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STAFF REPORT

CONSIDERATION OF ORDINANCE NO. 97-689A FOR THE PURPOSE OF AMENDING THE 1992 REGIONAL TRANSPORTATION PLAN TO INCLUDE THE NEED, MODE, FUNCTION, AND GENERAL CORRIDOR FOR THE I-5/99W CONNECTOR

Date: April 25, 1997

Presented by: Andrew Cotugno

PROPOSED ACTION

This ordinance amends the 1992 Regional Transportation Plan (RTP) to include the need, mode, function, and general corridor for the I-5/99W Connector located in Washington County (see map, Exhibit A). The need and general corridor for the Connector was identified as part of the Oregon Department of Transportation's (ODOT) *Western Bypass Study Recommended Alternative Report*, June, 1996. The modal need and function are further supported in the *I-5 to 99W Connector Technical Report*, March, 1997 and the *I-5 to 99W Connector: Findings of Fact and Statement of Reasons in Support of Exceptions to Goals 3, 4, 11, and 14*, March 11, 1997. The latter two documents are enclosed as Exhibits B and C.

This action is the first-step in what is envisioned as a two-step exceptions process consistent with the exceptions process for transportation improvements on rural lands contained in the Transportation Planning Rule 660-12-070. Consistent with OAR 660-12-025 (1), this action includes findings relating to the need, function, mode, and general corridor of the proposed Connector. Furthermore, consistent with OAR 660-12-050, this action will only "authorize" the project contingent upon a subsequent second-step process and decision-making to adopt a preferred alignment and design together with findings of compliance with remaining statewide planning goals (including goal 14, if necessary) and comprehensive planning provisions. In accordance with OAR 660-12-070 (5), if an exception is required, it must demonstrate that non exception locations cannot reasonably accommodate the proposed transportation facility.

This ordinance also contains a number of conditions of approval on this RTP amendment. First, in addition to the two-step process noted above, the ordinance recognizes the need for an alignment-level Environmental Impact Statement (EIS) process to identify the precise location, cross-section, and other design characteristics of the Connector and to evaluate their impact on the built and natural environment.

Second, the conditions recognize that if any portion of the Connector is outside Metro's Urban Growth Boundary (UGB), statewide planning goal exceptions will be necessary.

Third, the ordinance recognizes that the I-5/99W Connector significantly improves inter-regional accessibility between the Metro area and cities and other locations in the 99W Corridor. That improvement on accessibility may put development pressure on locations, particularly rural, that are inconsistent with the identified Region 2040 urban and rural reserves. Conditions requiring the development of Green Corridor and Neighbor City inter-governmental agreements are recommended to mitigate the potential adverse land use effects of that improved accessibility.

Finally, the Connector is recognized as a required action in the RTP. As such, findings of support are necessary. Those findings are included in Exhibit C.

FACTUAL BACKGROUND AND ANALYSIS

I-5/99W Connector: Background

The I-5/99W Connector was identified as a need within ODOT's Western Bypass Study. The full set of recommendations from that study are being reviewed concurrently with this action as part of Metro Resolution No. 97-2497 for inclusion as *recommendations* in Metro's 1995 Interim Federal RTP. This ordinance amends Metro's 1992 State RTP and includes the I-5/99W Connector as a *requirement* to meet the transportation need in that corridor. As a requirement, findings of fact with statewide planning goals are necessary and the project must be included in a State recognized plan. Since Metro is currently updating the RTP to be in compliance with the State Transportation Planning Rule, the State, in the meantime, recognizes the 1992 RTP as the most current regional plan to be in compliance with statewide planning goals.

As mentioned, the I-5/99W Connector was initially identified as a need as part of the Western Bypass Study recommendations. The Western Bypass Study was initiated in 1989 to respond to issues related to the adequacy of north-south circumferential transportation needs in Washington County. Those issues were identified both in Metro's 1987 Southwest Corridor Study and during the Washington County Transportation Plan development in 1988.

The Western Bypass Study provided a focused analysis and evaluation of the mobility needs and related problems in a large study area that included essentially the entire urban portion of Washington County and westernmost portions of both the City of Portland and Clackamas County. The study area also included portions of rural Washington County. The study provided for a

comprehensive, multi-modal analysis and evaluation of alternative options to address the identified transportation problems in the Study Area. A Statement of Purpose and Need (February 1991) and an Alternatives Analysis Report (May 1995) were published and underwent a public review as part of that process.

The study examined five alternative packages as part of the study. These included the No Build, the TSM/Planned Project Alternative, the Arterial Expansion/HOV Express Alternative, the Bypass Alternative, and the Land Use Transportation Air Quality (LUTRAQ) Alternative.

Western Bypass Study Recommended Alternative

The Western Bypass Study Recommended Alternative included a package of multi-modal improvements which reflect the best performing components of the five alternatives that meet the study needs. The needs are based on current traffic operational performance measures identified in the RTP, the State Highway Plan, and local plans, or necessary strategies to address a specific traffic function that is otherwise not being met. The latter includes the recommendation for a new expressway-type connector facility between Highway 99W and I-5. The facility is intended to meet an inter-regional, inter-state travel function that is missing in that portion of the study area. The *Recommended Alternative Report* summarizes the transportation problems within the study area and included the following generalized recommendations:

- Construction of a new limited access expressway type facility from I-5 to 99W (referred to as the I-5/99W Connector)
- Deletion from further consideration a full bypass from I-5 to the Sunset Highway
- Construction of a series of arterial and collector road improvements, primarily serving north/south urban to urban travel
- Widening of Highway 217
- Transportation System Management actions to improve the operation of the existing roadway system
- Transportation Demand Management programs (carpooling, flexible work hours, parking management, etc.)
- Transit Service Improvements

As noted, the study concluded that circumferential vehicular traffic within the study area is best served by the identified highway, arterial, and TSM improvements. As a result, the study does not recommend continued study or action on a full bypass. A minority conclusion of the Study Steering Committee was that the I-5/99W Connector should still be considered as a

first leg of a full bypass. That recommendation was not supported by the full Steering Committee and is not included in this ordinance.

I-5/99W Connector: Need, Function, Mode, and Corridor

The need, function, mode, and corridor for the I-5/99W Connector were identified initially in the *Western Bypass Study Recommended Alternative Report*. Supporting technical information and relevant land use findings are included in *I-5 to 99W Connector Technical Report* (Exhibit B) and the *I-5 to 99W Connector Findings of Fact and Statement of Reasons in Support of Exceptions to Goals 3, 4, 11, and 14* (Exhibit C, referred to as the Findings Report).

Need

In general the need responds to the congestion deficiencies on the arterial system that provides alternative connections between I-5 and 99W. It was found in the technical analysis that the alternative routes of Tualatin-Sherwood Road, Tualatin Road, and Durham Road would all exceed level-of-service F in the 2010 study year, even with aggressive land use, TDM, TSM, and transit being implemented.

Function

The study analysis and findings determined a functional deficiency in the corridor for inter-regional through travel for both people and goods. Accommodating such travel is identified in the Chapter 1 policies of the RTP. Historically, Highway 99W served as the inter-regional route to Newberg, McMinnville, and the coast. With the development that has occurred along 99W, all traffic, whether through or local, is diverting to roads with available capacity. The I-5/99W Connector is intended to provide for the through travel function while allowing arterial and collector streets in the vicinity to accommodate more localized traffic, including transit, bicycle, and pedestrian needs.

It was also concluded in the Findings Report that the separation of the through traffic from the local traffic is consistent with the Region 2040 Growth Concept. By removing the through traffic, the pressure to widen other arterials will be reduced and Boulevard Design treatments can be applied in Town Center areas such as Tigard, King City, Tualatin, and Sherwood. The result is a better pedestrian, bicycle, and transit environment.

Mode

The technical analysis recognized that a roadway serving primarily automobiles and trucks was the appropriate mode to serve the longer

distance, inter-regional nature of the trips identified in the function. The analysis also recommended the need for aggressive transit, TDM, TSM, and alternative mode strategies throughout the Western Bypass Study Area to provide modal choices and to reduce demand on the transportation system.

General Corridor

Exhibit A identifies the general corridor for the I-5/99W Connector. For the most part, the intent of the Western Bypass Study was to keep the Connector inside the UGB to avoid impacting rural land uses, primarily farming. The next step in the Connector process is to define the specific alignment for the new expressway as part of an Environmental Impact Statement process. If any portion of the selected alignment falls outside the UGB, additional findings for goal exceptions will be required consistent with the Transportation Planning Rule (OAR 660-12-070).

I-5/99W Connector: Conditions of Approval

Two types of conditions of approval are being recommended as part of this action. The first set of conditions recognize that the I-5/99W Connector will result in improved accessibility between the Metro area, Newberg, McMinnville and other locations along Highways 99W and 18 to Lincoln City. The second set recognizes that significant project development and finance activities remain prior to any right-of-way acquisition or construction in the Connector corridor. The conditions are identified in Exhibit D and summarized as follows.

The first set of conditions recognize pressures for development will likely increase with the improved accessibility provided by the Connector. Consistent with the Regional Urban Growth Goals and Objectives (RUGGOs, see Attachment 1), it is recommended that a Neighbor City Agreement be developed between Metro and Newberg to maintain a rural area between each other's UGBs; to develop policies to balance jobs and housing; and to agree to coordinate population forecasts used for planning.

The first set of conditions also recommend a Green Corridor Agreement be developed consistent with the RUGGOs. The Green Corridor Agreement would be between Metro, the City of Newberg, Yamhill and Washington Counties, and ODOT. The agreement would limit access to farm and forest uses within rural reserves; maintain rural zoning; limit rural commercial or rural industrial within rural reserves; and protect natural resources. A sample Neighbor City/Green Corridor agreement will be distributed at the April 25 TPAC meeting.

The second set of conditions, responding to future project development activities, recognize that an alignment-level EIS is required prior to further

amending the RTP to reflect a selected alignment; that further exceptions to statewide planning goals will be required if any portion of the alignment falls outside the UGB; and that the use of tolls should be considered both to finance the project and to manage corridor demand.

Finally, Exhibit E Contains the text revisions for the 1992 RTP in strikethrough (deletions) and underlines (additions).

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF AMENDING) ORDINANCE NO. 97-689A
THE 1992 REGIONAL)
TRANSPORTATION PLAN TO)
INCLUDE THE NEED, MODE,)
FUNCTION, AND GENERAL)
CORRIDOR FOR THE I-5/99W)
CONNECTOR) Introduced by Presiding Officer
Kvistad, Chair, JPACT

WHEREAS, the Oregon Department of Transportation initiated the Western Bypass Study in 1989 to address north-south circumferential transportation needs in Washington County; and

WHEREAS, the Western Bypass Study provided for a comprehensive, multi-modal analysis and evaluation of alternative transportation options to address the identified transportation needs in the study area; and

WHEREAS, the Study process included three standing committees: a Steering Committee, a Citizen Advisory Committee, and a Technical Advisory Committee; and

WHEREAS, a study Statement of Purpose and Need Report (February, 1991) and an Alternatives Analysis Report (May 1995) consistent with Federal planning rules were published and underwent public review; and

WHEREAS, a Recommended Alternative Report was approved by the three study committees in 1996 and identified the need, function, mode, and general corridor for the I-5/99W Connector; and

WHEREAS, the need, function, mode, and general corridor for the I-5/99W Connector were further defined in the *I-5 to 99W Connector Technical Report* (Technical Report); and

WHEREAS, the *I-5 to 99W Connector Findings of Fact and Statement of Reasons in Support of Exceptions to Goals 3,4,11, and 14* (Findings Report) address relevant statewide planning goals for a first-tier exception process; and

WHEREAS, an alignment-level Environmental Impact Statement Process is required to select a preferred alignment and that a second-tier statewide planning goal exception process will be required if any portion of the selected alignment falls outside the Metro Urban Growth Boundary, and

WHEREAS, Green Corridor and Neighbor City agreements consistent with Metro's Regional Urban Growth Goals and Objectives will be developed upon selection of a preferred alternative, now, therefore

THE METRO COUNCIL HEREBY ORDAINS:

1. That the 1992 Regional Transportation Plan (RTP) be amended to require the need, function, mode, and general corridor for the I-5/99W Connector as defined and shown on the map in Exhibit A and supported in Technical Report (Exhibit B) and the Findings Report (Exhibit C).

2. That Metro should work cooperatively with the Green Corridor and Neighbor City jurisdictions to ensure execution of these agreements prior to construction of the I-5/99W Connector.

3. That the 1992 RTP reflect the text revisions as shown in Exhibit E.

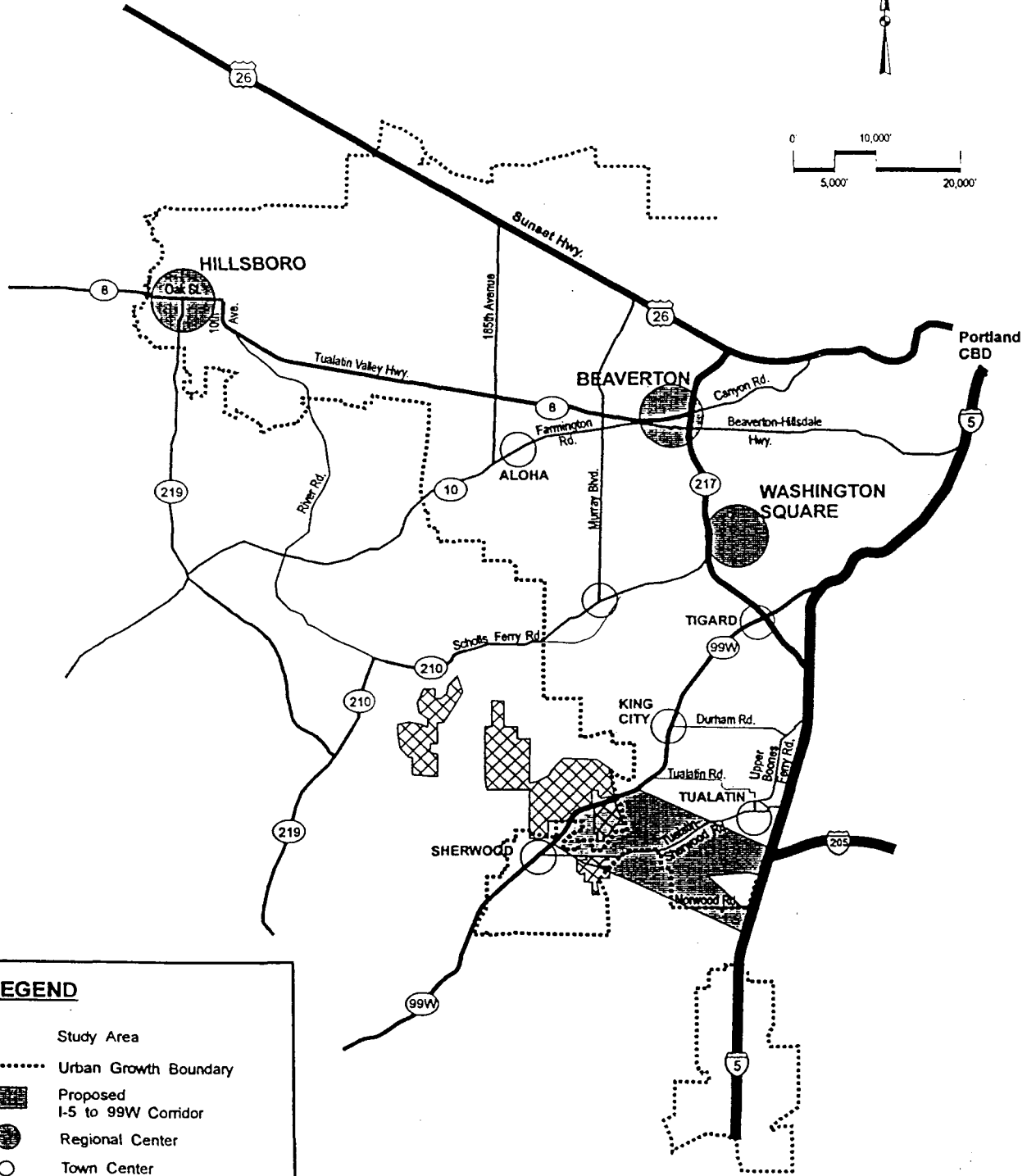
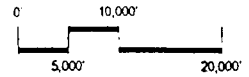
Jon Kvistad, Presiding Officer

Approved as to Form:

Daniel B. Cooper, General Counsel

MH:4/30/97
Connector.Ord

Exhibit A



LEGEND

- Study Area
- Urban Growth Boundary
- Proposed I-5 to 99W Corridor
- Regional Center
- Town Center
- Tualatin River National Wildlife Refuge

Existing Roadway Classifications:

- Freeways
- Principal Routes
- Major Arterials
- Minor Arterials
- Other Arterials

Figure 1

STUDY AREA



I-5 TO 99W CONNECTOR TECHNICAL REPORT

March 1997

Prepared for
Oregon Department of Transportation

Prepared by
Parsons Brinckerhoff Quade & Douglas, Inc.



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Figure 1: WBS Study Area 3
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Background

Introduction

This report focuses on one of the components of the Recommended Alternative in the Western Bypass Study: the addition of a new, limited access facility connecting Interstate 5 (I-5) and Highway 99W (99W). ODOT is currently analyzing this project in a toll study, responding to a 1995 state statute. The project is currently being considered for inclusion in the Functional Plan, which must occur before ODOT starts any alignment study.

The new facility will provide a direct link for through traffic between two major highways, and will improve access on existing roads connecting the Town Centers of Tualatin, Sherwood, King City, Tigard, and Scholls. The Region 2040 Growth Concept recognizes the importance of good access for through trips and regional trips, as well as improved access on roads connecting these designated Town Centers to provide for future growth. The analysis by Metro for the Growth Concept recognized this need and included a connector from I-5 to 99W in the preferred alternative.

Project Description

As a systems level analysis, the Western Bypass Study described the general alignment for this project as a corridor. Figure 1 shows the Western Bypass Study Area and the proposed corridor for the I-5 to 99W Connector.¹ The proposed corridor is 3 to 4 miles in length depending on the terminus selected, and more than 1 1/2 miles wide. Terminus options at I-5 could be at or near I-205, or at or near Norwood Road; the terminus at 99W will be somewhere north of the Six Corners intersection and south of Tualatin Road.

Western Bypass Study Context

The Western Bypass Study provided a focused analysis and evaluation of the mobility needs and related problems in the Western Bypass Study Area of the Portland metropolitan region. A comprehensive, multi-modal analysis and evaluation of alternative options to address the identified transportation problems in the Study Area was conducted. A Statement of Purpose and Need (February 1991) and an Alternatives Analysis Report (May 1995) were published and underwent a public review as part of that process.

The Western Bypass Study Recommended Alternative, summarized in the Recommended Alternative Report (June 1996), includes a package of multi-modal improvements to address the transportation needs in the Study Area. Tables listing the specific projects, services, and programs in the Recommended Alternative are provided in the Recommended Alternative Report. The Recommended Alternative Report also contains summaries of public comments received during the course of the Western Bypass Study and reports from the Community Advisory Committee and

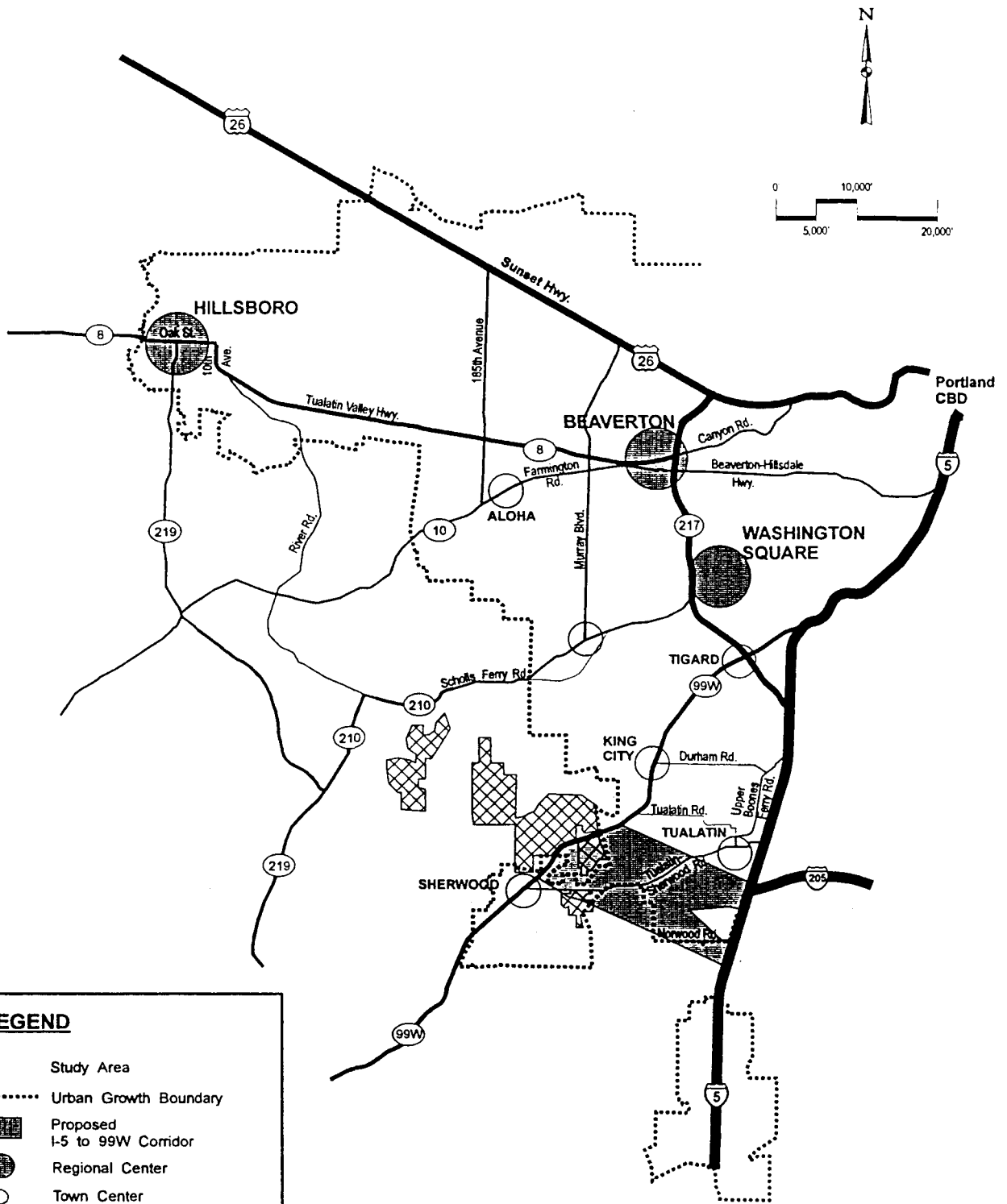
¹ Recommended Alternative Report, June 1996, Figure 2, page 18.

Steering Committee. Included are important community concerns relating to the perceived impact and benefits of the Recommended Alternative and other alternatives.

The Recommended Alternative includes a Transportation Demand Management (TDM) program, transit facilities and services, bicycle and pedestrian facilities, roadway projects that build on the existing arterial system, and the addition of a new roadway connection, the I-5 to 99W Connector. The I-5 to 99W Connector will serve a variety of trip types and trip purposes, including through trips of statewide significance, regional trips and local trips.

The Western Bypass Study demonstrated the need for a new connector to serve this variety of trips. The analysis demonstrated that, even with other transportation modes, services and programs, this road is still needed to serve the travel demand for existing and planned growth. The subsequent analysis completed for the Tollways Study² further emphasized the need for the I-5 to 99W Connector to accommodate travel demand based on updated population and employment forecasts.

² Tollways, Public, Private Partnerships and Other Innovative Financing Mechanisms - Final Report: Analysis of the Two Tollways Projects, June 1996.



LEGEND

- Study Area
- Urban Growth Boundary
- Proposed I-5 to 99W Corridor
- Regional Center
- Town Center
- Tualatin River National Wildlife Refuge

Existing Roadway Classifications:

- Freeways
- Principal Routes
- Major Arterials
- Minor Arterials
- Other Arterials

Figure 1

STUDY AREA



WESTERN BYPASS STUDY

Oregon Department of Transportation

I. STATEMENT OF NEED

Introduction

The Western Bypass Study (WBS) included a future No-Build transportation system. The No-Build system was defined to allow analysis of future regional transportation need. This system consists of both transit and highway facilities. The system includes all transportation facilities and networks that existed in 1988, plus any transportation projects with committed funding as of 1990. A number of these projects have been completed since 1990. The Oregon Department of Transportation (ODOT) published the Western Bypass Study Statement of Purpose and Need in February 1991. That report was publicly reviewed, and approved by the three committees (Steering Committee, Technical Advisory Committee, and Citizen Advisory Committee) for that Study.

The Western Bypass Study Area (Figure 1) includes an area generally between Highway 26 to the north, the Willamette River and Yamhill County to the south, I-5 and Highway 217 to the east, and Highway 219 to the west. Hilly terrain and an extensive network of creeks and tributaries, including the wide floodplain of the Tualatin River, has limited construction of a continuous grid system of roadways through the Study Area. Existing roads in the Study Area have evolved from a network of farm-to-market roads that follow the existing terrain and have been upgraded and maintained over time in response to planned growth in the Region and Study Area.

The existing regional roadway system consists of radial and circumferential facilities, with the Portland central business district (CBD) at the center of these facilities. East-west or southwest-oriented facilities, such as the Sunset Highway and 99W, provide radial routes from the Portland CBD to destinations in the western suburbs. Circumferential roads, such as Highway 217 and Murray Boulevard, connect these radial facilities to provide for north-south travel demand. Circumferential roadways in the southern portion of the Study Area, such as Tualatin/Sherwood Road, provide for east-west movement.

The Regional need for the new I-5 to 99W Connector, as well as the other improvements in the Recommended Alternative for the Western Bypass Study Area, was identified in the WBS Statement of Purpose and Need and other supporting information. The findings of regional need in this report focus on the results of those documents as they particularly pertain to the I-5 to 99W sub-area, including access between the Town Centers identified in the Region 2040 Growth Concept.

IA. Modal Nature of Need

Public Transit³

Within the Western Bypass study area, travelers are currently served by a transit center network that includes four suburban transit centers: Tigard, Beaverton, Cedar Hills, and Hillsboro. Three other transit centers, Lake Oswego, Barbur Boulevard, and Burlingame, are within proximity of Western Bypass study area communities.

Tri-Met also maintains a number of park-and-ride facilities within or on the perimeter of the Western Bypass study area. Currently, the Study Area is served by eight park-and-ride lots of 200 or more spaces each. In addition to the all-bus network in the Western Bypass study area, Tri-Met provides the Tri-County LIFT Program, a door-to-door dial-a-ride service for persons with special transportation needs.

Tri-Met and the Region are currently constructing the Westside LRT from the Portland CBD to Hillsboro. This transit spine will add major high-capacity transit in the northern part of the Study Area. It will be connected with other parts of the Study Area by fixed-route transit service.

The system of suburban transit centers, local routes, cross-town connectors, CBD-oriented trunk routes, and park-and-ride facilities is effective in allowing Tri-Met to continue serving CBD-oriented commuter trips, while at the same time providing some measure of local connectivity and circulation. However, limitations on the transit system—such as a lack of through-roads oriented towards cross-town travel, lower densities, and dispersed employment centers—constrain transit effectiveness in the Western Bypass Study Area. As shown in Table 1, transit trips in the Western Bypass Study Area are projected to be 3.2 percent of total daily work trips and 0.8 percent of non-work trips (No-Build Alternative).⁴

Numerous transit alternatives were considered as part of the Western Bypass Study. As described in Section IIA, the Study analyzed whether additional transit spines or other types of service, either separately or in combination, could address travel demands. Extensive improvement to transit services are included in the Recommended Alternative in addition to the I-5 to 99W Connector. As described further in this report, additional transit service beyond that recommended did not preclude the need for the I-5 to 99W Connector.

³ WBS Statement of Purpose and Need, February 1991, page 13.

⁴ A work trip is a person trip with origin or destination at a place of employment. A non-work trip is a person trip that has neither an origin or destination at a place of employment. A person trip is a daily trip by one person using any mode of travel from any origin to any destination that includes use of the Regional transportation system.

Freight

In this study, freight movement for large commercial vehicles is accommodated through expansion of the state highway system, including I-5 and Highways 26, 99W, and 217. Tualatin/ Sherwood Road connects 99W to I-5 through the downtown center of Tualatin. No alternative direct connection exists between I-5 and 99W to serve freight transport. Freight movement destined for I-5 and other regional facilities rather than downtown Tualatin is putting additional strain on already congested traffic conditions. Truck traffic on Tualatin/Sherwood Road currently makes up 6 to 8 percent of total traffic volume in the peak hour, and continues at a fairly constant rate (150 trucks per hour) throughout the day, resulting in an even higher percentage of truck traffic during the mid-day hours.⁵ Further widening of the existing road, which is already two through lanes in each direction plus turning lanes, would require additional right-of-way. In the Region 2040 Growth Concept, this area is to be preserved to support planned land uses in the Town Center (see Section IIC).

Automobile⁶

As shown in Table 1, the single-occupant vehicle (SOV) is and will continue to be the primary mode of choice for work trips throughout both the Region⁷ and the Study Area. Carpool trips, defined only for daily work-related trips, make up a much smaller portion of the trip-making totals within the Region and study area. They represent only 13.7 percent of the total daily work trips in 1988 and only 13.2 percent in 2010. The proportion of the total study area daily work trips by carpool will remain nearly constant, ranging between 13.3 percent and 13.2 percent. Transit, consisting of a bus only system in 1988 and a combination bus and light rail system under the 2010 No-Build scenario, is shown to carry fewer daily work travelers within the Study Area than carpools in both 1988 and 2010.

⁵ Traffic-Smithy (1996 Counts).

⁶ WBS Statement of Purpose and Need, page 17.

⁷ The Region is the Portland Tri-County Metropolitan Area.

Table 1: Mode Choice By Purpose in the Region and Study Area (in thousands) -- 1988 Existing and 2010 No-Build

PERSON TRIPS BY PURPOSE	REGION				STUDY AREA			
	1988	%	2010	%	1988	%	2010	%
Work Trips								
Auto Trips	743.0	79.2	942.2	76.8	154.5	84.0	248.8	83.6
Carpool Trips	128.5	13.7	171.2	14.0	24.4	13.3	39.3	13.2
Transit Trips	66.4	7.1	113.3	9.2	5.0	2.7	9.4	3.2
Total Trips	937.9	100.0	1,226.7	100.0	183.9	100.0	297.5	100.0
Non-Work Trips								
Auto Trips	3,447.7	97.6	4,779.7	97.8	683.9	99.2	1,150.0	99.2
Transit Trips	83.6	2.4	108.0	2.2	5.5	0.8	9.1	0.8
Total Trips	3,531.3	100.0	4,887.7	100.0	689.4	100.0	1,591.1	100.0
Total Person Trips	4,469.2		6,114.4		873.3		1,456.6	

Reliance on the automobile is even more dominant for non-work purposes than work purposes. The definitions of modal options differ slightly for work and non-work purposes. For non-work trips, Metro's modeling process does not differentiate between single-occupancy (SOVs) vehicles and multi-occupancy vehicles. These two modes are included in a single-mode: the auto mode. Transit is defined in the same way for both work and non-work purposes.

For non-work purposes, daily auto trips account for nearly 98 percent of the Region's trips in both 1988 and 2010 (3,447,700 trips and 4,779,700 trips, respectively). For study area daily non-work trips, the auto mode accounts for 99 percent of the total in both 1988 and 2010 (683,900 trips and 1,150,000 trips, respectively). Transit accounts for the remaining 2 percent of the total daily non-work trips in the Region and 1 percent in the Study Area in both 1988 and 2010.

IB. Deficiencies

The analysis of existing and future transportation deficiencies within the Western Bypass Study Area was based on a study of roadway levels of service using updated employment, population, and travel data projected through the year 2010. This analysis of the I-5 to 99W Corridor was updated for the year 2015 in the subsequent Tollways Study, and analyzed for potential land use changes in both the LUTRAQ study and the Region 2040 Growth Concept (see Section ID). The current Regional Transportation Plan, the current Oregon Highway Plan, and the Functional Plan for Early Implementation of the 2040 Growth Concept recognize level of service (LOS) as a measure of congestion. Levels of service are defined in the appendix to this report.

The Regional Transportation Plan (RTP) has set LOS D as the standard for the peak hour. Technically, this can be interpreted to mean that as much as 20 minutes of LOS E in the peak hour could be acceptable as a design standard.⁸ The Oregon Highway Plan (OHP) identifies LOS D as an acceptable operating level for peak hour operating conditions on regional and larger facilities in urban areas through a 20-year horizon. The OHP allows for LOS E in special transportation areas oriented to non-auto (pedestrian) travel.⁹

The Urban Growth Management Functional Plan allows local jurisdictions to incorporate 1 hour of LOS F and 1 hour of LOS E during a peak 2-hour period to meet density capacities in certain high density areas, including Regional Centers and Town Centers. Otherwise, the higher RTP and OHP standards currently used would apply.¹⁰

Many of the major roadways in the Study Area were significantly congested in 1988. Over the next two decades these already congested roadways will not be able to accommodate additional volumes of traffic within the peak hour without significant capacity improvements, and the levels of service will deteriorate. Other roadways will become more congested as traffic shifts away from the heavily congested segments. Many of these smaller roadways were not intended for the types or volumes of trips that will shift onto them. By 2010 there will not be enough capacity within the Study Area to meet travel demand in either the radial or circumferential direction.

This evaluation of deficiencies within the Study Area was based on an examination of p.m. peak-hour LOS using Metro's regional forecasting model (EMME-2), as documented in the WBS Statement of Purpose and Need. This model has been developed in accordance with acknowledged comprehensive plans, reflects future regional growth allocations, and is recognized by experts as the appropriate modeling software for analyzing the regional transportation system. Travel demand and deficiencies in the peak hour were analyzed using an industry standard.¹¹

Circumferential Facilities

The transportation connections in the I-5 to 99W area from Tigard in the north through Sherwood and Tualatin in the south are not able to serve the current or anticipated demand for access. Travel demand in this area is not limited to local trips accessing local neighborhoods. Rather, in both 1988 and 2010, 16 percent of the p.m. peak-hour trips on the major links between I-5 and 99W will be destined for Clackamas County or circumferential travel outside the Study Area. An additional 16 percent will be destined

⁸ Source: Metro

⁹ 1991 OHP, page A-3.

¹⁰ Urban Growth Management Functional Plan, November 1996, page 23.

¹¹ The adequacy of transportation facilities is based on the ability of roadway segments and intersections to accommodate current and anticipated traffic flow rates. The Transportation Research Board's Highway Capacity Manual (HCM), 1994, provides the standard methodologies for evaluating the capacity of transportation facilities. The HCM capacity evaluation methodologies have been developed based on 1-hour traffic flow rates. This report evaluates the adequacy of transportation facilities based on these methodologies and, in turn, on 1-hour traffic flow rates.

for the Portland area. Two-thirds of trips on these facilities will begin or end in the southeast portion of the Study Area.¹² Existing circumferential roadways such as McDonald/Bonita, Durham Road, Tualatin Road or Tualatin/Sherwood Road¹³ are or will be heavily congested or do not continue far enough to provide effective circumferential connections between I-5 and 99W for these long distance trips.

Additional analysis for the year 2015 reflecting adopted land uses and growth allocations confirms that these are not local trips accessing local neighborhoods. More than 25 percent of the trips on the new I-5 to 99W Connector would pass through the Region, and the average trip length for all vehicles using the connector would be more than 16 miles.¹⁴

I-5 to 99W Arterial Connections

Tualatin Road, Durham Road, and Tualatin/Sherwood Road currently provide the primary connections between 99W and I-5 at the southern end of the Western Bypass Study Area. There are no other roadway connections between I-5 and 99W that are designed or intended for this type of through traffic.

Peak hour traffic conditions on Durham Road were at LOS D/E in 1988. This peak hour level of service will worsen to a LOS F by the year 2010 under the No-Build Scenario.¹⁵ Traffic conditions on Tualatin Road were at LOS D in 1988. This will worsen to LOS F in the peak hour by the year 2010 under the No-Build Scenario.¹⁶

Traffic conditions on Tualatin/Sherwood Road were at LOS E in 1988. By the year 2010, traffic demand on this roadway segment will increase by 59.4 percent during the p.m. peak hour. The roadway will not be adequate to serve the traffic demands forecast even with the committed improvements under the No-Build Scenario. The LOS in downtown Tualatin is expected to deteriorate to LOS F during the peak hour.¹⁷

Downtown Tualatin will continue to experience significant congestion in the future. The intersection of Boones Ferry Road with Tualatin/Sherwood Road has high traffic demand on all approaches. The Boones Ferry Road intersection will cause a significant travel time constraint for through trips. Currently, the proximity of the Boones Ferry/Tualatin/Sherwood intersection to the I-5 interchange results in traffic being backed up from the interchange through this intersection. Year 2015 traffic demand projections indicate that approximately 36 percent of p.m. peak hour westbound trips turn at Boones Ferry Road.¹⁸ This heavy turning will result in increased delay for opposing flow and a general increase in delay for all traffic at this location.

¹² WBS Statement of Purpose and Need, Appendix D.

¹³ WBS Statement of Purpose and Need, page 35.

¹⁴ Analysis of the Two Tollways Project, June 1996 - Final Report, page 17.

¹⁵ WBS Recommended Alternative Report, June 1996, Table 2, page 9.

¹⁶ WBS Recommended Alternative Report, June 1996, Table 2, page 9.

¹⁷ WBS Statement of Purpose and Need, page 35.

¹⁸ Metro Select Link Analysis Plots as prepared for the Analysis of the Two Tollways Projects - Final Report.

Curves in the roadway, adjacent commercial development, and the proximity to the I-5 interchange limit the options for roadway expansion at this location. The segment between I-5 and Boones Ferry Road is densely developed with commercial uses that generate a large number of vehicle trips, including supermarkets, retail stores, banks, a hotel, and general office space. Light Industrial activities and some retail stores are located on the south side of Tualatin/Sherwood Road to the west of Boones Ferry Road. The northwest corner of the Tualatin/Sherwood Road and Boones Ferry Road intersection is currently being developed, with a large shopping center adjoining the roadway. Several light industrial sites are located to the west of this new center. Even if separate turning lanes or ramps are constructed, traffic would likely continue to be backed up from I-5 through the intersection.

This increasing congestion is likely to cause traffic to divert from these minor arterials to the collector and local streets in the neighborhoods between I-5 and 99W. The analysis showed that peak hour vehicle miles traveled on minor roadways would be 11 percent higher in the No-Build Alternative than for the Recommended Alternative.¹⁹ These local streets were not designed to accommodate these types of trips.

Arterials are designed to carry longer length trips at higher speeds than collector and local roads. Drivers diverting from arterials to local roads are doing so to save time and increase speed relative to a congested arterial. Local and collector roads, however, are designed for slower speeds, and have shorter sight distances and more pedestrians and bicyclists. Pedestrians and bicyclists will become even more prevalent as the Region 2040 Concept is developed. In addition to safety concerns related to increased traffic and speed, neighborhood infiltration causes a capacity problem where drivers seek to re-enter the arterial network system because these intersections were designed to serve local volumes, not pass-through traffic.

Peak hour volumes on Durham Road, Tonquin Road, Martinazzi Avenue, and Tualatin Road would be 20 percent, 35 percent, 12 percent and 10 percent less, respectively, for the Recommended Alternative as compared to the No-Build Alternative. These numbers were obtained from Metro modeling output. It is assumed that the same trend would continue, to a lesser extent, on the local and collector sheets that are not included in the model.²⁰

Highway 217²¹

Highway 217 is the only continuous circumferential road within the Study Area. It connects the Sunset Highway on the north to I-5 in the south, linking the cities of Lake Oswego, Tualatin, Tigard, and Beaverton. The road currently is being widened to three lanes southbound north of Canyon Road. It was re-stripped to three lanes in each direction between interchanges in the segment south of Canyon Road a few years ago; however, the capacity for through travel is limited to two lanes in each direction. Capacity ranges between 2,000 and 2,200 vehicles per hour (VPH) per through lane.

¹⁹ WBS Recommended Alternative Report, page 28 (Table 7).

²⁰ Metro Plots of Design Year Volumes as developed for the WBS No-Build Alternative.

²¹ WBS Statement of Purpose and Need, page 12.

In 1988 average weekday two-way traffic volumes on Highway 217 ranged between 73,200 vehicles per day (VPD) recorded south of the Beaverton-Hillsdale Highway (Oregon 10) interchange, and 99,000 VPD recorded south of the SW Allen Boulevard interchange. According to the 1992 traffic counts, traffic volumes were 105,000 and 100,000 VPD, respectively, for the same roadway segments. This roadway is rapidly approaching capacity (existing volume-to-capacity ratios in these areas range from 0.80 to 1.02 during the peak hour) and demand will exceed capacity in the near future based on regional transportation modeling projections.

By the year 2010, these volume-to-capacity (v/c) ratios will increase to anywhere from 0.89 to 1.07 (peak hour levels of service E and F). This would result in a breakdown of the system because no alternative north-south roads or alternative modes of travel exist in the Study Area to relieve traffic demands on Highway 217.

A full range of alternatives for Highway 217 was developed in the Western Bypass Study, including widening the road to four lanes in each direction, providing high-occupancy vehicle (HOV) lanes, adding light rail transit (LRT) and adding express bus service. Either exclusively or in combination, these improvements did not replace the need for a new I-5 to 99W Connector.

East-West or Radial Facilities

Interstate 5

I-5 is a major West Coast transportation route, providing a direct link between southern California and Canada and passing through the Portland CBD. It is a two-way, six-lane facility which serves between 6,000 and 6,500 VPH per direction during the p.m. peak hour. In 1988, I-5, just south of 99W, west of Tigard junction, carried a weekday traffic volume of 68,500 VPD. The same facility, just south of Highway 217, carried an average weekday traffic volume of 102,400 VPD.

I-5 is already congested north of Nyberg Road, and conditions will become worse and extend south by 2010 even with committed improvements under the No-Build Scenario. During the typical 1988 p.m. peak hour, I-5 north of the Nyberg Road interchange operated at LOS D or E. The total volume carried by this section of I-5 is expected to grow by 37 percent, and the traffic condition will worsen to LOS F.

Traffic conditions on I-5 south of the Nyberg Road interchange in the Study Area were at a LOS C or better in 1988. This level of service will worsen to LOS D or E during the peak hour by the year 2010 under the No-Build Scenario. Traffic volumes will increase by more than 43 percent on this portion of I-5.

Highway 99W²²

99W provides a primary connection between Tigard and Sherwood through the King City Town Center in the Region 2040 Growth Concept. It diverges from I-5 and continues south to Newberg. It is a five-lane roadway with two northbound lanes, two southbound lanes, and a center median/two-way left-turn lane. In 1988 it carried

²² WBS Statement of Purpose and Need, page 10.

between 11,900 VPD south of Beaverton-Hillsdale Highway and 47,600 VPD near Highway 217. Major intersections along 99W are located at Highway 217, Durham Road, and Tualatin/Sherwood Road.

99W within the Study Area north of the Tualatin Road Intersection either was operating at a poor level of service in 1988 or will be in 2010 under the No-Build Scenario even with committed improvements. Just north of the Tualatin Road Intersection, levels of service will worsen from acceptable peak hour levels of service in 1988 to LOS D or E by the year 2010. Traffic volumes on this section will grow by 84 percent.

In 1988, peak hour level of service on 99W north of Highway 217 was LOS F. Under the No-Build Scenario traffic will continue to operate at LOS F in the year 2010. Traffic north of Highway 217 will increase by 9 percent between 1988 and 2010. This portion of 99W was already operating at full capacity in 1988 and, as the minimal increase in traffic over the 20-year period indicates, it can accommodate very little additional traffic.

Without a new I-5 to 99W Connector, there will be additional demand for travel through the Tigard Town Center on an already congested 99W. The 2015 select link analysis showed 1000 vehicles diverting to 99W in the peak hour if the I-5 to 99W Connector is not constructed.²³ Because this Town Center is not intended to accommodate through traffic, it is important to provide the I-5 to 99W connector to provide an alternative facility for this through travel demand.

IC. Transportation Demand

Transportation demand is being caused by existing development and plans for future growth. These plans for future growth are recognized in comprehensive plans and the Region 2040 Growth Concept.

There are several larger urban centers within the Study Area, including the Cities of Beaverton, Hillsboro, Tigard, Tualatin, and Wilsonville. Smaller cities are Durham, King City, and Sherwood. Many of these centers are designated Regional or Town Centers as part of the Region 2040 Growth Concept (Figure 1). Several large companies have business centers in the Study Area, with large business parks located in Beaverton, Tigard, Tualatin and Hillsboro. Residential development is found in each of the cities, as well as in un-incorporated Washington County inside the urban growth boundary (UGB). There is also scattered rural residential development outside of the UGB.

Another major attraction is the Portland CBD, located to the east of the Study Area, which serves as an employment center. 99W also connects the Study Area to the Oregon Coast and other metropolitan areas such as Newberg and McMinnville.

As indicated in Table 2, the Study Area is expected to continue to grow at a higher rate than the Region as a whole. Between 1988 and 2010, the Study Area population is

²³ Metro Select Link Analysis Plots as prepared for the Analysis of Two Tollways Projects - Final Report, June 1996.

expected to grow by 60 percent. The number of households in the Study Area was slightly less than 99,000 in 1988, and is expected to reach more than 167,000 by 2010. Study Area employment is expected to grow by more 73 percent. Employment in the Study Area was about 136,000 in 1988, and is anticipated to reach approximately 236,000 by 2010.

Population in the Study Area will increase from 18.5 percent of total region population in 1988 to 22.0 percent in 2010, while employment will grow from 19.3 percent to 24.3 percent during that same period. Consequently, the Study Area is expected to become an increasingly important economic component in the Portland metropolitan area, as well as in the State of Oregon given Portland's dominance in the state economy. With increasing numbers of retail and employment centers, and recreational facilities located within the Study Area, the opportunities for travel within the Study Area will multiply, resulting in a greater percentage of study area trips both beginning and ending within the Study Area.

In 1988, 873,000 person trips were taken in the Study Area. It is projected that this amount will increase 67 percent by the year 2010, resulting in 1,457,000 trips. Consistent with adopted comprehensive plans, the type and rate of growth will result in land uses within the Study Area becoming increasingly more mixed relative to today. Work-related trips are forecast to increase by 30.8 percent between 1988 and 2010, reaching 1,226,700 daily work person trips in the Study Area by year 2010. The Study Area's share of the Region's work trips will increase from 19.5 percent in 1988 to 23.8 percent in 2010, consistent with the fact that the Study Area is projected to experience more rapid growth in both population and employment than the Region as a whole.

Table 2: Historical and Forecast Population, Households and Employment Regional and Study Area Totals

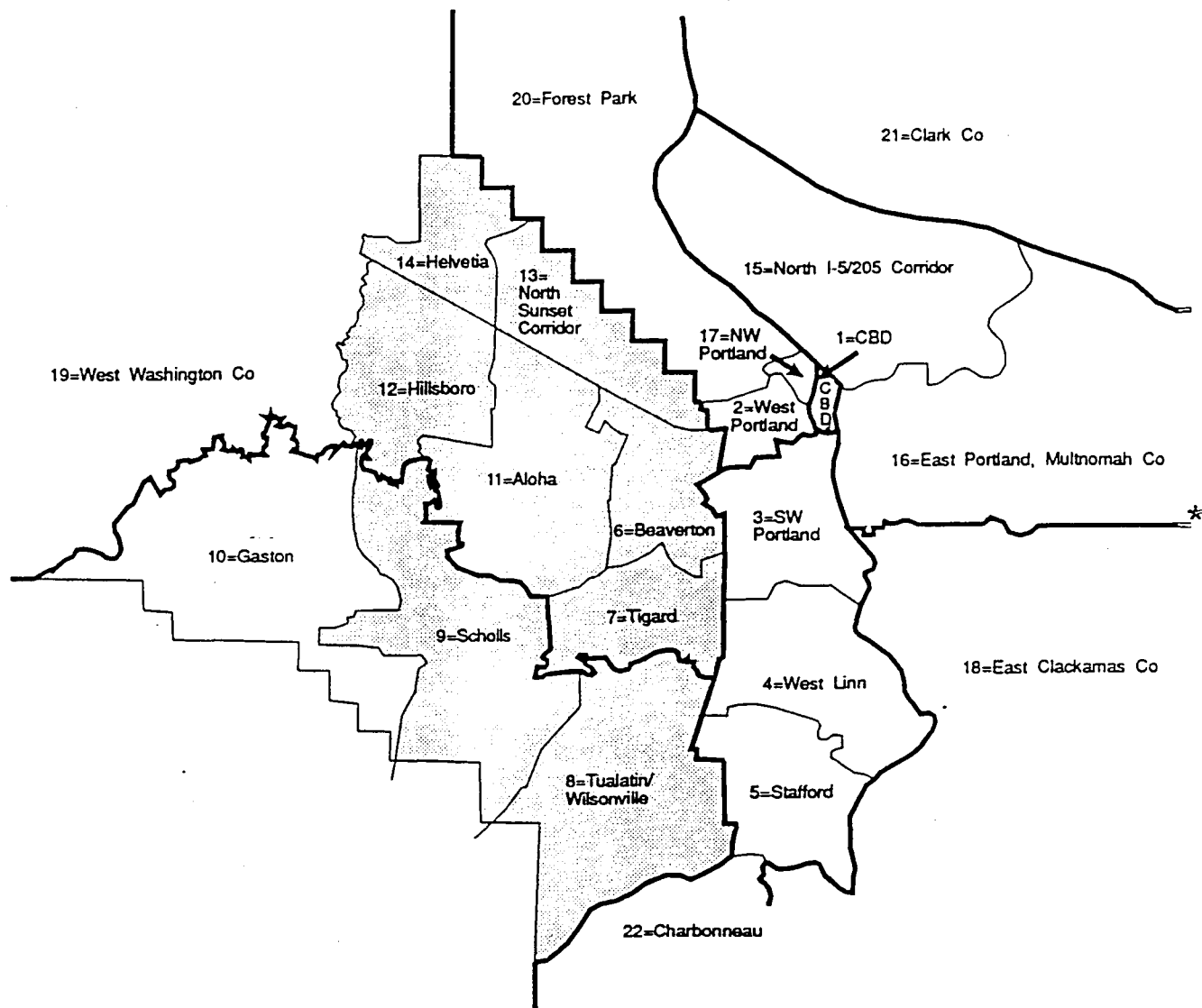
	REGION			STUDY AREA		
	1988	2010	% Growth	1988	2010	% Growth
Population						
Total	1,334.2	1,799.0	34.8	246.5	395.2	60.3
% of Region				18.5%	22.0%	
Households						
Total	534.0	762.3	42.8	98.7	167.4	69.6
% of Region				18.5%	22.0%	
Employment						
Retail	118.5	184.1	55.4	25.4	46.7	83.9
Other	586.1	789.7	34.7	110.9	189.7	71.1
Total	704.6	973.8	38.2	136.3	236.4	73.4
% of Region				19.3%	24.3%	
Person Trips						
Auto	4,109.7	5,721.8	36.5	838.4	1,398.8	66.8
Transit	149.9	221.4	47.7	10.5	18.5	76.2
Carpool	128.5	171.2	33.2	24.3	39.3	61.7
Total	4,469.1	6,114.4	36.8	873.2	1,456.6	66.8
% of Region				19.5%	23.8%	

Note: Numbers shown are 1,000s.²⁴

The I-5 to 99W area will also grow at a fast rate as part of the Study Area. The proposed corridor for the I-5 to 99W Connector is nearest to the districts of Tualatin/Wilsonville, Tigard, and Scholls (see Figure 2). As with the larger Study Area, population, employment, and daily person trips are forecast to increase between 1988 and 2010. The Tualatin/Wilsonville district will experience the majority of growth among the three districts -- approximately 105 percent population and 130 percent employment growth. Tigard is forecast to have a 55 percent employment and 30 percent population growth. Scholls will see approximately 45 percent employment and 5 percent population growth.²⁵

²⁴ WBS Recommended Alternative Report, June 1996, page 6.

²⁵ WBS 1988 existing and 2010 No-Build Forecasting Analyses Results, October 1990, Table A-4.



LEGEND

- Study Area
- Subarea Boundary (Extends to County Line)
- District Boundary
- * Subarea Boundary extends east to Mt. Hood National Forest

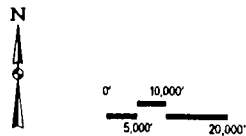


Figure 2



Table 3, details the expected increase in transportation demand by mode for the three districts, in terms of daily person trips. The Tualatin/Wilsonville district can be expected to experience the greatest growth, an increase of approximately 130 percent. Tigard and Scholls will experience similar growth of approximately 40 percent. The existing transportation system, with the deficiencies identified, cannot accommodate this demand.

Table 3: Sub Area Historic and Forecast Daily Person Trips

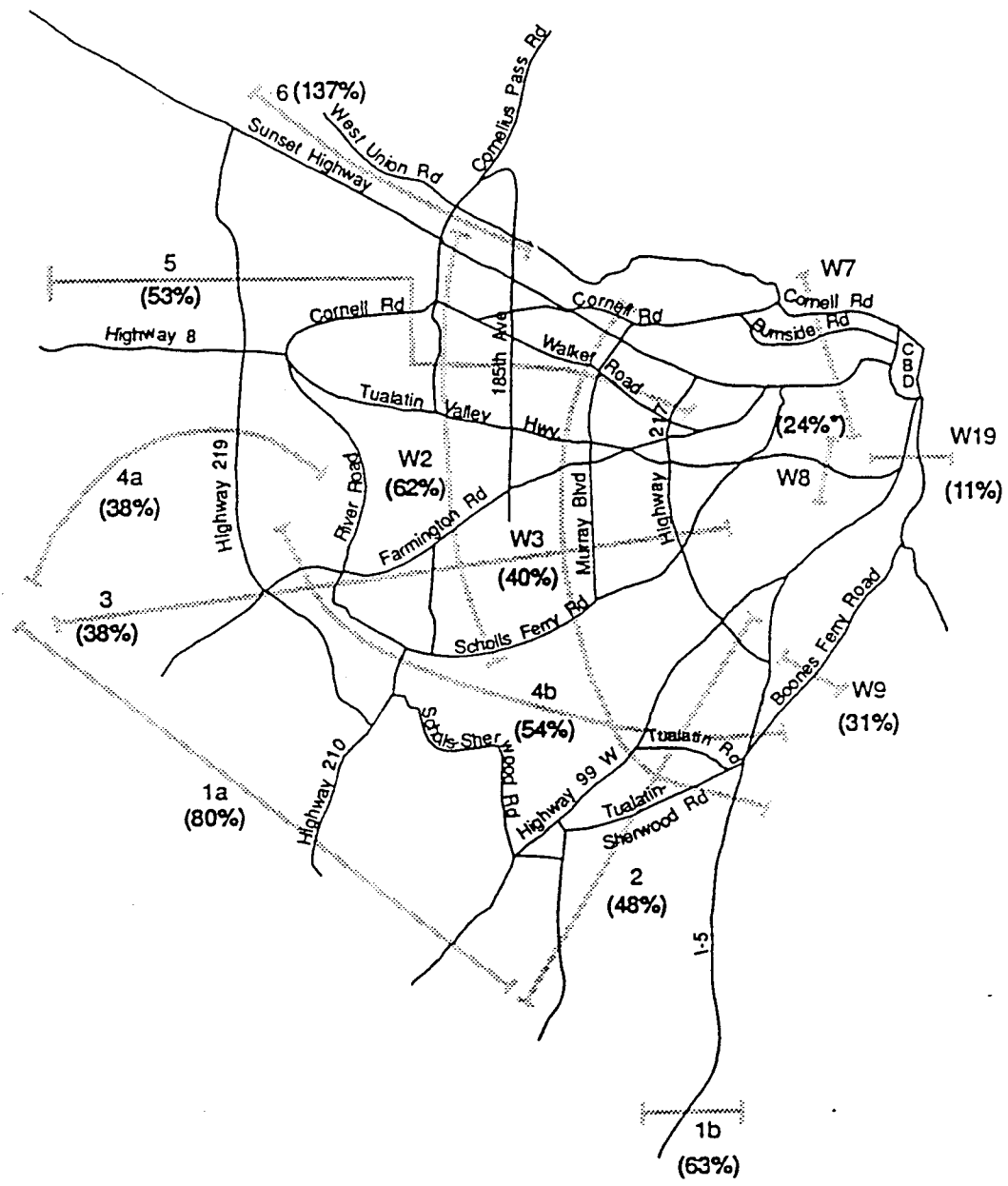
	TUALATIN / WILSONVILLE			TIGARD			SCHOLLS		
	1988	2010	% Growth	1988	2010	% Growth	1988	2010	% Growth
Person Trips									
Auto	69.7	154.3	121	131.5	188.0	43	7.1	10.1	42
Transit	0.6	1.4	133	1.7	2.5	47	0.0	0.1	
Carpool	2.4	5.0	108	4.0	5.2	30	0.2	0.3	50
Total	72.7	160.7	121	137.2	195.7	43	7.4	10.5	42

Note: Numbers are in the 1000's.²⁶

Screenlines are used in transportation demand analysis to compare existing and future travel demand. This demand is forecast based on planned land use allocations and employment and population forecasts. These screenlines typically measure the growth over a series of roadways that accommodate a common demand. Figure 3 shows screenlines developed for analysis of the Western Bypass Study Area. The figure also shows the anticipated growth for each screenline between 1988 and 2010. Screenline 2, which bisects the I-5 to 99W area, is projected to grow approximately 48 percent between 1988 and 2010.²⁷ These district and screenline results confirm that the projected growth within the I-5 to 99W area will be significant.

²⁶ WBS 1988 Existing and 2010 No-Build Forecasting Analyses Results, October 1990, Table A-6.

²⁷ WBS 1988 Existing and 2010 No-Build Forecasting Analyses Results, October 1990, page 22.



LEGEND

- Screenline X
- Roadway
- (00%) Percent Growth in Volumes Between 1988 and 2010
- * Growth for Both W7 and W8

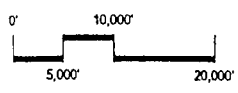


Figure 3



WESTERN BYPASS STUDY

GROWTH OF SCREENLINE VOLUMES BETWEEN 1988 EXISTING AND 2010 NO-BUILD

ID. Future Growth Allocations and Land Uses

The Western Bypass Study was based on a 2010 Design Year and existing Comprehensive Plans. Since then, Metro has updated the forecasts to the year 2015, and more current land use plans have become available. The resulting travel demand supports the need for transportation improvements in the Study Area. The impacts of these changes are described below.

Growth Allocations

During the Western Bypass Study Committee meetings, additional discussions reflected the increased growth that is occurring throughout the Region. Metro now has updated year 2015 forecasts for the Study Area and the Region that reflect the increased historical growth and growth forecasts. These forecasts to 2015 were interpolated to the 2010 design year to project study area growth patterns beyond the 2010 design year. Based on this interpolation, it can be projected that the population forecasts for the year 2010 would be 3 percent higher in the Study Area (395,000), and employment forecasts for the year 2010 in the Study Area (236,000) would be 17 percent higher. The combined effect of the increase in households and employment would result in approximately a 10 percent increase in person trips over the numbers used for the analysis completed in this the Western Bypass Study (1,456,000 person trips). This increased growth trend, while not radically different than the original study year 2010 projections, emphasizes the importance of the need identified.²⁸

The Tollways Study used the 2015 forecasts from Metro. With respect to the I-5 to 99W Connector, these growth adjustments, in combination with land use changes, have a sizable impact on travel projections. The projected 2015 volumes on the I-5 to 99W Connector are 35 percent greater than those projected in previous modeling for the year 2010 in the Western Bypass Study.²⁹

Land Use Changes³⁰

The Region 2040 Growth Concept was adopted by Metro in December 1994. The Growth Concept continues the policy groundwork laid out in the Regional Urban Growth Goals and Objectives that were developed in collaboration with the cities and counties of the Region and adopted by the Metro Council in 1991. The Growth Concept was built on these goals and objectives. This Growth Concept states the preferred form of regional growth and development for the Portland metropolitan region. Future growth is to be concentrated within the UGB and focused in mixed-use centers of varying size. In the Study Area, there are Regional Centers at Washington Square, Beaverton and Hillsboro. Regional Centers serve large market areas outside the central city, connected to it by high-capacity transit and highways.

²⁸ WBS Recommended Alternative Report, June 1996, page 6.

²⁹ Metro Travel Demand Plots as prepared for the Analysis of the Two Tollways Project - Final Report, June 1996.

³⁰ Source: Metro 2040 Growth Concept, December 8, 1994.

Connected to each Regional Center, by road and transit, are Town Centers with local shopping and employment opportunities within a local market area. Town Centers are planned at Highway 217/99W in Tigard, at Murray Boulevard/Scholls Ferry Road in Beaverton, in King City, Tualatin, and Sherwood, and on Farmington Road at 170th Avenue.

Conceptually, the LUTRAQ alternative closely resembles the 2040 Growth Concept in that it involved the development of compact, mixed-use corridors and centers in both Tualatin and Sherwood. The Western Bypass Study analysis of the transportation system under the LUTRAQ alternative in the I-5 to 99W area showed that the major arterials, if not improved and without additional roadway facilities, would be congested by the year 2010 even with alternative land use consistent with 2040. In particular Tualatin/Sherwood road would operate at LOS F in downtown Tualatin.³¹ Currently, the half hours surrounding the peak hour have approximately the same traffic flow as the peak hour in downtown Tualatin. Therefore, level of service for the peak 2-hour period can be projected to be at F/F in the year 2010, in excess of level of service options even for Regional and Town Centers in the Urban Growth Management Functional Plan.

This analysis indicated that transportation improvements are needed to provide reasonable access to and between the Regional Center at Washington Square and the Town Centers at Sherwood, King City, Tigard, and Tualatin. Because the I-5 to 99W connector would serve through traffic between I-5 and 99W, other existing roadways would be able to provide access between these centers. Specifically, access on Highway 99W and on Tualatin/Sherwood Road will be improved. The I-5 to 99W connector is recognized in and will support the Region 2040 Growth Concept.

³¹ Metro - Level of Service Maps, 1994.

II. Mode

Both supply and demand factors influence people's mode of travel. The land use patterns in the Study Area are characterized by origins and destinations which are, overall, relatively dispersed. The road system, serving both buses and cars, is not a complete grid system such as is found in many parts of Portland. Because of the many geographical constraints, the road network is discontinuous. It is thus difficult to serve many parts of the Study Area efficiently with fixed-route transit.

The Western Bypass Study conducted an extensive technical and public process to develop, evaluate, refine, and recommend a balanced transportation system. These alternatives were developed in response to the Need identified early in the study. The I-5 to 99W corridor identified as part of the Recommended Alternative is only one component of the recommended solution, which includes extensive alternative mode and transportation demand management measures, as well as improvements to existing facilities. It was demonstrated during the study that, even with these additional modal components, a new roadway between I-5 and 99W is needed.

The private automobile is and will continue to be the primary mode of travel in both the Region and the Study Area. Under the future 2010 No-Build Alternative, the private automobile will account for approximately 96 percent of the total daily person trips within the Study Area and approximately 94 percent in the Region. The percentage of commuters carpooling to work, 13 percent, is shown for the Study Area and the Region in 1988 and for the 2010 No-Build Alternative (see Table 1).

Evaluation of the Recommended Alternative indicates a positive ability to affect SOV use within the Study Area. In comparison to the No-Build Alternative, this alternative will reduce work-related SOV use. Work-related use of SOVs under the Recommended Alternative will be reduced by approximately 22 percent from that expected under the No-Build Alternative.³² This will result in about 61 percent of the total work person trips still being made by SOVs. For non-work trips, 89 percent use of autos (SOV and HOV combined) will continue.

Under the Recommended Alternative, total Study Area vehicle trips are projected to be reduced by nearly 4 percent, with a corresponding reduction in work-related vehicle trips of nearly 17 percent. This overall reduction in vehicle trips supports the conclusion that auto use will decrease when compared to the No-Build Alternative. Many of these vehicle trips may be absorbed by transit, as a result of the increase in transit coverage from 64 to 99 percent of the Study Area.³³

As further described in this Section II, the I-5 to 99W Connector will serve a variety of trip types and trip purposes, including through trips with destinations outside the Region, regional trips and local trips (see Circumferential Facilities, Section IB). Analysis completed in the Western Bypass Study and the subsequent analysis completed for the Tollways Study demonstrated the need for this new road to serve this

³² WBS Recommended Alternative Report, June 1996, Table 7, page 28.

³³ WBS Alternatives Analysis Report, Tables 5.1-1 and 5.1-2.

range of trips.³⁴ The analysis in the Western Bypass Study demonstrated that, even with other transportation modes, services and programs as included in other alternatives analyzed (see No-Build TSM and LUTRAQ/Bypass Alternatives),³⁵ this road is still needed to serve the travel demand for existing and planned growth.

As further described in this Section II, the Western Bypass Study also demonstrated that, for the sub-area in and near the proposed corridor for the I-5 to 99W Connector, the alternative modes, services and programs in the Recommended Alternative will provide a solution to the identified need only if they are combined with this new road. Furthermore, other additional alternative modes, roadway improvements, services and programs considered would not do away with the need for this new road.

This section describes the alternative modes, land use patterns, improvements to existing facilities, and the improvements considered, evaluated, and recommended for the I-5 to 99W area. As further described in the WBS Alternatives Analysis Report (May 1995), these alternatives were analyzed separately and in collaboration to develop a recommendation to meet the identified need.

IIA. Alternative Modes

Alternatives Modes Considered But Not Further Analyzed³⁶

Range of Alternative Technologies

The Western Bypass Study evaluated a broad range of transit and HOV facilities as transportation alternatives to the private automobile. These strategies primarily operate as modes to move or carry people rather than commercial goods. This section describes these modes and the reasoning for their inclusion in or exclusion from strategies and alternatives development during the Western Bypass Study. The following is a summary listing of the modes considered:

- Paratransit, including Demand-Responsive and Pre-Arranged Ridesharing
- Conventional and Express Bus Operations
- Enhanced Bus and HOV Techniques
- Smart Vehicle Technology
- People Movers
- Light Rail Transit
- Commuter Rail
- Railbus
- Automated Guideway Transit
- Heavy Rail
- High Speed Rail

Of these, the most appropriate modes for the Study Area were identified as those providing urban/regional type service. Such modes typically serve metropolitan areas,

³⁴ Analysis of Two Tollways Project - Final Report.

³⁵ WBS Alternatives Analysis Report, May 1995.

³⁶ WBS Alternative Transportation Technology Report, 1/21/91.

have numerous stops, and operate at low to medium speeds. Other modes that provide shorter connections (short haul) as a support to the urban regional type service were considered to also have potential application. Based on these service requirements and the results of the analysis of the existing and future transit conditions within the Western Bypass Study Area, several modes were identified as the most applicable and effective for consideration in developing strategies. These are:

- Paratransit
- Conventional Bus and Express Bus
- Enhanced Bus (transitway) and HOV Techniques
- Light Rail Transit

These modes are enhanced by a network of suburban transit centers and park-and-ride facilities.

Paratransit technologies, which share characteristics of both traditional fixed-route transit modes and the private automobile, offer the flexibility to develop a family of services to meet the variety of market needs within an urban, rural, or suburban environment. Conventional bus and express bus operations can provide service levels ranging from local circular routes to service levels approaching semi-rapid transit. These all-bus systems can serve low-volume suburban routes as well as high-volume suburban commuter routes. Enhanced bus and HOV techniques offer a number of methods for upgrading and enhancing conventional and express bus service, and for encouraging carpooling. These methods include transit-exclusive ramps onto major roads, traffic signal prioritization, transit-only lanes, and HOV lanes.

Light rail transit has been shown to be a more attractive alternative to the other identified less transit-intensive modes, supporting planned growth patterns. Existing and current projections for future population densities within the Study Area are similar to those in the Westside LRT Corridor. Furthermore, an expansion of the existing LRT network would be in keeping with the long-range regional light rail plan.

Other transit intensive modes were found to be less effective due to a number of factors, including operational constraints and capital cost limitations. These modes were determined difficult to integrate with the existing regional light rail network, and would thus create additional service and operating expenses if implemented as part of the current regional transit system. These include:

- People Movers
- Smart Vehicle Technology
- Commuter Rail
- Automated Guideway Transit
- Heavy Rail
- High Speed Rail

Some of these factors are self-evident. For example, smart vehicle technology has yet to be fully developed. For other modes, the critical factors are less simple but are basic to the attributes of the technologies, and are described briefly in the next few paragraphs.

High-speed rail and people movers, including monorails, were eliminated because it is unlikely that these systems could efficiently serve the transit needs of the Study Area. Generally, people mover technologies are intended for short haul type service only, the type found in amusement parks and airports. People movers function best when the service is intended to be of a shuttle nature, rather than regional, as would be needed to serve a larger and dispersed geographic area.

High-speed rail could provide effective inter-urban service between dispersed nodes of high-density development. Minimum spacing between stations for such a system, assuming that top speeds are attained, is between 8 and 10 miles. Typical spacing between high speed rail stations is 20 to 30 miles.

Likewise, heavy rail and commuter rail systems are also intended to provide service to longer distance travelers. Though the minimum spacing between transit stations for these two latter technologies is significantly less than that for high-speed rail, it is still typically longer than what would be required for the majority of the identified demand for regional trips and connections between Town Centers. Land use and growth data indicate that the demand in the sub-area is not consistent with these various transit technologies.

Most of the rail options, including automated guideway transit but with the exception of light rail transit (LRT) and commuter rail, would be difficult to integrate with the existing Tri-Met service in the Portland region. This is a significant factor because the Portland region has chosen light rail transit as the preferred transit-intensive technology for the area. To implement and integrate a different form of rail transit such as heavy rail, automated guideway transit, or people mover technology, substantial investment would be required for new maintenance facilities and other capital intensive requirements. In addition, it is unlikely that such a system would be compatible with the existing LRT networks, and it would require completely separate tracks, control systems, and other technology-specific equipment. Commuter rail, although differing from the existing LRT network, could operate independently from LRT, sharing maintenance facilities with existing freight rail operations in the Portland region. For this reason, it would be less difficult to make commuter rail for longer distance service compatible with the existing transit system.

Commuter Transit Service

Commuter Transit Service was considered but, owing to the small amount of demand it could accommodate relative to the identified need, it was not evaluated or advanced for further study.³⁷

It is appropriate to use a supply-oriented method to estimate the corridor-transit demand and the corresponding potential reduction in vehicle trips. For commuter transit service, it would be reasonable to expect that peak hour service between Tualatin and Sherwood would involve two to four trips at 15- to 30-minute peak hour headways in each direction, based on existing Tri-Met service standards. Assuming

³⁷ Estimates of travel demand include trips from areas outside the Region; however, they are not precisely coded in the Metro Regional Transportation Model to specific local origins or destinations outside of Metro's traditional regional modeling area.

full utilization of seats in the peak direction, a 25 percent utilization in the other direction, and 15-minute headways for service, approximately 200 to 300 local or express peak-hour transit trips would be served in this corridor.

For commuter transit trips from McMinnville, Newberg, or other destinations in the 99W/18 corridors, a reasonable assumption would be to implement the standards for inter-city passenger service established in the Oregon Transportation Plan (OTP). The Plan recommends hourly inter-city passenger service to major cities along I-5 in the Willamette Valley, and one daily round trip for cities with a population of more than 2,500 located 20 miles or more from the nearest Oregon city with a larger population and economy. Using the standard of one peak hour bus in each direction to serve this inter-city commuter need, and applying the same occupancy rates as above, inter-city commuter transit would serve approximately 50 to 75 peak hour trips in this corridor.

Combining the local/express transit ridership and the inter-city/commuter ridership, a total of 250 to 375 trips would be served by all transit modes in the peak hour. This corresponds to approximately 7 to 10 percent of the peak hour bi-directional flow of 3,680 vehicles forecast for the year 2015. This number is double the transit mode share for Washington County today. Thus, it is an ambitious estimate of potential transit ridership. In addition, while this increase in the number of transit trips would be meaningful, it would not significantly affect overall levels of service in the I-5 to 99W corridor, nor would it significantly reduce the number of trips forecast to be made by automobiles.

Alternative Modes Evaluated But Not Further Analyzed

*Transit Intensive Strategy*³⁸

A Transit Intensive Strategy was evaluated as part of the Western Bypass Study. Key features of the Transit Intensive Strategy were the following:

- Transit service improvements expanded and modified to support the LRT corridors
- A Barbur Boulevard LRT corridor with a southern terminus at I-5/Highway 217
- A Highway 217 LRT corridor connecting the Barbur and Westside LRT Corridors
- Through-routing of Highway 217 LRT to Hillsboro and downtown Portland via the Westside and Barbur LRT corridors
- Transportation Demand Management (TDM) Measures
- Demand Responsive Transit (DRT)
- Land use changes to complement transit improvements (LUTRAQ)

Analysis showed that although this strategy would result in better transit use, in and of itself, the strategy was not successful at reducing congestion in the area when compared to the No-Build strategy. Not enough trip types could be switched from auto to transit to reduce congestion to acceptable levels. For example, the Durham and

³⁸ WBS Transportation, Traffic and Safety Technical Report, August 1994, page 25.

Tualatin Roads are expected to operate at LOS F under the No-Build Alternative and under the Transit Intensive Strategy.³⁹

The Transit Intensive Strategy was also looked at in combination with land use changes in the LUTRAQ alternative. As discussed in Section ID of this report, the LUTRAQ alternative did not solve the need for an I-5 to 99W Connector. The Transit Intensive Strategy was not carried forward as an alternative. However, as described later in this section, all the components of the Transit Intensive Strategy that relate to the I-5 to 99W travel demand are included with the new I-5 to 99W Connector as part of the Western Bypass Study Recommended Alternative.

Circumferential Rail Strategy⁴⁰

The circumferential rail strategy consisted of a rail system operating from Forest Grove to Beaverton and from Beaverton to Tigard and Lake Oswego, all following a right-of-way currently owned by private railroad companies. The strategy also included an extension of such service across the Willamette River to Milwaukie, at which point it would follow an existing right-of-way in public ownership. The service included stops at the Gateway Transit Center, where it would connect with the existing MAX LRT line.

This strategy was analyzed in the context of the Western Bypass Study goals and objectives and evaluation criteria, which focused on accessibility, travel demand, and congestion.

Fixed-guideway transit service does not operate as effectively in a land use environment where both origins and destinations are widely dispersed. The planned land uses for the circumferential rail transit were modest. Moreover, the alternatives in the Western Bypass Study included options for transit service that responded to those dispersed land uses and related travel demand assumptions.

Express Bus Service On Tualatin/Sherwood Road⁴¹

Another significant transit-intensive strategy evaluated but not recommended was the LUTRAQ Alternative. This alternative explicitly included the provision of express bus service on Tualatin/Sherwood Road. The LUTRAQ Alternative transit plan proposed this as radial service, supporting HCT service on Barbur Boulevard and Highway 217, which would serve Washington County as well as Downtown Portland.

Findings in the Western Bypass Study indicated that providing transit in connection with the LUTRAQ Alternative produced substantial numbers of transit trips, (59,000 daily work trips by transit, a 240 percent increase over the No-Build; and almost 25,000 daily non-work trips by transit, a 57 percent increase over the No-Build). However, even with this improved use of alternative modes, congestion still was not adequately resolved to provide for reasonable access. This alternative resulted in unacceptable levels of congestion on Tualatin/Sherwood Road; specifically, a peak hour LOS of F in

³⁹ WBS Revised Transit Intensive (LRT) Strategy Description and Evaluation Summary, March 20, 1992.

⁴⁰ WBS Transportation, Traffic and Safety Technical Report, August 1994, Appendix A-6.

⁴¹ WBS Alternatives Analysis Report, May 1995, Table 5-1.1.

downtown Tualatin for the forecast year. This LOS would continue for approximately 2 hours, based on current trends (see Section ID).

While the number of increased transit trips would be meaningful, the change would not significantly reduce the number of automobile trips forecast, nor eliminate the need for the new facility.

Recommended Alternative Modes⁴²

The Recommended Alternative included extensive alternative modes, in addition to TDM measures and improvements to existing facilities. A component of the recommendation is that full transit subsidies will be provided to all employees who work in the Study Area and ride transit to work. The combination of increased service and transit subsidies generated a significant amount of transit ridership. Overall, an increase in daily work person trips by transit of approximately 175 percent, or about 48,000 more daily work trips by transit, is expected. This is equivalent to approximately 14 percent of the daily total work trips in the Study Area.⁴³

Analysis showed that daily non-work trips were not significantly affected by increased transit service. Overall, non-work trips by transit were less than 2 percent of total non-work trips for any alternative analyzed.

Even so, congestion on Study Area corridors is expected to remain significant unless the transit improvements are combined with TDM and improvements to existing facilities and the new I-5 to 99W Connector.⁴⁴ For example, in the I-5 to 99W area, Tualatin Road is forecast to operate at LOS F in the peak hour under the No-Build Alternative. These roads will continue to operate at unacceptable levels of service even if the TDM and transit improvement measures described as part of the Recommended Alternative are implemented. Consequently, although Alternative Modes are an important component of the Recommended Alternative, alone they do not provide enough congestion relief to meet the objectives of the study, and must be supplemented with other improvements.

Express Transit Service⁴⁵

Express transit service is included in the Recommended Alternative. It consists of a Highway 217 express bus/feeder network with express stops at I-5, Scholls Ferry Road, Washington Square, and the Beaverton Transit Center for a connection with the Westside LRT. The express bus service will combine the local collection from the southerly centers such as Sherwood, Lake Oswego, Wilsonville, and Tualatin with the line-haul express service between Tigard and Beaverton. This service is recommended for implementation by Tri-Met as part of its Primary Transit Network for

⁴² WBS Recommended Alternative Report, June 1996, page 19.

⁴³ WBS Alternatives Analysis Report, May 1995, Table 5.1-1.

⁴⁴ WBS Alternatives Analysis Report, May 1995, Table 5.1-1.

⁴⁵ WBS Recommended Alternative Report, June 1996, page 19.

the Highway 217 corridor. The express bus service and transit stops include park-and-rides at I-5, Washington Square, and Scholls Ferry Road.

This transit service supports the planned land uses in the Region 2040 Growth Concept, including the Regional Center at Washington Square. LRT along Highway 217 was evaluated as part of the Transit Intensive Strategy. The Express Transit service essentially provides similar coverage for the 2010 design horizon, and can help build transit ridership to support the planned LRT extension in that area in the future. With either Express Transit or additional LRT service, the I-5 to 99W Connector is still needed.

Fixed-Route Transit Service⁴⁶

Fixed-route transit service, which is regularly scheduled transit service on designated routes, is included as a component of the Recommended Alternative. New routes developed for the Recommended Alternative include those planned to support the express bus service on Highway 217. In the I-5 to 99W area, fixed-route transit service is one of several modes identified to address the demand for travel, in addition to the I-5 to 99W Connector.

The fixed-route transit service incorporates the expansion of the feeder bus network. The expansion components are designed to support and integrate with the express bus high-capacity transit element. Elements of the fixed-route transit service improvements, near the proposed I-5 to 99W Connector corridor, include a new Transit Center in Tualatin and a new park-and-ride lot at the Tigard Transit Center. Route extensions and improvements are presented in Table 4.

⁴⁶ WBS Recommended Alternative Report, June 1996, page 19.

Table 4: Recommended Transit Route Improvements

Route Number	Location of Termini	Proposed Changes from Transit Intensive (LRT) Definitions	Future Headway in Minutes	
			Peak	Off Peak
12A	Beaverton LRT station to Sherwood transfer node	EXTENSION to Beaverton LRT via 217/Canyon Rd HOV lane	15	30
12B	Washington Square to Tualatin Transit Center with King City deviation	SAME ROUTE PATH with outer branch and inner branch as Transit Intensive (LRT)	15	30
12C	Sherwood to Tualatin	SAME LOOP/circulator route (via Tualatin Rd, Tualatin/Sherwood Rd, Avery) as Transit Intensive (LRT)	20	30
12L	Tigard Transit Center to Portland CBD via Burlingame Transit Center	SHORTENED local route with frequent stops maintained along 99-W/Barbur Blvd	20	30
37	Tualatin to Lake Oswego Transit Center	DEVIATION via Kruse Way Express Station along Waluga/Carman Drives, Kruse Way, I-5 to Upper Boones Ferry	15	30
38A	Tualatin to Tigard Express Station	REMOVAL OF northern branch from Tigard to Washington Square; DEVIATION at 72 nd Ave onto 217 HOV lane	20	30
66	Branch to Tualatin Park-n-Ride	ROUTED via 217 HOV lane between Washington Square and Tigard		
68	Evergreen to Tigard Express Station through 185 th LRT station	DEVIATION: Southern leg follows new roadways along Murray Rd southern extension for local access to Tigard Transit Center	15	30
105	Tualatin Transit Center to 170 th St. LRT station	SAME ROUTE PATH: (Herman Rd, Edy Rd, Elsner Rd, Beef Bend Rd segment east of Elsner Rd, 150 th Ave, Bull Mtn, Reusser Rd, 170 th Ave) as for Transit intensive (LRT)	15	30

The fixed-route improvements are anticipated to result in an increase in transit ridership for work trips of about 75 percent over the No-Build Alternative. This is equivalent to approximately 30,000 daily trips, which represents 9 percent of the total work person trips in the Study Area. No additional fixed-route transit service was included because it would have been redundant with the Demand-Responsive Transit component of the Recommended Alternative.

Demand Responsive Transit (DRT)⁴⁷

Demand Responsive Transit is included in the Recommended Alternative. It provides service to riders when it is needed and where it is needed through dial-a-ride, shared ride, and shuttle services. DRT is more flexible than fixed-route service, and can provide more comprehensive transit coverage. To use it, riders would call a central control to be picked up anywhere within the Study Area, and would then be delivered to a destination within the Study Area. The DRT component is expected to accommodate approximately 18,000 work trips and more than 4,000 non-work trips in the Study Area each day. These trips correspond to 5 percent of the total work person trips and 1 percent of the total non-work person trips in the Study Area.

The following assumptions were incorporated in modeling this element as part of the Western Bypass Study. A system of five DRT cells were mapped that covered the entire Study Area. Dial-a-ride service was provided to users within each of these cells. Service coverage was provided to any and all destinations within a cell, including residences, offices, shopping centers, bus stops, light rail stops, and transit centers. DRT service was not provided between cells because that service would be provided by fixed-route service. DRT service would be in addition to the expanded fixed-route transit service and express transit service included in the Recommended Alternative.

The overall DRT program is another mode in addressing the demand for travel in the I-5 to 99W area, in addition to the I-5 to 99W Connector. This service combined with regular transit service and the recommended transportation improvements, demonstrates that the Recommended Alternative would provide comprehensive transit service throughout the Study Area. in combination with the other components of that recommendation.

Bicycle and Pedestrian Facilities⁴⁸

The Recommended Alternative includes bicycle facilities which, if constructed, will provide a continuous bike route connection from the southern end of the Study Area at I-5 to the Sunset Highway. This bicycle route can be provided through improvements associated with the new I-5 to 99W Connector, 99W widening, and the Murray Connection between 99W and Scholls Ferry Road. Murray Boulevard north of Scholls Ferry Road to Highway 26 has an existing bike lane.

⁴⁷ WBS Recommended Alternative Report, June 1996, page 19.

⁴⁸ WBS Recommended Alternative Report, June 1996, page 20.

Many other projects will include bicycle and pedestrian improvements as part of design development, consistent with ODOT policies and as required by the Transportation Planning Rule. The Highway 217 widening would also include, as appropriate, improvements to provide for bicycles and pedestrians; although pedestrian improvements may be limited to interchange areas.

Bicycle linkage is also provided on all of the roadway improvements in the Recommended Alternative to provide connectivity throughout the Study Area. With these improvements, bicycle and pedestrian trips will remain fairly constant at 9 percent of both work and non-work trips. However, improvements for this important mode of travel will not affect the need for the I-5 to 99W connector.

IIB. Transportation Demand Management Measures⁴⁹

Transportation Demand Management (TDM) is a program with elements designed to reduce the number of auto trips by creating measurable or quantifiable differences in time or cost. TDM is included in the Recommended Alternative, and is a demand reduction component in the I-5 to 99W area.

The following assumptions were incorporated into modeling this element as part of the Western Bypass Study. Parking charges were applied to all work-related SOVs parking in the Study Area. These charges were applied uniformly throughout the Study Area. No parking charges were assessed for carpools or vanpools. Full (100 percent) transit subsidies were provided for all employees who work in the Study Area and ride transit to work. Parking charges were not included for non-work trips, since research has demonstrated that an effective TDM program is focused on regular (commute type) trips.

TDM measures are recommended for implementation as part of a regional TDM program. The actual measures may be different than those modeled in this study. Because the TDM program modeled in the study focused on work trips, it indicates that an employer-based TDM program may be successful. The Region already has certain TDM programs in place. These activities are generated from policies in the Regional Transportation Plan and focus on ridesharing and parking management. Some other specific TDM tools that could be used include lane pricing and user fees.

As modeled in this study, the TDM program reduces the number of SOV daily work trips in the Study Area by approximately 37,000. This is equivalent to a 15 percent reduction of SOV work trips for the total Study Area. These results are consistent with analysis completed earlier in the study.⁵⁰ Based on research of other TDM programs nationwide, it was projected that a Regional TDM program could generate demand

⁴⁹ WBS Recommended Alternative Report, June 1996, page 15.

⁵⁰ WBS Technical Memorandum "Revised Transit Intensive Strategy Evaluation Summary," March 20, 1992.

reduction for work trips in the 5 percent range.⁵¹ While a specific employer or locality could potentially provide greater reductions, this 5 percent threshold was determined to be reasonable for this area.

Currently, the Region is aggressively pursuing TDM and alternative mode programs to address congestion, and to comply with growth management and air quality requirements. These programs include the Employee Commute Option (ECO) program mandated by the adopted DEQ Air Quality Maintenance Plan. The program requires employee trip reductions by up to 10 percent for all the Region's employers of 50 or more. Metro is also developing region-wide alternative mode programs as part of the RTP update, which will result in recommendations on how to meet the TPR goal of reducing overall vehicle miles traveled (VMT) per capita by 10 percent in the next 20 years.⁵²

In addition, Title 2, Section 2 of the Urban Growth Management Functional Plan identifies maximum parking ratios intended to reduce VMT. Those actions, together with other regional proposals (toll roads, congestion pricing, education programs) ensure that an aggressive TDM program component can be implemented over time. However, the need for the I-5/99W Connector to serve inter-regional passenger and freight needs will remain.

IIC. Improvement to Existing Facilities

In the I-5 to 99W area, existing facilities were considered for further improvements, and a number are included in the Recommended Alternative in addition to the I-5 to 99W Connector. Some were evaluated and not recommended because, either alone or in combination, they did not address the need or demand given trip lengths and distribution patterns. Others were not evaluated because they would not function in response to the identified need.

Improvements To Existing Facilities Considered But Not Evaluated

A limited number of existing roadways currently connect I-5 to 99W. Improvements to all or these roadways were considered, but only options for addressing the need identified were further analyzed.

Improvements to minor arterials and neighborhood streets

Improvements to minor arterials and neighborhood streets between I-5 and 99W were not evaluated. The demand in the year 2015, in combination with the other alternative modes and TDM program, is for more 3,600 vehicles in the peak hour (see Table 5). Minor capacity improvements to these facilities would not address the identified need. Short connections or intersection improvements would not address the longer distance connections needed, as further discussed in Section III of this Findings Report. Furthermore, these types of roadways were not intended for this type of through traffic.

⁵¹ WBS Technical Memorandum "Transportation Demand Management Measures," June 27, 1991, page 9.

⁵² Source: Metro

Specifically, North/South roadways such as Hall Boulevard and Boones Ferry Road are oriented in the wrong direction to serve as through connectors between I-5 and 99W. They only can provide parallel non-connecting routes. Tualatin area east-west roads such as Saggert, Avery, and Herman do not connect between I-5 and 99W. Even if widened, these small roads would not provide the needed through connection between I-5 and 99W to meet regionwide needs. If extended, these roads would not provide the needed direct connection to I-5 because there are no interchanges at their ends. The same would be true for minor roadways in Sherwood. Sunset Road, for example, would not provide a through connection.

Widening Tualatin/Sherwood Road

During the course of the Western Bypass Study it was understood that Metro would be developing a regional Framework Plan and a Functional Plan that dealt not only with land uses but also transportation facilities, and that these plans might include design standards for certain classes of transportation facilities, such as Tualatin/Sherwood Road. The adopted "Urban Growth Management Functional Plan," November, 1996 includes a discussion of boulevard design in Title 6, Section 2.

The language of the section (in draft form) clearly indicates the difficulty of expanding the existing arterial configuration through the Tualatin Town Center. The standards for facilities designated as "boulevards," of which Tualatin/Sherwood may be an example, include the following:

- wide sidewalks
- landscape strips
- pedestrian crossings at all intersections and mid-block crossings where intersection spacing is excessive
- bikeways
- on-street parking
- landscaped medians

"Boulevard" designations have not been made formally yet; however, the design challenge of expanding Tualatin/Sherwood Road through the center of Tualatin and simultaneously meeting these standards would be substantial. Any further widening of Tualatin/Sherwood Road would be in conflict with the Boulevard Design guidelines. For these reasons, further widening of Tualatin/Sherwood Road beyond two through lanes in each direction cannot reasonably accommodate both the regional and arterial road needs of the area and support the Region 2040 Concept for Town Centers.

Further Widening to Durham and Tualatin Roads

Durham Road does not connect to I-5 and is north of the area in which the travel demand exists. Select link analysis completed (see Section IIIA) demonstrated that, if the I-5 to 99W Connector were not constructed, there would not be significant increased travel demand on this roadway. Simply put, the regional through demand is located further south than Durham Road.

Tualatin Road does not connect to I-5 and cannot be extended through the existing urban area without displacement (removal and relocation) of significant existing commercial developments. Nor could a new connection at I-5 be reasonably

constructed due to interchange spacing requirements.⁵³ Tualatin Road is constrained from being widened by a golf course, railroad right-of-way, and a city park. Finally, select link analysis demonstrated that less than 15 percent of the I-5 to 99W Connector travel demand could be accommodated (see Section IIIA). This existing roadway is not an option for providing a through connection or a significant a capacity increase in the I-5 to 99W area.

Further Widening 99W

The recommended alternative would improve 99W to the capacity typically reflected in a six-lane arterial or a four-lane limited access facility. Additional lanes or access controls, or both, are needed in addition to the I-5 to 99W Connector, as demonstrated in the WBS Recommended Alternative Report. 99W passes through the Tigard Town Center. Widening 99W beyond what has been recommended is not consistent with the Town Center concept of the Urban Growth Management Functional Plan. Furthermore, if the I-5 to 99W Connector were not constructed, approximately 1,000 vehicles would be diverted to 99W in the peak hour. These through trips are not intended to pass through the Tigard Town Center.

Improvements To Existing Facilities Evaluated But Not Recommended⁵⁴

Widening of Highway 217 to Four Lanes: As part of one alternative evaluated, Highway 217 would be widened to four lanes in each direction. Analysis showed that, with three lanes in each direction and the additional modes and TDM program, the need could be accommodated.

Murray Extension: As part of one alternative evaluated, Murray Boulevard would be extended south of Scholls Ferry Road as a two lane arterial (in each direction). The Murray Extension would have connected past 99W to I-5 somewhere in a corridor roughly bounded by McDonald/Bonita in the north and Durham Road in the south. Analysis showed that, with the locally planned and now completed improvements to McDonald and Bonita and the additional modes and TDM program, the need could be accommodated.

As recommended, improvements will be made to provide the capacity typically found in a three-lane collector (one through lane an each direction) from Old Scholls Ferry Road to 135th Avenue (Project #115). This segment will have a capacity of 900 vehicles per hour, likely a two-lane segment. It also completes the Murray Connection (Project #161) to 99W by providing a new collector from 135th Avenue to Garage Street and widening Garage Street from 121st Avenue to 99W. Together the recommendation will provide the appropriate capacity from Scholls Ferry Road to 99W, but not a complete extension to I-5 that would encourage through movements not needed or planned for through these neighborhoods.

⁵³ ODOT's preferred minimum interchange spacing is 2 miles.

⁵⁴ WBS Alternative Analysis Report, May 1995, Table 5.1-1.

Recommended Improvements to Existing Facilities⁵⁵

A number of improvements to existing facilities, in combination with alternative modes, TDM methods, and the I-5 to 99W Connector, are recommended for addressing the need identified in the I-5 to 99W area (see Figure 4).

Project #169: Tualatin Road from 99W to Upper Boones Ferry Road. This project improves the capacity of Tualatin Road by adding a median lane between 99W and Upper Boones Ferry Road. (Construction complete).

Projects #15, #150 and #160: Highway 217 widened from Sunset Highway to I-5. This improvement will increase the two-way capacity to 6,250 vehicles per hour, with three travel lanes in each direction. The three-lane improvement is consistent with the RTP, and the local jurisdiction's plans. It is also identified in the ODOT Statewide Transportation Improvement Program (STIP) (1995-1998). Project #15 is in the Constrained RTP Funding. Projects #150 and #160 are also included in the Constrained RTP. Two of the Region 2040 Growth Concept's Regional Centers and two Town Centers are located adjacent to or near the Highway 217 corridor. The Regional Centers are Washington Square and Beaverton and the Town Centers are Tigard and Highway 217/26. This project will increase the ability of Highway 217 to serve these key areas.

Highway 99W included three projects in the Recommended Alternative, Projects #113, #163, and #406. Improvements would improve access between the Tigard, King City, and Sherwood Town Centers. Analysis of this specific roadway project showed that it will improve the peak hour level of service to D/E.⁵⁶ 99W needs this additional capacity to reduce some of the congestion it currently experiences.

Project #113: The widening of 99W from Pfaffle Street to Commercial Street. This project would result in capacity improvements for a six-lane segment.

Project #163: 99W intersection improvements. The improvements would enhance the flow of traffic on 99W between the Tigard, King City, and Sherwood Region 2040 Town Centers.

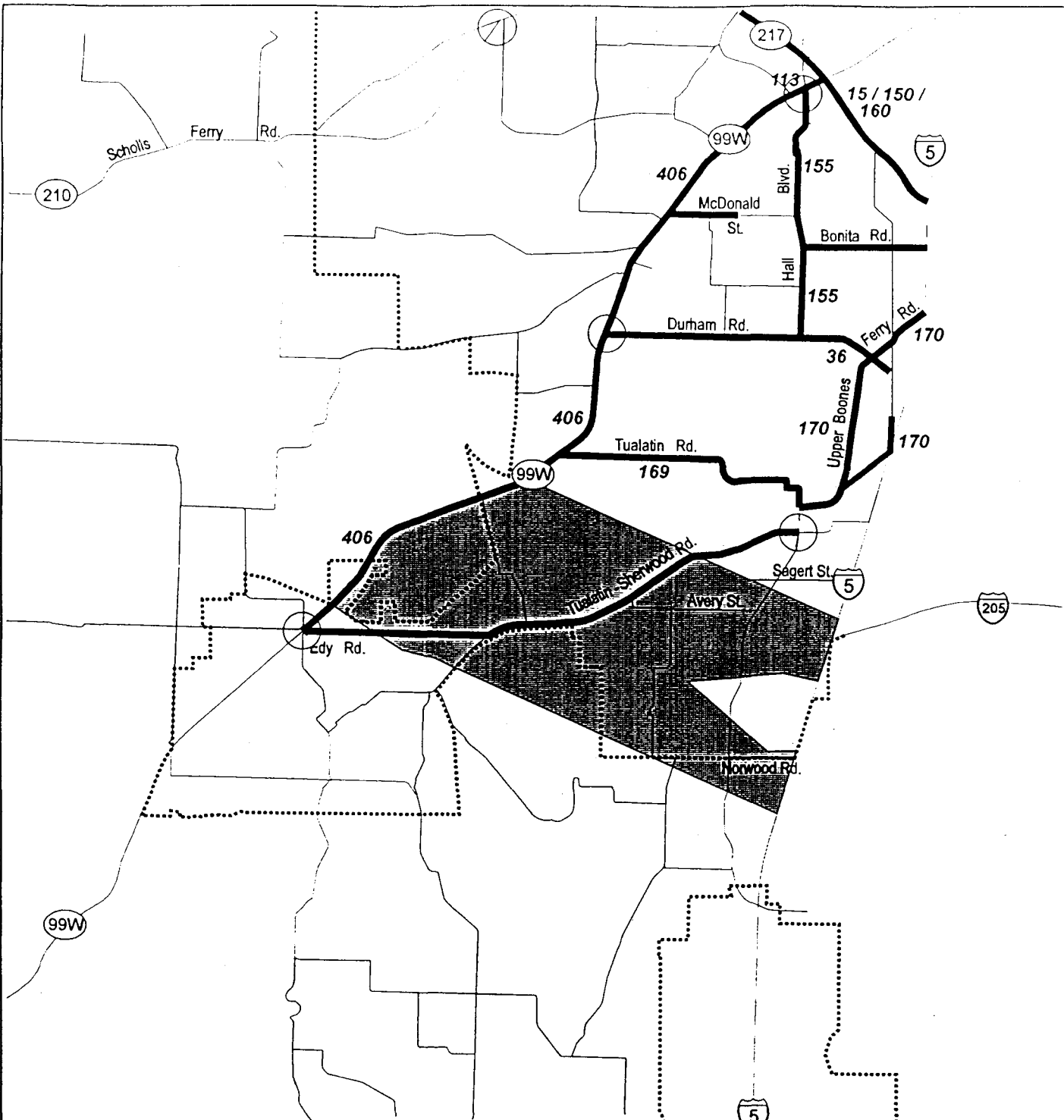
Projects #406: The widening of 99W from Durham Road to I-5, and the upgrade of 99W to a limited-access facility from Six Corners to Durham Road. This improvement will result in the capacity of 2,700 vehicles per hour on this facility, potentially a six-lane facility. Access management to upgrade 99W from Six Corners to Durham Road to a limited access facility is under the jurisdiction of ODOT, which has the authority to implement access standards on state facilities. Access management is required with the Transportation Planning Rule where it is consistent with designated access management categories.

This improvement will support the Region 2040 Growth Concept by enhancing the connection between the Tigard, King City and Sherwood Town Centers and by

⁵⁵ WBS Recommended Alternative Report, June 1996, page 11.

⁵⁶ WBS Alternatives Analysis Report, May 1995, Table 5.1-1.

enhancing the access of these to Town Centers to the Washington Square Regional Center.



LEGEND

- Study Area
- Urban Growth Boundary
- █ Proposed I-5 to 99W Corridor
- Town Center
- Roadway Improvements
- 406 Project Number

Figure 4



WESTERN BYPASS STUDY
Oregon Department of Transportation

**RECOMMENDED
 IMPROVEMENTS
 TO EXISTING FACILITIES**

IID. Alternative Land Use Patterns

One of the alternatives for the Western Bypass Study considered a different land use pattern than that recognized in local comprehensive plans. The LUTRAQ Alternative introduced new "mixed-use" land use patterns within Washington County that tended to cluster jobs, residences, and shopping near transit lines to encourage transit use. The transportation improvements specific to this alternative in the I-5 to 99W area included roadway improvements to Durham, Tualatin, and Tualatin/Sherwood Road consistent with local plans and consistent with the Western Bypass Study Recommended Alternative.

LUTRAQ transit improvements included the Westside LRT to Hillsboro, the TDM Program, and Demand Responsive Transit as included in the Recommended Alternative. Further, it included LRT in the Barbur corridor to Tigard, in the Tualatin corridor to Lake Oswego and Tualatin, and on Highway 217 connecting Beaverton, Tigard, and Tualatin. In addition, increases in expanded local feeder bus and express bus service were designed to support the light rail system.

Since the beginning of the study, Metro has adopted the 2040 Growth Concept (December 1994). This adopted future growth plan for the region reflects many of the land use concepts that were part of the LUTRAQ Alternative. The 2040 Growth Concept is now the preferred form of regional growth and development and is adopted for long-term regional growth management.

The LUTRAQ LRT projects along Highway 217, Barbur Boulevard, and the Willamette Shores are not part of the Recommended Alternative. Express bus service, highway widening, and transit center/park-and-ride facilities are included in the Recommended Alternative instead of LRT in the Highway 217 corridor for transit service improvements, because that level of service can address the demand through the year 2010. The Barbur and Willamette Shores LRT extensions did not address the need identified for the Western Bypass Study, and therefore were not included as components of the recommendation.

The LUTRAQ Alternative demonstrated that alternative land use patterns can improve transportation performance, when combined with appropriate transportation improvements. Analysis showed an increase of more than 10,000 daily work trips and 8,000 non-work trips in this alternative over any of the other alternatives analyzed.⁵⁷ As the land uses are conformed to those envisioned in the Region 2040 Growth Concept, some of the measures for which LUTRAQ performed well (e.g., change in total Study Area vehicle trips per day) will be reflected in the implementation of the Recommended Alternative.

Even with these notable improvements that can occur with land use changes, demand in the I-5 to 99W area will remain. Of particular concern is the congestion in the

⁵⁷ WBS Alternatives Analysis Report, May 1995, Table 5.1-1.

Tualatin Town Center. Without additional improvements, it is projected that there will be significant congestion (level of service F in excess of one hour during the peak period) and traffic diversion to roadways not intended for these types of trips.⁵⁸ The result would be significantly reduced access and result in safety concerns in the I-5 to 99W area.

⁵⁸ Metro - WBS Level of Service Plots.

III. Function of the I-5 to 99W Connector

The Western Bypass Study Recommended Alternative included alternative modes, transportation management measures, and improvements to existing facilities in the I-5 to 99W area. The Recommended Alternative also includes a new limited access road to provide needed additional capacity. This connection between I-5 and 99W, in combination with the other components, provides for the regional circumferential travel demand identified in the Purpose and Need Statement for the Western Bypass Study, consistent with travel patterns projected for the Study Area for the design year 2010.

The I-5 to 99W Connector will be a grade-separated facility with interchanges at Tualatin/ Sherwood Road and ramps at I-5/I-205 and 99W and will have a capacity of 3,000 vehicles per hour in each direction. This facility could be a four-lane roadway, which would alleviate much of the traffic congestion experienced on Tualatin and Tualatin/Sherwood Roads, and provide reserve capacity for planned growth beyond the year 2015. It would also provide an alternative route for the movement of heavy commercial vehicles outside of the Tualatin Town Center.

The I-5 to 99W Connector will support the Region 2040 Growth Concept by providing a new through road connecting two major urban highways. With through traffic using this new connector, better access will be provided on existing roads between the Town Centers in Sherwood and Tualatin, and between the other Town Centers along 99W.

IIIA. Purpose/Type of Trip

A select link analysis is part of the transportation planning software used by Metro. It allows the transportation planner to identify the origins and destinations of travelers on specific roadways to support analysis of the purpose and type of trip. The Study Area was broken into a southern and northern section for the purpose of the select link analysis. The southern portion of the Study Area consisted of the Tigard, Tualatin/Wilsonville, Sherwood, and Scholls districts, while the northern portion included the Beaverton, Hillsboro, Helvetia, North Sunset Corridor, and Aloha districts (see Figure 2). These districts are sizable areas in themselves, and a significant amount of trips can be expected to occur within a given district.

The 1988 analysis is based on the existing transportation system, and the 2010 analysis is based on the No-Build Alternative. The Tualatin and Tualatin/Sherwood Road pair in the southern portion of the Study Area were analyzed for select link information during the p.m. peak hour.⁵⁹

Data from the select link analysis follows:

Tualatin Road and Tualatin/Sherwood Road

During the p.m. peak hour for year 2010, the trips produced by Tigard, Scholls, Sherwood, King City, and Tualatin/Wilsonville are expected to increase by almost 74

⁵⁹ WBS Statement of Purpose and Need, Appendix D.

percent (from 3,000 trips in 1988 to 5,200 trips in 2010). Trips attracted to these areas will grow by 72 percent (from 1,400 trips to 2,800 trips). Additionally, the number of trips staying within these areas is expected to grow by 103 percent (from 1,400 trips to 2,800 trips). The number of trips staying within these areas is expected to grow by 103 percent (from 1,400 trips to 2,800 trips).

In 1988, during the p.m. peak hour, almost 64 percent of the total trips on the Tualatin Road and the Tualatin/Sherwood Road began or ended in the Tigard, Scholls, Sherwood, King City, and Wilsonville districts. Almost 16 percent of the total trips were produced or attracted to Clackamas County and another 16 percent were generated or attracted to the Portland area, Multnomah County, and Clark County. Less than 2 percent were distributed to the northwestern portion of the Study Area along the Sunset Highway corridor. Likewise, only a little more than 2 percent were destined for locations in the I-5 South Corridor, Gaston, and Western Washington County areas. Of the total trips using these links, over 29 percent stayed within the Tigard, Scholls, Sherwood, King City, and Wilsonville districts.

In comparison, in the year 2010 during the p.m. peak hour, more than 56 percent of total trips using Tualatin Road and Tualatin/Sherwood Road are expected to begin or end in the Tigard, Scholls, Sherwood, King City, and Wilsonville districts. Fourteen percent will originate or in travel to Clackamas County, and more than 14 percent will travel to or come from the Portland area, Multnomah County, and Clark County. Less than 3 percent will travel to the northern part of the study area along the Sunset Corridor, and less than 3 percent will go to the south of the I-5 Corridor. Furthermore, at least 35 percent of the total trips will stay within the Tigard, Scholls, Sherwood, King City, and Wilsonville districts.

In conclusion, origins and destinations of trips on connectors between 99W and I-5 are dispersed throughout the Region in the year 2010 analysis. Trips from the northwest portion of the Study Area are a small percentage of the total trips using the Tualatin and Tualatin/Sherwood Roads. The majority of all trips using the Tualatin Road and Tualatin/Sherwood Road were generated or attracted to Tigard, Scholls, Sherwood, King City, and Wilsonville, and not the northwest portions of the Study Area. However, almost a third of the trips were generated in or attracted to the Portland area or Clackamas County.

Select link analysis also was completed during the subsequent Tollways Study. The analysis concluded that the majority of trips are longer distance trips.⁶⁰ Trips assigned by the model to the connector roadways were sorted by the origin and destination zones of the model, generally grouped into eight larger areas: Sherwood, Oswego/I-205 Corridor, Wilsonville, Tigard & vicinity, Scholls and vicinity, CBD and vicinity, through trips which both begin and end outside the Region, and other areas. The grouping reflects the six largest percentages of vehicle trips to or from the 20 districts used to summarize zonal trip flow produced by the Metro model, plus the through trips. A summary of the travel forecast in vehicle trips by origin or destination using the connector by option model assignment run is presented in Table 5.

⁶⁰ Analysis of the Two Tollways Projects - Final Report, page 17.

Table 5: Origins or Destinations of 2015 Peak Hour Vehicle Trips Using the Tualatin/Sherwood Connector

Origin or Destination	Sherwood	I-205 Corridor	Wilsonville	Tigard & Vicinity	Scholls & Vicinity	CBD & Vicinity	Through Trips	Other Areas	Veh. Volumes On Connector	Avg. Trip Length (Miles)*
I-5 to Highway 99	800	300	300	150	250	500	1,000	380	3,680	16.40
% of Total	22%	8%	8%	4%	7%	14%	27%	10%	100%	

Trips passing through the Region (through trips with both origins and destination outside of the Region) represents 27 percent of the peak hour trips, or 1,000 p.m. peak hour vehicle trips. The average trip length for trips using the connector roadway is projected to be 16.4 miles.⁶¹

IIIB. Why A 4-Lane Limited Access Roadway?

The designation of the I-5 to 99W Connector as a four-lane limited access facility is based on its projected use by through trips and by high traffic volumes. Traffic projections completed during the Western Bypass Study for the I-5 to 99W Connector indicate p.m. peak hour volumes in the range of 1,200 vehicles per hour westbound and 1,500 vehicles per hour eastbound. The four-lane facility designation recognized the need for passing lanes in the near term, given these projected 2010 volumes, and anticipated additional demand beyond year 2010.

Based on select link analysis completed during the Western Bypass Study, the majority of travel demand in the corridor was projected to be for trips longer than 6 miles.⁶² The limited access designation was recommended as the best configuration for the longer distance trips expected to use the facility. Full access facilities in the corridor area, such as Tualatin/Sherwood Road, Tualatin Road, and Durham Road could then better provide local trip alternatives.

Under the No-Build Alternative, significant north-south and east-west volumes are projected in the Tualatin area. The intersection of Boones Ferry Road with Tualatin/Sherwood Road will continue to experience significant congestion and represents a travel time constraint to regional and through trips. Operating speeds along Tualatin/Sherwood Road are also projected to be constrained as additional intersections are added to serve south-north demand along this facility. The designation of the I-5 to 99W Connector as a limited access facility was based on the

⁶¹ A trip length is the distance from an origin to a destination. However, if a trip goes outside the Region, only the length within the Region is included.

⁶² WBS Statement of Purpose and Need, December 1990, Appendix D and supporting data.

goal of maintaining attractive operating speeds to serve the longer distance trips projected to use the facility. The limited access designation requires grade separation from local north-south roadways, thereby providing benefits in operating speed.

Subsequent traffic analysis completed since the original analysis as part of the Tollways Study⁶⁴ has used Metro's current model. The current Metro model for year 2015 reflects the adopted land use as designated as part of the 2015 RTP Financially Constrained network by Metro. Using this model, the projected p.m. peak hour volumes for the I-5 to 99W connector are projected to increase to approximately 1,940 vehicles per hour westbound and 1,740 vehicles per hour eastbound. These projections support the four-lane designation identified in earlier analysis. A two-lane facility will not operate at acceptable levels of service with this demand, based on standards in the Oregon Highway Plan and the Regional Transportation Plan (see Section IB - Deficiencies).

The year 2015 Tollways Study also confirmed and enforced the conclusion that the purpose of travel on the I-5 to 99W Connector will be for through trips. Analysis demonstrated that 27 percent of the peak hour trips will both start and end outside the Tri-County Portland Metropolitan region. The average trip using the I-5 to 99W Connector during the peak hour will be more than 16 miles in length during the peak hour (see Table 5).

The projected volumes and trip types identified by this subsequent analysis support the four-lane limited access designation for the I-5 to 99W Connector recommended during the Western Bypass Study. This facility would qualify as an Access Oregon Highway (AOH) as designated in the current Oregon Highway Plan (OHP). Appendix C of the OHP states that:

"In metropolitan areas, AOH facilities serve a dual role - providing for traffic passing through the area and for trips being made to or solely within the area. In these cases, do not reduce the priority of the through travel function while providing for intra-area traffic. Take measures to provide a road network with an access control strategy that will assure high level of service for future through travelers."

⁶⁴ Analysis of the Two Tollways Projects - Final Report.

IV. General Location

The Western Bypass Study began analysis of the I-5 to 99W Connector to address whether the demand for access between those two radial facilities could and needed to be accommodated by a new roadway. This new facility would be an independent utility, not the first leg of a bypass, and not intended to be for or preclude such a facility.

The I-5 to 99W corridor analyzed in the Western Bypass Study (see Figure 4) was originally identified in the local comprehensive plans for Washington County and Tualatin for that portion of the Bypass between I-5 and 99W. The width of the corridor was not extended farther north because other existing roads were located there. Some of these roads, such as Tualatin Road, Durham Road, McDonald/Bonita and Highway 217 could be improved if the demand extended further north.

Another new corridor for a new arterial between Tualatin Road and McDonald was considered as part of the Western Bypass Study. This road is referred to as the Murray Extension. Analysis showed that little demand for the I-5 to 99W Connector could be accommodated north of the I-5 to 99W Connector Corridor (see Section IIIB). Analysis showed that further improvements beyond those included in the Recommended Alternative would not solve the problem.

The corridor was not extended further south because the urban area generating the demand was not located there. Further, no options for new interchange connections exist on I-5 south of approximately Norwood Road.⁶⁵

Subsequent year 2015 select link analysis for the I-5 to 99W Connector (see Section IIIA) provides insight regarding which roadways vehicles attracted to the I-5 to 99W Connector would move to if the connector is not be constructed. The analysis confirmed the limits identified for the I-5 to 99W Connector Corridor. For the 3,680 total p.m. peak hour trips, approximately 1,200 vehicles would use Tualatin/Sherwood Road, approximately 1,000 vehicles would use 99W, 400 vehicles would use Tualatin Road, and about 500 would use local roads south of the Tualatin/Sherwood Road. The remaining trips would be distributed to other local roads.⁶⁶ This select link analysis confirms that little travel demand for an I-5 to 99W Connector exists beyond the corridor limits.

The corridor was adjusted twice during the course of the Western Bypass Study. First, a new connection option was added directly to I-5 roughly at I-205. While this was a very controversial decision, this corridor limits change was made to make it possible to subsequently evaluate, during project development, if a reasonable alignment alternative in the corridor could be developed that would not require a Goal exception.

⁶⁵ ODOT's preferred minimum interchange spacing requirement is 2 miles. The Norwood Road overcrossing is the last location north of the existing Wilsonville interchange that could be considered for an interchange.

⁶⁶ Metro Travel Demand Plots as prepared for the Analysis of Two Tollways Projects - Final Report, June 1996.

After the Tualatin National Wildlife Refuge Environmental Impact Statement (EIS) was published, the corridor boundaries were adjusted a second time.⁶⁷ The corridor limits change was made to make it possible to subsequently evaluate, during project development, if a reasonable alignment alternative in the corridor could be developed that would not require a portion of the Wildlife refuge. Existing commercial and residential development the Tonquin Scablands Geologic area, the 100-year floodplain, and associated wetlands are also significant constraints in the corridor.

Rural Land Within the Corridor

The Western Bypass Study prepared an Alternatives Analysis Report as part of the Major Investment Study. The information contained in that document was essentially the same as that in a Tier I EIS. Impacts for all the individual improvements in each of the alternatives were analyzed. The study team recognized that, owing to the width and types of improvements and land uses within the corridor, impacts in the I-5 to 99W Connector corridor could vary significantly depending on the alignment analyzed. They therefore selected two sample alignments with right-of-way widths consistent with that of a four-lane, limited-access facility.

The analysis demonstrated that impacts for an alignment solely within the UGB could be significant. Using Metro's RLIS mapping data base, a Geographical Information System (GIS) analysis indicated that the urban alignment could affect approximately 64 parcels, while the rural alignment could affect approximately 25 parcels.⁶⁸ The projected cost difference between the urban and rural right-of-way could be as much as \$40 million.⁶⁹ Project development at the alignment level will need to address whether the impacts for an alignment solely within the UGB are reasonable. Project design of this facility will need to determine whether reasonable mitigation measures can minimize operational impacts, support planned land use, enhance compatibility with existing land uses, and avoid splitting neighborhoods and local access.

The portion of the alignment that may need to be outside the UGB can potentially be limited relative to the overall length of the I-5 to 99W Connector. The I-5 to 99W Connector could have direct impacts on agricultural or forest lands, designated EFU, EFC, or AF-20, depending on the alignment chosen for the Connector at the project development stage. If the alignment is outside the UGB, approximately 37 acres of farmland could be directly affected by the limited-access facility from I-5 to 99W and other improvements contained in the Recommended Alternative. Farm parcels within the project corridor vary in size from 5 to 100+ acres.⁷⁰ Some of the parcels have residential development. Indirect impacts could range from the loss of crop income from the local economy to the disruption of farming activities such as crop spraying and harvesting.

⁶⁷ The corridor boundaries were adjusted by approximately 1/2 mile northeast of the northeast edge of the proposed refuge.

⁶⁸ WBS Recommended Alternative Report, June 1996, pages 37-38.

⁶⁹ Analysis of the Two Tollways Projects - Final Report.

⁷⁰ WBS Recommended Alternative Report, June 1996, pages 37-38.

The I-5 to 99W Connector could create pressure to allow land uses around interchange locations that differ from planned land uses included in the adopted comprehensive plans for these areas. These pressures should be addressed in project development, especially in selecting interchange locations, so that the I-5 to 99W Connector supports its intended use for through trips. In similar situations along I-205, planned land uses have remained unchanged around interchanges, especially outside the UGB. The same is expected to hold true for the I-5 to 99W Connector as the acknowledged comprehensive plans and Region 2040 Growth Concept are implemented.

Project level development and alternative alignment evaluation will be needed to test if a reasonable alignment can be developed that would not require an exception. At this systems level of analysis, the general location can be limited as contained in this recommendation.

APPENDIX A: LEVEL-OF-SERVICE DEFINITION

The analysis of existing and projected transportation deficiencies was completed using a level-of-service evaluation of major roadways within the Study Area. Specifically, deficiencies within the Study Area were evaluated based on an examination of p.m. peak-hour levels of service (LOS) using Metro's regional forecasting model (EMME-2). This transportation model has been developed in accordance with acknowledged comprehensive plans, reflects future regional growth allocations, and is recognized by experts as appropriate for modeling the transportation system.

Information was developed at a systems level using updated population, employment, and traffic data projected through 2010. Individual roadways were analyzed based on volumes of traffic on sections of roadways rather than at specific intersections. Congestion on roadways, therefore, may differ somewhat from that identified in the Washington County Transportation Plan and the Metro RTP. However, when used as a comparative tool with subsequent LOS evaluations in this study, the congestion analysis provides a corridor view of existing and future traffic conditions.

Congestion is measured by comparing the relationship between the observed or expected volume of traffic during the peak-hour of travel to the capacity of the facility that can be reasonably accommodated. Capacity is determined using a number of criteria, including number of traffic lanes, type of traffic control, roadway geometry, and speed of travel.

LOS ratings are used to describe how well traffic flows on a particular facility or through an intersection. LOS is defined by such factors as freedom to maneuver, speed, driver discomfort and frustration, fuel consumption, lost travel time, and delay. LOS on arterials is heavily affected by the type of arterial (principal, minor, suburban, or urban), number of signalized intersections per mile, speed limits, availability of turn lanes, parking, pedestrian interference, and roadside developments.

Level-of-service ratings range from A to F, with A being the best rating and F the worst. At LOS A, B, and C, little congestion exists and travelers are relatively uninhibited in their efforts to use the specific facility. At LOS D, small increases in traffic volumes will cause the level of service to deteriorate rapidly, and driver comfort is usually poor. LOS E is indicative of significant congestion, while LOS F represents severe congestion or failure, with high driver frustration. Characteristics of each level of service are detailed in Appendix A2.

For the Western Bypass Tier One EIS, the relationship between LOS and volume-to-capacity ratios (v/c) was defined such that a v/c ratio of less than 0.90 indicated a LOS of D or better; a v/c ratio greater than or equal to 0.90 and less than 1.0 indicated a LOS of E, and a v/c ratio greater than or equal to 1.0 indicated a LOS of F. These

definitions were based on the Highway Capacity Manual, TRB Special Report 209, 1986, and adopted by the Study Advisory Committees.

The Regional Transportation Plan has set a LOS D as the standard for the peak hour. Technically this could be interpreted to mean that as much as 20 minutes of LOS E in the peak hour could be acceptable as a design standard. The Urban Growth Management Functional Plan does allow a local option for up to one hour of LOS E and LOS F in certain high density areas, including Town Centers and Regional Centers.

I-5 to 99W Connector

Findings of Fact and Statement of Reasons in Support of Exceptions to Goals 3, 4, 11 and 14

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FINDINGS OF FACT AND STATEMENT OF REASONS IN SUPPORT OF AN AMENDMENT TO THE REGIONAL TRANSPORTATION PLAN TO INCLUDE THE INTERSTATE-5 TO HIGHWAY 99W CONNECTOR

I. INTRODUCTION

A. Project Description

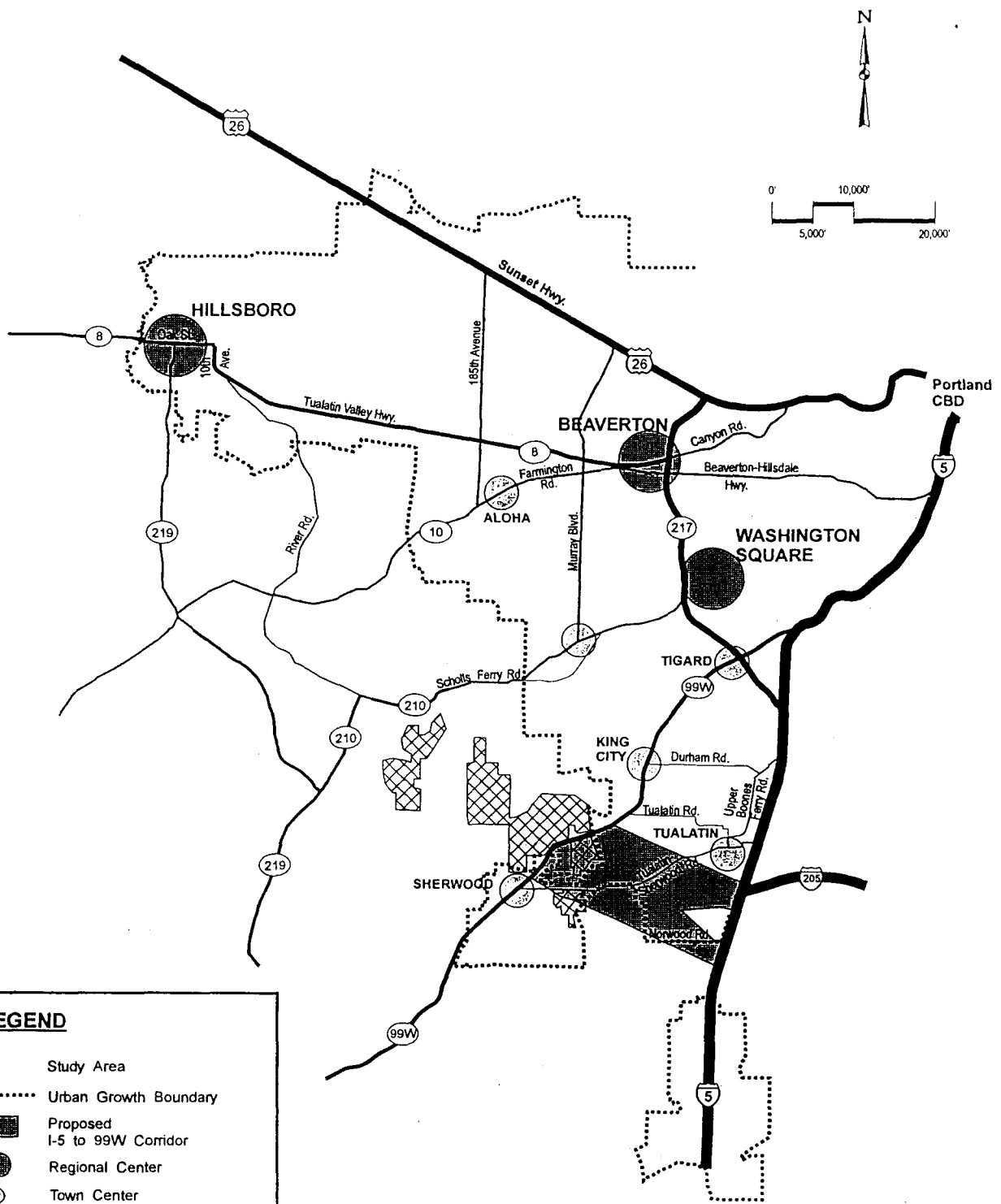
This document sets out findings of fact and reasons to support amendments to Metro's Regional Transportation Plan (RTP) and to the comprehensive plans of affected local governments to include the Interstate-5 (I-5) to Highway 99W (99W) Connector.

The I-5 to 99W Connector is a proposed new four-lane, grade-separated, limited access highway that would connect Interstate 5 south of the Tualatin Town Center with Highway 99W north of the Sherwood Town Center. From a functional standpoint, the facility will operate as a principal arterial serving long-distance, high-speed, interstate, statewide and inter-regional travel as opposed to local trips.¹ By providing a direct link for through (inter-regional) travel between these two major highways, the facility will facilitate improved roadway connections along facilities like Tualatin-Sherwood Road and 99W that access primary Metro Region 2040 land use components such as the Tualatin, Sherwood, King City and Tigard Town Centers.

The designation of the I-5 to 99W Connector as a limited access highway is based on its projected use by through and regional trips. The four lane designation is based on high traffic volumes and a design capacity of 3000 vehicles per hour per direction. The general location of the facility is shown as a corridor approximately three to four miles in length and one and one-half miles wide. See Figure 1. Terminus options along Interstate 5 would likely be at or near Interstate 205 or Norwood Road. Terminus options along Highway 99W would be somewhere south of Tualatin Road and north of the Six Corners intersection. A grade-separated facility is envisioned, with interchanges at Tualatin/Sherwood-Edy Road and ramps at I-5/I-205 and Highway 99W.

By the year 2015, PM peak hour volumes along the I-5 to 99W Connector in both directions are expected to reach 3680 vehicles. Based on select link analysis, approximately 27 percent of trips on the facility will be through trips originating and ending outside the Portland metropolitan region. The average length of all peak hour trips is expected to exceed 16 miles.

¹ Letter dated March 10, 1997 from Michael G. Hoglund, Regional Transportation Planning Manager, Metro, to Mark Greenfield ("Hoglund letter").



LEGEND

- Study Area
- Urban Growth Boundary
- Proposed I-5 to 99W Corridor
- Regional Center
- Town Center
- Tualatin River National Wildlife Refuge

Existing Roadway Classifications:

- Freeways
- Principal Routes
- Major Arterials
- Minor Arterials
- Other Arterials

Figure 1



B. Background

The I-5 to 99W Connector is one of a package of many multi-modal transportation improvements contained in the Western Bypass Study Recommended Alternative ("WBS Recommended Alternative").² To understand the need for this new facility and why that need cannot reasonably be met through alternative modes of transportation or improvements to existing roadways, an understanding of its function and performance in combination with the other multi-modal improvements contained in the WBS Recommended Alternative is required.

The Western Bypass Study provided a focused, comprehensive analysis and evaluation of mobility needs and related problems in the Western Bypass Study Area (Study Area) of the Portland metropolitan region. The Study began by conducting an extensive analysis to identify the types of travel that needed to be accommodated within the Study Area, which consists of the area generally bounded by Highway 26 to the north, the Willamette River and Yamhill County to the south, Interstate 5 and Highway 217 to the east, and Highway 219 to the west. See Figure 1. A Statement of Purpose and Need (February 1991) was prepared and reviewed publicly as part of the process. Next, a number of different transportation strategies were developed and evaluated to test how different modes of travel could provide solutions to the identified needs. Following this initial evaluation, the strategies were reconfigured as alternatives, combining the modes in ways that could gain potentially the most effectiveness from each modal component. These alternatives were then further analyzed and refined.³

The five alternatives developed and analyzed to address the transportation needs identified in the Western Bypass Study included a No Build Alternative, a Transportation Systems Management (TSM)/Planned Projects Alternative, an Arterial Expansion/HOV Express Alternative, a Bypass Alternative, and a Land Use/Transportation/Air Quality (LUTRAQ) Alternative. As part of the process, an Alternatives Analysis Report (May 1995) was published and made available for public review.⁴ The WBS Recommended Alternative includes a package of multi-modal improvements selected from these various alternatives to address the transportation needs in the Study Area. This package includes a Transportation Demand Management (TDM) program, new and expanded transit facilities and services, bicycle and pedestrian facilities, and roadway projects that build on the existing arterial system and add a new roadway connection, the I-5 to 99W Connector.⁵

²The WBS Recommended Alternative is set out and summarized in the Western Bypass Study Recommended Alternative Report ("Recommended Alternative Report") dated June, 1996 and incorporated herein by this reference.

³Recommended Alternative Report at 8-10.

⁴Recommended Alternative Report at 10-11.

⁵See Recommended Alternative Report at 11-20. The specific projects that comprise the WBS Recommended Alternative are set out in Tables 3-5 and Figure 2.

The WBS Recommended Alternative included the I-5 to 99W Connector to serve a variety of trip types and trip purposes, including through trips, regional trips and some local trips. Analysis completed in the Western Bypass Study demonstrated the need for this new road to serve this range of trips in combination with the other multi-modal components in the WBS Recommended Alternative.⁶ That analysis demonstrated that even with other transportation modes, services and programs, need still exists for this new roadway to serve transportation needs generated by existing and planned growth. Indeed, the Western Bypass Study and subsequent analysis completed by the Oregon Department of Transportation (ODOT) for the Tollways Study⁷ demonstrates that, for the subarea in and near the proposed I-5 to 99W Connector corridor, the alternative modes, services and programs in the WBS Recommended Alternative will provide a solution to the identified need *only if* they are combined with this new road. Furthermore, other additional alternative modes, roadway improvements, services and programs considered would not replace the need for this new road.⁸

C. Nature of Action

This action amending the RTP determines only the *need, mode, function and general location* for the I-5 to 99W Connector. Issues addressed at this "Tier 1" or "systems level" stage include whether a "transportation need" exists for a project of this nature; whether that need can be met through one or a combination of measures not requiring goal exceptions (including alternative modes of transportation, traffic management measures, or improvements to existing roadways); and identification of the corridor within which the proposed facility should be located.

Decisions addressing the precise location, alignment and preliminary design of this facility, including evaluation and mitigation of adverse impacts, will be made at a later date, consistent with Section 660-12-010(1) of the Land Conservation and Development Commission's Transportation Planning Rule (TPR).⁹ At that time, *if* the

⁶ While the WBS Recommended Alternative is based on a detailed analysis of *regional* transportation needs, the Recommended Alternative Report recognizes that the I-5 to 99W Connector also will serve important statewide and inter-regional transportation needs by connecting two significant state transportation facilities, Interstate 5 and Highway 99W. See also Hogle letter. Through this connection the new facility will accommodate long distance travel and access to areas outside the region, including Yamhill County and the Oregon Coast. See Recommended Alternative Report at 44.

⁷ As described in the text below, the I-5 to 99W Connector is one of two projects the 1995 Legislature identified for study as a toll road. See Senate Bill 626, codified at ORS Chapter 383. ODOT already has commenced analysis responsive to this statute. See Tollways, Public, Private Partnerships and Other Innovative Financing Mechanisms -- Final Report: Analysis of the Two Tollways Projects (hereinafter "Two Tollways Projects Report"), June 1996.

⁸ Metro analysis preliminary to its anticipated adoption of an updated Regional Transportation Plan in December, 1997 also confirms this conclusion. See Hogle letter.

⁹ The Transportation Planning Rule, OAR 660, Division 12, distinguishes between "transportation system planning", within which this action falls, and "transportation project development", which is the second phase of the process. As explained in OAR 660-12-010(1):

"Transportation system planning establishes land use controls and a network of facilities and services to meet overall transportation needs. Transportation project development

precise location requires use of land outside the Urban Growth Boundary (UGB), additional exceptions to Goals 3, 4, 11 and 14 beyond those taken as part of this decision will be adopted to demonstrate why lands inside the UGB cannot reasonably accommodate this facility. If lands outside the UGB are not required, no supplemental exceptions will be taken.

D. Authorization for Action

This action is taken pursuant to ORS 268.390, which authorizes Metro to adopt a regional "functional plan"¹⁰ on transportation.¹¹ Under ORS 268.390(4), Metro is authorized to review the comprehensive plans of cities and counties within its district and "recommend or require cities and counties, as it considers necessary, to make changes in any plan to assure that the plan and any actions taken under it conform to" any functional plan adopted by Metro under ORS 268.390(2). When Metro "recommends" changes to a local government's comprehensive plan, then to the extent that a local government chooses to implement Metro's recommendations, it must prepare and adopt land use findings demonstrating compliance with the applicable statewide goals. However, when Metro "requires" amendments to local plans to achieve conformance with a functional plan, Metro demonstrates compliance with the statewide goals, thereby permitting local governments then to rely on Metro's findings when they adopt their required comprehensive plan amendments.

As part of this RTP amendment, Metro is *requiring* the affected cities and counties to amend their comprehensive plans to include the I-5 to 99W Connector. *Accordingly, these findings are intended to demonstrate goal compliance not only to support Metro's action but also to support the subsequent local government plan amendments required to implement this RTP amendment.* For that reason, these findings address certain standards which otherwise would not apply to Metro were this action merely a "recommendation."

More specifically, there are relevant TPR standards, including the goal exception standards in OAR 660-12-070, that apply to city and county "comprehensive plan" amendments but not to Metro "functional plan" amendments. Cities and counties must adopt any goal exceptions needed to amend their comprehensive plans to comply with Metro's RTP. By definition, exceptions are comprehensive plan amendments (see ORS 197.732(8)). Even though the RTP is not a comprehensive plan, in order for Metro's

implements the [transportation system plan (TSP)] by determining the precise location, alignment, and preliminary design of improvements included in the TSP."

¹⁰ A "functional plan" is not a comprehensive plan. It is, instead, a Metro-adopted plan addressing a specific area or activity having significant impact upon the orderly and responsible development of the metropolitan region with which city and county comprehensive plans may be required to conform. Metro is required by state law to adopt a functional plan for regional transportation. See ORS 268.390.

¹¹ The current RTP was adopted in 1989 and revised in 1992. As described in the text below, Metro anticipates adopting major amendments to the RTP in December 1997 to fully implement the requirements for regional transportation system planning in the TPR. See Heglund letter.

functional plan action to *require* a change in local comprehensive plans, that action itself must comply with the statewide goals. Hence, Metro must demonstrate that a needed goal exception *can* be adopted by the cities or counties required to adopt the functional plan provision to avoid a goal violation by the regional requirement. Therefore, Metro findings justify the goal exceptions it is requiring the affected local governments to take when they adopt local comprehensive plan amendments to implement Metro's RTP amendments. That is what Metro is doing here.

This action amends the RTP to add only the I-5 to 99W Connector. It does not amend the RTP to include the whole package of multi-modal improvements identified in the WBS Recommended Alternative, even though ODOT has forwarded that alternative to Metro for adoption. Metro will consider adopting the remainder of the WBS Recommended Alternative at the same time it considers adopting an integrated and comprehensive network of multi-modal transportation improvements and demand management measures for all of the metropolitan region, including Multnomah and Clackamas Counties. That action currently is expected to occur in December 1997.¹²

Although some might believe that approval of the I-5 to 99W Connector concurrent with the remainder of the improvements contained in the WBS Recommended Alternative would be more appropriate, there are several good reasons supporting adoption of the I-5 to 99W Connector into the RTP apart from and prior to adoption of the remainder of the WBS Recommended Alternative. First, Senate Bill 626, enacted by the 1995 Legislative Assembly, requires ODOT to develop an institutional process for investigating potential toll road projects, and the I-5 to 99W Connector is one of just two projects it specifically identifies for study. See ORS 383.007(2). Already, ODOT has commenced a toll road study that is responsive to this legislative directive.¹³ ODOT's practice, for projects of this nature, is to act in a manner that is consistent with regional and local plans. This practice is consistent with ODOT's State Agency Coordination Agreement and with the TPR, which provides that state transportation projects be consistent with acknowledged plans. See OAR 660-12-015(1)(b) and (5). It is important to ODOT that such projects be included in the regional and local plans of affected jurisdictions prior to commencement of an alignment study, and this RTP amendment action facilitates that result.

Second, unlike all other projects contained in the WBS Recommended Alternative, the I-5 to 99W Connector requires the establishment of a new transportation corridor.¹⁴ Currently, development is occurring at a rapid pace within both the broader WBS Study Area and the proposed I-5 to 99W Connector general corridor. See Figure 1. Absent

¹² Hogle letter.

¹³ Two Tollways Projects Report.

¹⁴ Arguably, the Beef Bend Extension requires the establishment of a new transportation corridor. However, unlike this project, that corridor *already* was identified on Washington County's acknowledged transportation plan map when ODOT forwarded the WBS Recommended Alternative to Metro. Subsequently, Washington County adopted goal exceptions to authorize that new road at the general location proposed in its comprehensive plan. Those exceptions were not appealed and are deemed acknowledged.

an expeditious land use decision-making process, new urban development within the proposed corridor might impede or preclude the location of the facility within portions of the corridor, especially inside the urban growth boundary, thereby making it more difficult to site the project within the urban growth boundary. Prompt inclusion of the project in the RTP and local plans is warranted to preserve the range of potentially reasonable alternative alignments.

E. Applicable Standards

The standards applicable to this RTP amendment at the regional or local levels include OAR 660-12-060, 660-12-065, 660-12-070,¹⁵ the statewide planning goals and Metro's Regional Urban Growth Goals and Objectives (RUGGOs). *This document addresses only compliance with the identified TPR standards.* Compliance with the RUGGOs and other applicable statewide planning goals is addressed in a separate findings document.¹⁶

II. COMPLIANCE WITH TRANSPORTATION PLANNING RULE

A. Compliance with OAR 660-12-060

Under OAR 660-12-060(1), amendments to functional plans, acknowledged comprehensive plans and land use regulations which "significantly affect a transportation facility" must assure that allowed land uses are consistent with the identified function, capacity and level of service of the facility. This can be achieved by either (1) limiting allowed land uses to be consistent with the planned function, capacity and level of service of the proposed facility; or (2) amending the transportation system plan (TSP) to provide transportation facilities adequate to support the proposed land uses.¹⁷

Initially, OAR 660-12-060(1) requires a determination whether the proposed amendment approving the I-5 to 99W Connector would "significantly affect a

¹⁵ OAR 660-12-070 incorporates by reference the standards in ORS 197.732(1)(c), Goal 2 and OAR 660, Division 4.

¹⁶ While the TPR provisions applicable to preparation and adoption of TSPs do not apply to this RTP amendment, it is noted that the Western Bypass Study Statement of Purpose and Need, Alternatives Analysis Report and Recommended Alternative Report in large measure provide the type of need and alternatives analysis required by the rule. More specifically, they considered and recommend a range of transportation system options, including improvements to existing facilities and services, new facilities and services, transportation system management measures, and demand management measures. They further considered and recommend measures intended to reduce reliance on the automobile, including enhanced transit service (including express transit service, fixed route transit service and demand responsive transit), improved bicycle and pedestrian travel, and parking charges and other measures aimed at reducing the number of vehicle trips by auto. Further, they are intended to implement Metro's 2040 Growth Concepts, which include changes in land use designations, densities and designs that help reduce reliance on the automobile. Evaluation of such land use changes is required under OAR 660-12-035(2).

¹⁷ Metro does not currently have a "transportation system plan" as that term is used in the TPR.

transportation facility." If there is no significant effect, then OAR 660-12-060 does not apply. Under OAR 660-12-060(2), a plan or land use regulation amendment "significantly affects" a transportation facility if it (1) changes the acknowledged functional classification of an existing or planned transportation facility; (2) changes standards implementing the functional classification system; (3) allows types or levels of land uses which would result in levels of travel or access inconsistent with the functional classification of the facility; or (4) reduces the level of service (LOS) of the facility below the minimum acceptable level identified in the TSP.

For both Metro and the affected local governments, the I-5 to 99W Connector would not "significantly affect" a transportation facility. First, the proposed facility would not be "changing" the acknowledged functional classification of any existing or planned transportation facility identified in the RTP or on local comprehensive plans. Rather, it would be "establishing" a classification for a new road not currently part of any existing acknowledged plan. Second, the I-5 to 99W Connector would not be changing Metro or local standards implementing a functional classification system. Third, the amendment does not alter the types or levels of permitted land uses in the area, and the levels of travel and access it would permit are consistent with its planned function as a major limited access highway serving regional and through travel. Fourth, there can and would be no "reduction" in the facility's existing level of service because there is no existing facility and because the facility is not yet included in a TSP. It is noted that the Connector will meet current RTP and Urban Growth Management Functional Plan LOS requirements.¹⁸

Although the I-5 to 99W Connector would not significantly affect a transportation facility, its *absence* would have that effect because planned land uses would increase

¹⁸ Level of Service ratings are used to describe how well traffic flows on a particular facility or through an intersection. LOS is defined by such factors as freedom to maneuver, speed, driver discomfort and frustration, fuel consumption, lost travel time, and delay. LOS ratings range from A to F, with A being the best rating and F the worst. At LOS D, small increases in traffic volumes will cause level of service to decrease rapidly, and driver comfort is usually poor. LOS E is indicative of significant congestion, while LOS F represents severe congestion or failure with high driver frustration. See I-5 to 99W Connector Technical Report ("I-5/99W Technical Report"), March, 1997, Appendix A.

The RTP has set LOS D as the minimum acceptable standard for the peak hour. The Urban Growth Management Functional Plan does allow a local option for up to one hour of LOS E and one hour of LOS F in the Central City, Regional Centers, Town Centers, Main Streets and Station Communities during the peak two hours if a city or county determines that this change is needed to achieve target densities in these areas. See Urban Growth Management Functional Plan at 23. However, the local option does *not* allow a level of service below LOS D during the peak one hour in areas *outside* of these higher density areas. Moreover, for *state highways*, which would include the I-5 to 99W Connector, the Urban Growth Management Functional Plan provides that the congestion performance standards shall be as identified in Appendix F of the 1992 Oregon Transportation Plan. For facilities of statewide importance, the category that would apply to the I-5 to 99W Connector, Appendix F requires an operating level of service standard of "D" within urban parts of metropolitan areas, with LOS "E" acceptable in "special transportation areas", including transit-oriented development districts or other activity centers oriented to non-auto travel, where growth management considerations are paramount. See Urban Growth Management Functional Plan at 25 (Section 4(D)(2)) and Oregon Transportation Plan at 141-142. See also Hoglund letter.

travel on existing streets to levels that are inconsistent with their functional classifications. This impact is described in more detail below. The I-5 to 99W Connector is needed to *retain* a balance between the transportation system and the land uses and population and employment projected for the year 2015 using the 2040 Growth Concept.

B. Compliance with OAR 660-12-065

OAR 660-12-065 identifies the types of transportation improvements "which may be permitted on rural lands consistent with Goals 3, 4, 11 and 14 without a goal exception." Because the list of permitted transportation improvements does not include new four-lane limited access highways on rural lands, OAR 660-12-065 does not apply. Instead, the exception standards in OAR 660-12-070 apply. See OAR 660-12-070(1).

C. Compliance with OAR 660-12-070

As noted in the Introduction to these findings, a functional plan is not a "comprehensive plan" as defined in ORS 197.015(5). Because, by definition, an "exception" is a comprehensive plan amendment, Metro cannot take an exception to amend its RTP. Nevertheless, Metro is addressing these exception standards because (1) its functional plan requirements require the affected cities and counties to amend their comprehensive plans; and (2) where amendments require exceptions to comply with the statewide goals, Metro must demonstrate that the cities and counties can adopt the needed goal exceptions.

1. OAR 660-12-070(1)

OAR 660-12-070(1) requires an exception for siting transportation facilities on rural lands that do not meet the requirements of 660-12-065. The I-5 to 99W Connector satisfies OAR 660-12-070(1) because an exception will be taken consistent with this exception statement as required by this standard.

2. OAR 660-12-070(2)

OAR 660-12-070(2) requires that the exception be taken pursuant to ORS 197.732(1)(c), Goal 2, OAR 660, Division 4 and OAR 660, Division 12. Because OAR 660, Division 4 and OAR Division 12 implement Goal 2 and ORS 197.732(1)(c), a demonstration of compliance with these administrative rule requirements demonstrates compliance with all of these review standards.

This exceptions statement provides the findings of fact and reasons demonstrating compliance with the applicable exception standards, as required by Goal 2 and ORS 197.732. As earlier noted, this exception will be taken by the affected cities and counties only to identify the *need, mode, function* and *general location* of the I-5 to 99W Connector. Subsequently, following further study, ODOT will select the precise

alignment. In the event that alignment is located entirely inside the UGB, this exception will have been unnecessary. On the other hand, should a precise alignment be selected that extends outside the UGB, a second exception will be required to demonstrate why non-exception locations cannot reasonably accommodate the facility, and further to demonstrate compliance with OAR 660-12-070(7) (which requires a comparison of the economic, social, environmental and energy consequences of alternative locations requiring exceptions) and OAR 660-12-070(8) (addressing adverse impacts the facility will likely have on surrounding rural land uses and adopting measures to support continued rural use of surrounding rural lands and minimize accessibility of rural lands from the new facility).¹⁹

3. OAR 660-12-070(3)

OAR 660-12-070(3) concerns exceptions that are "adopted as part of a TSP or refinement plan." Because neither Metro nor the affected cities and counties will be adopting this exception as part of a TSP or refinement plan, OAR 660-12-030 does not appear to apply. Still, given the intent of this exception to justify need, mode, function and general location for the I-5 to 99W Connector, the provisions in OAR 660-12-070(3) effectively are considered as part of the demonstration of compliance with OAR 660-12-070(4).

4. OAR 660-12-070(4), ORS 197.732(1)(c)(A), Goal 2 Part II(c)(1), OAR 660-04-020(2)(a) and OAR 660-04-022

OAR 660-12-070(4) states:

"To address Goal 2, Part II(c)(1) the exception shall demonstrate that there is a transportation need identified consistent with the requirements of 660-12-030 which cannot reasonably be accommodated through one or a combination of the following measures not requiring an exception:

- "(a) Alternative modes of transportation.
- "(b) Traffic management measures; and
- "(c) Improvements to existing transportation facilities."

¹⁹ The second exception also would address corresponding provisions in OAR 660-04-020.

a. **Transportation Need²⁰**

Need for Transportation Improvements in the I-5 to 99W Subarea of the Western Bypass Study Area

Population/Employment Growth within the Western Bypass Study Area

Year 2010 forecasts developed by Metro show that population and employment in the Portland metropolitan area will continue to expand at significant rates.²¹ Within the Tri-county metropolitan area, the Western Bypass Study Area, which contains most of urban Washington County, will continue to be an area of much higher growth than the region as a whole. Between 1988 and 2010, the Study Area population is expected to grow by over 60 percent, compared to about 35 percent regionwide. The number of households in the Study Area, which was slightly less than 99,000 in 1988, is expected to exceed 167,000 by 2010. Study Area employment is expected to grow by over 73 percent, from about 136,000 in 1988 to approximately 236,000 by 2010. See Table 2 of the I-5/99W Technical Report.²²

Population in the Study Area will increase from 18.5 percent of total region population in 1988 to 22.0 percent in 2010, while employment will grow from 19.3 percent to 24.3 percent during that same period.²³ With such growth, the Study Area will become an increasingly important economic component of the Portland metropolitan area. With growing numbers of retail and employment centers, increasing population, and new recreational facilities locating within the Study Area, comes increased movement of people and goods. The number of trips that both begin and end within the Study Area will increase as a percentage of the total number of Study Area trips.

In 1988 there were 873,000 person trips beginning or ending in the Study Area.²⁴ By 2010 this number is projected to increase by 67 percent to 1,457,000 trips. Consistent

²⁰ The transportation need for the I-5 to 99W Connector is described in considerably greater detail in the I-5/99W Technical Report, incorporated herein by this reference. That document also explains the reasons why alternative modes, transportation system management and improvements to existing facilities, alone or in combination, cannot reasonably accommodate the identified transportation need. This identified need and the inadequacy of alternatives is confirmed and further explained in the Høglund letter, also incorporated herein by this reference.

²¹ The Western Bypass Study was based on a 2010 design year and existing comprehensive plans. See Recommended Alternative Report at 6. The 2010 forecasts were subsequently updated to incorporate Metro year 2015 population and employment projections and reflect Region 2040 Growth Concepts. See Høglund letter; see also Memorandum dated March 7, 1997 from Robert C. Brannan, PE, Parsons Brinckerhoff to Mark Greenfield ("Brannan memorandum").

²² Actual population and employment growth has exceeded the pace projected in year 2010 forecasts. See I-5/99W Technical Report at 18; see also Brannan memorandum and Høglund letter.

²³ I-5/99W Technical Report at 13.

²⁴ A "person trip" is a daily trip taken by one person by any mode of travel from any origin to any destination which is counted as using the regional transportation system. A work trip is a person trip with origin or destination at a place of employment. A non-work trip is a person trip which has neither an

with adopted comprehensive plans, the type and rate of growth will result in land uses within the Study Area becoming increasingly more mixed relative to today. Work-related trips are forecasted to increase by 30.8 percent between 1988 and 2010, reaching 1,226,700 daily work person trips in the Study Area by year 2010. The Study Area's share of the region's work trips are projected to increase from 19.5 percent in 1988 to 23.8 percent in 2010, consistent with the projection that the Study Area will experience more rapid growth in both population and employment than the region as a whole.²⁵

Population/Employment Growth within the I-5 to 99W Subarea

As part of the Study Area, the I-5 to 99W subarea also will grow at a fast rate. The proposed corridor for the I-5 to 99W Connector is nearest to the districts of Tualatin/Wilsonville, Tigard, and Scholls. See I-5/99W Technical Report, Figure 2. As with the larger Study Area, population and employment in these districts are forecasted to increase between 1988 and 2010. The Tualatin/Wilsonville district will experience the majority of growth among the three districts with approximately 105 percent population and 130 percent employment growth. Tigard is forecasted to have a 30 percent population and 55 percent employment growth. Scholls is projected to experience growth of about 5 percent in population and 45 percent in employment²⁶.

In terms of transportation demand, the Tualatin/Wilsonville district is expected to experience an increase in daily person trips from 1988 to 2010 of approximately 121 percent, while the Tigard and Scholls districts are expected to experience daily person trip increases of 43 and 42 percent respectively. See I-5/99W Technical Report, Table 3. Overall for the I-5 to 99W subarea, a 48 percent increase in trip volumes is anticipated.²⁷ As described below and at pages 7-12 of the I-5 to 99W Technical Report, the existing transportation system cannot accommodate this demand.

In 1995, Metro developed updated population and employment forecasts to the year 2015, incorporating land use assumptions implementing Region 2040 Growth Concepts.²⁸ The 2015 allocations assumed that growth will be occurring consistent with the 2040 concept and allocated higher densities primarily within Regional and Town Centers, station communities and corridors with anticipated good transit service.²⁹ The 2015 forecasts were interpolated to the 2010 design year to project

origin or a destination at a place of employment. Person trips include travel by auto, transit, carpool, bike or foot. See Brannan memorandum.

The rapid growth in person trips is attributable to rapid growth in population and employment and plans for future growth. These plans for future growth are recognized in acknowledged comprehensive plans and in the Region 2040 Growth Concept. *Id.*

²⁵ I-5/99W Technical Report at 13.

²⁶ *Id.* at 14. Much of the Scholls district is located outside the UGB.

²⁷ Western Bypass Study 1988 Existing and 2010 No-Build Forecasting Analyses Results, October 1990, page 22.

²⁸ Hogle letter.

²⁹ Hogle letter.

Study Area growth patterns beyond the 2010 design year.³⁰ Based on this interpolation, population and employment forecasts for the year 2010 are now projected to exceed the initial 2010 forecasts by *three and 17 percent* respectively. The combined effect of the increase in households and employment would result in approximately a *10 percent increase in person trips* over the numbers used for the analysis completed in the Western Bypass Study.³¹

With respect to the I-5 to 99W Connector, these growth adjustments in combination with changes to implement the Region 2040 Growth Concepts to the year 2015 have an even more sizable impact on volume projections. According to data contained in ODOT's Tollways Study, which incorporated Metro's 2015 forecasts, *projected Year 2015 volumes for the I-5 to 99W Connector are 35 percent greater than those projected in previous modeling for Year 2010 in the Western Bypass Study.*³²

In December, 1994, Metro adopted the Region 2040 Growth Concept into Metro's Regional Urban Growth Goals and Objectives.³³ The Growth Concept continues the policy groundwork laid out in the RUGGOs that were developed in collaboration with the cities and counties of the region and adopted by the Metro Council in 1991. The Growth Concept is an integrated set of goals and objectives which states the preferred form of regional growth and development for the Portland metropolitan region. Future growth is to be concentrated within the UGB and focused in mixed-use areas of varying size. In the Study Area, there are Regional Centers at Washington Square, Beaverton and Hillsboro. Regional Centers serve large market areas outside the central city, connected to it by high capacity transit and highways. See Figure 1.

Connected to each Regional Center, by road and transit, are Town Centers providing shopping and employment opportunities within a local market area. Town Centers are planned in Tualatin, Sherwood, King City, at Highway 217/99W in Tigard, at Murray Boulevard/Scholls Ferry Road in Beaverton, and on Farmington Road at 170th Avenue in Aloha.

Transportation improvements on appropriately functioning and designed facilities are needed in the I-5 to 99W subarea to connect and provide reasonable access to and among the Town Centers at Sherwood, King City, Tigard, Tualatin and Scholls and the Regional Center at Washington Square. As explained in Title 6, Section 1 of the Urban Growth Management Functional Plan,³⁴ focusing development in these concentrated activity centers requires the use of both (1) alternative modes of transportation to avoid unacceptable levels of congestion and (2) appropriate regional street design concepts that fully integrate transportation and land use concepts. The designs should generally

³⁰ Brannan memorandum.

³¹ *Id.* See also Hoglund letter, noting that the higher (2015) forecast does not eliminate the need for any recommendations contained in the Western Bypass Study.

³² Two Tollways Project Report; see also Brannan memorandum.

³³ Metro incorporates its RUGGOs and 2040 Growth Concept by reference herein.

³⁴ Metro adopted its Urban Growth Management Functional Plan on November 21, 1996.

form a continuum, ranging from a network of throughways (freeway and highway designs) that emphasize auto and freight mobility and connect major activity centers, to slower-speed "boulevard" designs within Regional and Town Centers that balance the multi-modal travel demands for each mode of transportation within these areas and lessen the negative effects of motor vehicle traffic on other modes of travel.³⁵ Implementation of amenity oriented boulevard treatment that better serves pedestrian, bicycle and transit travel in Regional and Town Centers is deemed "a key step in the overall implementation of the Metro 2040 Growth Concept."³⁶

By facilitating long distance, higher speed through traffic traveling between Interstate 5 and Highway 99W, the I-5 to 99W Connector removes inter-regional trips from the existing local arterial network, thereby allowing existing arterials, such as 99W and Tualatin/Sherwood Road, to properly function as boulevards in designated major activity centers.³⁷ Simply stated, both types of roadway improvements are needed to achieve implementation of 2040 Growth Concepts. The I-5 to 99W Connector provides for relatively high speed movement of people and goods into and out of the region. Through its design and function, it separates incompatible traffic such as collector/arterial traffic from regional/through traffic and minimizes the effect of traffic on alternative modes and users. It also eliminates unnecessary higher speed through traffic on more local arterials serving the designated Town Centers in Tualatin, Sherwood, King City and Tigard, thereby permitting densities in those areas to be maximized.³⁸

Analysis of the LUTRAQ Alternative as part of the Western Bypass Study confirms the need for both the I-5 to 99W Connector and improved local arterials in the I-5 to 99W subarea. Unlike the other Western Bypass Study alternatives, the LUTRAQ alternative did not determine future transportation needs based on existing, acknowledged land use plans, but instead introduced alternative, higher density "mixed use" development patterns which clustered jobs, housing and shopping near transit lines to encourage more transit ridership and reduce reliance on the automobile.³⁹ The modeled LUTRAQ

³⁵ The Boulevard design standards in Title 6 do not apply to highway facilities like the I-5 to 99W Connector whose primary function is to serve inter-regional travel, but rather to arterials located within 2040 land use types (such as Regional and Town Centers) whose function is to accommodate short, local trips. Facilities like the Connector must, however, be evaluated for congestion management strategies consistent with Title 6, Section 4.D. See Hoglund letter.

³⁶ As explained in the Hoglund letter and in detail below, the I-5 to 99W Connector is needed to serve long-distance, high speed inter-regional travel as opposed to shorter arterial trips accessing primary Region 2040 mixed use areas.

³⁷ Hoglund letter; see also I-5/99W Technical Report at 19. As further explained in the Hoglund letter, boulevard design standards were not intended to, and do not apply to highway facilities like the I-5 to 99W Connector whose primary function is to serve through, inter-regional travel. Instead, they apply to arterials whose primary functions are to accommodate short, local trips with a minimum of through traffic and connect and access mixed use centers

³⁸ Hoglund letter.

³⁹ The transportation improvements specific to the LUTRAQ alternative included a limited number of roadway improvements from the TSM alternative, all of the improvements in the No-Build alternative, increased feeder and express bus service, plus additional light rail transit improvements in the Barbur corridor to Tigard, in the Tualatin corridor to Lake Oswego and Tualatin, and on Highway 217 connecting

Alternative conceptually closely resembles the 2040 Growth Concept on which the region's future growth pattern is based, in that it involved the development of compact, mixed use corridors and centers in both Tualatin and Sherwood.⁴⁰

The Western Bypass Study analysis of the transportation system in the I-5 to 99W subarea under the LUTRAQ Alternative showed that the major arterials, if not improved and without additional roadway facilities, would be congested by the year 2010 even with alternative land uses consistent with the 2040 Growth Concept. In particular Tualatin/Sherwood Road would operate at level of service F in downtown Tualatin during the PM peak hour.⁴¹ Currently, the half hours surrounding the peak hour have approximately the same traffic flow as the peak hour in downtown Tualatin. Therefore, level of service for the peak two-hour period can be projected to be at F/F in the year 2010, in excess of level of service options even for Regional and Town Centers in the Urban Growth Management Functional Plan.⁴² This deficiency reflects the need for additional transportation improvements in the I-5 to 99W subarea.⁴³

Need for the I-5 to 99W Connector⁴⁴

The Transportation Planning Rule, at OAR 660-12-005(27), defines "regional transportation needs" as "needs for movement of people and goods between and through communities and accessibility to regional destinations within a metropolitan area, county or associated group of counties." The I-5 to 99W Connector would serve regional transportation needs by enhancing the movement of traffic through the subarea, by improving access to regional population and employment centers in Washington, Clackamas and Multnomah counties, by providing better linkages on

Beaverton, Tigard and Tualatin. The Metro 2040 Growth Concept reflects many of the land use concepts that were part of the LUTRAQ alternative. See Recommended Alternative Report at 23. Many of the transportation improvements in the LUTRAQ alternative are included in the WBS Recommended Alternative, including the roadway improvements in the TSM alternative, demand responsive transit and transportation demand management.

⁴⁰ Brannan memorandum. The 2040 Growth Concept compares favorably with the LUTRAQ option in minimizing traffic demand for the area. Both plans assume higher densities, identified mixed use areas, control parking, and assume better pedestrian and transit environments than were considered in the 2010 forecast. See Hogle letter.

⁴¹ Alternative Analysis Report, Table 5.1-1.

⁴² I-5/99W Technical Report at 19; Brannan memorandum.

⁴³ According to Metro staff, the updated 2015 population projections and application of the Region 2040 Growth Concepts indicate even more of a need for the I-5 to 99W Connector than under the Western Bypass Study 2010 analysis. Hogle letter.

⁴⁴ As used in this section and throughout these findings, "I-5 to 99W Connector" refers to the facility described at the beginning of these findings, i.e. a four lane, limited access highway, approximately three to four miles in length, to be located in the corridor identified in Figure 1 and with a capacity to accommodate approximately 3000 vehicles per hour per direction. The specific alignment will be determined by ODOT following preparation of a design-level (Tier II) environmental document in a manner consistent with federal requirements set out in the National Environmental Policy Act and implementing regulations, including public and agency involvement processes and opportunity for public comment. This process also will require ODOT to address and show compliance with all applicable local government and agency ordinances, regulations and permit requirements, including provisions for mitigation of adverse impacts.

existing roads connecting and serving Town Centers in Sherwood, Tualatin, Tigard, King City and Scholls, and by providing access to new recreational destinations of regional and even national importance, including the Tualatin River National Wildlife Refuge.

The I-5 to 99W Connector also would serve "state transportation needs", which the TPR defines as "needs for movement of people and goods between and through regions of the state and between the state and other states." OAR 660-12-005(28). Like Interstate 5, Interstate 84, the Sunset Highway, US 26 east, and US 30 north, the I-5 to 99W Connector would be a principal arterial, designed primarily to serve long-distance, high-speed, interstate, statewide and inter-regional travel.⁴⁵ By connecting two key elements of the state transportation network, I-5 and Highway 99W, the facility would provide linkages to highways and destinations beyond the Portland metropolitan area, including Yamhill County and the Oregon coast.

Upon incorporation into Metro's RTP and local comprehensive plans, the I-5 to 99W Connector is expected to become part of the National Highway System (NHS), replacing 99W through Tigard, Tualatin and Sherwood as the principal arterial to serve major travel destinations, particularly inter-regional travel,⁴⁶ and the Access Oregon Highways (AOH) system, which "was designed to establish a logical and effective system of highways to link major economic and geographic activity centers to each other, to other high level highways, to ports, and to other states."⁴⁷ See 1991 Oregon Highway Plan ("Highway Plan") at C-1 through C-5.⁴⁸

As explained in Table 5 and the text at pages 39-41 of the I-5/99W Technical Report, the majority of trips using the I-5 to 99W Connector would be longer distance statewide or regional trips as opposed to local trips accessing local neighborhoods or mixed use centers. According to select link analysis completed during the Western Bypass Study,

⁴⁵ Hoglund letter. This functional need has been adopted by resolution by both Metro Council and Metro's Joint Policy Advisory Committee on Transportation (JPACT) in 1996 and is not likely to change with further development of Metro's TSP. *Id.*

⁴⁶ *Id.* The NHS purpose is to provide an interconnected system of principal arterial routes which will serve major population centers, international border crossings, ports, airports, public transportation facilities and other major travel destinations; meet national defense requirements; and serve interstate and inter-regional travel." *Id.*

⁴⁷ By its inclusion in the AOH program, the I-5 to 99W Connector becomes part of a network intended to move through traffic safely and efficiently through and between geographic and major economic areas within Oregon, between Oregon and adjacent states, and to and through major metropolitan areas. AOH Policy Goal, Highway Plan at C-2. Under Highway Plan AOH implementation strategies, operating speeds along AOH highways will in general be at least 45 miles per hour in higher density urban areas. *Id.* In metropolitan areas, AOH highways serve a dual role of providing for traffic passing through an area as well as for trips remaining in the area. However, the through travel function retains priority in such circumstances. *Id.*

⁴⁸ The Highway Plan recognized a transportation need for a transportation facility of statewide significance in this area, but it deferred determination of the specific transportation mode to meet that need. Highway Plan at C-5. The I-5 to 99W Connector is the specific mode determined and recommended by ODOT to meet that identified need.

by the year 2015 approximately 27 percent of all peak hour trips on this facility⁴⁹ are expected to be "through" (inter-regional) trips.⁵⁰ The average trip length of all vehicles using the facility would exceed 16 miles.⁵¹ Existing arterial roadways in the corridor area are or will be heavily congested, are needed to serve more local transportation purposes, or do not continue far enough to provide effective connections between I-5 and 99W for these longer distance trips. The limited access configuration for the I-5 to 99W Connector was recommended as the best configuration for the longer distance trips expected to use the facility.⁵² Full access facilities in the corridor area, such as Tualatin Road and Tualatin/Sherwood Road, could then better provide local trip alternatives.⁵³

To fully understand the transportation need for the I-5 to 99W Connector, it is important to understand the transportation deficiencies in the I-5 to 99W subarea from Tigard in the north to Sherwood and Tualatin in the south.⁵⁴

Currently, Tualatin Road, Durham Road and Tualatin/Sherwood Road are the only roadway connections between I-5 and Highway 99W in the southern end of the Western Bypass Study Area which are designed or intended to accommodate through traffic.⁵⁵ *Without the I-5 to 99W Connector, traffic conditions on portions of these full-access roadways will deteriorate to Level of Service (LOS) "F"⁵⁶ during the PM peak hour, even with committed improvements.*⁵⁷

Without the I-5 to 99W Connector, downtown Tualatin will continue to experience significant congestion. Level of service in downtown Tualatin along Tualatin/Sherwood Road is projected to worsen to a LOS F for both hours of the peak two-hour period.⁵⁸ The intersection of Boones Ferry Road with Tualatin/Sherwood Road already has high PM peak hour traffic demand on all approaches. This intersection will cause a

⁴⁹ Peak hour trips are a reasonable indication of average daily trips. Typically these type of through trip volumes continue through the day, while shorter trips are more prevalent during the peak hour. See Brannan memorandum.

⁵⁰ Through trips are trips that begin and end outside the region. Regional trips have at least one trip end that begins or ends inside the region.

⁵¹ See I-5/99W Connector Technical Report at 41. A trip length is the distance from an origin to a destination. If a trip goes outside the region, only the length within the region is included. *Id.*

⁵² This configuration also is consistent with existing RTP policy. See Heglund letter.

⁵³ *Id.*

⁵⁴ The evaluation of deficiencies within the Study Area was based on an examination of PM peak-hour levels of service using Metro's regional forecasting model (EMME-2) as documented in the WBS Statement of Purpose and Need. Analyzing travel demand and deficiencies during the peak hour is an industry standard. See Brannan memorandum.

⁵⁵ I-5/99W Technical Report at 9.

⁵⁶ Level of Service is described in footnote 18. For a more detailed discussion of LOS, see Appendix A of the I-5/99W Technical Report.

⁵⁷ I-5/99W Technical Report at 9. Committed improvements under the No-Build Alternative include widening Durham Road to three lanes, widening Tualatin-Sherwood Road to three lanes between 99W and Avery, and widening Tualatin-Sherwood Road to 5 lanes between Avery and Boones Ferry Road. The WBS Recommended Alternative Report also recommends widening Tualatin Road to three lanes.

⁵⁸ I-5/99W Technical Report at 19; Brannan memorandum.

significant time travel constraint for through trips. Year 2015 traffic demand projections indicate that approximately 36 percent of the PM peak hour westbound trips turn at Boones Ferry Road.⁵⁹ This heavy turning movement will result in increased delay for opposing flow and a general increase in delay for *all* traffic serviced at this location. The proximity of the Boones Ferry/Tualatin-Sherwood intersection to the I-5 Tualatin interchange currently results in the traffic being backed up from the interchange through the intersection during the PM peak hours. This situation will not improve without the I-5 to 99W Connector.

The segment of Tualatin-Sherwood Road between I-5 and Boones Ferry Road is densely developed with commercial and light industrial uses that generate a large number of vehicle trips, including supermarkets, retail stores, banks, a hotel and general office space. A large shopping center is currently being developed at the northwest corner of the intersection of Tualatin/Sherwood Road and Boones Ferry Road, and light industrial activities and some retail uses exist on the south side of Tualatin/Sherwood Road to the west of Boones Ferry Road. Even if separate turning lanes or ramps are considered at the intersection of Boones Ferry Road and Tualatin/Sherwood Road, the traffic likely would still be backed up through the intersection from Interstate 5.⁶⁰

In all, tight horizontal curvatures of the roadway, adjacent commercial development and close proximity to the I-5 interchange at Tualatin limit the options for roadway expansion. Given all of these factors, options for roadway expansion are limited and would still result in a significant travel time constraint for through trips.⁶¹

Increasing congestion typically results in traffic diverting from minor arterials to the collector and local streets in the neighborhoods. Between I-5 and 99W, this effect was demonstrated in the analysis by data projecting that peak hour vehicle miles traveled on minor roadways would be 11 percent higher in the No-Build Alternative than for the WBS Recommended Alternative.⁶² However, these local streets were not designed to accommodate these types of trips either from a capacity, maintenance or safety perspective.

Arterials are designed to carry longer length trips at higher speeds than collectors and local roads. Drivers diverting from arterials to local roads are doing so to save time and increase speed relative to a congested arterial. Local and collector roads, however, are designed for slower speeds, have shorter sight distances and more pedestrians and bicyclists. Pedestrians and bicyclists will become even more prevalent as the Region 2040 Growth Concept is developed. In addition to safety concerns related to increased traffic and speed, neighborhood infiltration causes a capacity problem where

⁵⁹ Two Tollways Projects Report.

⁶⁰ I-5/99W Technical Report at 10.

⁶¹ *Id.* at 9-10.

⁶² Recommended Alternative Report, Table 7 at page 28.

drivers seek to re-enter the arterial network system because these intersections were designed to serve local volumes, not pass-through traffic.⁶³

The designation of the I-5 to 99W Connector as a four lane limited access facility is based on its projected use primarily by inter-regional and regional trips. A limited access facility is warranted to implement and preserve the primary arterial function of the roadway.⁶⁴ With a limited access facility, adequate operating speeds consistent with applicable provisions of the 1991 Oregon Highway Plan, the Oregon Transportation Plan (Appendix F) and Title 6 of Metro's Urban Growth Management Functional Plan can be maintained to service the regional and through trips projected to use the facility, including trips moving freight through the region.⁶⁵ This will require grade separation from local north-south roadways, thereby providing the benefits in operating speed.

Although a four-lane designation builds in excess capacity to the year 2010, the need for that excess capacity is realized by the year 2015.⁶⁶ Using Metro's current model as applied to the Tollways Study, the projected year 2015 PM peak hour volumes for the I-5 to 99W Connector would be approximately 3680 vehicle trips per hour, with 1940 vehicles traveling westbound and 1740 vehicles traveling eastbound. These numbers support a four-lane roadway. A two-lane roadway will not operate at acceptable levels of service with this demand based on standards in the Oregon Highway Plan or Regional Transportation Plan.⁶⁷

Without the I-5 to 99W Connector corridor, select link analysis indicates that for the 3680 total PM peak hour trips, approximately 1200 vehicles would be diverted onto Tualatin/Sherwood Road, 1000 vehicles onto 99W, and 400 vehicles onto Tualatin

⁶³ I-5/99W Technical Report at 10. For the WBS Recommended Alternative, peak hour volumes on Durham Road, Tonquin Road, Martinazzi Avenue and Tualatin Road would be 20 percent, 35 percent, 12 percent and 10 percent less, respectively, compared to the No-Build Alternative. These numbers were obtained from Metro modeling output. It is assumed that the same trend would continue, to a lesser extent, on the local and collector streets that are not included in the model. *Id.*

⁶⁴ Hoglund letter. AOH Implementation Strategy 1.3 expressly recognizes that in metropolitan areas, AOH facilities may play a dual role of providing both "for traffic passing through the area and for trips made to solely within the area." The Western Bypass Study found that some local trips may travel on this facility. See I-5/99W Technical Report, Table 5. However, in these cases, the priority of accommodating a high level of service for through travel may not be reduced. See Highway Plan at C-2.

⁶⁵ Hoglund letter. As earlier noted, Title 6 of the Urban Growth Management Functional Plan distinguishes between "freeway" designs that emphasize auto and freight mobility and serve the needs of through travel, and "slower-speed boulevard designs" within concentrated activity centers that balance the multi-modal travel demands of each mode of transportation within these areas.

⁶⁶ See Brannan memorandum. Metro staff also concurs with this conclusion, noting that the demand for the facility is heightened by the increases within Metro's adopted 2015 population and employment projections developed consistent with the Region 2040 Growth Concepts. See Hoglund letter.

⁶⁷ The four-lane designation also is consistent with AOH Objective 1, Implementation Strategy 1.2, which calls for long-range plans to preserve facilities to meet future traffic demand. 1991 Highway Plan at C-2. See also Hoglund letter (identifying the longer term need enables right-of-way preservation to begin early and allows growth control implementation to ensure limited access and development along and adjacent to the Connector).

Road. Approximately 500 vehicles would use local roads south of Tualatin/Sherwood Road, with the remaining trips distributed to other local roads.⁶⁸ As described elsewhere in these findings,⁶⁹ Tualatin/Sherwood Road, Tualatin Road and 99W cannot be improved beyond what is already planned for them to accommodate these additional traffic volumes. Further, shifting regional and through trips onto already congested arterials, collectors or local roads is inconsistent with the planned functions of these other roadways to serve shorter trips accessing Regional and Town Centers,⁷⁰ with regional accessibility concepts in the Urban Growth Management Functional Plan⁷¹, and with the intent of the TPR, which is to provide a roadway system in which the various elements of the roadway network serve their intended functions and operate within their intended capacities and levels of service. See, e.g., OAR 660-12-060.⁷²

Based on the above findings, Metro concludes that a transportation need exists for the I-5 to 99W Connector. That transportation need is both a regional need to move people and goods between communities within the region, and a statewide need to move people and goods through the Portland region or to other destinations in or outside the state. A limited access facility is warranted to preserve the function of the roadway to facilitate regional and inter-regional trips. A limited access facility also is consistent with the 1992 RTP and the 1996 Policy Chapter, both of which recognize the need to maintain a system of principal arterials (freeways and highways) that serve long-distance, high-speed, interstate, statewide, inter-regional travel.⁷³ Projected 2015 travel volumes support the four-lane designation. Without this new facility, arterial, collector and local streets in the I-5 to 99W corridor area will become overburdened. For reasons described below, the overburdening of streets in the corridor would seriously jeopardize Metro's ability to achieve implementation of its adopted 2040 Growth Concepts consistent with its Urban Growth Management Functional Plan.

b. Consistency with 660-12-030

To comply with OAR 660-12-070(4), the identified transportation need must be consistent with the requirements of OAR 660-12-030.

⁶⁸ I-5/99W Technical Report at 43.

⁶⁹ See discussion below addressing improvements to existing facilities.

⁷⁰ Hogle letter. Even if widened, travel speeds on these facilities during both peak and off-peak hours would be inconsistent with adopted Metro policy expectations to maintain higher speeds for external travel. *Id.*

⁷¹ See Title 6, Section 1; see also Hogle letter.

⁷² Both the Urban Growth Management Functional Plan and the TPR seek a balanced network of transportation facilities that adequately serve the various transportation needs of the urban area. Because the primary function of the I-5 to 99W Connector is to move inter-regional and regional traffic, design standards applicable to regional activity centers do not reasonably apply to the facility. See Hogle letter. Indeed, those design and level of service standards are inconsistent with the state standards for highways of statewide significance identified in the Oregon Transportation Plan. *Id.*

⁷³ 1992 RTP, p. 1-5; 1996 Policy Chapter, p. 1-23. See Hogle letter.

OAR 660-12-030(1) requires that a TSP identify transportation needs relevant to the planning area and the scale of the transportation network being planned, including state, regional and local transportation needs, the needs of the transportation disadvantaged, and needs for movement of goods and services. As earlier noted, Metro does not have a TSP, and RTP amendments to adopt a TSP are probably about a year away.

Similarly, the Western Bypass Study Recommended Alternative Report is not a TSP, even though the report incorporates many TPR requirements, particularly those encouraging a multi-modal transportation system that reduces principal reliance on the automobile. Indeed, the Western Bypass Study approach, which carefully considered a variety of transportation modes as well as transportation system management and transportation demand management, very closely parallels the type of planning exercise required by the TPR for transportation system planning.

Because the requirements in OAR 660-12-030(1) relate to a TSP, it would appear that the standard does not directly apply at this time. However, OAR 660-12-070(4) requires that exception analysis include the identification of need for the I-5 to 99W Connector which is consistent with and meets the intent of OAR 660-12-030(1). The Connector is consistent with OAR 660-12-030(1) because it is based on the Western Bypass Study Recommended Alternative Report which considered and identifies transportation needs relevant to the Study Area and the scale of the transportation network being planned.

The I-5 to 99W Connector also is needed to move goods and services. As described in the I-5/99W Technical Report,⁷⁴ freight movement is accommodated for large commercial vehicles through expansion of the State highway system, including I-5 and Highways 26, 99W, and 217. Tualatin/Sherwood Road connects 99W to I-5 through the downtown center of Tualatin. No alternative direct connection exists between I-5 and 99W to serve that freight need.

Currently, truck traffic on Tualatin/Sherwood Road represents six to eight percent of total traffic volume in the peak hour. It continues fairly constantly during the day, with even higher percentages of truck traffic during mid-day hours. This freight movement, which is not destined for downtown Tualatin but instead for I-5, I-205 and other destinations, is putting additional strain on the already congested conditions. Further widening of the existing road, which already is built to two through lanes in each direction plus turning lanes, would require additional right-of-way. No alternative direct connection exists between I-5 and 99W to serve that freight need.⁷⁵ Additional right-of-way along Tualatin-Sherwood Road within the Tualatin Town Center would undermine implementation of the Region 2040 Growth Concept, which favors high density development over very wide rights-of-ways in Town Centers, and the Urban Growth

⁷⁴ I-5/99W Technical Report at 6.

⁷⁵ *Id.*

Management Functional Plan, which favors pedestrian-sensitive boulevard designs in lieu of throughways in concentrated activity centers.⁷⁶

As explained above, ODOT's 1991 Highway Plan identifies a need for a new AOH facility in this area which would serve as a primary network for moving goods and people through and between geographic and major economic centers and to and through major metropolitan areas.⁷⁷ In accordance with adopted AOH policies, objectives and implementation measures, the I-5 to 99W Connector will play a key role in accommodating the movement of people and freight between subareas of the Portland metropolitan area and between this region and other regions of the state.⁷⁸ Without the new facility, under either current RTP or the optional Urban Growth Management Functional Plan level-of-service choices, through freight traffic will be severely inhibited given congestion on the current system. While freight level-of-service standards are still subject to adoption by the Metro Council, the current proposal for external and through freight movement, particularly on the suburban fringe, would be to allow no worse than LOS "E". Without the new facility, I-5, 99W and Tualatin/Sherwood Road would not meet that minimum level of service standard.⁷⁹

OAR 660-12-030(2) requires that Metropolitan Planning Organizations⁸⁰ preparing regional TSPs rely on the analysis of state transportation needs in adopted elements of the state TSP⁸¹, and that local governments preparing local TSPs rely on the analyses of state and regional transportation needs in adopted elements of the state TSP and adopted regional TSPs. Because this amendment does not concern the adoption of a regional TSP pursuant to the TPR, this standard does not appear to apply at this time. Even so, Metro here is adopting findings of goal compliance in support of a roadway of statewide and regional significance that Metro is requiring be added to city and county comprehensive plans. Metro's action is consistent with ODOT's 1991 Highway Plan, which identifies a need for an AOH facility in this area of the Portland region.⁸² This action also is consistent with ODOT's recommendation to amend the RTP to include the I-5 to 99W Connector to accommodate state transportation needs.⁸³ Further, when

⁷⁶ Høglund letter. Widening Tualatin/Sherwood Road through Tualatin or 99W through Tigard and King City, is not an option. Such widening would result in arterials requiring an approximate 140 foot cross-section. That cross-section would need to accommodate all modes and function of traffic and would result in significant potential for modal and functional conflicts. The 140 foot cross section would also create a physical barrier for pedestrians within Town Centers and result in a visual separation between buildings. The latter conflicts with the compact urban form principal for Town Centers.

⁷⁷ AOH Goal, Highway Plan at C-2.

⁷⁸ Highway Plan at C-1 to C-5.

⁷⁹ Høglund letter.

⁸⁰ Metro is a Metropolitan Planning Organization.

⁸¹ The 1991 Oregon Highway Plan is an adopted element of the state TSP.

⁸² As previously noted, the adopted 1991 Highway Plan identifies a transportation need for an AOH facility within the Western Bypass Study Area. Highway Plan at C-5. However, the Highway Plan deferred action on the selection of the appropriate mode to meet that need. This action implements ODOT's recommendation identifying the I-5 to 99W Connector as the transportation mode meeting that identified need.

⁸³ See OAR 660-12-015(2)(b), requiring coordination between Metro and ODOT. This current action is proceeding at the request of ODOT.

the affected cities and counties prepare their TSPs, they may rely on these findings to support inclusion of the I-5 to 99W Connector.

OAR 660-12-030(3) requires that local and regional transportation need determinations within urban growth boundaries be based on 20-year population and employment forecasts and distributions which are consistent with acknowledged comprehensive plans and Goal 14 urbanization policies. As explained in the I-5/99W Technical Report and the Høglund letter, although the Western Bypass Study was based on a 2010 design year and existing comprehensive plans, Metro since has updated its population and employment forecasts to the year 2015. The 2015 forecasts reflect local comprehensive plan amendments adopted subsequent to the commencement of the Western Bypass Study. These forecasts also reflect the Region 2040 Growth Concept. With respect to the I-5 to 99W Connector, these growth adjustments, in combination with land use changes, have a sizable impact on traffic volume projections. As earlier noted, the projected Year 2015 volumes for this facility are 35 percent greater than those projected in previous modeling for Year 2010.⁸⁴

Metro's adopted 2040 Growth Concept states the preferred form of regional growth and development in the Portland metropolitan region.⁸⁵ Consistent with Goal 14 urbanization provisions encouraging urban development on urban lands prior to conversion of urbanizable lands, this preferred urban form concentrates growth within Metro's existing UGB, focusing it in existing urban mixed use areas of varying sizes. Those mixed use areas include Regional Centers planned at Washington Square, Beaverton and Hillsboro and Town Centers planned at Sherwood, Tualatin, King City, Tigard, Murray Boulevard at Scholls Ferry Road, and Aloha.

The determination of regional need for the I-5 to 99W Connector is based not only on Metro's Year 2015 population and employment projections, but also on the need to connect and provide reasonable access to and among mixed use Town Centers, Regional Centers and the Central City on appropriately functioning facilities designed in a manner that is consistent with adopted regional urbanization strategies. The I-5 to 99W Connector provides two basic functions. First, it provides for inter-regional passenger and freight movement and for longer distance regional trips.⁸⁶ Second, by segregating through traffic from local traffic, it allows lower-level arterials such as

⁸⁴ I-5/99W Technical Report at 18.

⁸⁵ Metro's 2040 Growth Concept was acknowledged by LCDC order.

⁸⁶ Chapter 1 policy directs that relatively high speeds be maintained for inter-regional traffic. The current level of service for such traffic is LOS "D". However, service levels and standards are being reviewed as part of the RTP update. Based on factors such as the 2040 Growth Concept, RTP functional classifications and the planned availability of alternative modes (particularly good transit), these levels may vary throughout the region. Early RTP analysis suggests that LOS "E" may be an acceptable standard for through, inter-regional routes in urban areas during the peak period. However, a standard below LOS E is unlikely. An LOS of E would result in operating speeds of between 30-46 miles per hour on expressway/freeway type facilities serving inter-regional traffic. The I-5 to 99W Connector is necessary to achieve that minimal operating characteristic based on the analysis shown in the Western Bypass Study. See Høglund letter.

Tualatin-Sherwood Road and Highway 99W north of Sherwood to function properly as arterials to connect and provide access into adjacent and nearby Town and Regional Centers.⁸⁷

In addition, arterials such as Tualatin-Sherwood Road and Highway 99W through Tigard will be subject to Boulevard Design Standards as described in Title 6, Section 2 of Metro's Urban Growth Management Functional Plan. Boulevards are intended as slower speed facilities providing direct motor vehicle and transit access into Regional and Town Centers and allowing for safe, convenient bicycle and pedestrian circulation within those centers.⁸⁸ The use of Boulevard Design substantially furthers regional urbanization objectives for developing pedestrian and bicycle friendly mixed use Regional and Town Centers.⁸⁹ To the contrary, widening these arterials to accommodate through traffic that otherwise would be carried by the I-5 to 99W Connector would make the boulevard areas of these roads much less pedestrian and bicycle friendly and increase the operation of these roads as *barriers* through the middle of mixed use areas. Creation of barriers to pedestrian friendly mixed use areas would make it more difficult for the region to attract population to Regional and Town Centers and achieve the desired urban form. With the I-5 to 99W Connector, the system is more balanced.⁹⁰

Under OAR 660-12-030(4), calculations of local and regional transportation needs are to be based upon accomplishment of the requirements in OAR 660-12-035(4) to reduce reliance on the automobile. Specifically, OAR 660-12-035(4) requires Metro to design its TSP to achieve a 10 percent reduction in vehicle miles traveled per capita (VMT) in 20 years.

Again, Metro has not yet adopted its regional TSP pursuant to the TPR, and this action is not intended for that purpose. Moreover, the VMT standard necessarily must be applied on a regional system planning basis rather than an individual project development basis, and there is nothing in the standard that precludes a single project even from increasing VMT provided the TSP, as a whole, has an overall effect of reducing VMT.

The question of how the VMT standard applies prior to adoption of a regional TSP is addressed in a December 9, 1991 letter from Larry Knudsen, Assistant Attorney General, to Michal A. Wert, Highway Division. As reproduced at Appendix F of the

⁸⁷ The accommodation of high levels of through traffic on lower level arterials accessing mixed use centers is not envisioned and, in fact, conflicts with the concept for Town Centers. See Hoglund letter.

⁸⁸ *Id.*

⁸⁹ Under the 2040 Growth Concept, densities in Town Centers should jump from a 1990 level of 23 persons per acre to about 40 persons per acre when fully developed. Town Centers are seen as changing away from auto-oriented development and traffic to a more transit and pedestrian-friendly character. See Hoglund letter.

⁹⁰ *Id.* See also Title 6, Section 1 of the Urban Growth Management Functional Plan.

Western Bypass Study Land Use Technical Report (August 1994), that letter states in pertinent part:⁹¹

"OAR 660-12-035(4) establishes objectives for the reduction of vehicle miles traveled (VMT) in Metropolitan Planning Organization (MPO) areas. There has been some question about whether the numerical reduction objectives apply to individual transportation projects and whether they apply at all to ODOT.

"In my opinion, the objectives do not apply directly to individual projects. Rather, they are to be applied over an entire planning area and over a specific (10 and 20 year) time period. In other words, a TSP may include a project that fails to reduce (or even increases) VMT so long as the plan, as a whole, is designed to achieve the objective.

"The rule does not expressly apply to ODOT. By its terms, only 'regional and local TSPs shall be designed to achieve' VMT reduction objectives. Indirectly, however, the rule does affect ODOT. For example, VMT reduction objections [sic] must be considered when calculating local and regional needs in the preparation of a plan. OAR 660-12-030(4). Similarly, under the state agency coordination program, ODOT's actions (with respect to programs affecting land use) must comply with the statewide goals and be compatible with local land use plans. *Unless a project is authorized by acknowledged local plan provisions, ODOT should consider whether a proposed land use action would make it impracticable for the MPO to achieve its VMT objectives.*" (Emphasis added.)

The Western Bypass Study identifies and recommends, on a *subregional* basis, various alternatives that the region can use to reduce per capita VMT. These alternatives include a substantially improved transit system (include demand responsive transit), transportation demand management, and changes to land uses such as those identified in the adopted 2040 Growth Concept. When it adopts its TSP, Metro will be considering these and other mechanisms on a *regional* basis, consistent with the rule. Also, Metro will consider how VMT is to be measured, i.e. which trips reasonably should be included or excluded in the calculation. The TPR is not precise on this issue.

With regard to the I-5 to 99W Connector, one could argue that given its primary function to provide for long-distance, high speed inter-regional passenger and freight movement, the facility cannot help but increase VMT. However, for several reasons that conclusion is not so readily apparent. First, as previously noted, approximately 27 percent of trips traveling along this facility will be trips beginning and ending *outside* the

⁹¹ Appendix F to the Land Use Technical Report is a memorandum from Mark J. Greenfield to Robert C. Brannan entitled "Application of Statewide Goals and Transportation Planning Rule to Western Bypass Study." The VMT standard is discussed at pages 33-37 of that memorandum.

metropolitan area. At least to the extent it serves these external, out-of-region trips, the roadway does not serve "regional or local transportation needs" and would not appear subject to the VMT standard under the plain language of OAR 660-12-030(4).

Second, while the identified need for the I-5 to 99W Connector admittedly includes a regional element (to move people and goods between and through communities and to regional destinations), the new roadway concurrently would serve the critical function of facilitating implementation of Metro's 2040 Growth Concept which itself helps *reduce* VMT per capita by providing employment and shopping options in much closer proximity to where people live and work. This conclusion is borne out by the LUTRAQ study. As made clear by the I-5/99W Technical Report, if this new roadway is not built, traffic that otherwise would use this facility instead will either move on other arterials (like Tualatin-Sherwood Road, Highway 99W and Tualatin Road) that will be over capacity, or it will detour onto collector and local streets not designed to accommodate through traffic. Particularly given the predominant inter-regional and regional nature of the trips using the facility, it would be speculative to assume that travel along such circuitous routes would yield less VMT per capita than would result from travel along the new roadway. What is not speculative, however, is that the alternatives to the new road, including further widening of Tualatin-Sherwood Road, would substantially inhibit the region's ability to implement the 2040 Growth Concept by creating barriers to achieving a more compact and pedestrian-friendly urban form. See Hoglund letter.

In conclusion, while the new road, individually, might not reduce VMT per capita based on its intended function, mode and planned capacity, one cannot reasonably conclude from this that the I-5 to 99W Connector would increase VMT or otherwise make it "impractical" for Metro to achieve the VMT standard in the rule on a regionwide basis. This is particularly so given the high percentage of through and regional trips using the facility, the ability to significantly improve transit service in the region (including light rail, express bus and demand responsive transit),⁹² the availability of TDM measures that have been shown to substantially reduce single occupancy vehicle work trips in the Study Area,⁹³ and implementation of 2040 Growth Concepts which should help reduce the number and length of vehicle trips per capita.⁹⁴

c. Inadequacy of Alternatives

The I-5 to 99W Connector is only one component of the recommended transportation solution for the Western Bypass Study Area. Included also are extensive alternative mode and transportation demand management measures, in addition to improvements to existing facilities.

⁹² Many vehicle trips may be absorbed by transit as a result of the increase in transit coverage from 64 to 99 percent of the Study Area. See I-5/99W Technical Report at 20.

⁹³ *Id.* at 30-31. See also Hoglund letter.

⁹⁴ See OAR 660-12-035(2), which requires local governments in the Metro area to evaluate alternative land use densities, designations and designs that increase residential densities near transit lines and major employment areas and generally bring people closer to where they work and shop.

Numerous alternatives to the I-5 to 99W Connector were considered in arriving at the WBS Recommended Alternative. The Study analyzed whether additional transit spines or other types of transit service (such as commuter rail or heavy rail), either separately or in combination, could address the need. Although the WBS Recommended Alternative includes extensive improvements to transit service, additional transit beyond that identified in the WBS Recommended Alternative still would not preclude the need for the new roadway facility.

Alternative Modes of Transportation

Introduction

Both supply and demand factors influence people's mode of travel. The land use patterns in the Western Bypass Study Area are characterized by origins and destinations that are, overall, relatively dispersed. The road system, serving both buses and cars, is not a complete grid system such as is found in many parts of Portland. Because of the many geographic constraints, the road network is discontinuous. It is thus difficult to serve many parts of the Study Area efficiently with fixed route transit.

Despite these potential constraints and limitations, the Western Bypass Study conducted an extensive technical and public process to develop, evaluate, refine and recommend a balanced transportation system. Alternative modes studied included bus and rail transit, demand responsive transit, high occupancy vehicle facilities, ride-sharing, and bicycle and pedestrian travel. In addition to the I-5 to 99W Connector and improvements to existing road facilities, the WBS Recommended Alternative includes extensive alternative mode and transportation demand measures.

Under the Recommended Alternative, total Study Area vehicle trips are projected to be reduced by nearly four percent, with a corresponding reduction in work-related vehicle trips of nearly 17 percent.⁹⁵ This overall reduction in vehicle trips supports the conclusion that auto usage will decrease when compared with the No-Build Alternative. Many of these vehicle trips may be absorbed by transit as a result of the increase in transit coverage from 64 to 99 percent of the Study Area.⁹⁶

As noted above, the I-5 to 99W Connector will serve a variety of trip types and purposes, including through with destinations outside the region, regional trips and local trips. Analysis completed in the Western Bypass Study, and subsequent analysis completed for the Tollways study, demonstrated the need for this facility to serve this range of trips. The analysis in the Western Bypass Study demonstrated that even with the other transportation modes, services, and programs as included in other

⁹⁵ I-5/99W Technical Report at 20.

⁹⁶ *Id.*

alternatives analyzed, this new roadway still is needed to serve the travel demand for existing and planned growth.⁹⁷

The Western Bypass Study also demonstrated that, for the subarea in and near the proposed I-5 to 99W Connector corridor, the alternative modes, programs and services in the WBS Recommended Alternative will provide a solution to the identified need only if they are combined with this new road. Furthermore, other additional alternative modes, roadway improvements, programs and services would not replace the need for this new road.⁹⁸

Alternative Modes Considered

The Western Bypass Study evaluated a broad range of bus and rail transit and high occupancy vehicle (HOV) facilities as transportation alternatives to the private automobile within the Western Bypass Study Area, including the I-5 to 99W subarea. Modes considered included paratransit, conventional and express bus operations, enhanced bus and HOV techniques, smart vehicle technology, people movers, light rail transit, commuter rail, railbus, automated guideway transit, heavy rail and high speed rail.⁹⁹ These modes primarily operate to move or carry people rather than commercial goods.

Of these, the most appropriate modes for the Study Area were identified as those providing urban/regional type service. Such modes typically serve metropolitan areas, have numerous stops, and operate at low to medium speeds. Other modes which provide shorter connections (short haul) as a support to the urban regional type service also were considered to have potential application. Based on these service requirements and the results of the analysis of the existing and future transit conditions within the Western Bypass Study Area, several modes were identified as the most applicable and effective for consideration in developing strategies.¹⁰⁰ These modes are paratransit (including demand responsive transit and pre-arranged ridesharing), conventional and express bus, enhanced bus (transitway) and HOV techniques, and light rail transit. These modes are enhanced by a network of suburban transit centers and park-and-ride facilities.

Paratransit technologies, which share characteristics of both traditional fixed route transit modes and the private automobile, offer the flexibility to develop a family of services to meet the variety of market needs within an urban, rural, or suburban environment. Conventional bus and express bus operations can provide service levels ranging from local circular routes to service levels approaching semi-rapid

⁹⁷ Id. at 20-21; See also Alternatives Analysis Report, May 1995.

⁹⁸ The inability of alternative modes, programs and services to meet the identified statewide and regional transportation needs to move people and freight between and through regions and communities and provide accessibility to Regional and Town Centers is addressed in greater detail at pages 21-30 of the I-5/99W Technical Report, incorporated herein by reference.

⁹⁹ Western Bypass Study Alternative Transportation Technology Report, January 1991.

¹⁰⁰ The modes deemed not effective were not further analyzed as part of the study.

transit. These all-bus systems can serve low-volume suburban routes as well as high-volume suburban commuter routes. **Enhanced bus and HOV techniques** offer a number of methods for upgrading and enhancing conventional and express bus service, and for encouraging carpooling. These methods include transit-exclusive ramps onto major roads, traffic signal prioritization, transit-only lanes, and HOV lanes.

Light rail transit (LRT) has been shown to be a more attractive alternative to the other identified less transit-intensive modes, supporting planned growth patterns. Existing and current projections for future population densities within the Study Area are similar to those in the Westside LRT Corridor. Furthermore, an expansion of the existing LRT network would be in keeping with the long range regional light rail plan.

Other transit intensive modes were found to be less effective due to a number of factors including operational constraints and capital cost limitations. These modes include people movers, smart vehicle technology, commuter rail, automated guideway transit, heavy rail and high speed rail. These modes were determined difficult to integrate with the existing regional light rail network, and would thus create additional service and operating expenses if implemented as part of the current regional transit system.

High speed rail and people movers, including monorails, were eliminated from further evaluation and analysis because it is unlikely that these systems could efficiently serve the transit needs of the Study Area. Generally, people mover technologies are intended for short haul type service only, the type found in amusement parks and airports. People movers function best when the service is intended to be of a shuttle nature, rather than regional, as would be needed to serve a larger and dispersed geographic area.

High speed rail could provide effective inter-urban service between dispersed nodes of high density development. Minimum spacing between stations for such system, assuming that top speeds are attained, are between 8 and 10 miles. Typical spacing between high speed rail stations is on the order of 20 to 30 miles.

Likewise, **heavy rail and commuter rail** systems are also intended to provide service to longer distance travelers. Though the minimum spacing between transit stations for these two technologies is significantly less than that for high speed rail, it is still typically longer than what would be required to serve the majority of the identified demand for regional trips and connections between Town Centers. As demonstrated in the discussion below for commuter transit service, the demand in the subarea is not consistent with these various transit technologies.

Most of the rail type options, including **automated guideway transit** but with the exception of light rail transit (LRT) and commuter rail, would be difficult to integrate with the existing Tri-Met service in the Portland region. This is a significant factor because the Portland region has chosen light rail transit as the preferred transit intensive technology for the area. To implement and integrate a different form of rail transit such

as heavy rail, automated guideway transit, or people mover technology, substantial investment would be required for new maintenance facilities and other capital intensive requirements. It is unlikely that such a new system would be compatible with the existing LRT networks, requiring completely separate tracks, control systems, and other technology specific equipment. Commuter rail, although differing from the existing LRT network, could operate independently from LRT, sharing maintenance facilities with existing freight rail operations in the Portland region. For this reason, compatibility of commuter rail for longer distance service with the existing transit system would be less difficult to achieve

Commuter Transit Service

Commuter transit service was considered, but due to the small amount of demand it could accommodate relative to the identified need, it was not evaluated or advanced for further study.¹⁰¹

Combining estimated local/express transit ridership and intercity/commuter ridership, it was determined that a total of 250-375 trips would be served by all transit modes in the peak hour. This corresponds to approximately 7-10 percent of the peak hour bi-directional flow of 3680 vehicles forecast for the year 2015. This is a number twice the transit mode share for Washington County today. Thus, it is an ambitious estimate of potential transit ridership in the future.

While the number of commuter transit trips would thus be meaningful, it would not make a significant impact on overall levels of service in the I-5 to 99W corridor, nor would it reduce significantly the number of trips forecast to be made by automobiles. Accordingly, commuter transit service does not eliminate the need for the I-5 to 99W Connector.

Transit Intensive Strategy¹⁰²

The Western Bypass Study evaluated a transit intensive strategy. Key elements of that strategy included expanded transit service improvements to support LRT corridors, a Barbur Boulevard LRT corridor with a southern terminus at I-5/Highway 217, a Highway 217 LRT corridor connecting the Barbur and Westside LRT corridors, transportation demand management, demand responsive transit, and land use changes to complement transit improvements.

Analysis showed that although this strategy would result in better transit use throughout the Study Area, in and of itself it was not successful at reducing congestion in the Study Area as compared to the No-Build strategy. Not enough trips could be transferred from

¹⁰¹ Estimates of travel demand include trips from areas outside the region. However, they are not precisely coded in the Metro Regional Transportation model to specific local origins or destinations outside Metro's traditional regional modeling area. See I-5/99W Technical Report at 23.

¹⁰² See WBS Transportation, Traffic and Safety Technical Report, August 1994, at 25.

auto to transit to reduce congestion to acceptable levels. For example, at PM peak hours Durham and Tualatin Roads are expected to operate at LOS F under the No-Build Alternative and under the Transit Intensive Strategy.

The Transit Intensive Strategy was also looked at in combination with land use changes in the LUTRAQ Alternative. As described below, the LUTRAQ Alternative did not eliminate the need for an I-5 to 99W Connector. While the Transit Intensive Strategy was not carried forward as an alternative in the Western Bypass Study, all the components of the Transit Intensive Strategy which relate to the I-5 to 99W travel demand are included with the new I-5 to 99W Connector as part of the WBS Recommended Alternative.

Circumferential Rail Strategy¹⁰³

The circumferential rail strategy consisted of a high quality rail system operating from Forest Grove to Beaverton and from Beaverton to Tigard and Lake Oswego, all following a right-of-way currently owned by private railroad companies. The strategy also included an extension of such service across the Willamette River to Milwaukie, at which point it would follow an existing right-of-way in public ownership. The service included stops at the Gateway Transit Center where it would connect with the existing Eastside (MAX) LRT line.

This strategy was analyzed using several transportation systems performance measures which were estimated using other existing data. It was analyzed in the context of the Western Bypass Study goals and objectives and evaluation criteria which focused on accessibility, travel demand and congestion.

Fixed guideway high capacity transit service does not operate as effectively in a land use environment like the Study Area and the subarea where both origins and destinations are widely dispersed. Moreover, the alternatives in the Western Bypass Study included options for transit service which better responded to those dispersed land uses and related travel demand. These included demand responsive transit, which can provide service to any destination on a dial-a-ride basis.

Express Bus Service On Tualatin/Sherwood Road¹⁰⁴

Another significant transit intensive strategy evaluated but not recommended was the LUTRAQ Alternative. This alternative explicitly included the provision of express bus service on Tualatin/Sherwood Road. The LUTRAQ Alternative transit plan proposed this as service supporting high capacity transit service on Barbur Boulevard and Highway 217, serving Washington County as well as Downtown Portland.

¹⁰³ *Id.* at Appendix A-6.

¹⁰⁴ Alternative Analysis Report, Table 5.1-1.

Findings in the Western Bypass Study indicated that the provision of transit in connection with the LUTRAQ Alternative produced substantial numbers of transit trips (59,000 daily work trips by transit, a 240 percent increase over the No-Build, and almost 25,000 daily non-work trips by transit, a 57 percent increase over the No-Build). However, even with this improved use of alternative modes, congestion still was not adequately resolved to provide for reasonable access serving regional and through travel. This alternative resulted in unacceptable levels of congestion on Tualatin/Sherwood Road. The peak hour level of service on the facility for the forecasted year in the LUTRAQ alternative was LOS "F". This peak hour would be for a duration of approximately two hours, based on current trends.¹⁰⁵ Hence, while the number of increased transit trips would be meaningful, the change would not reduce significantly the number of trips forecast to be made by automobiles, nor eliminate the need for the new facility.

WBS Recommended Alternative Modes¹⁰⁶

The WBS Recommended Alternative includes extensive express and fixed route transit service in addition to transportation demand management measures and improvements to existing facilities. Together, these are expected to reduce work-related single occupancy vehicle use by approximately 22 percent in comparison to the No-Build.¹⁰⁷

A component of the recommendation is that full transit subsidies will be provided to all employees who work in the Study Area and ride transit to work. The combination generated a significant amount of transit ridership. *Overall, there is expected to be an increase in daily work person trips by transit of approximately 175 percent, or about 48,000 more daily work trips by transit. This is equivalent to approximately 14 percent of the total daily work person trips in the Study Area.*

Analysis showed that daily non-work trips were not significantly affected by increased transit service. Overall, non-work trips by transit were less than two percent of total non-work trips for any alternative analyzed.

Even so, congestion on Study Area corridors is expected to remain significant unless the transit improvements are combined with TDM and improvements to existing roadways and the new I-5 to 99W Connector.¹⁰⁸ For example, in the location of the I-5 to 99W area, Tualatin Road is forecast to operate at LOS F in the PM peak hour under the No-Build Alternative. These roads will continue to operate at unacceptable levels of service even if the TDM and transit improvement measures described in the WBS Recommended Alternative are implemented. Thus, although alternative modes are an important component of the WBS Recommended Alternative, alone they do not provide

¹⁰⁵ I-5/99W Technical Report at 19.

¹⁰⁶ Recommended Alternative Report at 19.

¹⁰⁷ *Id.* at page 28, Table 7.

¹⁰⁸ Alternatives Analysis Report at Table 5.1-1.

enough congestion relief to meet the objectives of the study, and they must be supplemented with other improvements.¹⁰⁹

Express transit service¹¹⁰ is included in the WBS Recommended Alternative. It consists of a Highway 217 express bus/feeder network with express stops at I-5, Scholls Ferry Road, Washington Square and the Beaverton Transit Center for a connection with the Westside LRT. The express bus service will combine the local collection from the southerly centers such as Sherwood, Lake Oswego, Wilsonville and Tualatin with the line-haul express service between Tigard and Beaverton. This service is recommended for implementation by Tri-Met as part of its Primary Transit Network for the Highway 217 corridor. The express bus service and transit stops include park-and-rides at I-5, Washington Square and Scholls Ferry Road.

This transit service supports the more intensive mixed use urban form identified in the Region 2040 Growth Concept, including the Regional Center at Washington Square. LRT along Highway 217 was evaluated as part of the Transit Intensive Strategy. The Express Transit service essentially provides similar coverage for the 2010 design horizon, and can help build the ridership demand to support the planned implementation of that LRT extension in the future. With either, however, the I-5 to 99W Connector is still needed.

Fixed-route transit service¹¹¹, which is regularly scheduled transit service on designated routes, is included as a component of the WBS Recommended Alternative. New routes developed for the WBS Recommended Alternative include those planned to support the express bus service on Highway 217. In the I-5 to 99W subarea, fixed route transit service is one of several modes identified to address the demand for travel, in addition to the I-5 to 99W Connector.

The fixed-route transit service incorporates the expansion of the feeder bus network. The expansion components are designed to support and integrate with the express bus high capacity transit element. Elements of the fixed-route transit service improvements, near the proposed I-5 to 99W Connector corridor, include a new Transit Center in Tualatin and a new park-and-ride lot at the Tigard Transit Center. Route extensions and improvements are set out in the I-5/99W Technical Report at Table 4.

The fixed-route improvements are anticipated to result in an increase in transit ridership for work trips of about *75 percent* over the No Build Alternative. This is equivalent to approximately 30,000 daily trips, which represents 9 percent of the total work person trips in the Study Area. No additional fixed route transit service was included because it would have been redundant with the Demand Responsive Transit component of the WBS Recommended Alternative.

¹⁰⁹ I-5/99W Technical Report at 26.

¹¹⁰ *Id.*; See also Alternatives Analysis Report at Table 5.1-1.

¹¹¹ I-5/99W Technical Report at 27; See also Alternatives Analysis Report at Table 5.1-1.

Demand Responsive Transit (DRT)¹¹² is included in the WBS Recommended Alternative. It provides service to riders when it is needed and where it is needed. It includes types of dial-a-ride, shared ride and shuttle services. It provides flexibility that fixed-route service cannot, as well as more comprehensive transit coverage. In essence, DRT provides opportunities to call a central control, be picked up anywhere within the study area, and then be delivered to a destination within the study area. *If adopted by Metro, the DRT component is expected to provide approximately 18,000 work person trips and over 4,000 non-work person trips in the Study Area. These trips correspond to 5 percent of the total work person trips and 1 percent of the total non-work person trips in the Study Area.*

The following were incorporated in modeling this element as part of the Western Bypass Study. A system of five DRT cells were mapped that covered the entire Study Area. Dial-a-ride service was provided to users within each of these cells. *Service coverage was provided to any and all destinations within a cell, including residences, offices, shopping centers, bus stops, light rail stops and transit centers.* DRT service was not provided between cells because that service would be provided by fixed-route service. DRT service is intended to be provided in addition to the expanded fixed-route transit service and express transit service.

The overall DRT program is another mode in addressing the demand for travel in the I-5 to 99W subarea, in addition to the I-5 to 99W Connector. *Since its coverage is complete, it demonstrates that the WBS Recommended Alternative has comprehensive transit service in combination with the other components of that recommendation. Any additional transit service would be redundant.*

The WBS Recommended Alternative also includes **bicycle facilities** which will provide a continuous bike route connection from the southern end of the Study Area at I-5 to the Sunset Highway.¹¹³ This bicycle route can be provided through improvements associated with the new I-5 to 99W Connector, 99W widening, and the Murray Connection between 99W and Scholls Ferry Road. Murray Boulevard north of Scholls Ferry Road to Highway 26 has an existing bike lane.

Many other projects in the WBS Recommended Alternative will include **bicycle and pedestrian improvements** as part of design development.¹¹⁴ The Highway 217 widening would also include, as appropriate, improvements to provide for bicycles and pedestrians; although pedestrian improvements may be limited to interchange areas.

Bicycle linkage is also provided on all of the roadway improvements in the WBS Recommended Alternative to provide connectivity throughout the Study Area. With

¹¹² *Id.* at 29.

¹¹³ *Id.* at 29-30.

¹¹⁴ *Id.*

these improvements bicycle and pedestrian trips will remain fairly constant at nine percent of work trips and nine percent of non-work trips. Thus this important mode of travel does not affect the need for the I-5 to 99W Connector.

Even when all of these recommended alternative transit modes are taken together, congestion on Study Area corridors still is expected to remain significant unless the transit improvements are combined with TDM, improvements to existing facilities *and the new I-5 to 99W Connector*. For example, in the I-5 to 99W subarea during the PM peak hour, Tualatin Road is forecast to operate at LOS F under the No-Build Alternative. Without the I-5 to 99W Connector, Tualatin Road will continue to operate at LOS F, even if the TDM and transit improvement measures described as part of the WBS Recommended Alternative are implemented. Thus, although alternative modes are an important component of the WBS Recommended Alternative, alone they do not provide enough congestion relief to meet the objectives of the study and must be supplemented with other improvements.

Transportation System Management Measures¹¹⁵

Transportation Demand Management is a program with elements designed to reduce the number of trips by auto by creating measurable or quantifiable differences in time or cost. TDM is included in the WBS Recommended Alternative and is a demand reduction component in the I-5 to 99W subarea.

The following were incorporated into modeling this element as part of the Western Bypass Study. Parking charges were applied to all work-related single occupancy vehicles (SOVs) parking in the Study Area. These charges were applied uniformly throughout the Study Area. No parking charges were assessed for carpools or vanpools. Full (100 percent) transit subsidies were provided for all employees who work in the Study Area and ride transit to work.¹¹⁶

TDM measures are recommended for implementation as part of a regional TDM program. The actual measures may be different than those modeled in the Western Bypass Study.¹¹⁷ Since the TDM program modeled in the Study focused on work trips, it indicates that an employer-based TDM program may be successful. The region has certain TDM programs already in place. These activities are generated from policies in

¹¹⁵ See Recommended Alternative Report at 15.

¹¹⁶ Parking charges were not included for non-work trips because research has demonstrated that an effective TDM program is focused on regular (commuter type) trips.

¹¹⁷ See Hoglund letter. Currently, the region is pursuing TDM actions such as congestion pricing, toll roads, rideshare programs, and transportation management associations. While congestion pricing seems to be the most promising alternative to reducing system demand to the level assumed in the Bypass Study, the program remains in the study stage. Metro is looking at the I-5 to 99W Connector as one alternative to be priced. In addition, Metro staff supports examining the use of tolls on the Connector in order to both fill the revenue gap and to manage demand (particularly commuter travel) on the facility. *Id.*

the RTP and focus on ridesharing and parking management. Other specific TDM tools that could be used include lane pricing and user fees.

As modeled in the Western Bypass Study, the TDM program reduces the number of SOV daily work trips in the Study Area by approximately 37,000. This is equivalent to a 15 percent reduction of SOV work trips for the total Study Area. Based on research of other TDM programs nationwide, it was projected that a Regional TDM program could generate demand reduction for work trips in the five percent range.¹¹⁸ While a specific employer or locality could potentially provide greater reductions, this five percent threshold was determined to be reasonable for the area.¹¹⁹

Currently, the region is aggressively pursuing TDM and alternative mode programs to address congestion and to comply with growth management and air quality requirements. These include the Employee Commute Options (ECO) program mandated by the adopted DEQ Air Quality Maintenance Plan. The program requires employee trip reductions by up to 10 percent for all the region's employers of 50 or more. Metro is also developing region-wide alternative mode programs as part of the RTP update which will result in recommendations on how to meet the TPR goal of reducing overall VMT per capita by 10 percent in the next 20 years.¹²⁰

In addition, Title 2, Section 2 of the Urban Growth Management Functional Plan identifies maximum parking ratios intended to reduce vehicle miles of travel. Those actions, together with other regional proposals (toll roads, congestion pricing, education programs) ensure that an aggressive TDM program component can be implemented over time. However, even together with alternative modes of transportation and improvements to existing facilities, need for the I-5 to 99W Connector will remain to serve interregional passenger and freight needs.¹²¹

Improvements to Existing Facilities

In the I-5 to 99W subarea, improvements to existing facilities were considered and a number are included in the Recommended Alternative, in addition to the I-5 to 99W Connector. Some were evaluated and not recommended because they did not address the need or demand. Others were not evaluated because they would not function in response to the identified need. See I-5/99W Technical Report at pages 31-36.

There are a limited number of existing roadways which connect I-5 to 99W. Improvements to all were considered, but only reasonable options for addressing the regional need identified were further analyzed.

¹¹⁸ Western Bypass Study Technical Memorandum, "Transportation Demand Management Measures", June 27, 1991, at 9. The Høglund letter describes the Western Bypass Study TDM analysis as "very aggressive."

¹¹⁹ I-5/99W Technical Report at 30-31.

¹²⁰ *Id.* at 31.

¹²¹ *Id.* See also Høglund letter.

Improvements to minor arterials and neighborhood streets between I-5 and 99W were not evaluated. The demand in the year 2015, in combination with other transportation modes and TDM, is for over 3600 vehicles in the peak hour. Minor capacity improvements to these streets would not address the identified transportation needs. Short connections or intersection improvements would not address the longer distance connections needed as discussed in this exceptions document. Furthermore, these types of roadways were not intended to serve through trips.

Specifically, north-south roadways such as Hall Boulevard and Boones Ferry Road are oriented in the wrong direction to be through connectors between I-5 and 99W. They can only provide parallel, non-connecting routes. Tualatin area east-west roads such as Saggert, Avery and Herman do not connect between I-5 and 99W. Even if widened, these small roads would not provide the regionally needed through connection between I-5 and 99W. If extended, these roads would not provide the needed direct connection to I-5 because there are no interchanges at their ends. The same would be true for minor roadways in Sherwood. For example, Sunset Road would not provide a through connection.

The WBS Recommended Alternative includes widening Tualatin-Sherwood Road to three lanes between 99W and Avery and five lanes between Avery and Boones Ferry Road. Widening of Tualatin-Sherwood Road beyond five lanes would conflict with the concept for Town Centers and with Boulevard Design elements contained in Title 6, Section 2 of the Urban Growth Management Functional Plan.¹²²

The language of Title 6, Section 2 clearly shows the difficulty of expanding the existing arterial configuration through the Tualatin Town Center. The standards for facilities designated as "boulevards," such as Tualatin/Sherwood Road, include, among other things, wide sidewalks, landscape strips, pedestrian crossings at all intersections and mid-block crossings where intersection spacing is excessive, bikeways, on-street parking and use of landscaped medians. While "boulevard" designations have not yet been added to comprehensive plans, the design challenge of further expanding Tualatin/Sherwood Road through the center of Tualatin and simultaneously meeting these standards would be substantial, and such expansion would be counterproductive to achieving Region 2040 implementation. As earlier noted, as well as creating a physical barrier for pedestrians, such further widening would create a 140 foot cross section that would result in significant potential for modal and functional conflicts.¹²³

The WBS Recommended Alternative includes widening Durham Road to three lanes. Durham Road does not connect to I-5 and cannot reasonably be extended through the

¹²² See Hoglund letter. Widening Tualatin/Sherwood Road to five lanes between Avery and 99W eventually may be necessary and not entirely inappropriate to serve arterial trips between the Sherwood and Tualatin Town Centers. However, widening the facility beyond five lanes would draw regional traffic to the arterial and create conflicts with the Boulevard Design elements for reasons explained in the text.

¹²³ Hoglund letter.

existing urban area to I-5. More importantly, Durham Road is north of the area in which the identified travel demand exists. Select link analysis demonstrated that if the I-5 to 99W Connector were not constructed, there would not be significant increased travel demand on this roadway. This is because little travel demand for an I-5 to 99W connector exists beyond the identified corridor limits. Simply put, the regional through demand is located farther south than Durham Road.¹²⁴

The WBS Recommended Alternative also includes widening Tualatin Road to include a median lane between 99W and Upper Boones Ferry Road. Tualatin Road does not connect to I-5 and cannot be extended through the existing urban area without displacement of significant existing commercial developments. Nor could a new connection at I-5 reasonably be constructed due to interchange spacing requirements.¹²⁵ Tualatin Road is constrained from being widened by a golf course, railroad right-of-way, and a city park. Finally, select link analysis demonstrated that less than 15 percent of the I-5 to 99W Connector travel demand could be accommodated for if this facility were upgraded to a through road. Accordingly, this existing roadway is not an option for providing a through connection or a significant capacity increase in the I-5 to 99W area.¹²⁶

The WBS Recommended Alternative authorizes the widening of 99W to potentially six travel lanes from Pfaffle Street to Commercial Street and from Durham Road to I-5. It further includes 99W intersection improvements to enhance the flow of traffic between the Town Centers of Sherwood, King City and Tigard, which 99W will serve and connect. Moreover, between Six Corners in Sherwood and Durham Road, 99W would be upgraded to a limited access highway. This would improve the PM peak hour LOS from F to D/E. 99W needs this additional capacity to reduce some of the congestion it currently experiences.

Further widening of 99W beyond that included in the WBS Recommended Alternative is not a reasonable option. 99W passes through the King City and Tigard Town Centers. Additional widening would conflict with Boulevard Design elements contained in Title 6, Section 2 of the Urban Growth Management Functional Plan that are applicable to and required to achieve the Town Center concept. As with further widening of Tualatin/Sherwood Road, such widening would create a 140 foot cross section that would result in significant potential for modal and functional conflicts.¹²⁷

Without a new I-5 to 99W Connector, there will be additional demand for travel through the Tigard Town Center on an already congested 99W. The 2015 select link analysis showed 1000 vehicles diverting to 99W in the PM peak hour if the I-5 to 99W

¹²⁴ I-5/99W Technical Report at 32. See also Two Tollways Projects Report.

¹²⁵ ODOT's preferred minimum interchange spacing is two miles.

¹²⁶ I-5/99W Technical Report at 33. See also Høglund letter (the only potentially viable alternatives that exist or are appropriate to carry the inter-regional traffic intended to be carried on the I-5 to 99W Connector are 99W and Tualatin-Sherwood Road).

¹²⁷ Høglund letter.

Connector is not built.¹²⁸ Since this Town Center is not intended to accommodate through traffic, it is important to provide the Connector to serve the identified through traffic demand.¹²⁹

Conclusions with Respect to Alternatives

As the above-described analysis demonstrates, alternatives to the I-5 to 99W Connector were exhaustively studied. For all of the reasons stated above and in the I-5/99W Technical Report, those alternatives, even in combination and even if adopted into the RTP, cannot reasonably accommodate or eliminate the identified need for the I-5 to 99W Connector. Already, transit and TDM measures are substantially incorporated into the WBS Recommended Alternative. With DRT, transit service will become available to virtually all of the I-5 to 99W subarea. Further expansion of the transit system still would not eliminate the identified need.

Additional improvements to existing roadway facilities cannot reasonably accommodate the need. Substantial improvements already are proposed for 99W and Tualatin/Sherwood, Tualatin, and Durham Roads. Some roads, like 99W and Tualatin/Sherwood, cannot be further widened to meet capacity requirements without creating modal conflicts and violating the Boulevard Design standards contained in the Urban Growth Management Functional Plan. Other roads, like Tualatin and Durham, are out of direction, out of the travel demand area, or cannot reasonably be extended to I-5 to meet the identified regional and state transportation need. Still other roads are too far removed to serve the identified need in this area.

Moreover, further widening of these roads would run contrary to the primary functions to be served by the new facility. The identified transportation need for the I-5 to 99W Connector is for a facility that (1) provides for relatively high speed movement of people and goods into and out of the region; (2) separates incompatible traffic such as collector/arterial traffic from regional/through traffic and minimizes the effect of traffic on alternative modes and users; (3) eliminates unnecessary higher speed through traffic from designated Town Centers in Tigard, King City, Tualatin and Sherwood; and (4) maintains current and anticipated RTP performance levels for principal arterials. See Høglund letter. To implement the 2040 Growth Concept, 99W, Tualatin/Sherwood Road, Tualatin Road, Durham Road, and other lesser arterials are needed to serve local transportation needs. These roads need to operate in pedestrian, bicycle and transit-friendly manners, at slower operating speeds. This result cannot be achieved by creating a single facility concurrently serving both inter-regional and local trip needs.

¹²⁸ Two Tollways Projects Report.

¹²⁹ I-5/99W Technical Report at 12. As noted in the Høglund letter, 99W's designation as a through route is proposed for change in the RTP update. As proposed, the I-5 to 99W Connector would replace 99W as the principal arterial to serve major travel destinations, particularly inter-regional travel. 99W's new primary function would be to provide access to and circulation within designated Region 2040 Town Centers, thereby accommodating short, local trips with a minimum of through traffic.

Finally, changes in land use designations, densities and designs would not eliminate the need for the I-5 to 99W Connector. The 2040 Growth Concept adopted in 1994 already reflects many of the "mixed use" land use concepts introduced in the LUTRAQ alternative. The "Regional Center" and "Town Center" concepts have the effect of clustering jobs, residences and shopping near transit lines to encourage transit use. Indeed, the 2040 Growth Concept is now the preferred form of regional growth and development and is adopted for long-term regional growth management.

The LUTRAQ LRT projects along Highway 217, Barbur Boulevard and the Willamette Shores are not part of the WBS Recommended Alternative. Express bus service, highway widening, and transit center/park-and-ride facilities are included in the WBS Recommended Alternative instead of LRT in the Highway 217 corridor for transit service improvements, because that level-of-service can address the identified demand through the year 2010. The Barbur and Willamette Shores LRT extensions did not address the needs identified for the Western Bypass Study, and therefore were not included as components of the recommendation.

The LUTRAQ Alternative demonstrated that alternative land use patterns can improve transportation performance, when combined with appropriate transportation improvements. Analysis showed an increase of more than 10,000 daily work trips and 8,000 non-work trips in this alternative over any of the other alternatives analyzed.¹³⁰ As the land uses are conformed to those envisioned in the Region 2040 Growth Concept, some of the measures for which LUTRAQ performed well (e.g. change in total Study Area vehicle trips per day) will be reflected in the implementation of the WBS Recommended Alternative.

Even with these notable improvements which can occur with land use changes, demand in the I-5 to 99W subarea will remain. Of particular concern is the congestion in the Tualatin Town Center. Without the I-5 to 99W Connector it is projected that there will be significant congestion (LOS F in excess of one hour during the PM peak period) and traffic diversion onto roadways not intended to accommodate through and regional travel.¹³¹ The result would be significantly reduced access in the I-5 to 99W subarea.

d. ORS 197.732(1)(c)(A), Goal 2 Part II(c)(1), OAR 660-04-020(2)(a) and OAR 660-04-022

ORS 197.732(1)(c)(A), Goal 2 Part II(c)(1) and OAR 660-04-020(2)(a) and -022 parallel OAR 660-12-070(4). ORS 197.732(1)(c)(A) and Goal 2, Part II(c)(1) require an exception to include reasons which justify why the state policy embodied in the applicable goals should not apply. OAR 660-04-020(2)(a) interprets these requirements by explaining that the exception should set forth the facts and

¹³⁰ Alternatives Analysis Report, Table 5.1-1.

¹³¹ *Id.*

assumptions used as the basis for determining that a state policy embodied in a goal should not apply to a specific property or situation, including the amount of land for the use being planned and why the use requires a location on resource land.

OAR 660-04-022 gives examples of the types of reasons which may justify exceptions, including demonstrated need for the activity based on one or more requirements of Goals 3 to 19 and special features of the proposed use or activity that necessitate its location on the proposed exception site.

The reasons which justify exceptions to Goals 3, 4, 11 and 14 for the I-5 to 99W Connector are stated above. Those reasons relate to Goal 12 and reflect statewide and regional transportation and growth management policies and identified statewide and regional transportation needs. Those reasons also reflect the inability of existing facilities or alternative modes to reasonably accommodate the needed four lane limited access highway. The reasons are consistent with the more specific reasons required under OAR 660-12-070(4).

It is not yet clear whether, in fact, the I-5 to 99W Connector will require a rural location. This matter will be determined during project development, when alternative alignments are considered and a specific alignment selected. However, good reasons exist for recognizing the *possibility* for portions of the I-5 to 99W Connector to be located on rural lands. Of course, when an alignment is selected, any determination authorizing any portion of the roadway to be located outside the UGB would need to be accompanied by another goal exception explaining why the facility cannot reasonably be accommodated within the UGB.

The I-5 to 99W corridor analyzed in the Western Bypass Study was originally that identified in the local comprehensive plans for Washington County and Tualatin for that portion of the proposed Western Bypass between I-5 and 99W. The width of the corridor did not then extend farther north because other existing facilities were located there, including Tualatin/Sherwood Road. Some of these facilities, including Tualatin Road, Durham Road, McDonald/Bonita and Highway 217 could be improved if the demand extended farther north.

Another new facility corridor for a new arterial was considered in the area between Tualatin Road and McDonald, referred to as the Murray Extension. However, analysis during the course of the Western Bypass Study showed that this corridor could accommodate little of the demand shown for the I-5 to 99W Connector. Analysis showed that further improvements to the north of the area in the recommended I-5 to 99W corridor would not satisfy the identified needs.

The corridor was not extended farther south because the urban area generating the demand was not located there. Furthermore, no options for new interchange connections exist on I-5 south of approximately Norwood Road.¹³²

The corridor was adjusted twice during the course of the Western Bypass Study. First, a new connection option was added directly to I-5 roughly at I-205. While this was a very controversial decision, this change was made to make it possible to subsequently evaluate, during project development, if a reasonable alignment alternative in the corridor could be developed which would not require a Goal exception.

After the Tualatin National Wildlife Refuge Environmental Impact Statement (EIS) was published, the corridor boundaries were adjusted again, approximately one-half mile northeast of the northeast edge of the proposed refuge. The change was made to make it possible to subsequently evaluate, during project development, if a reasonable alignment alternative in the corridor could be developed which would not require a portion of the Wildlife Refuge. The Tonquin Scablands Geologic area, the 100 year floodplain and associated wetlands were also significant constraints in the corridor.

The Western Bypass Study prepared an Alternatives Analysis Report as part of the Major Investment Study. The information contained in that document was essentially the same as that in a Tier I EIS. Impacts for all the individual improvements in each of the alternatives were analyzed. The study team recognized that, due to the width and types of improvements and land uses within the corridor, impacts in the I-5 to 99W Connector corridor could vary significantly depending on the alignment analyzed. They therefore selected two sample alignments with right-of-way widths consistent with that of a four lane limited access facility.

The results of the analysis demonstrated that the adverse impacts for an alignment solely within the UGB could be significant. Using Metro's RLIS mapping data base, Geographical Information System (GIS) analysis concluded that the urban alignment could result in impacts to 64 parcels while the rural alignment could impact approximately 25 parcels.¹³³ The projected differential in cost between the urban and rural right-of-way could be as much as \$40 million.¹³⁴ Project development at the alignment level will need to address whether the impacts for an alignment solely within the UGB is reasonable. Project design of this facility will need to test if mitigation is reasonable to provide measures to minimize operational impacts, support planned land uses, enhance compatibility with existing land uses, ensure compatibility with 2040 growth management and design objectives, and avoid splitting neighborhoods and local access.

¹³² ODOT's preferred minimum interchange spacing requirement is two miles. The Norwood Road overcrossing is the last location north of the existing Wilsonville interchange that could be considered for an interchange.

¹³³ Recommended Alternative Report at 37-38.

¹³⁴ Two Tollways Projects Report.

The portion of the alignment which might need to be outside the UGB can potentially be limited relative to the overall length of the I-5 to 99W Connector. The I-5 to 99W Connector could have direct impacts on agricultural or forest lands designated EFU, EFC, or AF-20, depending on the alignment chosen at the project development stage. If the alignment is outside the UGB, approximately 37 acres of farmland could be directly impacted by the limited-access facility and other improvements contained in the WBS Recommended Alternative. The farm parcels within the project corridor vary in size from five to one hundred plus acres. Some of the parcels have residential development. There could also be indirect impacts that range from the loss of crops from the local economy to the disruption of farming activities such as crop spraying and harvesting.

The I-5 to 99W Connector could create pressures to allow land uses around interchange locations that differ from the planned land uses. There are adopted comprehensive plans for these areas. These induced pressures will need to be addressed in project development, especially in selecting interchange locations so that the I-5 to 99W Connector supports its intended use for through trips. In similar locations along the I-205 facility, the planned land uses have remained unchanged around interchange locations, especially outside of the UGB. The same is expected to hold true for the I-5 to 99W Connector as the existing acknowledged plans and the Region 2040 Growth Concept are implemented.

In summary, project level development and alternative alignment evaluation will be needed to test if a reasonable alignment can be developed which would not require an exception. At this systems level of analysis, the general location can be limited as contained in this recommendation.

e. OAR 660-12-070(5), ORS 197.732(1)(c)(B), Goal 2 Part II(c)(2) and OAR 660-04-020(2)(b)

OAR 660-12-070(5) provides that to address Goal 2, Part II(c)(2), the exception must demonstrate that non-exception locations cannot reasonably accommodate the proposed transportation improvement or facility. Similarly, OAR 660-04-020(2)(b) requires justification why "areas which do not require a new exception cannot reasonably accommodate the use."

It is premature to address OAR 660-12-070(5) and 660-04-020(2)(b) at this time. The action taken here merely establishes a general corridor within which the proposed facility is to be located. Because locating the I-5 to 99W Connector entirely inside the UGB could potentially result in unreasonable adverse impacts that would justify a location outside the UGB, this general corridor includes some lands located outside the UGB. However, the decision to include those rural lands does not, in itself, authorize construction of this facility on those lands. For that to happen, a second exception must be taken demonstrating why the facility cannot reasonably be located entirely

within the UGB. Insufficient evidence is available at this time to conclude one way or the other.

f. OAR 660-12-070(6)

OAR 660-12-070(6) requires the exception to justify the thresholds chosen to judge whether an alternative method or location identified under OAR 660-12-070(4) or (5) cannot reasonably accommodate the proposed transportation need or facility. These thresholds include cost, operational feasibility, economic dislocation and other relevant factors.

For the I-5 to 99W Connector, the most relevant thresholds are the nature of the transportation need, operational feasibility and impacts on planned urban growth patterns. As noted in these findings and throughout the I-5 to 99W Technical Report, the facility is intended to and would serve predominantly state and regional transportation needs to move people between and through the region and to connect Town and Regional Centers. These needs cannot reasonably be met through alternative modes of transportation or through facilities serving local needs. The Western Bypass Study WBS Recommended Alternative includes significant planned transit improvements which will extend transit service to 99 percent of the Study Area, including the I-5 to 99W subarea. Those improvements have been taken into account in determining the need for this facility. Transit improvements beyond those planned, even in conjunction with TDM measures, still would not eliminate the need for this facility. Indeed, they would do little even to reduce the need for this facility.

Similarly, improvements to existing roadways beyond those contained in the WBS Recommended Alternative would not eliminate the state and regional needs for this facility or meet the operational objectives of providing a facility designed to serve through traffic. If the I-5 to 99W Connector is not built, the roadways that would accommodate the bulk of the diverted traffic, i.e. Tualatin/Sherwood, Tualatin and 99W, would exceed their planned capacity and levels of service. Further widening of these roadways cannot reasonably accommodate the identified need for reasons already stated in these findings. Roads elsewhere in the Study Area, including Durham Road, Bonita and Highway 217, do not serve the identified need. For those reasons, further consideration of improvements at those alternative locations is not warranted.

The impacts alternatives would have on Metro's ability to implement its 2040 Growth Concept is another major consideration. The 2040 Growth Concept earmarks urban communities including Sherwood, Tualatin, King City and Tigard to accommodate regional urban growth needs through their development as Town Centers. The urban form in which these Town Centers grow is important to their success. While a safe and convenient roadway and transit network connecting Town Centers and Regional Centers is vital to the success of the 2040 Growth Concept, the resulting transportation system must be compatible with and cannot overwhelm or undermine planned design concepts implementing these urban designations as provided in Title 6, Section 2 of

the Urban Growth Management Functional Plan. As described above, further widening of Tualatin/Sherwood Road or Highway 99W would prevent the region from developing the Tualatin and Tigard Town Centers in the manner consistent with the Urban Growth Management Functional Plan. A six or seven lane full access roadway dividing the center of the Tualatin or Tigard Town Center would destroy the compact, pedestrian friendly development concept planned for those Town Centers and seriously impede the region's ability to achieve full implementation of the 2040 Growth Concepts.¹³⁵

Cost also is a consideration. Consistent with federal law, Metro has adopted a Financially Constrained RTP that includes projects for which adequate funding reasonably is anticipated over the planning period. Because the proposed road is being considered as a tollway, the potential for funding it may be more likely than funding transportation alternatives, such as a new light rail line. Also, extending light rail to Tualatin or Sherwood is infeasible given cost constraints and higher regional LRT priorities. Given funding uncertainties, however, cost is not a major factor.

Economic dislocations, including displacements, fragmentation, encroachments and property access impacts, and social impacts, including residential displacements, visual impacts, disenfranchisement, noise, traffic, safety and community cohesion, will become factors when decisions selecting the precise location and alignment are made. Likewise, adverse environmental impacts, including impacts on wetlands and wildlife habitat, parks and recreational areas, hydrology and water quality, air quality and cultural resources, will become factors. At this systems level, they are not factors except to the extent they might prevent roadway expansion or influence the location of the I-5 to 99W corridor (e.g., to avoid or minimize impacts to the Tualatin River National Wildlife Refuge and the Tonquin Scablands).

The ability to achieve regional VMT objectives also is a factor. Because VMT is measured on a regional rather than an individual project basis, the focus is on whether the new facility is likely to substantially impede Metro's ability to meet VMT standards in the TPR. For reasons stated above, it does not appear that the I-5 to 99W Connector will have any significant impact on the region's ability to meet VMT objectives, even given that most trips along this facility would be regional and through trips. The TPR recognizes the need to plan for and accommodate these types of trips.

g. OAR 660-12-070(7), ORS 197.732(1)(c)(C), Goal 2 Part II(c)(3) and OAR 660-04-020(2)(c)

OAR 660-12-070(7) provides that to comply with Goal 2, Part II(c)(3), the exception must compare the economic, social, environmental and energy consequences of the proposed location with other locations *requiring exceptions*. The exception must discuss "whether the net adverse impacts associated with the proposed exception site are significantly more adverse than the net impacts from other locations which would

¹³⁵ Hoglund letter.

also require an exception." The proposed exception would fail only if the impacts associated with it are "significantly more adverse" than the other identified exception sites. Under OAR 660-12-070(7)(c), the evaluation of consequences may be generalized.

OAR 660-04-020(2)(c) is similar to OAR 660-12-070(7). It requires a general description of the character of each alternative area and discussion of the advantages and disadvantages of the various alternatives, including positive and negative consequences. Like OAR 660-12-070(7), the exception must explain why the use at the chosen site is not "significantly more adverse" than would typically result from the same proposal being located at one of the exception sites. Considerations include which resource lands are most productive; the ability to sustain resource uses near the proposed use; and long-term economic impact on the general area resulting from removal of land from the resource base.

Because no specific alignment is proposed at this time, it is premature to address these standards. If, at the time of project development, alignments are proposed that extend outside the UGB, consideration of these standards will be required.¹³⁶

h. OAR 660-12-070(8), ORS 197.732(1)(c)(D), Goal 2 Part II(c)(4) and OAR 660-04-020(2)(d)

OAR 660-12-070(8) provides that to comply with Goal 2, Part II(c)(4), the exception must describe the adverse effects that the proposed transportation improvement is likely to have on the surrounding rural lands and land uses, including increased traffic and pressure for nonfarm or highway oriented development on areas made more accessible by the transportation improvement. This section also requires, as part of the exception, facility design and land use measures which minimize accessibility of rural lands from the proposed transportation facility and support continued rural use of surrounding lands.

Similarly, OAR 660-04-020(2)(d) requires the exception to explain how the proposed use is compatible with other adjacent uses or will be rendered compatible through measures designed to reduce adverse impacts. As used in this section, "compatible" is not intended as an absolute term meaning no interference or adverse impacts of any type with adjacent uses.

At this time, it is unclear whether any of the I-5 to 99W Connector would be located outside the UGB. Should the alignment be situated entirely inside the UGB, a demonstration of compliance with these criteria will be unnecessary. On the other hand, if an alignment extending outside the UGB is selected, a second exception will

¹³⁶ No alternative corridor locations requiring exceptions have been proposed that might trigger application of these standards at this time.

be required to show how these standards are met. Accordingly, a demonstration of compliance with these sections at this time is premature.

D. Overall Conclusion of Compliance with the Transportation Planning Rule.

For all of the reasons listed above, compliance with all currently applicable TPR provisions has been demonstrated. These findings support amendment of the RTP to include the I-5 to 99W Connector. They further provide the justification required by the goals and OAR 660-12-070 for affected local governments to amend their comprehensive plans to include this transportation facility.



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**EXHIBIT D
CONDITIONS OF APPROVAL
I-5/99W Connector**

- A. Conditions relating to improved accessibility to preserve the function of US 99W and the I-5/99W Connector.
1. Adoption of a Neighbor City Agreement between Metro and the City of Newberg, addressing the RUGGO Objectives 26.1, 26.2, as follows:
 - a. Maintaining rural area in between the Metro and City urban growth boundaries.
 - b. Policies to improve the jobs/housing balance in the City of Newberg and southwestern communities inside the Metro urban growth boundary.
 - c. Agreement to coordinate population forecasts that are used as the basis for land use planning.
 2. Adoption of a Green Corridor and Rural Reserve Agreement among City of Newberg, Yamhill and Washington Counties, ODOT, and Metro addressing RUGGO Objectives 26.3 and 2040 Growth Concept Rural Reserves, as follows:
 - a. Policies to maintain the transportation facility that links the metropolitan area and the City of Newberg with limits on access to the farms and forests of rural reserve areas.
 - b. Policies to maintain the rural character of the landscape by maintaining rural zoning designations.
 - c. Policies to limit new rural commercial or industrial development in rural reserves.
 - d. Maintaining resource protection and very low density residential zoning.
- B. Conditions relating to project development decisions

1. A build/no build decision will be made through an amendment of the Regional Transportation Plan after completion of an alignment level Final Environmental Impact Statement (FEIS).
2. Further exceptions to applicable statewide land use planning goals consistent with OAR 660-12-070 shall be taken if any portion of the selected alignment is located outside the acknowledged urban growth boundary.
3. Consideration of the use of tolls should look at methods to both finance the I-5/99W Connector and to manage corridor demand consistent with the Green Corridor and Neighbor City agreements

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EXHIBIT E

Text revisions to the 1992 Regional Transportation Plan *April, 1997*

With adoption of Ordinance No. 97-689A, the 1992 Regional Transportation Plan will show the following text amendments:

Figure 5-7 (map text):

~~A variety of transportation and land use alternatives are being examined in the Tualatin-Hillsboro corridor as part of the Western Bypass Study.~~

Page 5-16: 10-Year Priority Projects (Reduce Congestion)

~~Consider constructing~~ Construct a limited access facility in the Tualatin-Hillsboro from I-5 to Highway 99W or other alternatives as identified in the ODOT Western Bypass Study. Construction is contingent upon completion of an alignment-level EIS to select a preferred alignment, including any required exceptions, and upon Green Corridor and Neighbor City inter-governmental agreements between Metro, ODOT, and jurisdictions within the Connector and Highway 99W corridor.

Page 5-16: 10-20 Year Projects (Reduce Congestion)

~~Constructing interchanges on the proposed bypass facility at Highway 99W and Tualatin-Sherwood/Edy Roads. (The proposed bypass is contingent upon the recommendations of ODOT's Western Bypass Study. If a decision is made to not build the bypass facility, then the need for these improvements will be re-evaluated).~~

Page 5-17: 10 Year Priority Project (Circumferential Travel)

~~Consider constructing facility improvements in the Tualatin-Hillsboro corridor from Highway 99W to Tualatin Valley Highway and from Tualatin Valley Highway to Sunset Highway, or other highway transit, or land use alternatives as identified in ODOT's Western Bypass Study.~~

Page 5-17: 10-20 Year Projects (Arterial Operations)

~~Widening Scholls Ferry Road from Beef Bend to the bypass facility, Consider capacity improvements to Scholls Ferry southwest of Murray, and~~

Page 5-18: 10-Year Projects (Remove Through Traffic)

~~Constructing interchanges at I-5/I-205 and the proposed bypass facility. (The proposed bypass is contingent upon the recommendations of ODOT's Western Bypass Study. If a decision is made to not build the bypass facility, then the need for these improvements will be re-evaluated).~~

Page 8-14: Outstanding Issues

6. ~~Tualatin Hillsboro Corridor I-5/99W Connector~~

~~The Western Bypass was adopted as a contingent recommendation subject to the findings of a land use and environmental analysis. ODOT has begun a study of the Tualatin Hillsboro Corridor evaluating the need for transportation improvements in the corridor and assessing the land use consequences of a range of reasonable alternative. The ODOT Western Bypass Study will incorporate the results of 1000 Friends of Oregon LUTRAQ Study if that study produces a viable land use/transportation strategy.~~

ODOT completed the Western Bypass Study in 1997. Part of the findings of the study was to construct a limited access facility from I-5 to Highway 99W. The study also conclude that a full bypass route should be dropped from consideration. Further, construction of the Connector is contingent upon completion of a alignment-level EIS to select a preferred alignment, including any required exceptions, and upon Green Corridor and Neighbor City inter-governmental agreements between Metro, ODOT, and jurisdictions within the Connector and Highway 99W corridor.

Page 8-15: Outstanding Issues

9. Land Use

The RTP constains three new proposed improvements on the regional highway system that would likely impact resources protected under the Statewide Land Use Planning Goals:

- ~~Tualatin Hillsboro Corridor (Western Bypass) I-5/99W Connector~~ in Washington County

WHEREAS, an alignment-level Environmental Impact Statement Process is required to select a preferred alignment and that a second-tier statewide planning goal exception process will be required if any portion of the selected alignment falls outside the Metro Urban Growth Boundary, and

WHEREAS, Green Corridor and Neighbor City agreements consistent with Metro's Regional Urban Growth Goals and Objectives will be developed upon selection of a preferred alternative, now, therefore

THE METRO COUNCIL HEREBY ORDAINS:

1. That the 1992 Regional Transportation Plan (RTP) be amended to require the need, function, mode, and general corridor for the I-5/99W Connector as defined and shown on the map in Exhibit A and supported in Technical Report (Exhibit B) and the Findings Report (Exhibit C).

2. That Metro should work cooperatively with the Green Corridor and Neighbor City jurisdictions to ensure execution of the agreements in Exhibit D prior to construction of the I-5/99W Connector.

3. That the 1992 RTP reflect the text revisions as shown in Exhibit E.

Jon Kvistad, Presiding Officer

Approved as to Form:

Daniel B. Cooper, General Counsel

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WHEREAS, an alignment-level Environmental Impact Statement Process is required to select a preferred alignment and that a second-tier statewide planning goal exception process will be required if any portion of the selected alignment falls outside the Metro Urban Growth Boundary, and

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*Handout for
Ord. 97-689A*