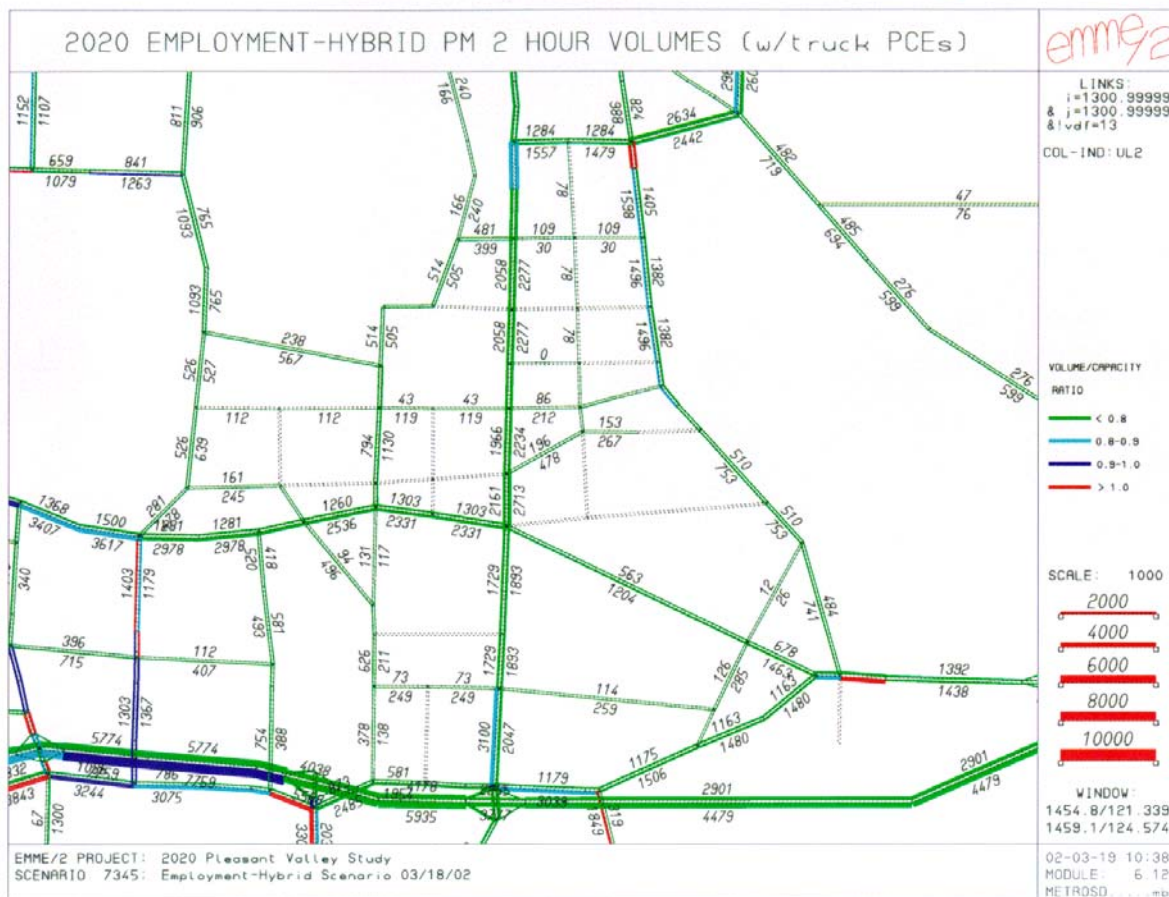


Figure 4. March Hybrid Damascus 2-hour PM Volumes

Pleasant Valley local street network

Additional neighborhood connector and local streets were assumed for each alternative, but were not modeled for traffic impacts due to limitations with the regional travel demand model. Neighborhood connectors serve as important connections for local access within Pleasant Valley as the primary network for local trips. Local streets are intended to provide access between people’s homes and the neighborhood connectors. The local street system includes local and neighborhood connector street connections every 530 feet except where prevented by existing development or environmental and topographic constraints. Bike and pedestrian accessways are provided every 330 feet where full street connections cannot be provided.

Pleasant Valley stream crossings

In general, the stream crossing locations followed Metro’s *Green Streets* handbook guidelines for full street crossings every 800-1200 feet and bike/pedestrian only crossings in sensitive environmental areas

or where additional connections were needed to provide access to community activity areas such as the town center, schools and parks. Local street stream crossings have also been identified for each alternative.

Pleasant Valley multi-use trail system

A multi-use trail system is also assumed for each Pleasant Valley Concept Plan alternative to complement the arterial, collector and local street network by providing additional off-street connections to community destinations such as schools, parks, commercial services and the regional trails network. The trail system was the same for each alternative.

1. A trail on either side of the main stem of Kelley Creek running east and west. At the east edge of the project area the trail head north to connect with the Gresham Butler Creek trail and south to connect with Metro’s open space parcel.
2. A trail that runs north and south through the project area via the BPA/Northwest Natural Gas line easement. This trail connects with the Springwater Corridor trail and bisects the Kelley Creek Trail.
3. A north and south trail at the west end of the project area. The trail connects with the Springwater Corridor trail at about the 162nd Avenue grid line and runs partially along the Kelley Creek trail and then runs along Mitchell Creek.

Transit Service

Regional and community transit service is provided on key roads in Pleasant Valley, with direct connections to Happy Valley, Clackamas regional center, Damascus, Lents, Gresham, the Columbia Corridor and Portland for each alternative. In general, the transit service modeled in the 2000 RTP Priority System served as the starting point for developing these assumptions. The coverage and frequency of transit service was the same for each concept alternative. Routing of service varies within the Pleasant Valley study area for each alternative, reflecting the different street systems. A transit center location has not been identified to serve Pleasant Valley, however, transfer opportunities are provided within the Pleasant Valley town center for modeling purposes.

Table 6 summarizes the transit service that will be modeled in each alternative. A more detailed description of the service and passenger amenities follows Table 6.

Table 6. Pleasant Valley Transit Summary

Service Type	Route	To/From	Peak Service	Off-Peak Service
Rapid Bus	Powell Boulevard/Foster Road	Downtown Portland to Damascus	Every 10 minutes	Every 15 minutes
	Foster Road	Lents to Damascus	Every 10 minutes	Every 15 minutes
Frequent Bus	Sunnyside Road	Clackamas regional center to Damascus	Every 7 minutes	Every 15 minutes
	172nd Avenue/190th Avenue	Damascus to Gresham	Every 10 minutes	Every 15 minutes
Regional Bus	Town center/190th Avenue/181st Avenue/Airport Way	Pleasant Valley town center to Columbia Corridor	Every 15 minutes	Every 15 minutes

	82nd Avenue/Sunnyside Road/97th/Stevens/ Mather Road/122nd/ 145th/Clatsop/172nd/ Foster Road	Clackamas regional center to Lents	Every 10 minutes	Every 15 minutes
Community Bus	Foster Road/ Butler Road/Towle Road	Damascus to Gresham	Every 15 minutes	Every 30 minutes
	Pleasant Valley loop	Within study area	Every 15 minutes	Every 30 minutes

Rapid bus

Typically, this service runs at least every 15 minutes. Passenger amenities are concentrated at transit centers. Rapid bus passenger amenities include schedule information, ticket machines, special lighting, benches, covered bus shelters and bicycle parking. Rapid bus stops are located approximately every 1/2-mile.

Frequent bus

Typically, this service runs at least every 10 minutes and includes transit preferential treatments such as reserved bus lanes and signal preemption and enhanced passenger amenities along the corridor and at major bus stops such as covered bus shelters, curb extensions, special lighting and median stations. Frequent bus service provides slightly slower, but more frequent, service than rapid bus service.

Regional bus

Typically, this service operates at maximum frequencies of 15 minutes. Transit preferential treatments and passenger amenities such as covered bus shelters, special lighting, signal preemption and curb extensions are appropriate at high ridership locations.

Community bus

Community bus lines provide localized access from Pleasant Valley neighborhoods to Happy Valley, Damascus, Gresham, and regional transit service and community destinations, such as parks, schools and the town center. Community bus will connect to regional bus service within Pleasant Valley and Gresham via Butler Road/Towle Road in each alternative. Community bus service runs as often as every 30 minutes on weekdays. Weekend service is provided as demand warrants. This service could be implemented through a partnership between TriMet and local jurisdictions.

Alternatives

Four concept plan alternatives were created during a five-day design charrette (May 15 – 19, 2001). Some key features and advantages of this design charrette were to:

- Provide a forum for ideas on how to fulfill the project goals and make a great community.
- Provide immediate feedback to the designers, and the ability to test illustrated ideas in real time.
- Build consensus by giving mutual authorship to the plan by all those who participate.
- Promote participation (and working together) by a wide variety of people potentially affected by the plan.

The four concept plan alternatives chiefly varied in the major road system alignment and resulting companion land use patterns. See Figure 5.

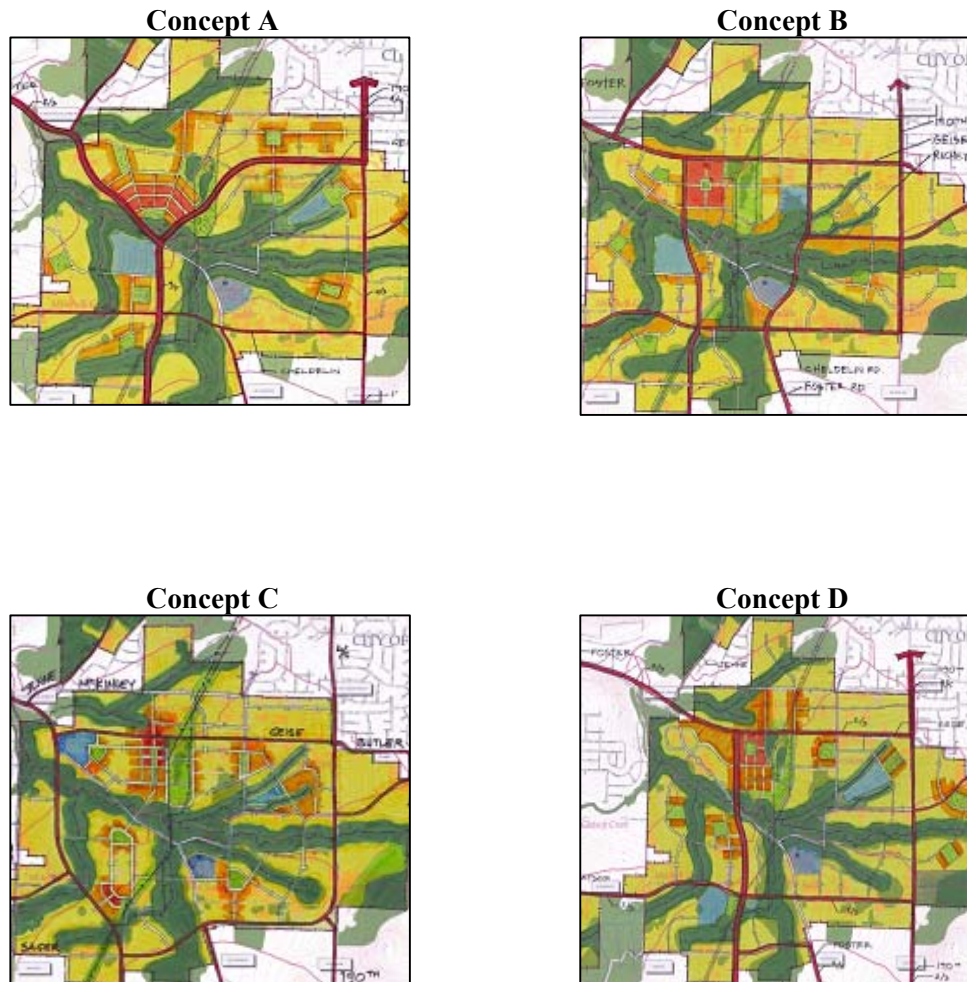


Figure 5. Four Design Charrette Alternatives

The Transportation Work Team analyzed the four concept plan alternatives using the regional travel demand model and other data to determine how well each of the concepts meet the Transportation Goal and other transportation-related goals. The Steering Committee endorsed evaluation measures to assist in the evaluation. Transportation related measures were:

- The plan is consistent with regional level-of-service standards as indicated by an evaluation of key gateway locations.
- The plan is consistent with regional connectivity standards (530 feet for streets/330 feet for accessways) and street design guidelines.
- The plan includes an adequate hierarchy of streets that serve different functions (e.g., arterials, neighborhood connectors and local streets) as indicated by a street system that provides opportunities for through-travel on arterial streets and local access to community destinations on neighborhood connectors and local streets.
- The plan includes community and regional transit service that is supported by street design, a mix of land uses and transit-supportive densities.

- The plan provides for bicycle and pedestrian routes on all streets. These routes are connected to a multi-use trail and parks and open spaces system and to major activity centers such as schools, civic uses and the town center.
- The number of homes within 1/4-mile without crossing an arterial street (for elementary schools) and 1/4-mile crossing no more than one arterial street (for middle schools).
- The number of housing units within 1/4-mile of future regional transit service.

The evaluation process led to the creation of a “hybrid” concept plan. The hybrid concept plan included elements of the different alternatives that were deemed to best meet goals. It also included new ideas and elements that were identified as meeting the goals better than any of the alternatives.

In summary, the transportation analysis found that the arterial and collector street system was sized appropriately within the study area for all concepts for the 20-year plan period, with Concept D costing the least and performing the best in terms of level-of-service. The arterial and collector street systems in Concepts B and D best address Goal H in terms of providing the most direct and frequent connections to community destinations in the study area and the strongest north/south oriented arterial and collector network of streets for circulation by all modes of travel within the study area. Concepts A and C best address long-term regional mobility needs with a strong north/south arterial connection from 172nd Avenue to 190th Avenue to connect Clackamas County and Damascus with Gresham. Bicycle and pedestrian travel is further enhanced in Concepts B and D by a strong east/west multi-use trail system that provides additional off-street connections to community destinations where full street connections cannot be provided. Concepts B and D also provide the best access to the town center by all modes of travel as a result of the well-connected arterial and collector network that abuts directly to the town center. All concepts were well served by transit service and provided good connections to the town center. Concept B was best served by transit service, with 85 percent of the Pleasant Valley households located within 1/4-mile of transit streets. However, in some cases in each concept, there are higher density land uses not served by transit, particularly in the southeastern corner of the study area.

The transportation analysis found the demand for gateway routes remained the same in all four concepts, regardless of the configuration of the internal Pleasant Valley arterial and collector street system. As a result, the arterial and collector street system for the preferred alternative could be in a variety of configurations as long as the arterial and collector street system provides direct connections to the gateway routes, particularly between 172nd Avenue and 190th Avenue and to commercial areas within Pleasant Valley. The analysis also identified the need for transportation improvements on “gateway” routes that connect the study area to surrounding communities, such as 172nd Avenue, 190th Avenue, Powell Boulevard, Sunnyside Road and Foster Road west of the study area. One critical refinement recommended by the work team is the addition of a more direct major arterial connection from 172nd Avenue to 190th Avenue south of the study area if Damascus urbanizes in the future.

The evaluation process also resulted in changes to other goal elements. A significant change affecting the transportation process was adding a significant amount of employment land to the concept resulting in a more balanced job to housing ratio. What follows is the results of the modeling done for, first, the four alternatives and second, for the March hybrid concept plan.

DKS Associates assisted the Pleasant Valley project staff in conducting the transportation system analysis for the Pleasant Valley Planning Area. Metro staff took the lead in preparing travel forecast with a refined version of the latest regional travel demand model. The refinements were purposed to better represent the intensity and location of possible development within the valley, and to more clearly understand the travel dynamics associated with long-term growth in both Pleasant Valley and the Damascus area in Clackamas County. Our role in this study has included the following technical areas:

- General circulation planning and development of transportation alternatives
- System performance and alternatives evaluation

- Transit Evaluation
- Recommended System Plan Elements
- Preliminary Cost Estimates

Concept Plan Alternatives

DKS participated in the open houses and public workshops to help formulate the Pleasant Valley concept plan alternatives. The four concepts that have succeeded through to the evaluation stage were comprised of a similar mix of land use types with different arrangements of their locations with respect to the natural and transportation system network of the valley. Each concept plan had basically the same quantity of the following elements although there was minor variation as noted below (source: Pleasant Valley Concept News, October 2001):

- The total number of residential units ranged from 5,300 to 5,500.
- The employment within and around the designated town center ranged from 470 to 700.
- The park acreage ranged from 49 to 84 acres.
- The total population at build-out ranged from 13,300 to 13,800.

Overall, the total travel demand associated with these concept plans was very similar as a result of the similarity in land use intensities. The essential difference between them was found in how they were arrayed around the valley. In other words, the key findings of our evaluation tested the relative merits of each concept plan based on how the selected street patterns and the relative location of housing, town center, park and school uses related to each other. The street system components were identified and mapped by Metro staff. The tabulations of roadway facilities for each concept plan area is summarized in Table 7.

Table 7: Pleasant Valley - Roadway Cross-Section Length Comparison

Classification	Alt A (ft)	Alt B (ft)	Alt C (ft)	Alt D (ft)
Major Arterial - 92'	10,501	4,918	11,984	5,992
Major Arterial - 111'	939	1,448	0	1,867
Minor Arterial - 62'	5,984	5,987	6,358	5,380
Minor Arterial - 70'	25,930	38,305	26,131	27,591
Minor Arterial - 80'	2,303	992	472	832
Collector - 60'	17,348	26,641	22,479	19,358
Collector - 70'	5,591	2,345	3,371	1,067
Collector - 74'	3,722	2,987	8,688	1,660
Neighborhood Connector - 64'	0	0	0	0
Total	72,318	83,623	79,483	63,747

Each concept plan also assumed the full build-out of the Damascus Concept Plan area to the south in Clackamas County. The recent planning work done by the county in June 2001 for this area was used as the basis for assumed land development. The alternative referred to as the Neighborhoods scenarios was selected for use in this study. That plan included 10,500 jobs and households covering 2,700 acres of land between the Sunrise Corridor and the Pleasant Valley plan area (source: Damascus Concept Planning Study: Executive Summary, June 30, 2001). The overall size of the development is more than twice as large as the Pleasant Valley area, and its associated travel demands will significantly shape and impact streets within the Pleasant Valley study because its size and proximity.

Furthermore, the assumptions at the regional gateways leading away from the valley were constant across each of the concept plans. The major roadways were all assumed to have the same connectivity and capacity for each case. Major roadways included Foster Road (west and south of the valley), 190th Avenue leading to Highland Avenue and Powell Boulevard, Butler Road to leading to Towle Avenue, 172nd Avenue to the south, and Clatsop Street to the west. The number of travel lanes assumed for each case was consistent with the current transportation plans for the respective city or county at the initial stage of analysis.

Alternative Performance Evaluation

Four plan alternatives were evaluated using the 2020 regional travel demand model based on the land use plans associated with each concept. The growth assumed in the travel forecasts included the expected 2020 development within the region, plus full build-out of Pleasant Valley and Damascus. This is significant since it is very likely that both Pleasant Valley and Damascus will continue to be urbanized beyond a 20-year horizon. Assuming full build-out by 2020 will tend to overstate the travel demand at the gateways, but it will help to ensure that adequate facilities are planned either within 20 years or shortly thereafter.

A performance analysis was made of the travel forecasts to consider:

- Overall system performance
- Changes to major roadways assumptions to better match travel demand
- Gateway intersection performance
- Transit service coverage
- Outstanding Plan Issues

Overall System Performance

System performance was evaluated during the afternoon peak 2-hour period based on forecasts provided by Metro. The forecasted travel demand was compared to the roadway capacity along major street corridors, and those that were found to exceed planned capacity were highlighted. In many cases, the assumed capacity applies to roadways that are not yet built. A case where forecasted travel exceeds the planned capacity helps to direct attention to refinements in either circulation or land use planning or both. For those cases where the roadway already is built to its ultimate width then new facilities will be required, or improvements will be needed beyond those already planned. Many cases noted in Table 8 have volumes within 10 to 20 percent above planned capacity. This is relatively minor exceedance in a 20-year horizon, especially given the built-out assumptions noted previously for Pleasant Valley and Damascus. A few links are expected to grossly exceed planned capacity, and those are noted accordingly. As summarized in Table 8 below, the overall system impacts of Plan D is better than other plans. The most impacting case is Plan B. Specific observations from the system performance analysis are summarized in the next section.

Table 8: Study Area Road Links Exceeding 2-Hour Peak Capacity based on 2020 Forecasts

Description	Plan A	Plan B	Plan C	Plan D
Powell Boulevard (162 nd to Jenne)	□	□	□	□
Jenne Road (Powell to Foster)	□	□	□	□□
Highland Road (Powell to 190 th)		□	□	
190 th Avenue (Giese to Richey)	□	□		
190 th Avenue (Highland to Butler)	□	□	□	
Butler Road (Binford to Towle)		□		□
Foster Road (122 nd to Barbara Welch)	□□	□□	□□	□□
Foster Road (Barbara Welch to Jenne)				
Foster Road (Jenne to 172 nd)		□	□	
Clatsop Road (145 th to Barbara Welch)	□	□□		□
Clatsop Road (Barbara Welch to 162 nd)	□	□	□	□

□ = Moderate Impact: Roadway forecasted volume exceed planned capacity by less than 20 percent.

□□ = Major Impact: Roadway forecasted volume exceed planned capacity by more than 20 percent.

Overall, the system impacts outside of the Pleasant Valley plan area were very similar between alternative plans. A variation of Alternative A was tested to determine the Pleasant Valley area impacts of not constructing the second unit of the Sunrise Highway within the 2020 horizon. It was found that the major street volumes and roadway performance within the valley would not be significantly different than for Alternative A. Other more specific performance findings are highlighted in the next section.

Specific Performance Observations

The unique terrain and environmental constraints of the Pleasant Valley area tend to focus the highest motor vehicle travel onto a few major corridors. Several of these corridors are expected to operate near planned capacity with full build-out of Pleasant Valley and Damascus Valley (may occur beyond the 2020 horizon assumed in this analysis). Specific observations for further plan considerations are noted below.

Foster Road Corridor — Travel demand in the Foster Road corridor is severely constrained east of NE 122nd Avenue. The most critical segment appears to be between NE 122nd Avenue and Barbara Welch where forecasted peak period volumes were nearly two times the planned capacity. Expanding road capacity east of NE 122nd Avenue to 172nd Avenue was found to increase travel forecasts by 10 to 30 percent in the corridor. Marginal reductions to traffic volumes on parallel east-west facilities (Clatsop Road, Powell Blvd.) were noted. The proposed “break” in Foster Road in Concepts B, C and D caused no significant “overload” of traffic on parallel routes. Foster Road south of Pleasant Valley performs well with three lanes until its terminus at Highway 212.

North-south travel into Gresham — Peak direction travel demand via 162nd Avenue, Powell Boulevard, and Jenne Road generally exceeds planned capacity during the busiest two-hour period. Parallel routes via Highland Road, and 190th Avenue are at or near capacity in most alternatives, except Plan D. Together, these findings show a very high north-south demand at the northern gateways into Gresham.

However, routes further east than 190th Avenue are not as attractive for north-south travel. The Butler Road to Towle Road route is moderately used in most plans and well within planned capacity.

Clatsop Road — The segment between 162nd and 145th Avenue are at or near capacity for most plans. Access limitations and “T” shaped intersections should provide sufficient operational capacity without expanding the number of travel lanes.

Gateway Performance Testing

The peak hour intersection levels of service were evaluated for consistency with regional performance measures described in the RTP. The gateway locations for this study were selected to provide an overall assessment of the intersection operating characteristics.

The results of the LOS analysis summarized in Table 9 show that most of the gateway locations will operate within the performance standards described in the RTP with LOS E or better during the peak 2-hours. The notable exceptions are at Foster Road/122nd Avenue where additional east-west capacity is required to achieve acceptable performance.

Table 9: Forecasted 2020 Peak Hour Intersection Level of Service

Intersection	Plan A			Plan A without Sunrise Unit 2			Plan B			Plan C			Plan D		
	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
Signalized															
Foster/122 nd	78.1	E	1.15	75.1	E	1.14	77.5	E	1.15	80.0	F	1.16	78.3	E	1.15
Foster/172 nd	58.3	E	0.98	59.6	E	0.99	50.0	D	0.94	42.9	D	0.90	27.0	C	0.70
Foster/Jenne	51.2	D	0.97	54.5	D	0.99	39.9	D	0.82	33.2	C	0.70	40.4	D	0.82
Powell/Jenne	27.2	C	0.81	38.2	D	0.90	36.1	D	0.87	38.8	D	0.88	37.8	D	0.88
Powel/182 nd	42.8	D	0.88	46.5	D	0.91	47.2	D	0.93	56.6	E	1.00	47.7	D	0.95
Powell/Eastman	51.6	D	0.88	65.1	E	0.97	54.1	D	0.88	54.2	D	0.91	49.4	D	0.85
Powell/Hogan	45.2	D	0.79	44.2	D	0.77	45.8	D	0.79	45.5	D	0.80	46.7	D	0.80
172 nd /Clatsop	52.1	D	0.94	52.7	D	0.95	70.2	E	1.04	27.5	C	0.68	46.5	D	0.88
172 nd /Sunnyside	53.4	D	0.93	100.9	F	1.16	53.2	D	0.92	56.6	E	0.96	51.5	D	0.91
172 nd /Hwy 212	49.5	D	0.94	106.5	F	1.36	49.9	D	0.95	54.4	D	1.07	49.2	D	0.94
Foster/Hwy 212	16.2	B	0.70	43.2	D	1.06	15.5	B	0.70	14.0	B	0.68	15.3	B	0.70
Unsignalized	Major/Minor LOS			Major/Minor LOS			Major/Minor LOS			Major/Minor LOS			Major/Minor LOS		
King/147 th	A/E			A/F			A/E			A/E			A/E		

Notes:

Signalized Intersection LOS: Delay=Average stopped delay per vehicle, LOS=Intersection level of service, V/C=Volume-to-Capacity ratio

Unsignalized Intersection LOS: A/A = Major street turn LOS/minor street turn LOS

*The forecast volumes used for this analysis are raw model volumes (2-hr PM Peak) factored by 0.52 to peak hour volumes. Assumed geometries are based on the modeled roadway lanes and capacities (with some refinement from Gresham TIF data).

Intersection Performance

Intersection service levels were evaluated for the afternoon peak period at the same locations considered in the alternatives analysis. Table 10 below compares the performance of the March Hybrid Plan with the other four alternatives and the previous Hybrid Plan that did not include 60 acres of employment uses. Overall, there are minor differences between each of the gateway locations. The results are essentially the same as for Plan D and the January 24th Hybrid Plan. It is notable that the travel demands for the March Hybrid Plan included 60-acres of employment uses that were not included in the other four cases. The impacts of added a higher intensity land use do not appear to significantly change intersection performance at any of the gateway locations.

Table 10: March 6 Hybrid Plan Intersection Performance Relative to Alternative Plans

Intersection	Plan A	Plan B	Plan C	Plan D	Hybrid Plan	Hybrid Plan		
					(Jan. 24)	(March 6)		
Signalized	LOS	LOS	LOS	LOS	LOS	Delay	LOS	V/C
Foster/122 nd	E	E	F	E	F	84.6	F	1.18
Foster/172 nd	E	D	D	C	C	30.1	C	0.81
Foster/Jenne	D	D	C	D	D	41.6	D	0.88
Powell/Jenne	C	D	D	D	D	42.9	D	0.91
Powell/182 nd	D	D	E	D	D	51.3	D	0.96
Powell/Eastman	D	D	D	D	D	53.7	D	0.91
Powell/Hogan	D	D	D	D	D	46.6	D	0.80
172 nd /Clatsop	D	E	C	D	D	43.3	D	0.78
172 nd /Sunnyside	D	D	E	D	D	50.0	D	0.93
172 nd /Highway 212	D	D	D	D	D	50.2	D	0.95
Foster/Hwy 212	B	B	B	B	B	19.6	B	0.70
<i>STOP Sign Control</i>	<i>LOS</i>	<i>LOS</i>	<i>LOS</i>	<i>LOS</i>	<i>LOS</i>	<i>Major/Minor LOS</i>		
King/147 th	A/E	A/E	A/E	A/E	A/E	A/E		

Notes:

LOS (signals): Delay=Average stopped delay per vehicle, LOS=Intersection level of service, V/C=Volume-to-Capacity ratio

LOS (stop signs): A/A = Major street turn LOS/minor street turn LOS

**The forecast volumes used for this analysis are raw model volumes (2-hr PM Peak) factored by 0.52 to peak hour volumes. Assumed geometries are based on the modeled roadway lanes and capacities (with some refinement from Gresham TIF data).*

The Foster Road corridor remains at capacity near 122nd Avenue, but operates adequately at Jenne Road and 172nd Avenue according to the demand forecasts. As noted previously, the bottleneck just east of 122nd Avenue (transition from 4-lane to 2-lane road cross-section) will create very significant queues and delays that will extend the peak period in this segment of the corridor. The bottleneck will also constrain the eastbound volumes on Foster Road in the p.m. period, which allows the intersections further east to

operate satisfactorily with planned capacity. The Foster Road and Powell Boulevard corridors will be further studied by Metro and the City of Portland for appropriate system improvements to serve planned development.

Forecasted turning volumes at Foster Road and 172nd Avenue showed that the peak hour demand was high on the west and south legs, and relative low on the east leg. The 2020 forecast showed 1,650 vehicles in the peak hour using this intersection. Of those, about 300 vehicles (20%) use the east leg in either travel direction. This finding points to the possible need to re-orient the intersection such that the major “through” movements from west to south (and south to west) become the major street, and the east leg of Giese Road become a minor approach. Our operational showed that it could work during peak hours adequately with either configuration, but reducing right-turning movements at this intersection could be a significant improvement for pedestrian safety.

Transit System Coverage

Transit coverage Level of Service (LOS) was analyzed based on the *2000 Highway Capacity Manual* (HCM) methodology. The method compares the transit service area and frequency to land use. The transit service area is analyzed as a buffer zone from transit routes and/or stops. The distances used for defining the buffer are based on the estimated walking trip length that is determined reasonable for the general public. Walking distances of 0.25 miles were used to define the transit buffer around bus routes. Transit service frequency analysis was based on the proposed transit route headways for the PM peak and off peak periods.

Transit buffers were defined for proposed transit system for each of the four concept plans. Land use associated with Transportation Analysis Zones (TAZs) was used to determine which TAZs meet the 2000 HCM minimum density criteria for being transit supportive. The criteria were defined as densities of at least 3 households/acre or 4 employees per acre.

The results of the transit coverage analysis indicate all concept plans have adequate transit coverage with the exception of the area along 190th Avenue in the southeast corner of the valley. No transit service was expected along that portion of 190th Avenue in the travel forecasts, and the walking distance to the nearest route was found to be too great to adequately serve transit needs. The plans that assumed higher density housing along this area would not be adequately served. It is recommended that these types of uses be relocated to other corridors to better encourage transit ridership.

The transit route frequencies (headways) assumed for these scenarios range from 10 to 15 minutes in the PM peak and 15 to 30 minutes in the off peak period. Based on the 2000 HCM methodology, 10 to 15 minute headways correspond to a transit LOS of B to C during the PM peak period. Headways of 15 to 30 minutes correspond to a transit LOS of C to D during the off peak period. The LOS for the transit buffers, using the assumed transit route headways, should adequately serve the study area during both the PM peak and off peak periods.

Preliminary Cost Estimates

Cost estimates were developed for the major components of the transportation facilities to compare the relative investment between the four concept plans. The preliminary cost estimates were made for new and improved roadways classified as arterial or collector facilities. Lower functional classes roadways are more likely to be shaped and funded through development plans, and no estimate was made for these streets. Typically, the local and collector streets are fully constructed by the development as a condition of approval. The higher tiered streets are constructed through joint public funding programs at the city, county or regional level.

Table 11: General Cost Assumptions

Construction Category	Cost Per Square Foot
ROW	\$10
Pavement Construction	\$10
Bridge Work	\$125
Contingency Factor	1.25
Bridge Length (feet)	200

The streets and bridges costs were estimated by applying general assumptions based on recent construction projects of a similar nature. The assumptions used for this study are listed in Table 11 for the right-of-way, pavement, and bridge construction. The other elements of the street design including street lighting, drainage, traffic signal controls, etc. are not included in this estimate.

The tally of functional class by concept plan was previously listed in Table 1. A similar tally was made of the number of bridge crossings required for each concept plan as shown in Table 12. This shows that 22 to 29 bridges will be required to implement these street systems. The breadth of the bridges varies according to the type of street as shown in the table. For the purposes of this study, all bridges were assumed to be 200 feet in length.

Table 12: Number of Stream Crossings by Functional Classification in Pleasant Valley

Class	Street Right-of-Way	Bridge Width	Plan A	Plan B	Plan C	Plan D
Major Arterial	92	68	1	1	1	1
Major Arterial	111	68				
Minor Arterial	62	46	2	1	2	1
Minor Arterial	70	46	8	9	4	5
Minor Arterial	80	46				
Collector	60	44	5	8	8	6
Collector	70	44	2			
Collector	74	44		2	2	
Neighborhood Conn.	64	34	3	2	3	10
Local	56	32	7	6	2	2
Trail	10	10				
Total			28	29	22	25

The results of the preliminary cost estimate are listed in Table 13 in \$1,000s of dollars (2001). The cost elements are divided into right-of-way and roadway/bridge costs. It was noted that the least right-of-way cost was for Plan A while the most right-of-way was required for Plan B. The overall least cost for the major street improvements was in Plan D with \$97.5 million.

Table 13: Major Roadway Preliminary Costs (\$1,000)

Cost Element	Plan A	Plan B	Plan C	Plan D
ROW Costs	\$26,781	\$37,323	\$42,197	\$23,121
Number of Bridges/Crossing	28	29	22	25
Construction Costs	\$64,970	\$69,380	\$62,543	\$54,932
Total Costs	\$114,689	\$133,379	\$130,924	\$97,566

Section 5 – System Plans

Preferred Plan

The Steering Committee selected a hybrid of the four alternatives presented above for the transportation system to serve the valley. The March Hybrid Plan was primarily based on the configuration reflected in Plan D. Adjustments to this network were made to reduce environmental impacts at stream crossings, and to provide more direct travel between neighborhoods and proposal school locations. Changes to the land use plan included additional neighborhood commercial centers, and a significant addition of 60-acres of employment uses in place of proposed residential uses in the prior alternatives analysis. The travel forecasts for the March 6 Hybrid Transportation Plan and revised land use plans were evaluated by Metro staff using the travel demand tools that were applied in the alternatives analysis. The following section presents the transportation performance, recommended functional class and transit map elements, and the final preliminary cost estimates for the March 6 hybrid transportation system.

On May 14, 2002 the Steering Committee endorsed a preferred Concept Plan. See Figure 1 for the preferred network of arterial, collector and neighborhood connector streets. In summary, the key elements of the street plan (as integrated with land use and natural resources) are to:

- Create a network of arterial, collector, neighborhood connector and local streets that accommodates travel demand and provides multiple routes for travel. Key new street extensions and connections include:
 - a) 172nd Avenue extension north to Giese Road
 - b) Giese Road west to Foster Road
 - c) Clatsop Street west to Cheldelin Road
 - d) 182nd Avenue south to Cheldelin
 - e) Butler Road west to 190th Avenue
 - f) Sager Road east to Foster Road
- Long-term arterial connection from 172nd to 190th Avenue south of the study area.
- Upgrade existing streets and design all new streets to accommodate biking and walking, with special pedestrian amenities on transit streets. Upgrade intersections with safety issues identified as part of the inventory work.
- Provide regional and community transit service on key roads in Pleasant Valley, with direct connections to Happy Valley, Clackamas regional center, Damascus, Lents, Gresham, the Columbia Corridor and downtown Portland. Transit streets include 172nd Avenue, Giese Road, 182nd Avenue, 190th Avenue, a new east-west collector south of Giese Road and Clatsop Street-Cheldelin Road.
- Provide a logical and connected street system that connects directly to community destinations while also avoiding the ESRA where possible. Plan for a local street system that complements the arterial and collector street system, and meets regional connectivity requirements.
- Use “green” street designs that are an integral part of the stormwater management system and provide walkable tree-lined streets.
- Downgrade the function of Foster and Richey roads to serve as local access streets and develop a strategy to disconnect and potentially vacate these streets in the confluence area of Kelley Creek.

- Plan for a long-term major arterial connection south of the study area from 172nd Avenue to 190th Avenue to serve long-term regional mobility needs if future urbanization occurs in Damascus. This will be evaluated more fully by Metro as part of urban area planning for the Damascus area.
- Evaluate needed capacity improvements to address long-term travel demand for key gateway routes if future urbanization occurs in Damascus. This will be evaluated as part of a Powell/Foster corridor study (beginning in summer 2002), continued Damascus area planning, and the next Regional Transportation Plan update.

2020 Volume Forecasts

The raw model volumes were adjusted to correct cases where intersection controls and street design types would yield different results. For example, the route including Richey Road and the north-south collector street (182nd Avenue) were “assigned” a volume that did not account for traffic signals and higher design speeds on 190th Avenue. A manual adjustment was made to better reflect these factors. Another link worth noting is 162nd Avenue that has a forecast of about 8,000 vehicles daily. Initially, this seemed high for a collector considering that relatively little land development is connected to it; however, it was noted that the elementary and middle school sites rely primarily on 162nd Avenue, and that these sites alone generate 3,000 to 5,000 daily vehicles. Therefore, the 162nd Avenue forecast of 8,000 vehicles seems reasonable.

The resulting volumes of the Pleasant Valley area (**Table 14**) illustrate a range of daily traffic volumes on the arterials (Foster Road, Giese Road, 190th Avenue, 172nd Avenue) from 9,000 to 39,000 vehicles daily. The highest volumes in the valley were noted on 190th Avenue between Giese Road and Cheldelin Road. Collector facilities (162nd Avenue, Butler Road, Sager Road) show daily volumes from 3,000 to 15,000 vehicles in both directions. Volumes on Cheldelin Road between 190th Avenue and 172nd Avenue could be substantially higher if the proposed connector immediately south of the plan area is not constructed. In that case, the Cheldelin Road segment could be considered a major arterial. Traffic volumes on neighborhood connector routes are expected to be below 5,000 vehicles daily.

Table 14: 2020 Pleasant Valley Travel Demands by Major Corridor (2-Hour PM Peak)

Major	PV Demand	Percent of Total External Traffic	Total Demand	PV Percent of Total Demand
<i>Eastern Corridor</i>				
Powell Blvd. E/o 190 th	390	4%	4250	9%
Binford Lake Pkwy E/o 190 th	290	3%	1900	15%
Butler Road E/o 190 th	840	9%	3600	23%
<i>Southern Corridor</i>				
172 nd S/o Sager Road	1410	15%	3400	41%
Foster Road S/o Sager Road	840	9%	1810	46%
<i>Northern Corridor</i>				
Jenne Road N/o Foster	640	7%	3120	20%
190 th Ave S/o Highland Drive	1650	18%	6090	27%
<i>Western Corridor</i>				
Powell Blvd. W/o Jenne Road	940	10%	5930	16%
Foster Road W/o 162 nd Ave.	1300	14%	3310	39%
Clatsop Road W/o 162 nd Ave.	900	10%	3530	25%
Total	9,230		36,940	25%

Select Zone Analysis

Gateway activity associated with Pleasant Valley was reviewed using a select-zone analysis for all of the plan area TAZs. This process shows the proportion of PV traffic using each of the major roadways within the study area. The results are useful to illustrate the major travel orientation for trips that start or end within Pleasant Valley, and also for showing what proportion of the total 2020 travel demand can be directly associated with Pleasant Valley traffic. The results summarized in Table 14 show that the Pleasant Valley component of the future traffic stream along the major arterials feeding the valley vary from 10 to 45 percent. The most significant corridors are to and from the west and south with roughly 30% in either cardinal direction. The table also shows the proportion of Pleasant Valley traffic relative to the total 2020 travel demand for the same corridors. Overall, approximately 25% of the 2020 trips through the gateway arterials are attributed to Pleasant Valley. The corridors with the highest share of trips originating or terminating in Pleasant Valley are the western and southern corridors, with percent shares ranging from 15 to 46%.

Sager Road Issues

Sager Road between 172nd Avenue and Foster Road is forecasted to carry about 3,000 to 5,000 vehicles daily. Clatsop Road parallel to the north will serve 13,000 to 15,000 vehicles. One possible modification to the March 6 Hybrid network would be a discontinuous Sager Road to reduce the number of stream crossings and wetland area impacts. If this approach is taken, the volume on Clatsop Road would rise about 10 percent in this segment, and the junction of Clatsop Road and 172nd Avenue would have a similar increase. We expect that Clatsop Road can adequately serve this volume, but the Clatsop Road intersection at 172nd Avenue may require additional turn lanes on its approaches to serve the added vehicle volume during peak hours. Other side effects include out-of-direction travel for the neighborhood, and wider street approaches that may detract from the safety and convenience of pedestrian crossings. In conclusion, Sager Road is needed in the future street network to serve as an important parallel route to Clatsop Street.

2020 Link Performance

The ratio of roadway planned capacity and 2020 p.m. peak demand volumes is illustrated in Figure 6 for the Pleasant Valley Area. The street network is shown schematically, and is color-coded to indicate the volume-to-capacity (V/C) ratio for each of the modeled links. Generally, most of the roadway links operate a less than 80% of capacity, and these are indicated with the color green. Higher v/c ratios up to 1.00 are indicated on:

- 190th Avenue north of Giese Road
- Butler Road
- 190th Avenue near Cheldelin
- Clatsop west of 162nd Avenue
- Jenne Road southbound
- Foster Road eastbound up to Jenne Road

A few links are expected to exceed 1.00 v/c ratio, which means that the link volume will exceed the prototypical link capacity. These include:

- Highland Road southbound
- Butler Road near High School site
- Foster Road east of Jenne Road
- 190th Avenue south of new Butler Road connection

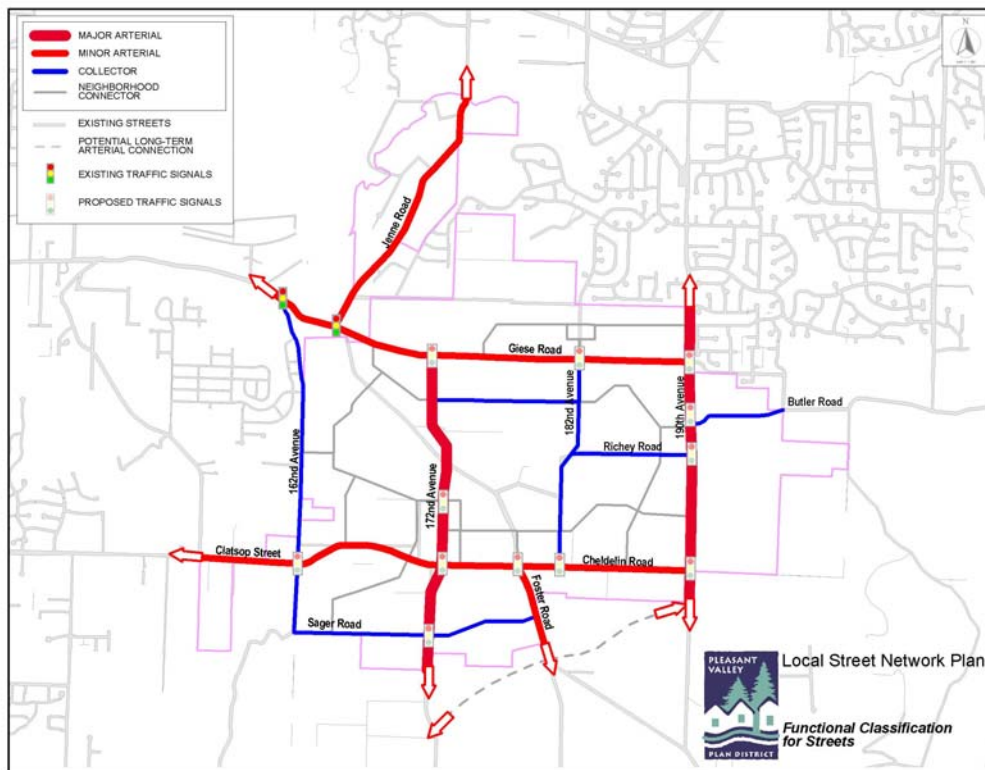
Typically, the maximum daily volume on a three-lane facility is 15,000, and 30,000 vehicles daily for a five-lane facility. Higher volume can be served than this with implementation of higher standards for access control, prohibition of on-street parking and more intersection capacity. The cases noted above will require consideration of additional turn lanes at major intersections and higher levels of access controls mid-block (medians) to sustain higher than average link capacities.

Street System

Functional Classification

The functional classification designations complement existing designations for the connecting routes outside the study area including Foster Road in City of Portland, 190th Avenue – Highland Road in the City of Gresham, and Foster Road in Clackamas County. The new segment of Butler Road was identified as a collector road to be consistent with existing City of Gresham plans. Of all the facilities considered in this plan, Butler Road is one that would be a candidate for a re-designation to another classification. Given the future daily volumes approach 15,000 vehicles, and the relatively limited access because of terrain, it is suggested that the City of Gresham consider re-designating Butler Road to be a minor arterial. The length of Butler Road between 190th Avenue and its easterly terminus at Regner Road is roughly 1.5 miles. The combination of Butler Road and Regner Road provides one of the few east-west routes between US 26 and 190th Avenue in this sector of the city, and generally conforms to the broader definition of an arterial facility.

Figure 6. Network of Arterial, Collector and Neighborhood Connector



Streets

Arterial streets

Purpose

Arterial streets serve longer, through trips and interconnect communities within the region. They also serve shorter, more localized travel within a community, linking major commercial, residential, industrial and institutional areas.

Characteristics

Arterial streets usually carry between 10,000 and 30,000 vehicles per day. These streets are divided

into major and minor classifications, and usually have two to four travel lanes (one or two in each direction). Major arterials function to serve longer, through trips and serve more of a regional traffic function. Minor arterials function to serve shorter, more localized travel within a community. As a result, major arterials usually carry more traffic

Arterial streets are typically designed within 70 to 111 foot right-of-way and with a design speed of between 25 and 35 mph, depending on adjacent land uses. Arterial streets located in the plan district will mix a significant amount of motor vehicle traffic with public transportation, bicycle and pedestrian travel. These streets have many street connections and some driveways, although combined driveways are preferable. These facilities may include on-street parking when possible, particularly in the town center. The center median serves as a pedestrian refuge and allows for left-turn movements at intersections. Swale medians with left turn refuges

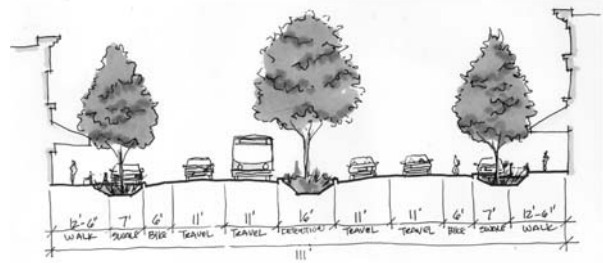


Figure 7. Regional boulevard (major arterial in town center)

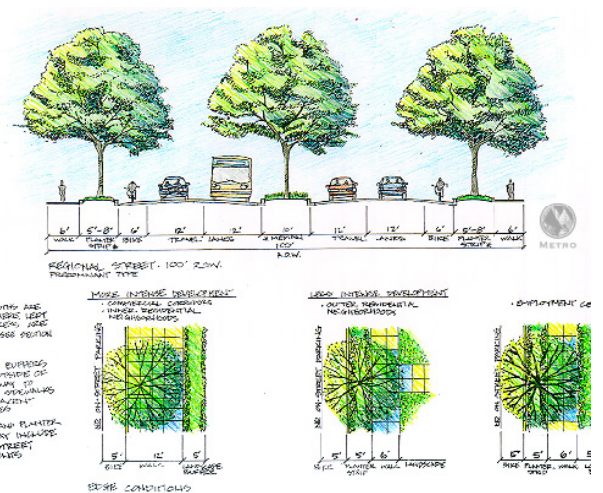


Figure 10. Community street (minor arterial with median outside town center)

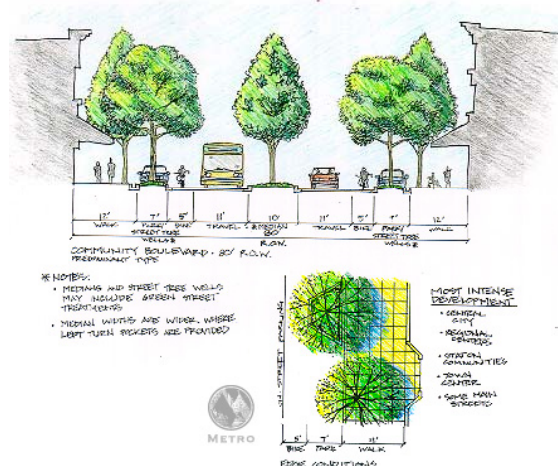


Figure 9. Community boulevard (minor arterial within town center)

shall be provided on arterial streets in the plan district, including Giese Road, 172nd Avenue, Clatsop Street and 190th Avenue.

Arterial streets in the plan district are designed to be transit-oriented, with high-quality service and substantial transit amenities at stops and station areas. Pedestrian improvements are substantial on streets in the town center, including broad sidewalks, pedestrian buffering, special street lighting and crossings at all intersections with special crossing amenities at major intersections. These streets have bike lanes. They also serve as primary freight routes and may include loading facilities within the street design. Loading facilities should occur on side streets, where feasible.

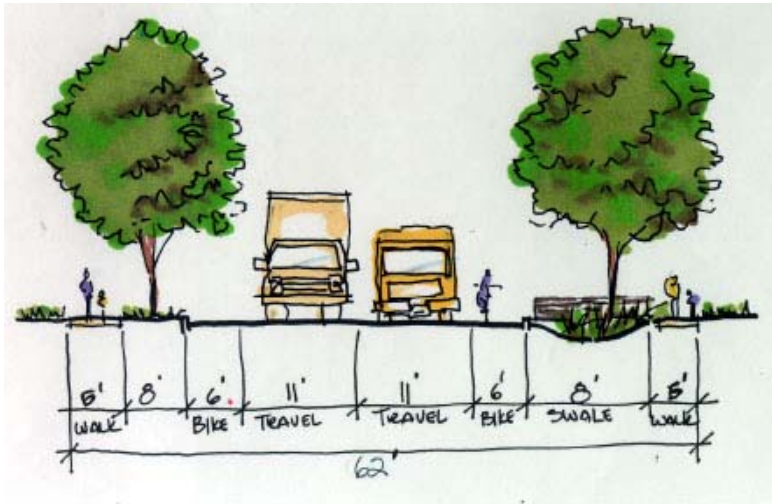


Figure 11. Community street (minor arterial without median outside town center)

Collector Street

Purpose

Collectors serve neighborhood traffic and provide local alternatives to arterials. They provide both circulation and access within residential and commercial areas, helping to disperse traffic that might otherwise use the arterial system for local travel.

Characteristics

Collectors usually carry between 1,000 and 10,000 vehicles per day. Collector streets are usually have two travel lanes (one in each direction) and are spaced at half-mile intervals, or midway between arterial streets. Access control on collectors is lower than arterials, and direct driveway connections from residential, commercial, and employment uses are allowed.

Collector streets are typically designed within 60 to 70 foot right-of-way and with a design speed of between 25 and 35 mph, depending on adjacent land uses. Collector streets are designed to carry vehicle traffic while providing for public transportation, bicycle and pedestrian travel. These facilities serve lower-density residential neighborhoods as well as more densely developed corridors and main streets, where buildings are often oriented toward the street at main intersections and transit stops. Collector streets have few driveways that are shared when possible.

Collector streets are transit-oriented in design when they are also transit streets, with transit amenities at stops and station areas. Although less substantial than in arterial streets in the town center, pedestrian improvements are important on collector streets, including sidewalks that are buffered from motor vehicle travel, crossings at all intersections and special crossing features at major intersections. Collector streets have striped or shared bikeways depending on traffic volumes and other safety considerations. These facilities also serve as secondary freight routes and may include loading facilities within the street design

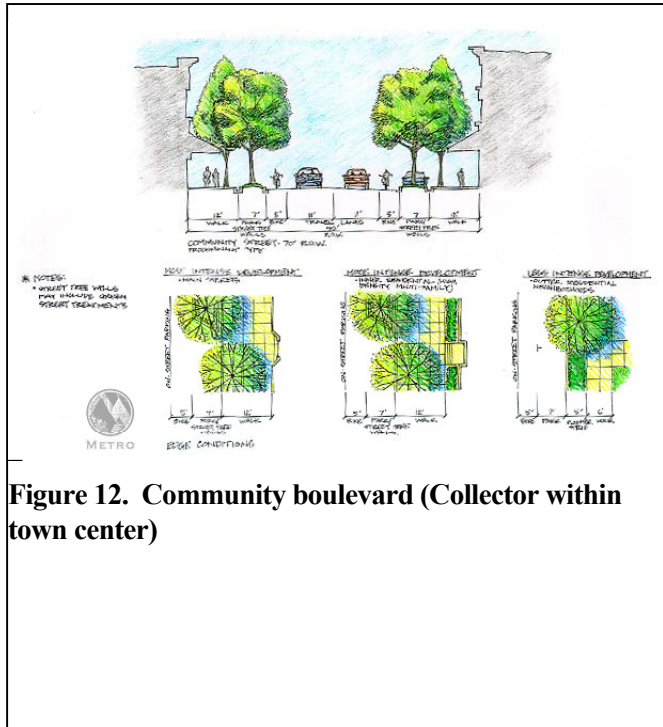


Figure 12. Community boulevard (Collector within town center)

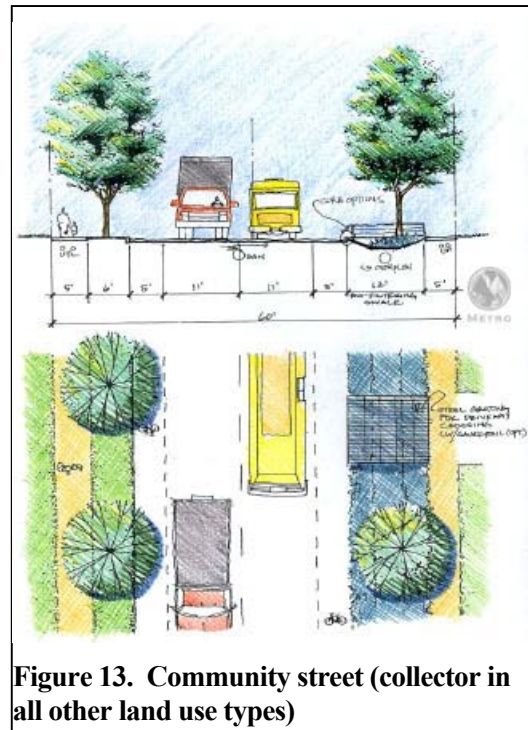


Figure 13. Community street (collector in all other land use types)

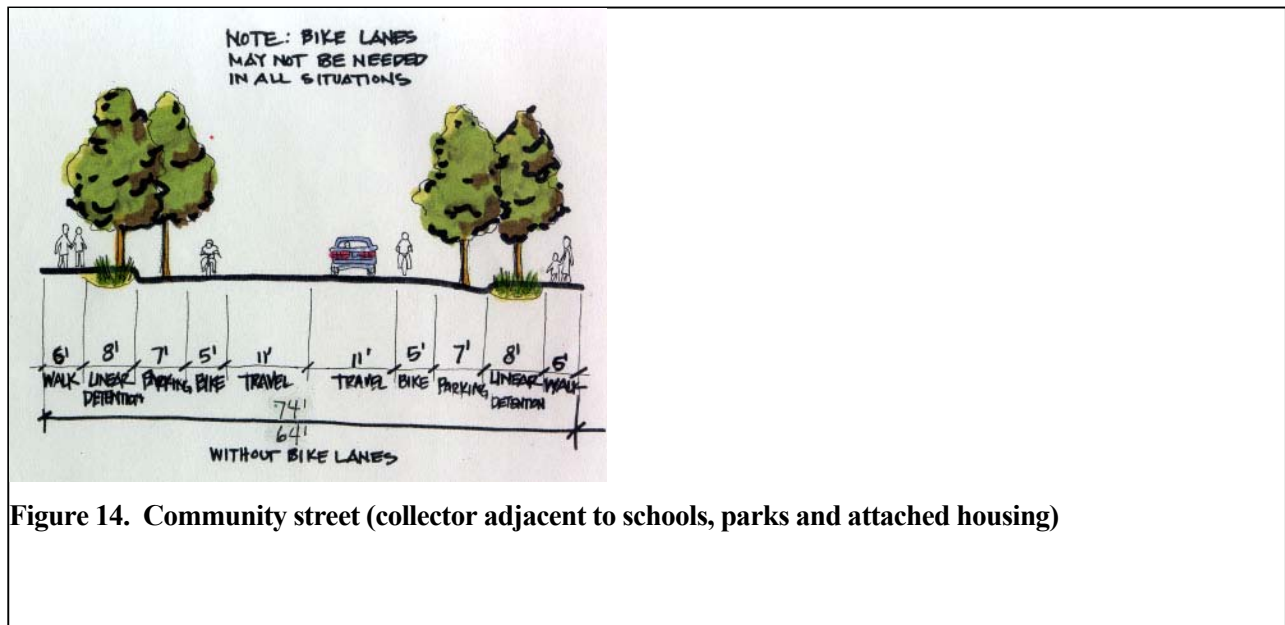


Figure 14. Community street (collector adjacent to schools, parks and attached housing)

in the town center and neighborhood centers, where appropriate. Loading facilities should occur on side streets, where feasible.

Neighborhood connectors

Purpose

Neighborhood connector streets serve residential neighborhoods and provide connectivity to the collector and arterial street system. They are intended to serve travel between neighborhoods and provide options to the arterial and collector streets for travel within the community.

Characteristics

Neighborhood connectors serve more traffic than local streets, but still less than 5,000 vehicles per day. Neighborhood connectors usually have two travel lanes (one in each direction) and include on-street parking, a landscaped buffer between the travel lanes and sidewalks, curb extensions, sidewalks and bike lanes depending on traffic volumes.

Neighborhood connector streets are typically designed within 60 to 70 foot right-of-way and with a design speed of between 10 and 25 mph, depending on adjacent land uses. Street design elements include sidewalks, bike lanes depending on traffic volumes, on-street parking and a landscaped buffer between travel lanes and sidewalks.

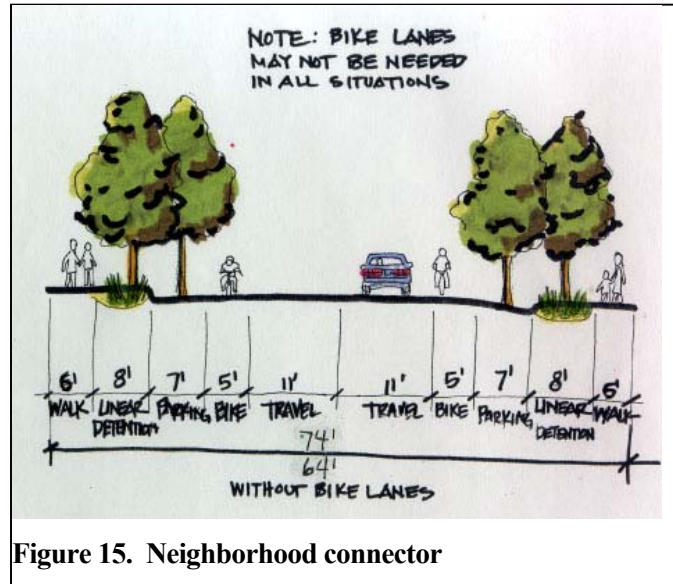


Figure 15. Neighborhood connector

Local streets

Purpose

These streets provide direct access to adjacent land. Local streets provide access between people's homes and the neighborhood connectors.

Characteristics

Local streets are multi-modal and are designed to serve most short automobile, bicycle and pedestrian trips. Local streets usually carry fewer than 1,000 vehicles per day. Local street designs include many connections with other streets, every 530 feet except where prevented by existing development or environmental and topographic constraints. Bike and pedestrian accessways are provided every 330 feet where full street

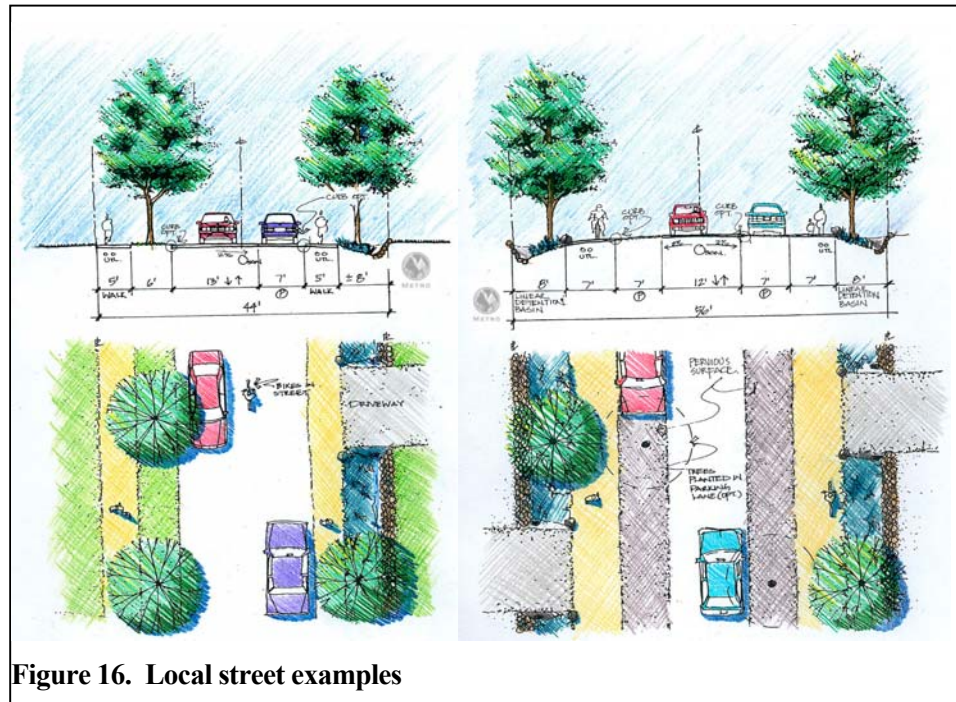


Figure 16. Local street examples

connections cannot be provided. Local streets are typically designed within 20 to 50 foot rights-of-way and with a design speed of between 10 and 20 mph.

On average, each household generates between 10-12 automobile trips per day. A well-connected street system with reasonably direct connections encourages walking, bicycling, and transit use, and can reduce the number and length of these automobile trips. In well-connected street systems, local traffic is more dispersed, rather than focused on arterials where it combines with through-traffic to create congestion. With a well-connected system that provides multiple routes to local destinations, any single street will be less likely to be overburdened by excessive traffic. Police and fire response also benefits from a well-connected street system.

Street Design

All streets will be designed to support adjacent land uses and accommodate bicycles and pedestrians, with special pedestrian amenities on transit streets. All streets include “green streets” design elements that help minimize stormwater run-off, including pervious curbs and the use of buffer treatments that include street trees, swales, infiltration trenches and linear detention basins. Refer to Metro’s *Green Streets: Innovative Solutions for Stormwater and Street Crossings* handbook for more information on these street design elements.

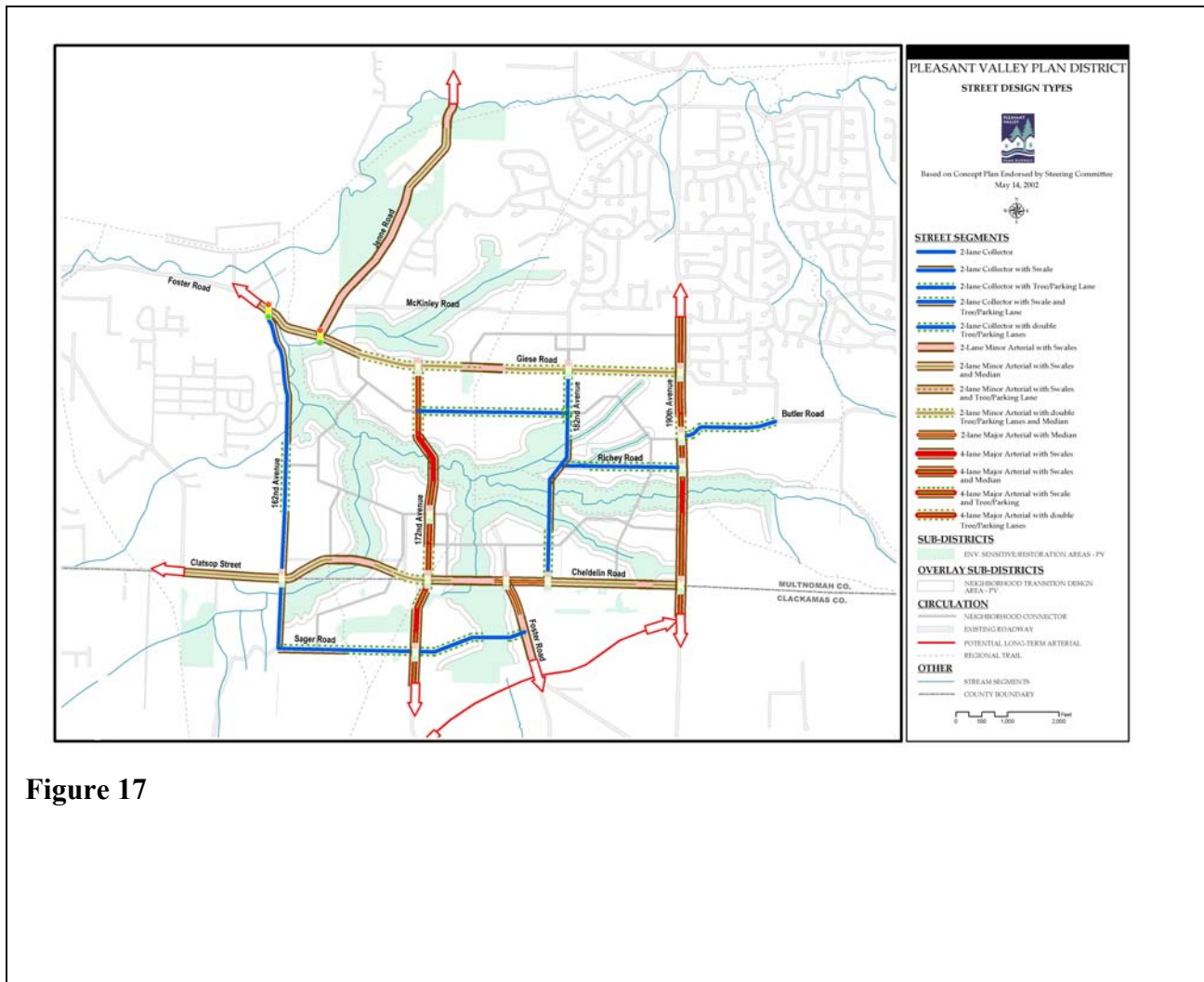


Figure 17

Table 15 summarizes the preferred street cross section for streets in Pleasant Valley by functional classification and adjacent land use. Many variables will be taken into account when the cross sections are implemented locally. Local implementation of these street designs should provide opportunities to mix and match various street design elements and to vary from preferred dimensions in areas where natural constraints exist. For example, the cross sections include the option of a landscaped buffer and center median that can be adjusted at intersections to allow for turn lanes without needing to dedicate more right-of-way than has been identified.

Though street design features are not part of the Metro transportation model, there are assumptions made in the modeling process that reflect these street design assumptions, including the degree to which walking, bicycling and access to transit are affected by street design.

The Street Design Type Map is a plan that illustrates the location of specific street cross-sections in Pleasant Valley. This work was begun in the Concept Plan, which included text describing where the various cross-sections should be located within the community. The Street Design Type Map takes this work one step further and recommends refinements (i.e., further detailing) of the location of the street designs in concert with adjacent land uses, natural resources, and urban design opportunities. See Figure 17.

The Street Design Type Map is essentially a site-specific application of the Concept Plan recommendations for street types. As noted above, it includes refinements and detailing, which are summarized as follows:

1. On major arterials, on-street parking is included adjacent to the neighborhood centers. This would apply to about 500 feet of frontage along 190th and 172nd Avenues.
2. On minor arterials outside the town center, on-street parking is included on selected streets adjacent to high and medium density residential, mixed-use, and employment areas.
3. On neighborhood collectors, on-street parking is included adjacent to all residential, mixed-use, civic and employment areas, but not adjacent to the Environmentally Sensitive and Restoration Areas (ESRAs).
4. Within the ESRAs, center swales are not included in the street cross-section. Swales are retained at the edge of the street.

Refinements (1)-(3) above introduce on-street parking in selected areas to promote pedestrian character and walkable streets. This is consistent with the overall vision and many of the implementation strategies for Pleasant Valley. It is also appropriate given the small nature of the sub-areas within the community.

The section of Geise Road between 190th and 182nd provides a good example of the benefits of refining the street types in selected areas. This section is about three blocks long and will form the edge between two adjacent neighborhoods. On-street parking will help create a street character for Geise that connects these neighborhoods, rather than separates them. This same situation is true for most of the sub-areas in the valley: between most major intersections, and between major streets and ESRAs, there is a recurrent three-to-five block dimension. Collector or arterial streets should be planned with as much pedestrian character as is practical to form good “edge” conditions for these areas. On-street parking is one tool to support pedestrian character and a good neighborhood edge.

Refinement (4) is intended to reduce the width of streets within the ESRAs, and therefore the grading impacts and cost. The cross-section is still a green street.

Table 15: Pleasant Valley Street Design Parameters

Motor Vehicle Functional Classification	Street Design Classification	Preferred Street Design Elements							
		R/W	Speed	Travel Lanes (11')	Swale Median	Bike Lane	On Street Parking	Swale	Side walk
Major arterial within TC	Regional boulevard	111'	20-25 mph	4	16'	6'	7'	No	12.5'
Major arterial outside TC	Regional street	100'	35 mph	4	16'	6'	No	8'	6'
Minor arterial within TC	Community boulevard	80'	20-25 mph	2	10'-14'	6'	7'	No	10'
Minor arterial with median outside TC	Community street	70'	35 mph	2	10'-14'	6'	No	8'	6'
Minor arterial w/o median outside TC	Community street	62'	35 mph	2	No	6'	No	8'	6'
Collector within TC	Community boulevard	70'	20-25 mph	2	No	5'	7'	No	12'
Collector adjacent to schools, parks and MF housing	Community street	74'	20-25 mph	2	No	5'	7'	8'	6'
Collector other areas	Community street	60'	20-25 mph	2	No	5'	No	8'	6'

Notes:

1. All streets will be designed to support adjacent land uses and accommodate bicycles and pedestrians with special pedestrian amenities on transit streets.
2. All streets include "green streets" design elements that help minimize stormwater runoff, including pervious curbs.
3. Swales may include infiltration trenches and/or linear detention basins as possible treatments.
4. Bike lane and sidewalk dimensions may be reduced when natural constraints exist. The need for and width of bike lanes will be determined based on traffic volumes and other safety considerations.
5. On-street parking lanes will include tree planters. Tree well curb extensions should be designed to accommodate street sweepers.
6. Twelve-foot outside travel lane may be considered on Regional Streets that are planned to accommodate local freight movement or buses.
7. Local implementation of these street designs should provide opportunities to mix and match various street design elements and to vary from preferred dimensions listed above in areas where natural constraints exist.
8. Cross sections include the option of a landscaped buffer and center median that can be adjusted at intersections to allow for turn lanes without needing to dedicate more right-of-way than has been identified.

Street Connectivity

Connectivity standards are required by Metro for newly urbanizing areas. Draft objectives for local streets were prepared to form a basis for more detailed connectivity standards. They are based upon guiding statements from the Pleasant Valley Concept Plan Summary and Recommendations, Pleasant Valley Concept Plan Technical Appendix (Transportation Chapter), Southwest and Far Southeast Master Street Plan (City of Portland), Final Report and Recommendations, and Pleasant Valley Implementation Project Statement of Work.

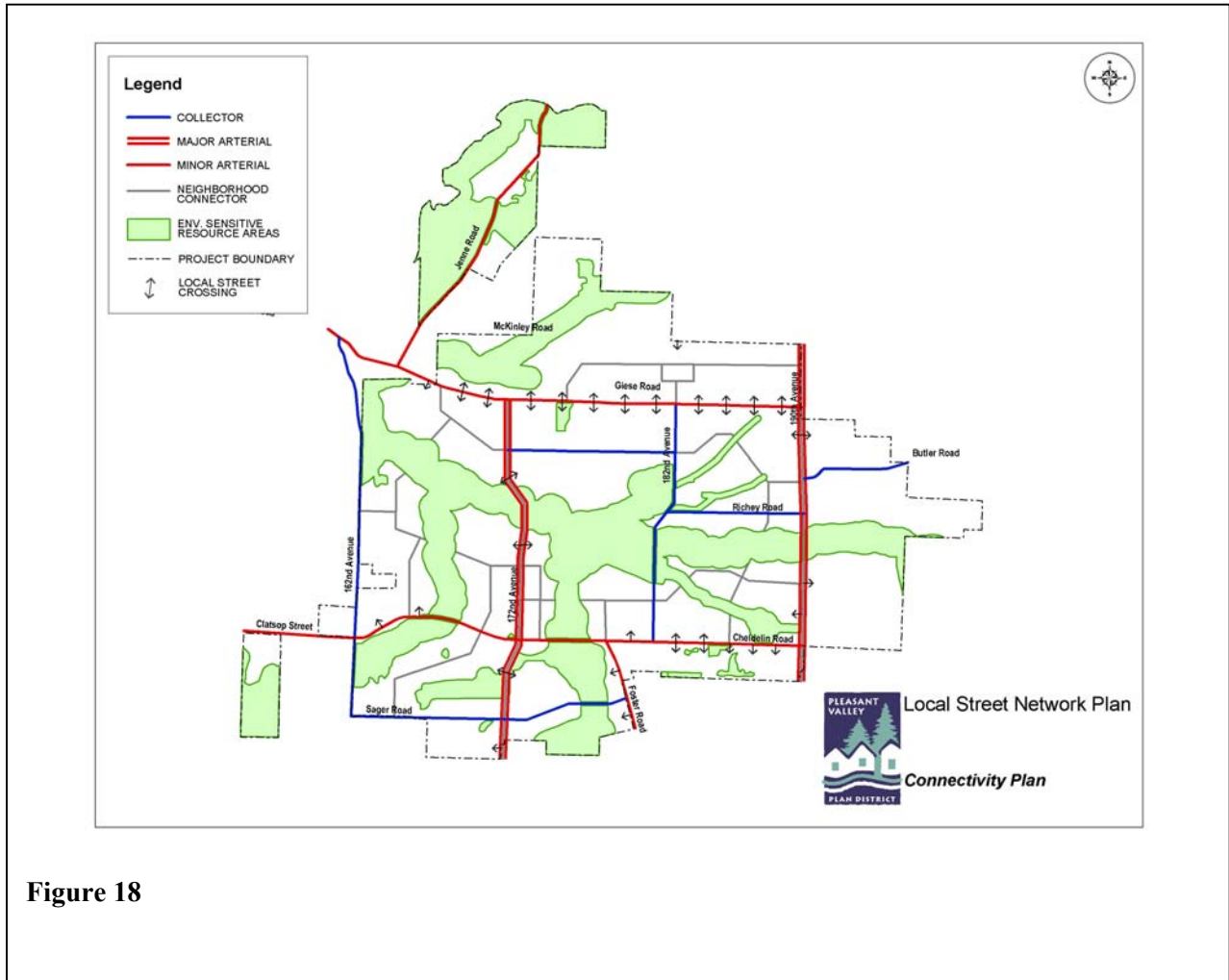


Figure 18

Local street connectivity is important to the overall success of Pleasant Valley, including the integration of land use, transportation, and natural resources. Adequate local street connections contribute to the creating a community where it is safe, convenient, and inviting to walk, ride a bike, and use transit. It also improves the functional capacity and efficiency of the transportation system by providing direct, local access between neighborhoods and local destinations, reducing the number of short, local trips on the arterial and collector streets. Finally, local streets provide routes for emergency vehicle access to local neighborhoods.

From a local street perspective, Pleasant Valley is essentially a “greenfield” setting. That is, the existing network of streets is rural and an entirely new network of connections will be needed to implement the Concept Plan’s vision for a new, urban community. Additionally, the creation of the transportation network will occur over a long time – perhaps 20-40 years. Therefore, the local street plan must strike a

balance between the certainty that is needed for creating a good network and the flexibility that is needed for long term implementation and adaptability to local conditions.

The strategy for Pleasant Valley’s street connectivity implementation is to focus on two fundamental elements of the local network:

1. The general location and number of local streets that intersect with the arterial network, implemented through a Connectivity Plan.
2. Code standards that will be applied when actual local streets are proposed through the development review process.

The Connectivity Map illustrates a recommended layout of intersections of local streets with arterials. Each intersection is shown with a crossing “arrow” symbol. This map is intended as graphic tool to supplement the tables of regulatory intersection spacing standards that are in the Transportation System Plans. The number of local streets that cross the arterials is intended to be the required number of cross streets, subject to evaluation of site-specific feasibility. The locations of the local crossings are general, that is, there is flexibility for their final location, subject to city approval.

To supplement the connectivity map, three standards are recommended for use during the review of proposed local streets in Pleasant Valley:

1. Streets will be designed to form a system of complete blocks and a connected circulation network.
2. Block length will be limited to the maximums designated in Table 16.
3. Changes and exceptions to the above standards will be permitted when one or more of the following situations apply:
 - a. Without the change, there could be no public street access from the parcel(s) to the existing street;
 - b. The change is necessary to support circulation and access for bicycles and/or pedestrians;
 - c. The change is necessary due to topographic constraints, preservation/restoration/enhancement of natural resources, existing structures and similar physical constraints.

Regarding block lengths, the Pleasant Valley Concept Plan Transportation Implementation Strategies Report states: “Local street designs include many connections with other streets, every 530 feet except where prevented by existing development, or environmental or topographic constraints. Bike and pedestrian access ways are provided every 330 feet where full street connections cannot be provided.”

The 530-foot spacing referenced above complies with Metro requirements and provides good overall guidance. However, a shorter maximum block length will result in a more walkable community. The following block lengths are recommended:

Table 16. Local Street Connectivity Standard

Plan Designation	Maximum Block Length
Residential Subdistricts (outside Town Center)	400 feet
Town Center	see diagram (Figure 19)
Neighborhood Center	400 feet
Mixed Use Employment	400 feet
Employment (Geise road)	400 feet
Employment (172 nd Ave)	600 feet
All other areas	None

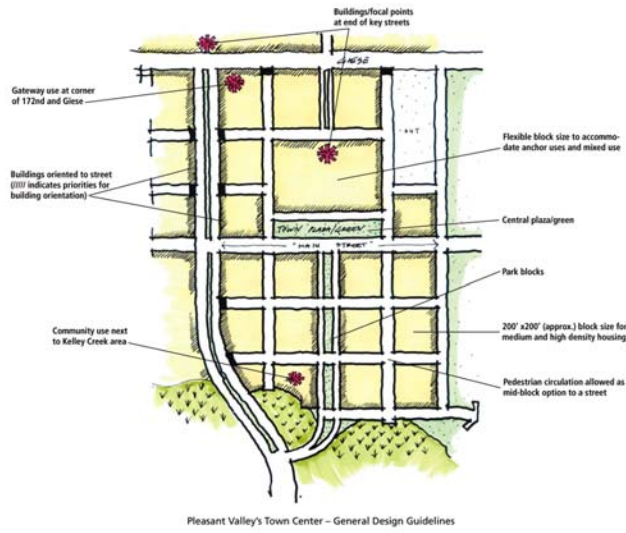


Figure 19.

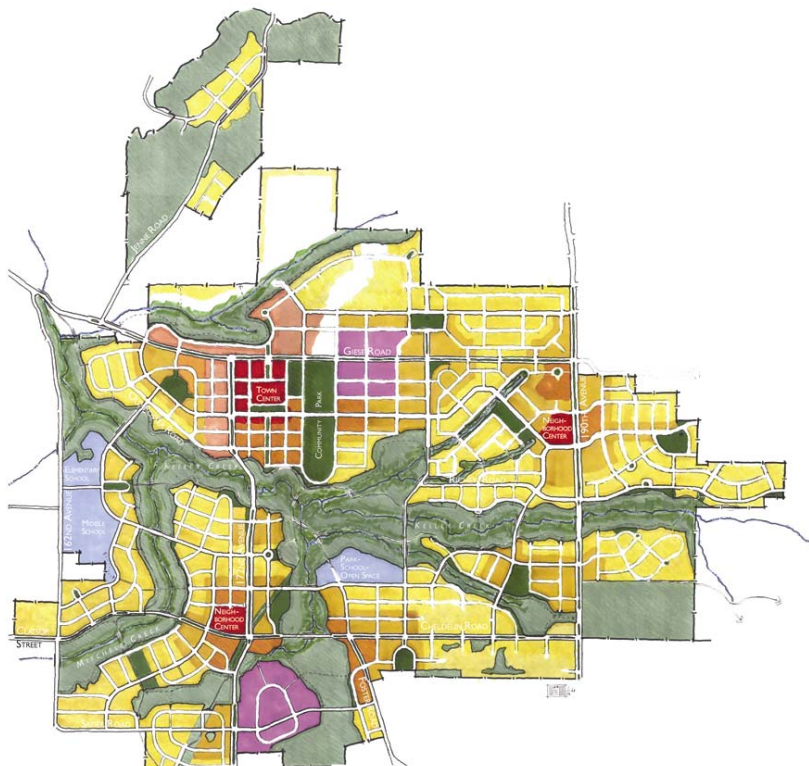


Figure 20. Illustrative Street Plan

Illustrative Street Plan

The Illustrative Street Plan, see Figure 20, was prepared as a tool to help guide the development of the other local street network maps listed above. It is purely illustrative – no attempt has been made to try to identify, reconcile and illustrate all the specific site conditions that will influence actual development and redevelopment in Pleasant Valley. The Illustrative Street Plan shows how the implementation of the connectivity standards works with the overall concept for the Pleasant Valley community, and the relationships between land use, transportation and natural resources that result from these connections. The cities may wish to adopt the illustrative plan as a guiding, but non-binding, resource to use in land use reviews and future planning.

Future Traffic Signals

A preliminary evaluation of traffic signal location was made based on the forecasted travel volumes. The list of intersections that could be controlled by traffic signals at build-out of the Pleasant Valley area include the following:

- Foster /162nd (existing)
- Foster / Jenne (existing)
- Foster / 172nd (future)
- Giese / N-S collector (future)
- Giese / 190th (future)
- Clatsop / 172nd (future)
- Clatsop / 162nd (future)
- Cheldelin /Foster (future)
- Cheldelin / N-S collector (future)
- Cheldelin / 190th (future)
- New Butler / 190th (future)
- Old Butler / 190th (future)
- Richey / 190th (future)
- Neighborhood route leading to schools / 172nd (future)
- Sager Road / 172nd (future)

These locations are noted on Figure 5 to indicate where existing and potential traffic signals may be located. Additional signals may be required depending on the specific land development proposals, and compliance with city or county access spacing standards.

Transit System

Regional transit service

Purpose

Regional transit service is provided on key roads in Pleasant Valley, with direct connections to Happy Valley, Clackamas regional center, Damascus, Lents, Gresham, the Columbia Corridor and Portland. Transit service shall lead development and be included on the front-end of community planning efforts to

encourage transit-supportive development. For Pleasant Valley, three types of regional transit service are provided: rapid bus, frequent bus and regional bus. See Figure 21 below.

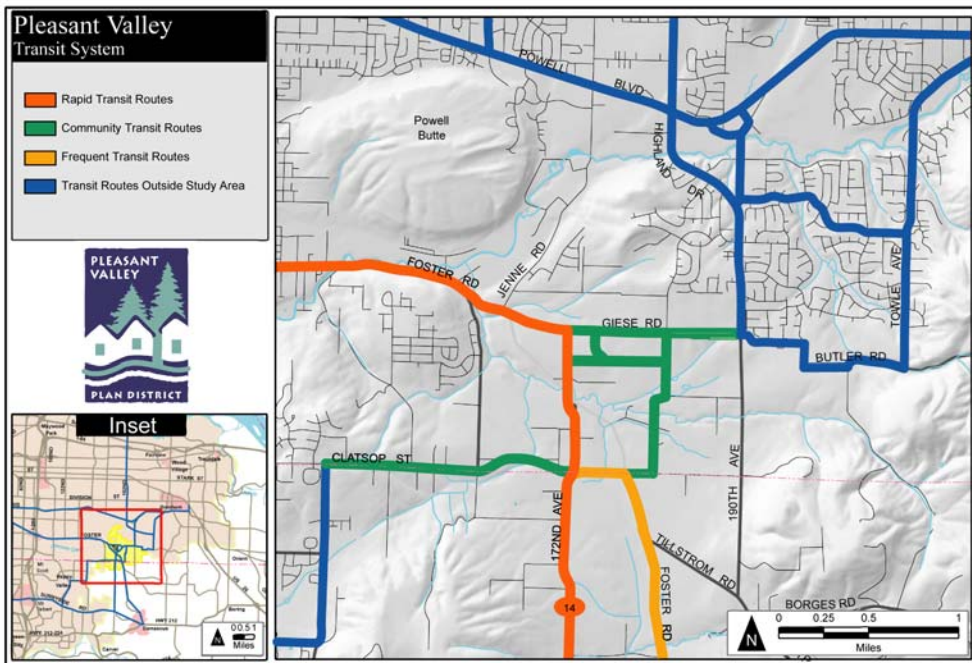


Figure 21.
Characteristics

Typically, rapid service runs at least every 15 minutes. Passenger amenities are concentrated at transit centers. Rapid bus passenger amenities include schedule information, ticket machines, special lighting, benches, covered bus shelters and bicycle parking. Rapid bus stops are located approximately every 1/2-mile. Rapid bus has been identified along Powell Boulevard/Foster Road from downtown Portland to Damascus via Pleasant Valley town center.

Typically, frequent bus service runs at least every 10 minutes and includes transit preferential treatments such as reserved bus lanes and signal preemption and enhanced passenger amenities along the corridor and at major bus stops such as covered bus shelters, curb extensions, special lighting and median stations. Frequent bus service provides slightly slower, but more frequent, service than rapid bus service. Frequent bus service has been identified along 172nd Avenue/190th Avenue between Clackamas and Gresham regional centers via Damascus and Pleasant Valley.

Regional bus service generally operates at maximum frequencies of 15 minutes. Transit preferential treatments and passenger amenities such as covered bus shelters, special lighting, signal preemption and curb extensions are appropriate at high ridership locations. Regional bus service has been identified to connect Pleasant Valley to the Columbia Corridor, Clackamas regional center, Happy Valley and Lents.

Community bus service

Purpose

Community bus lines provide localized access from Pleasant Valley neighborhoods to Happy Valley, Damascus, Gresham, regional transit service and community destinations, such as parks, schools and the town center. Community bus service will connect to regional bus service within Pleasant Valley and Gresham via Butler Road/Towle Road.

Characteristics

Community bus service runs as often as every 30 minutes on weekdays. Weekend service is provided as demand warrants. This service could be implemented through a partnership between TriMet and local jurisdictions.

Transit streets

Purpose

Transit streets are arterial, collector and, in some cases, neighborhood connector streets designated to serve community and regional transit routes. These streets connect major transit stops and include street designs, land use types, patterns and densities and pedestrian and bicycle improvements that support transit.

Characteristics

A transit street shall be designed to promote pedestrian travel with such features as wide sidewalks with buffering from adjacent motor vehicle traffic, frequent street crossings (unless there are no intersections, bus stops or other pedestrian attractions), special crossing amenities at some locations, special lighting, benches, bus shelters, awnings and street trees. The plan district shall provide pedestrian facilities leading to bus stop waiting areas and make the waiting areas safe, comfortable, and attractive with passenger amenities such as covered bus shelters, special lighting, and curb extensions. Consideration shall be given to the special access needs for elderly, economically disadvantaged, and people with disabilities.

Major Transit stops

Purpose

Major transit stops provide transfer opportunities between regional and community transit routes and provide a high degree of transit passenger comfort and access.

Characteristics

In Pleasant Valley, major transit stops are designated where bus lines intersect at Clatsop Street/172nd Avenue, Giese Road/172nd Avenue and 190th/Butler Road. Major transit stops shall provide schedule information, lighting, benches, shelters and trash cans. Other features may include real time information, special lighting or shelter design, public art and bicycle parking. Retail, office and institutional buildings on sites at major transit stops shall be located within 20 feet of the major transit stop or provide a pedestrian plaza at the major transit stop and provide reasonably direct pedestrian connections between the transit stop and building entrances on site. A transit street in the town center district shall serve as a transit hub that provides transfer opportunities between regional and community transit routes and be designed to include the features of a major transit stop. Consideration shall be given to the special access needs for elderly, economically disadvantaged, and people with disabilities.

Pedestrian districts

Purpose

Pedestrian districts are areas with street and site design standards that provide special pedestrian amenities (e.g., landscaping, curb extensions, pedestrian street lighting, benches and shelters, building entrances oriented to the street, on-site pedestrian circulation system) in the town center, neighborhood centers, employment districts and along transit streets. All streets within pedestrian districts are important pedestrian connections.

Characteristics

A pedestrian district shall be designed to provide safe and convenient pedestrian circulation, with a mix of uses, density, and design that support high levels of pedestrian activity and transit use. Pedestrian districts shall be characterized by buildings oriented to the street and boulevard-type street design features such as wide sidewalks with buffering from adjacent motor vehicle traffic, marked street crossings at all intersections with special crossing amenities at some locations, special lighting, benches, bus shelters, awnings and street trees. Consideration shall be given to the special access needs for elderly, economically disadvantaged, and people with disabilities.

Table 17. Recommended regional transit service

Transit route	To/From	Short-term Implementation (0-10 years)	Long-term Implementation (10-20 years)
Powell Boulevard/ Foster Road	Downtown Portland to Pleasant Valley	Regional bus (15 minute peak/15 minute off-peak)	Extend Rapid Bus to Damascus
Foster Road	Lents to Damascus	No service	Rapid bus (10 minute peak/15 minute off- peak)
Sunnyside Road	Clackamas regional center to Damascus	Regional bus (15 minute peak/30 minute off-peak)	Frequent bus (7 minute peak/15 minute off- peak)
172nd Avenue/190th Avenue	Damascus to Gresham	Regional Bus (15 minute peak/15 minute off-peak)	Frequent bus (10 minute peak/15 minute off- peak)
Town center/190th Avenue/ 181st Avenue/Airport Way	Pleasant Valley town center to Columbia Corridor	Regional Bus (15 minute peak/30 minute off-peak)	Regional Bus (15 minute peak/15 minute off- peak)
82nd Avenue/Sunnyside Road/97th/Stevens/ Mather Road/122nd/ 145th/Clatsop/172nd/ Foster Road	Clackamas regional center to Happy Valley to Pleasant Valley to Lents	Regional Bus (15 minute peak/30 minute off-peak)	Regional Bus (10 minute peak/15 minute off- peak)
Foster Road/ Butler Road/Towle Road	Damascus to Gresham	No service	Community bus (15 minute peak/30 minute off-peak)

Pleasant Valley loop	Within study area	Community bus (15 minute peak/30 minute off-peak)	Community bus (15 minute peak/30 minute off-peak)
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Bike and Trail Plan

The purpose of trails is to interconnect parks and open spaces to maximize access to programs and facilities; to promote physical fitness and health for a variety of users; to encourage social interaction and community pride; to provide opportunities for rest and relaxation within a natural setting through trail-related recreation; to reduce auto-dependency and enhance connections to transit facilities; to link open space amenities with homes, workplaces and other community facilities; and to provide “outdoor classroom” opportunities for environmental education. About 6.6 miles of regional trails are proposed. Regional trails may multi-use paths (10-12 feet wide with 2 feet shoulders) or hiking trails (4-6 feet wide with 2 foot shoulders).

These trails connect to the Springwater Corridor, Powell Butte and other regional trails and green spaces. They also connect to major destinations – such as the Community Park, town center, employment districts and elementary/middle school complex. They include: the East Buttes Powerline Corridor Trail follows the BPA powerline easement and provides an important north/south connection from the Springwater Corridor Trail and the proposed Gresham/Fairview Trail to the Clackamas River Greenway near Damascus; and the East Buttes Loop Trail goes through the heart of Pleasant Valley and parallels Kelley Creek on its north and south sides. The East Buttes Loop Trail connects historic and natural landmarks with the town center and neighborhoods.

The Bike and Trail Plan, see Figure 22, includes the regional trails, along with additional local walking/hiking trails. The local walking/hiking trails are intended as supplemental routes that connect the regional trails with local destinations and streets in Pleasant Valley. There should be flexibility to build these trails as separated paths, or as widened sidewalks adjacent to streets, depending on the local conditions and development proposals.

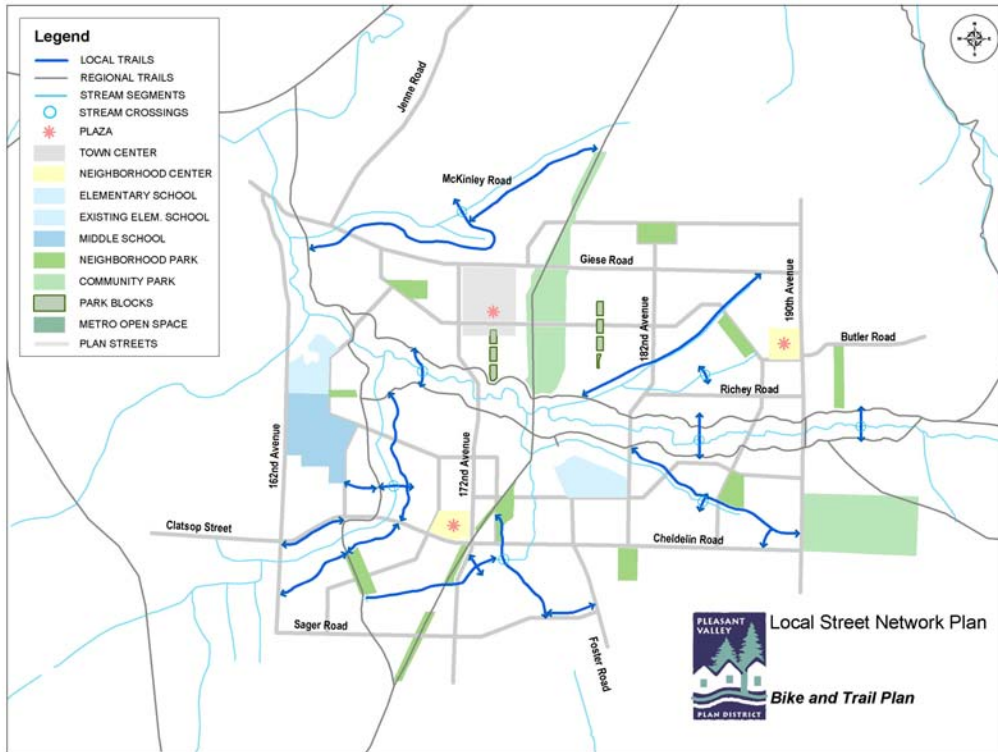


Figure 22

Section 6 – Implementation

Preferred Plan Cost Estimate

The estimated cost to provide the planned transportation system in Pleasant Valley is approximately \$90 million for the collector and arterial street system and associated stream crossings. The primary funding sources for the development of the transportation system in Pleasant Valley will include regional, state, and federal grants for large regionally significant improvements and existing deficiencies; development exactions for frontage improvements and local street improvements; and transportation improvement fees (TIFs) for development-related system improvements.

The Pleasant Valley Plan District will include special green street designs for local, collector and arterial streets. The process for establishing these designs will occur incrementally. Gresham does not have a set of green street designs that can be applied directly to Pleasant Valley. The approach will be to prepare a model green street standard, possibly connected with an early development proposal or as separate staff-level effort, and adopt this standard as part of the plan district. Given the importance of green streets to the overall plan for Pleasant Valley, the preparation and adoption of model green street designs is identified as an early-action item in the list of projects for implementing the TSP.

Projects and Funding Plan

Project	Project	Description	Cost ¹	Timing	Responsible Jurisdiction	Funding Source
	New Roads					
R1	Foster North	New extension - 1,395 LF	\$1,767,000	6 to 20	Portland/Gresham	SDC/STP/Private
R2	Giese Ext.	New extension - 2,018 LF	\$2,940,000	6 to 20	Portland/Gresham	SDC/STP/Private
R3	Butler Ext.	New extension - 2,835 LF	\$3,990,000	6 to 20	Portland/Gresham	SDC/STP/Private
R4	Clatsop Ext.	New extension - 2,938 LF	\$3,720,000	6 to 20	Portland/Gresham	SDC/STP/Private
R5	Foster South	New extension - 2,581 LF	\$1,953,000	6 to 20	Portland/Gresham	SDC/STP/Private
	Existing Roads					
1	Segment 1	Boundary to Butler - improvement to existing - 122,137.5 LF	\$4,104,750	6 to 20	Portland/Gresham	SDC/Local
2	Segment 2	Butler to Richey - improvement to existing - 787.5 LF	\$1,632,750	6 to 20	Portland/Gresham	SDC/Local
3	Segment 3	Richey to Cheldelin - improvement to existing - 1,912.5 LF	\$3,825,000	6 to 20	Portland/Gresham	SDC/Local
4	Segment 4	Cheldelin to So Boundary - improvement to existing - 600	\$1,200,000	6 to 20	Portland/Gresham	SDC/Local
	On Butler					

Project	Project	Description	Cost ¹	Timing	Responsible Jurisdiction	Funding Source
5	Segment 5	190th to Ea. Boundary - improvement to existing - 1,800 LF	\$2,328,000	6 to 20	Portland/Gresham	SDC/Local
	On Richey					
6	Segment 6	182nd to 190th - improvement to existing - 2,325 LF	\$2,958,000	6 to 20	Portland/Gresham	SDC/Local
	On 182nd					
7	Segment 7	Giese to Richey - improvement to existing - 2,025 LF	\$2,682,000	6 to 20	Portland/Gresham	SDC/Local
8	Segment 8	Richey to Cheldelin - improvement to existing - 2,362.5 LF	\$2,992,500	6 to 20	Portland/Gresham	SDC/Local
	On 172nd					
9	Segment 9	Giese to Butler Ext. - improvement to existing - 900 LF	\$1,998,000	6 to 20	Portland/Gresham	SDC/Local
10	Segment 10	Butler Ext to unknown - improvement to existing - 1,537.5 LF	\$3,075,000	6 to 20	Portland/Gresham	SDC/Local
11	Segment 11	unknown to Cheldelin - improvement to existing - 1,275 LF	\$2,657,250	6 to 20	Portland/Gresham	SDC/Local
15	Segment 15	Cheldelin to Boundary - improvement to existing - 1,800 LF	\$3,600,000	6 to 20	Portland/Gresham	SDC/Local
	On Cheldelin					
12	Segment 12	172nd to 182nd - improvement to existing - 2,325 LF	\$3,255,000	6 to 20	Portland/Gresham	SDC/Local
13	Segment 13	182nd to 190th - improvement to existing - 2,550 LF	\$3,570,000	6 to 20	Portland/Gresham	SDC/Local
	On Clatsop					
14	Segment 14	162nd to Boundary - improvement to existing - 1,912.5 LF	\$2,371,500	6 to 20	Portland/Gresham	SDC/Local
	On 162nd					
16	Segment 16	Foster to unknown - improvement to existing - 3,000 LF	\$3,978,000	6 to 20	Portland/Gresham	SDC/Local
17	Segment 17	unknown to Clatsop - improvement to existing - 2,175 LF	\$2,988,000	6 to 20	Portland/Gresham	SDC/Local
18	Segment 18	Clatsop to Boundary - improvement to existing - 1,350 LF	\$1,620,000	6 to 20	Portland/Gresham	SDC/Local

Project	Project	Description	Cost ¹	Timing	Responsible Jurisdiction	Funding Source
	On Sager Road					
19	Segment 19	162nd to 172nd - improvement to existing - 2,662.5 LF	\$3,331,500	6 to 20	Portland/Gresham	SDC/Local
20	Segment 20	172nd to Foster - improvement to existing - 2,137.5 LF	\$2,680,500	6 to 20	Portland/Gresham	SDC/Local
	On Giese					
21	Segment 21	172nd to 182nd - improvement to existing - 2,925 LF	\$4,305,000	6 to 20	Portland/Gresham	SDC/Local
22	Segment 22	182nd to 190th - improvement to existing - 2,175' LF	\$3,045,000	6 to 20	Portland/Gresham	SDC/Local
	On Jenne Rd					
23	Segment 23	All - improvement to existing - 4,500 LF	\$5,580,000	6 to 20	Portland/Gresham	SDC/Local
	Traffic Signals					
S1	Signal	190th and Giese	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S2	Signal	190th and Butler	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S3	Signal	190th and Richey	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S4	Signal	190th and Cheldelin	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S5	Signal	182nd and Giese	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S6	Signal	172nd and Giese	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S7	Signal	Jenne and Giese	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S8	Signal	172nd (south of Foster)	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S9	Signal	172nd and Cheldelin	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S10	Signal	172nd and Sager	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S11	Signal	Cheldelin and 182nd	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S12	Signal	Cheldelin and Foster	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S13	Signal	Foster and 162nd	\$250,000	6 to 20	Portland/Gresham	SDC/Local
S14	Signal	Clatsop and 162nd	\$250,000	6 to 20	Portland/Gresham	SDC/Local

Project	Project	Description	Cost ¹	Timing	Responsible Jurisdiction	Funding Source
	Bridges					
B1	Bridge 1	Foster North	\$1,150,000	6 to 20	Portland/Gresham	SDC/STP
B2	Bridge 2	Giese Extension	\$1,150,000	6 to 20	Portland/Gresham	SDC/STP
B3	Bridge 3	Clatsop Ext.	\$1,150,000	6 to 20	Portland/Gresham	SDC/STP
B4	Bridge 4	Butler Ext to unknown local	\$1,700,000	6 to 20	Portland/Gresham	SDC/STP
	Planning Projects					
	Green Street Design Standards		\$50,000	1 to 5	Portland/Gresham	Local
	Foster/Richey/Giese Refinement Plan		\$100,000	1 to 5	Portland/Gresham/Metro	SDC/Local/STP
	TIF Update Study		\$100,000	1 to 5	Gresham	SDC
	Total New Road Projects		\$14,370,000			
	Total Improvements to Existing Roads		\$69,777,750			
	Total Signals		\$3,000,000			
	Total Bridges		\$5,150,000			
	Total Planning Projects		\$250,000			
	Total Transportation Projects		\$92,547,750			

¹ For roads cost includes ROW construction and pavement construction

** Some portions of roads or entire road projects fall outside the proposed Annexation Subarea extent.

Grants

A number of grant sources can be used to help fund transportation improvements. Most grants also come with a local match requirement that can range from 10% to 40%. Over the past 10 years, the City of Gresham has averaged approximately \$1 million per year in transportation capital grants from various sources. A specific estimate has not been made as to how much grant funding will be available to offset the cost of transportation improvements.

Developer Exactions

Developer exactions are applied to transportation improvements (usually frontage improvements) that developers are required to construct in order to develop their land. These most often apply to internal local streets in the case of a subdivision, and other frontage improvements.

Transportation Impact Fee Assessment

Transportation Impact Fees are used to fund growth-related transportation system improvements. To determine the share of this cost between the TIF and development exactions, the following assumptions were made:

- TIF applies to any right-of-way (R/W) or roadway costs beyond the first 60 feet of R/W and/or pavement on both collectors and arterials while development exactions apply to costs up to the first 60 feet.
- Brand new arterials (Giese, 172nd to 190th; 172nd, Foster to Giese; and Cheldelin, 172nd to 190th) will be entirely funded by the TIF.
- All bridges will be funded by the TIF.
- All street segments adjacent to “undevelopable” land (i.e., slopes, environmental, etc.) will be funded by the TIF

Total Arterial and Collector Improvement Costs and Allocations

Transportation Component	Development Cost	TIF Cost	Total Cost
Roadways	\$44,840,575	\$41,055,015	\$85,895,590
Traffic Signals	\$0	\$2,450,000	\$2,450,000
Existing Deficiencies	\$0	-\$250,000	-\$250,000
Total	\$44,840,575	\$43,255,015	\$88,095,590

Institute of Transportation Engineers trip generation rates were applied to the general land use categories and development forecasts for the Pleasant Valley plan area. The area is estimated to generate a total of 13,520 peak hour trips per day at build out.

TIF Rate = Total TIF Cost/Estimated Trip Generation

Based on the analysis for street construction costs and estimated trip generation, the preliminary TIF rate would be approximately **\$3,200 per peak hour trip**. This compares to the current Gresham TIF rate of \$1,607 (\$1,977 effective July 1, 2004).

TSP Implementation Actions

The following actions are identified as desirable to implement public facility transportation provisions:

1. The City of Gresham, the City of Portland and Multnomah and Clackamas County and others as appropriate will work cooperatively to identify necessary public facility improvements in Pleasant Valley. Gresham will take lead responsibility for updating the Pleasant Valley Public Facility Plan. In this capacity, Gresham will convene an annual meeting of public works and transportation staff member from the four jurisdictions and urban service providers as defined in ORS 195 to share information about planned capital improvements and discuss policy issues affecting the provision of public facilities.
2. The four jurisdictions and other urban service providers will work cooperatively on necessary urban service agreements and intergovernmental agreements to ensure clarity regarding transfer of ownership of transportation facilities.

3. Gresham and Clackamas County will work toward developing an intergovernmental agreement, if necessary, to ensure the provision of necessary municipal infrastructure in county roads for that part of Clackamas County that is within the Pleasant Valley plan area. If agreement between Gresham and the County does not anticipate annexation of this area to Gresham, it will comply with provisions of ORS 195 for urban service providers.