City of Poulsbo, Washington

TRANSPORTATION PLAN UPDATE

2006

Final

Prepared for:

CITY OF POULSBO, WASHINGTON

Prepared by:
DAVID EVANS AND ASSOCIATES, INC.

Project Number POUL0000-0002

November 2006

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EXECUTIVE SUMMARY

This Transportation Plan Update provides an important element for the City of Poulsbo (City) *Comprehensive Plan Update*. This update evaluates current transportation characteristic in the city and forecasts how these characteristics are expected to change in the future based on the land use and employment information in the City Comprehensive Plan. Based on the travel growth forecast derived from the adopted land use plan, a plan of transportation improvements to meet the needs of 20+ years of growth was developed.

Existing Condition Evaluation

The Growth Management Act (GMA) requires that the Transportation Element of the Comprehensive Plan include an evaluation of existing conditions in light of the adopted standard for level of service (LOS). This is to identify the existing deficiencies resulting from past growth, before planning of improvements needed for future growth.

- Transportation level of service is graded from A (very good) to F (failing). In Poulsbo, the desired LOS is D or better as a goal, but level E is permitted before improvement is necessary. For intersections, Poulsbo uses a method based on the average amount of delay per vehicle using the intersection in peak hours. This method measures congestion. For road sections between intersections total traffic volume is compared to the road's capacity, with adjustments for the classification of each road, and for compliance with design standards. If the road does not meet urban design standards (particularly sidewalks and shoulders), the allowable capacity is reduced. This measures the ability of the entire road corridor to safely provide for pedestrian and bicycle needs along with vehicular travel.

- Several existing deficiencies were identified based on the LOS standards. Most will be corrected by currently funded city or state improvement projects. Two deficient locations remain, but these will benefit from the SR 305 improvements and should be reevaluated after traffic through the downtown area has had time to adjust. No further action is required for existing deficiencies.

- Road projects that are funded and certain to be completed within six years were treated as if existing, for the purpose of this evaluation. Committed improvements include the SR 305 widening project, sidewalk improvements on several downtown area roads, extension of 3rd Avenue from Jensen to Iverson behind the post office, and sidewalk improvements on Caldart Avenue and Mesford Street.

Growth Forecast

The adopted Land Use Element defines the growth in Poulsbo that must be considered in future transportation plans. Based on the overall 20+ year forecast of new growth amounting to about 3,500 dwelling units and 2,400,000 square feet of commercial development, a total of 95,000 new daily trips would be generated within the Poulsbo Urban Growth Area, including potential annexation areas. This is an 89 percent increase over existing conditions, and corresponds to "buildout" under the existing land use plan and zoning code. A traffic forecasting model for Poulsbo and surrounding areas was developed and calibrated to existing conditions with 91 percent accuracy. Using this model, the increase in travel demand was assigned to the road network to identify future conditions and evaluate future improvement needs.

Future Needs Assessment

In order to serve the projected travel demand and comply with LOS standards, transportation improvements will be needed. Some forecast needs cannot easily be solved by adding capacity, and should instead be dealt with by efforts to reduce travel demand or reroute the demand to other locations. The transportation improvements needed by 2025 are detailed in the Mitigation section of this report. They include:

- Thirty-two projects will add sidewalks, turn lanes, bicycle lanes, and otherwise upgrade existing roads. These projects will assure that all arterials and collectors and sub-collector roads provide adequately for pedestrians and bicycles as well as motor vehicles, when all proposed growth has occurred. These projects are described in Table 11 and Figure 6.

- Seven projects will add new roadway segments of various lengths. These projects add new connections in growing areas, to efficiently route traffic from neighborhoods to the arterial network. These are described in Table 12 and Figure 6.

- Eleven projects will improve the capacity of intersections with signalization, channelization, roundabouts, and two-way or all-way stop controls. These are described in Table 13 and Figure 7.

- Thirteen locations where capacity improvements are not feasible. Instead alternative strategies for Transportation Demand Management (TDM) should be pursued. Most of these are in the downtown area including Front Street, where traffic calming and traffic rerouting should be pursued.

- Four routes were identified where reclassification may be appropriate, to best reflect the future use of those roads. The Finn Hill Road-Lindvig Road corridor should be reclassified upward as a principal arterial and that corridor carefully managed to optimize through travel. Viking Way should be reclassified downward as a minor arterial at the same time. These revisions match the actual usage of those roads. In East Poulsbo, Forest Rock Lane and Pugh Road should be monitored for future demand that may exceed the intended capacity of neighborhood sub-collectors. The best solution for these roads may be to reclassify these streets upward in keeping with their actual use.

Implementation

The recommended plan would be implemented gradually, as growth occurs. The actual timing of needs may take more or less than the nominal 20 years assumed in this study. The overall cost of the listed needs would total approximately $77 million in 2006 dollars. A conservative estimate of available public resources of all kinds over 20+ years was fixed at $11 million. The remaining $66 million would need to be raised by other means or other assumptions. The practical options available fall into three broad categories:

- ***Increased levels of public funding for transportation in the future.*** This option is available only as a speculative choice, since future decisions of legislatures and councils cannot be confirmed now.

- ***Development contributions of direct road improvements, chiefly as frontage improvements and/or on-site circulation roads that may be part of the adopted transportation plan.*** This practice will in fact provide for a portion of the identified needs. The exact scope remains to be determined.

- ***Development contributions to the cost of needed system improvements, via GMA impact fees or off-site impact mitigation through the State Environmental Policy Act.*** This approach will be used to provide the balance of needs not accounted for by other means.

Remaining work to be done to complete the implementation strategy includes the refinement of assumed public finance capabilities, if any, and the separation of the improvement needs list into projects that are most appropriately accomplished directly by developers as part of site development plans (because the development in question generates most of the need), versus those off-site improvements that are best implemented as a public project with a blend of public and private sector funding (because many developments contribute to the need). Financial support may be obtained from private developments either via SEPA mitigation or via GMA impact fees.

BACKGROUND

This transportation plan update makes use of prior studies and a new forecasting model to identify future transportation deficiencies in five subareas covering the City's urban growth area. The purpose of the update is to identify additional transportation facilities, measures and policies needed to meet transportation service standards on city streets in 2025.

Study Area

The study area considered for the update is shown on **Figure 1**. The study area has been subdivided into the five subareas shown to better summarize and discuss some of the key transportation issues for this update. The five subareas are:

Subarea	Subarea Abbreviation
Highway Commercial	HC
Northeast Poulsbo	NE
Old Poulsbo	OP
Southeast Poulsbo	SE
West Poulsbo	WP

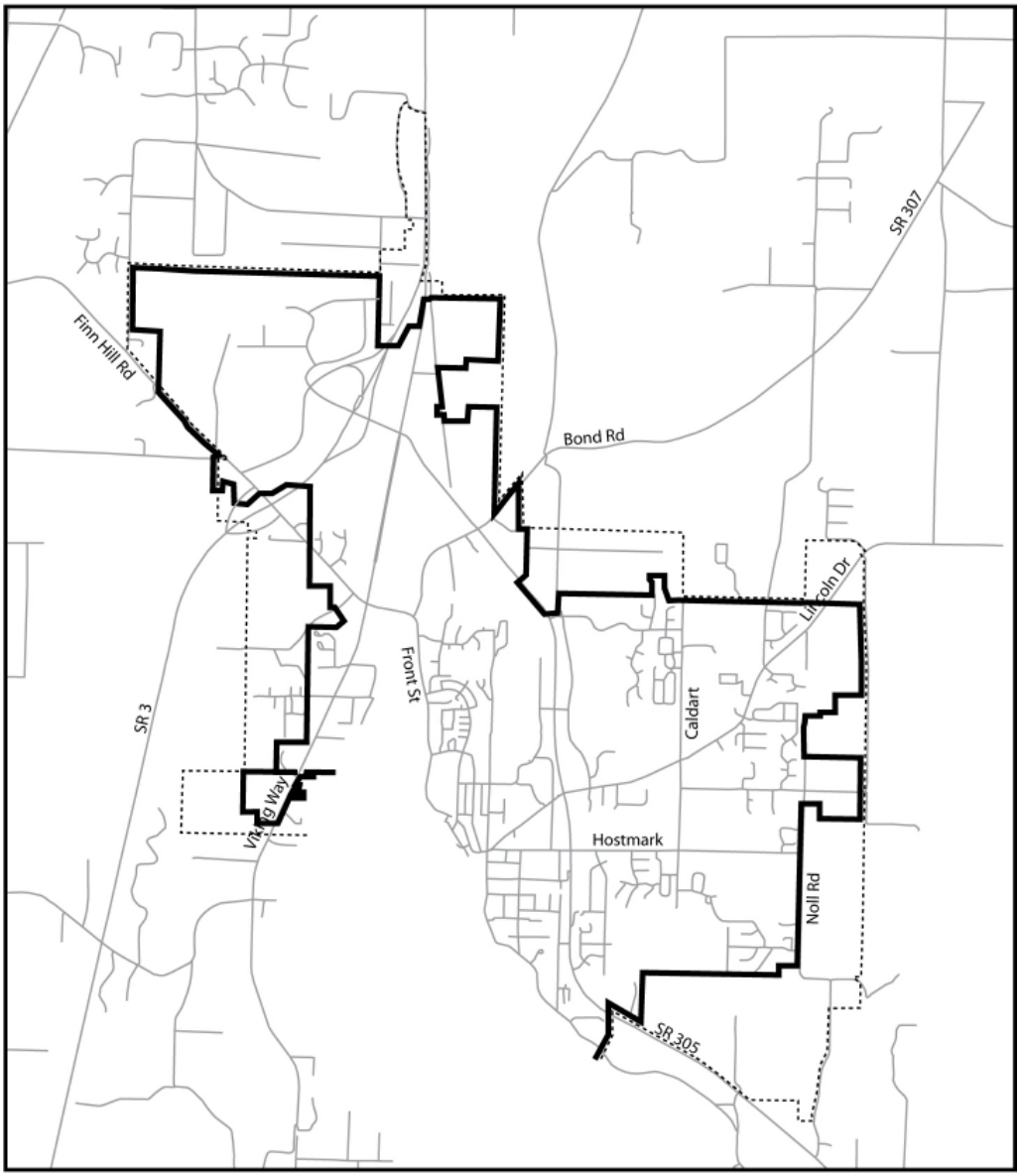
The first four subareas lie in the eastern portion of the city as shown on **Figure 2A**. The West Poulsbo subarea covers the entire western portion of the city as shown on **Figure 2B**.

Coordination with Other Plans

The analyses and recommendations in this Transportation Plan Update are based on information from the *Poulsbo Traffic Study Final Report—Phase 1 + Phase 2,* prepared by David Evans and Associates, Inc. (October 2004). The Transportation Plan Update has been developed to fit within the City of Poulsbo's ongoing *Comprehensive Plan Update* process and is intended to meet the planning requirements of the Growth Management Act.

The results of this transportation study will be used to develop Poulsbo's strategy for future growth, including the following new documents and procedures:

- Update the Transportation Element of the *2007 City Comprehensive Plan Update*
- Concurrency Ordinance
- Traffic Impact Fee Ordinance



LEGEND:

City Limits 2005

Urban Growth Area

City Limits and Urban Growth Area

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Figure 1

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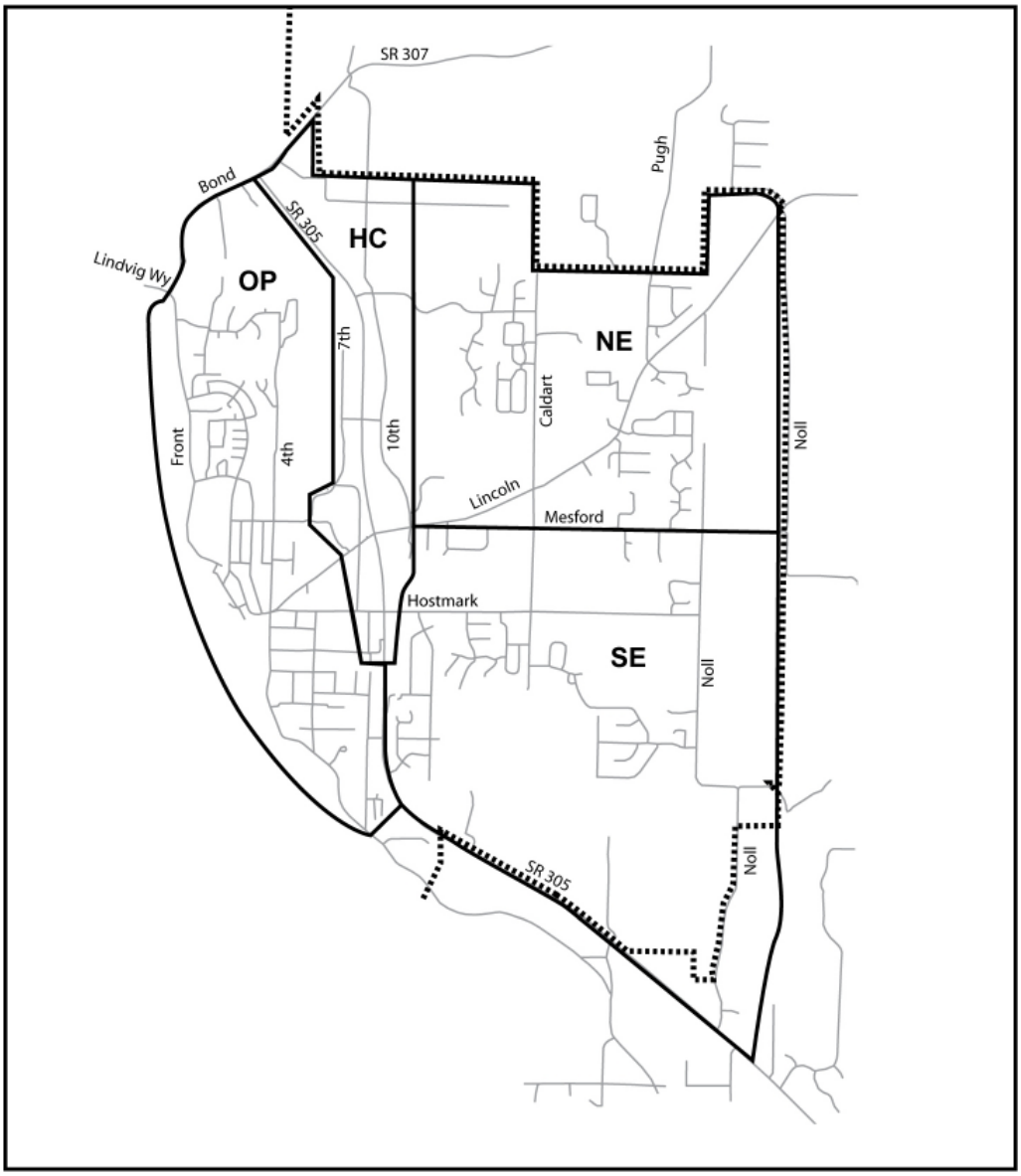

LEGEND:

- Urban Growth Area
- **HC** = Highway Commercial
- **NE** = Northeast Poulsbo
- **OP** = Old Poulsbo
- **SE** = Southeast Poulsbo

Planning Sub-Areas (East)

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Figure 2A

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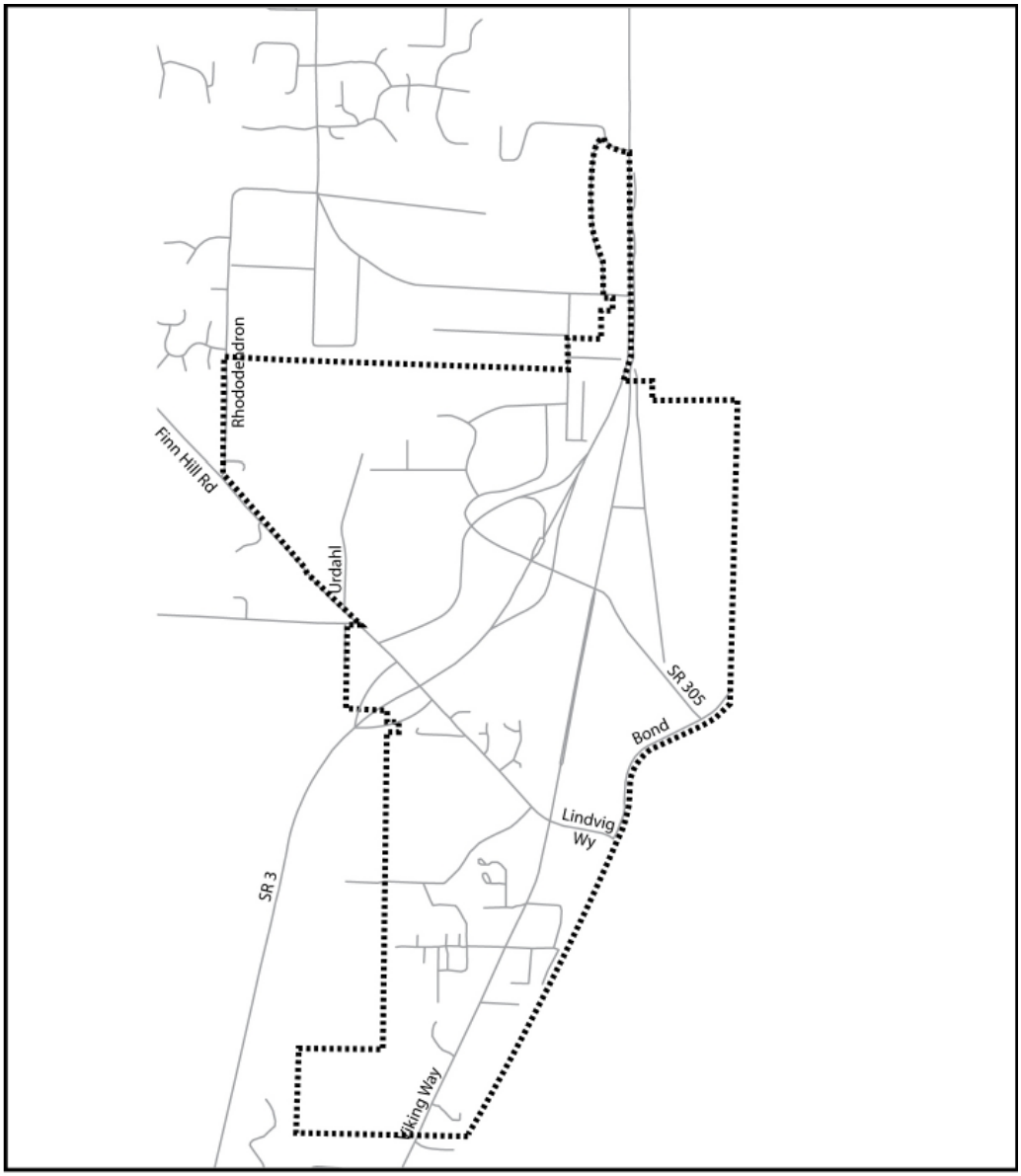

LEGEND:

▪▪▪▪▪ Urban Growth Area

Planning Sub-Area (West)

Poulsbo Transportation Plan Update

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Figure 2B

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Purpose of the Transportation Plan Update

This Transportation Plan Update provides important information for the City of Poulsbo Comprehensive Plan. This update evaluates current transportation characteristics in the city and forecasts how these characteristics are expected to change in the future based on the land use and employment data in the City's Comprehensive Plan.

Update Methodology

The following tasks were undertaken to determine if the future transportation characteristics would meet the City's transportation service standards:

- The balance between existing and additional committed transportation facilities and expected transportation demand was evaluated to determine if transportation service standards could be met in the short-term. The anticipated timing and characteristics of additional transportation facilities were identified based on city, state and developer commitments, and how much these facilities would help to balance demand.

- Forecasts were prepared for land use growth in the study area to estimate the likely increase in transportation demand in the future.

- Forecasts of future transportation demand growth were generated based on assumed land use and employment growth in and around the city, and locations where transportation service standards cannot be met by the combination of existing and anticipated transportation facilities were identified.

- Mitigation options were considered for the few locations where standards would not be met in 2025. This task also included developing a funding plan for the required mitigation.

The following sections detail the analyses and findings from each of these tasks.

EXISTING AND COMMITTED TRANSPORTATION CONDITIONS

Transportation service in the city is a function of the transportation facilities available to accommodate the transportation demand generated by the land use policies in the City's Comprehensive Plan. The analysis of current transportation facilities and demand considered both existing and committed facilities to determine a short-term baseline condition.

2006 Transportation Facilities

Current transportation facilities were detailed in Chapter Two (Road System Inventory) of the *Poulsbo Traffic Study Final Report—Phase 1 + Phase 2.* Included in the road system inventory for that report were roadway functional classifications, lane capacity, intersection controls, shoulders and sidewalks, bicycle facilities and transit facilities.

Committed Facilities

There are a number of transportation facilities that are committed for implementation in the near future. These include projects on the City's Six-Year Transportation Improvement Plan (TIP), projects planned by the Washington State Department of Transportation (WSDOT) on state highways through the city, and projects to be funded and/or implemented by developers. **Table 1** lists the known projects that are currently committed to expand transportation facilities in the study area, which will be completed within six years or less.

Table 1. Committed Transportation Facilities

Subarea	Roadway Segment Functional Classification	Segment Location	From	To	Description
HC	Collector Arterial	Iverson	8th Avenue	SR 305	Sidewalks
HC	Collector Arterial	7th Avenue Extension	Extension End	SR 305	New Road
HC	Principal Arterial	SR 305	Bond Road	Hostmark	Widening and Intersections
OP	Collector Arterial	Iverson	Jensen	4th Avenue	Sidewalks
OP	Commercial Sub-collector	3rd Avenue	Jensen	Iverson	New Road
OP	Neighborhood Sub-collector	4th Avenue	Arbutus Court	Iverson	Sidewalks
		Intersection Location			
NE		Caldart and Lincoln			Signalization
NE	Neighborhood Sub-collector	Caldart Avenue	Lincoln	Forest Rock	Sidewalk
SE	Neighborhood Sub-collector	Mesford	Caldart	Schooner	Sidewalk

2006 Traffic Demand

The *Poulsbo Traffic Study Final Report—Phase 1 + Phase 2* was based on extensive traffic counts taken in 2003 and select additional counts taken in October 2004. This data was assumed to be valid for this update as well because traffic demand in most of the city has not changed substantially since 2003. The one exception area where demand has grown, is around the Olhava Shopping Center where retail developments have recently opened and subdivision roads have been completed. However, a field review of this area indicated that the combination of demand growth and new facilities have kept traffic operations in this area at approximately the 2003 level. Average daily traffic (ADT) volumes for inventoried roadway segments are shown in **Appendix A.**

Current Transportation Service Standards

Level of Service Concepts

Level of service is a measure of how well a street segment or an intersection is able to accommodate traffic demand. Level of service is measured in six levels designated LOS A through LOS F, with LOS A indicating free-flowing conditions with no traffic delays and LOS F indicating heavy congestion and long delays for most traffic.

Many agencies have set minimum LOS standards in order to ensure acceptable transportation service on streets in their jurisdiction. By selecting a "high" standard (LOS A, B or C), agencies become committed to obtaining the amount of facilities needed to allow traffic to operate with little congestion and small delays even in the peak hours, normally at considerable expense to the agency for those facilities. By

selecting a "low" standard (i.e., LOS D, E or F), agencies are willing to accept more congestion and longer delays during peak hours rather than obtaining more facilities or revising their land use policies.

Level of Service Policy and Concurrency

The City of Poulsbo has established a dual standard for transportation facilities inside the city limits. LOS D is the desired standard. LOS E is the minimum acceptable standard. In addition, the City recognizes WSDOT's standard of LOS E for state highways in urban areas. LOS E corresponds to full use of the available capacity of a road or intersection, a level of use which should not be regularly exceeded.

The desired LOS standard is used to encourage design of improvements that provide adequate capacity over the long run at tolerable levels of congestion and/or multi-modal conflicts. The minimum LOS standard is used by the City to determine if transportation facilities are adequate in the short run to serve proposed new developments, a requirement of the State GMA known as "concurrency."

The GMA concurrency test ensures that transportation facilities needed to serve planned growth are implemented concurrently (i.e., within six years) of the developments causing the growth. To pass the concurrency test, a facility must be able to serve new demand at or above the minimum LOS standard for the facility, or committed improvements must be planned within the next six years that will result in the facility operating at or above the minimum LOS standard with the new demand. Otherwise, the development generating the new demand must be denied for failing to meet the concurrency test.

Level of Service Thresholds

The methodology for determining level of service varies between roadway sections and intersections. For intersections, the method of calculation follows the *Highway Capacity Manual* (National Academy of Sciences, Transportation Research Board, Special Report 209, 2000 edition or latest update). For roadway sections, the method of calculation is described in Appendix E, and considers the road's geometric design, functional classification, and compliance with design standards including provision of bicycle and pedestrian facilities.

The measures and values that define each service level are shown in **Table 2** and differ according to the type of facility.

Table 2. Level of Service Thresholds

Measure: Level of Service	Roadway Segment Volume/Capacity (2-way total)	Signalized Intersection Control Delay per Entering Vehicle	Unsignalized Intersection Delay per Vehicle, Stopped Approach Only
A	< 60%	< 10 sec	< 10 sec
B	60%-70%	10-20 sec	10-15 sec
C	70%-80%	20-35 sec	15-25 sec
D	80%-90%	35-55 sec	25-35 sec
E	90%-100%	55-80 sec	35-50 sec
F	100%+	>80 sec	> 50 sec

2006 Level of Service Calculations

Facilities Considered

The committed projects that were identified in Table 1 will be completed within six years. Therefore, it was assumed for the LOS calculations that both the existing and committed projects were in place. The following discussion of LOS standards and deficiencies is based on this assumption.

Roadway Segments

The level of service analysis of roadway segments compares existing or forecast traffic volumes to the "allowable capacity" of each segment as determined from **Appendix E.** The tables in **Appendix A** show for each roadway segment the functional classification, the volume to capacity (V/C) ratio, and the approximate capacity remaining both in number of vehicles and as a permissible percentage increase over existing volumes.

Table 3 summarizes some of the data from **Appendix A** to illustrate the current transportation characteristics and concurrency status of inventoried city streets and state highways in each subarea.

Table 3. 2006 Roadway Segment Concurrency Status

Concurrency Data by Functional Classification	Subareas					Totals for all Subareas
	NE	SE	HC	OP	WP	
Principal Arterials						
Total Segments	-	-	-	-	3	-
Lowest growth factor of segments with permissible growth remaining	-	-	-	-	79%	-
Number of segments with no permissible growth remaining	-	-	-	-	-	-
Minor Arterials						
Total Segments	5	-	1	10	5	-
Lowest growth factor of segments with permissible growth remaining	32%	-	53%	5%	1%	-
Number of segments with no permissible growth remaining	-	-	-	-	-	-
Collector Arterials						
Total Segments	1	8	5	4	10	-
Lowest growth factor of segments with permissible growth remaining	148%	14%	26%	6%	100%	-
Number of segments with no permissible growth remaining	-	-	-	-	-	-
Commercial Sub-collectors						
Total Segments	1	1	11	2	-	-
Lowest growth factor of segments with permissible growth remaining	120%	241%	9%	12%	-	-
Number of segments with no permissible growth remaining	-	-	-	-	-	-
Neighborhood Sub-collectors						
Total Segments	8	1	-	4	1	-
Lowest growth factor of segments with permissible growth remaining	38%	41%	-	7%	194%	-
Number of segments with no permissible growth remaining	-	-	-	-	-	-
Residential Sub-Collectors						
Total Segments	3	6	-	2	-	-
Lowest growth factor of segments with permissible growth remaining	100%	36%	-	150%	-	-
Number of segments with no permissible growth remaining	-	-	-	1	-	1
Total number of segments with no permissible growth remaining						**1**

Source: Appendix A

Intersections

LOS calculations were performed for key intersections in the study subareas. The level of service for roadway segments was calculated using the SYNCHRO traffic simulation model developed by Trafficware, based on the Federal Highway Administration (FHWA) *Highway Capacity Manual* (2000) techniques for signalized and stop-controlled intersections. The level of service for signalized intersections is based on the average vehicle delay in seconds for all traffic traveling through the intersection in the peak hour. The level of service for unsignalized intersections is based on the average delay per vehicle in seconds for vehicles on the most congested movement (typically one of the stop-sign controlled movements or an uncontrolled left-turn movement. **Table 4** summarizes the 2006 LOS for key intersections in each subarea.

Table 4. 2006 Intersection Concurrency Status

Subarea	Intersection Location	Control Type	LOS	Exceeds Standard
WP	Viking at Lindvig	Signal	D	
WP	Bond at Lindvig	Signal	C	
OP	Jensen at Front	All-Way Stop	C	
OP	Jensen at Iverson	All-Way Stop	C	
OP	4th at Iverson	All-Way Stop	C	
OP	4th at Hostmark	Two-Way Stop	D	
HC	7th at Liberty	All-Way Stop	F	**X**
HC	10th at Liberty	All-Way Stop	B	
HC	10th at Lincoln	Two-Way Stop	E	
HC	10th at Forest Rock	Two-Way Stop	E	
DE	Caldart at Hostmark	Two-Way Stop	E	
NE	Caldart at Lincoln	Two-Way Stop	E	
NE	Pugh at Lincoln	Two-Way Stop	D	

2006 Transportation Service Deficiencies

Roadway Segments

Only one roadway segment does not meet City or WSDOT LOS standards in 2006. This is the segment of Torval Canyon Road from Front Street NE to 4th Avenue NE, a residential sub-collector in the Old Poulsbo Subarea. However, this deficiency should be reevaluated after committed work on SR 305 and the 3rd Avenue NE Extension are finished. These improvements may result in some volumes currently on Torval Canyon Road diverting to other routes, eliminating the deficiency. If not, then Torval Canyon Road should be reclassified as a neighborhood sub-collector. Reclassification would result in an allowable capacity of 4,000 vehicles per day, which would accommodate 2006 volumes.

Intersections

There is currently one intersection that does not meet City or WSDOT LOS standards in 2006:

Intersection	Subarea
7th at Liberty	Highway Commercial

In addition, four intersections currently operate above the minimum standard of LOS E, but below the desired standard of LOS D. Three of the intersections will benefit from the SR 305 improvement project. New stop signs could also be installed on all legs at these three intersections to eliminate the current deficiencies. (As noted later, future traffic increases could require traffic signals at these locations and each could be coordinated with the nearby signal on SR 305 to further improve operations.)

The intersection of Caldart at Hostmark is only a problem during the high school peak hour and would not satisfy signal warrants at any other time. Adding turn channelization would improve operations for high school traffic.

For the intersection of Caldart at Lincoln, there is a funded signal project underway.

LAND USE GROWTH FORECAST

Traffic on roads is generated by land use. Therefore an inventory of existing and future land uses is the essential foundation for traffic growth forecasts and transportation planning for growth. This chapter summarizes information derived from the Land Use Element of the Comprehensive Plan, and how it is used in the Transportation Element.

Land Use Assumptions for Growth Management

Poulsbo's future boundaries are defined by the Urban Growth Area (UGA) agreed to between the City and Kitsap County. See Figure 1 for this area, and the city boundaries existing in 2005. This expanded area provides sufficient land for the city to realize its mandated growth target for the year 2025, for a total population of 14,700 within the expanded city including Urban Growth Area (existing city plus UGA). The existing population is 7,250 inside the current city limits.

Land Use Data Used in Traffic Forecasting Model

The land use data used in the traffic forecasting was based on the land parcel records in the City's Geographic Information System (GIS). This data resource provided a count of dwelling units and/or non-residential building areas on each land parcel. Parcel data was added up for corresponding totals in each Traffic Analysis Zone (TAZ) of the model. The model uses 145 TAZs to cover the existing city area and the Urban Growth Area.

Land Use Summary Totals

Table 5 provides a summary of the total land use accounted for in the traffic model. Data is presented first for existing conditions, and represents the inventory of actual existing development on all parcels within the planning area. The second column gives the results of a future growth scenario that was developed based on the assumption that almost all (or nearly all) land in the existing city plus Urban Growth Area would be developed over time, minus adjustments for critical area set-asides, unbuildable lands, allowances for roads and utilities, and market adjustment factors.

Table 5. Total Land Use for Traffic Forecasting (City + Urban Growth Area)

Planning Year	Dwelling Units	Non-residential Sq, Ft.
2005	3,147	2,784,964
2025	6,681	5,164,282
Percent Growth	112.3%	85.4%

Development densities were based on the current city zoning map (shown in **Figure 3**), less the adjustments described above. The resulting total of future dwelling units is consistent with the future population level of 14,700 that the City is required to plan for. The growth in commercial buildings is roughly proportional to the growth of dwellings and population. This proportional relationship indicates an economically balanced growth scenario for the City of Poulsbo.

The distribution of these areawide totals is given in **Tables 6** and **7**. The boundaries of the planning subareas are described in Figures 2A and 2B. These subareas were designed for purposes of traffic analysis and do not necessarily correspond to any other districts used for other purposes.

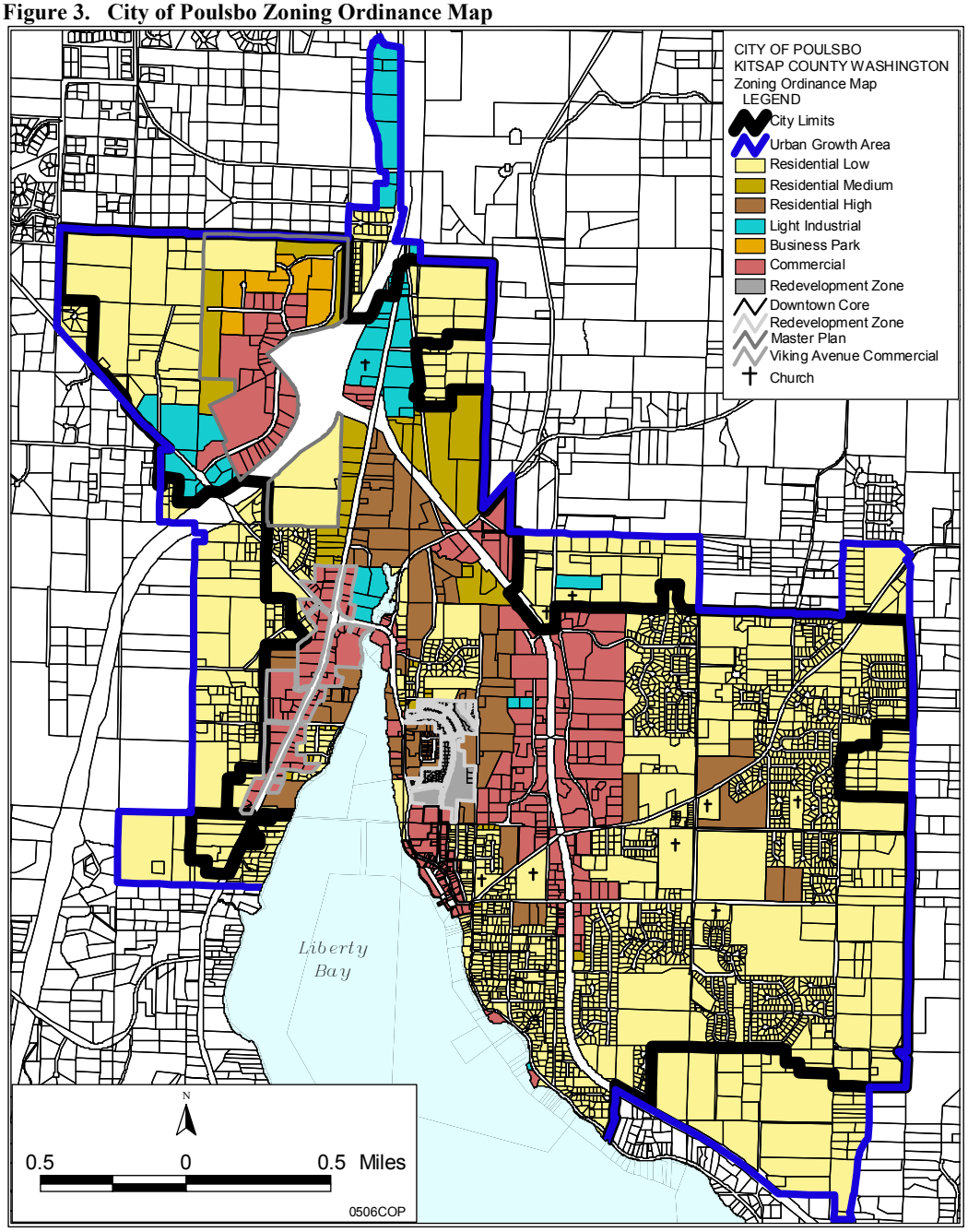
Table 6. Existing Land Use for Traffic Forecasting by Subarea

Subarea	2005 Dwelling Units	2005 Non-residential Sq. Ft.
West Poulsbo	642	843,194
Old Poulsbo	964	548,835
Highway Commercial	48	856,066
Northeast	684	202,821
Southeast	809	334,048
Totals	3,147	2,784,964

Table 7. Future Land Use for Traffic Forecasting by Subarea

Subarea	2025 Dwelling Units	2025 Non-residential Sq. Ft.
West Poulsbo	2,544	2,695,952
Old Poulsbo	1,368	565,822
Highway Commercial	36	1,347,839
Northeast	1,399	204,693
Southeast	1,334	349,976
Totals	6,681	5,164,282

Figure 3. City of Poulsbo Zoning Ordinance Map



TRANSPORTATION DEMAND GROWTH FORECAST

Traffic Forecasting Model

A traffic forecasting model for Poulsbo has been developed that predicts future traffic volumes, based on input assumptions about future land use. The model uses VISUM software (©PTV America, Inc.), and utilizes land use data from the City's GIS. The traffic model represents each road in terms of its lanes, lane-based capacity, operating speed and functional classification. Intersections are represented according to traffic control types (signal, stop sign, roundabout, all-way stop). The study area for the traffic model includes the surrounding portions of North Kitsap County, well beyond the City of Poulsbo, to account for all relevant travel interactions between Poulsbo and other areas (so-called "internal-external" trips), and to account for non-stop movements that pass through Poulsbo ("external-external" trips).

The existing and future land use and trip generation are calculated from land use inventories developed at the level of individual land parcels. Existing land use is as documented in the current parcel data files. Future land use was estimated for all parcels according to density factors defined in the current zoning code.

Eight roads leave the urban growth area surrounding Poulsbo (SR 3 (north and south), SR 307 (northeast), SR 305 (southeast), Viking Way (south), Lincoln Road, Finn Hill Road, and Noll Road). Existing volumes on those links were matched to known traffic counts.

The traffic model for existing conditions produces a "forecast" of traffic volumes on the existing road system that is a close match to the actual counts on file. Thus, the traffic model is satisfactorily calibrated and suitable for future planning applications.

For purposes of the future forecast, it was assumed that parcels presently developed but covering less than 10 percent of the parcel area would eventually be redeveloped to an average level of intensity. The future residential development total in terms of dwelling units corresponds to the county-mandated population growth target of 14,700 and assumes development of all designated urban growth areas at urban densities.

Growth factors for the external areas represented by these links were developed consistent with Kitsap County's countywide transportation model, which results in 50 percent to 100 percent growth on those external links over 20+ years.

The future traffic model used a "buildout" land development assumption. The buildout scenario provides a "worst-case" analysis for future planning purposes because it reveals the potential future traffic conditions that would someday occur, if all land is developed. All land in the Poulsbo area, including the urban growth areas, was fully developed to allowable densities based on current zoning. Whether and when this buildout target would materialize depends on market conditions. For planning purposes, the assumption is that this will occur in about 20 years. On the population side, this appears reasonable based on current trends. On the commercial/industrial side, there are no official growth targets mandated for growth management purposes and market conditions may vary. That said, it appears that the buildout of non-residential land in Poulsbo is reasonable, because the resulting percentage increase in non-residential activity is lower than the population increase.

The future traffic assignment is based on the existing road system, plus currently committed and funded improvements. This analysis produced forecasts of overloads on several roadways and intersections, which will require improvements. An improvement program to resolve those future deficiencies is the subject of a following section.

Trip Generation Forecast

Based on the existing and future land use scenarios described above, the total trip generation was calculated for each and all Traffic Analysis Zones in the City of Poulsbo plus urban growth areas, using standard trip rates consistent with the Institute of Transportation Engineers, *Trip Generation* report. The results are summarized in **Table 8**. Commensurate with the overall population and housing growth level of 112.3 percent and non-residential growth level of 85.4 percent, the citywide growth in trip generation is 89 percent. The distribution of growth differs by subarea of the city. All subareas of the city have residential growth, except the Highway Commercial District. Commercial growth is also high in West Poulsbo due to the Olhava Business Park now being developed. Commercial growth in Old Poulsbo's downtown area is forecast based on theoretical buildout of all land. Whether that is realistic or not may need further analysis.

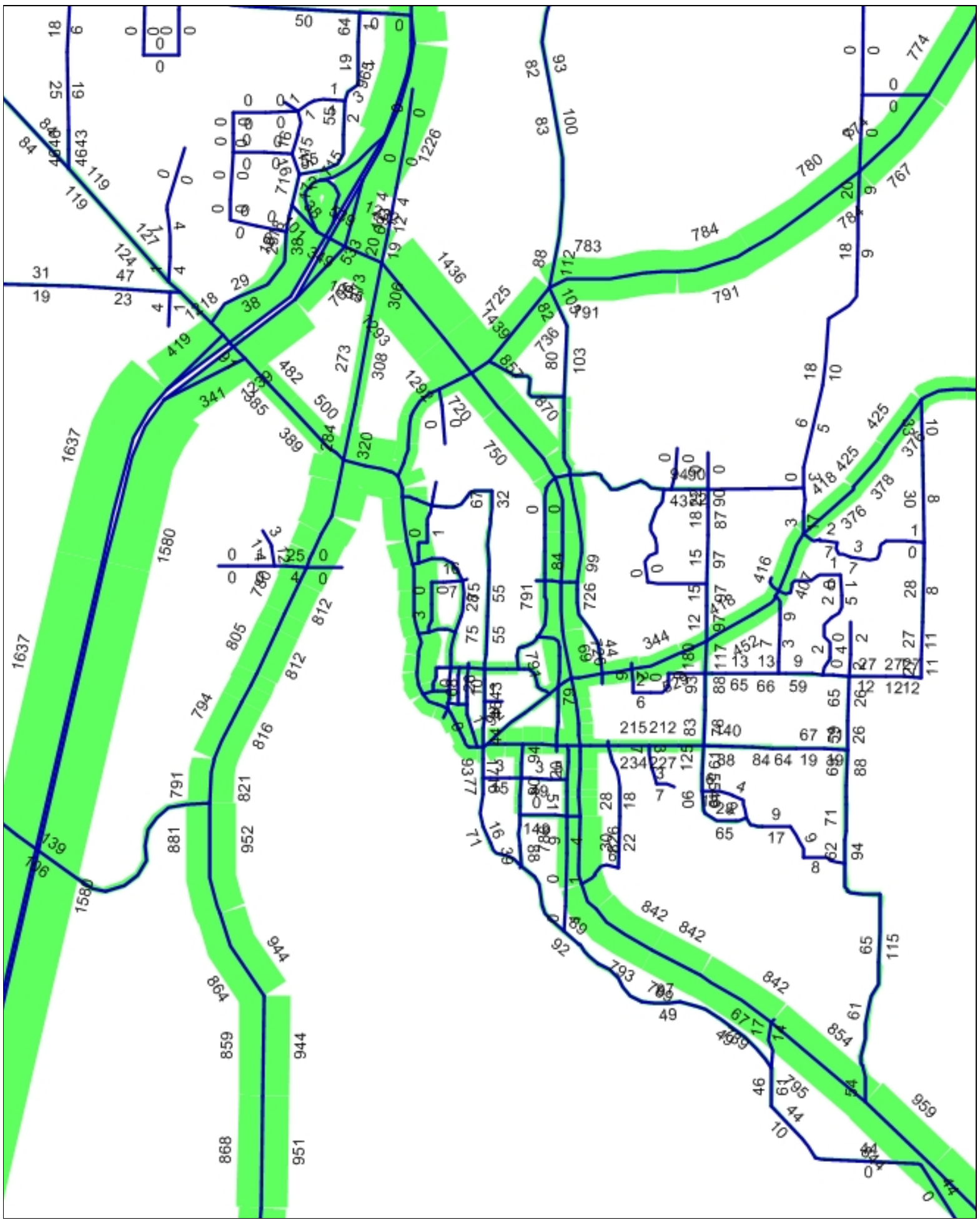
Table 8. Trip Generation Growth by Subarea

Subarea	2003 Total Trips	2025 Total Trips
West Poulsbo	3,432	10,093
Old Poulsbo	2,496	2,753
Highway Commercial	2,611	4,076
Northeast	1,249	1,855
Southeast	922	1,444
Totals	10,710	20,220

Traffic Growth Forecasting on Existing Road System

The traffic forecasting model was used to develop the "forecast" of existing conditions shown in **Figure 4**. The modeled volumes closely match actual observed counts. The correlation coefficient (R-squared statistic) achieved was 91 percent, which is well above the federally-recommended minimum of 88 percent. This demonstrates that the model is suitable for use in forecasting future transportation conditions and improvement needs.

Figure 4. 2006 "Forecast" (Calibration) Traffic Demand



Note: Annotated numbers show PM peak hour volume by direction of travel.

Traffic Growth Forecasting on Proposed Road System

The traffic forecasting model was next used to develop the forecast of future conditions shown in **Figure 5**. This forecast is based on the existing road system, plus presently funded and committed improvements. Analysis of these volumes is presented elsewhere, and indicates that further road improvements are needed in order to adequately serve future growth.

Impacts on State Highways

State law requires each city's Comprehensive Plan to identify impacts of planned growth on state facilities. The traffic forecast for buildout growth indicates that volumes on state highways will increase commensurate with the growth generated in Poulsbo and surrounding areas. The PM peak hour traffic forecasts in Figures 4 and 5 include the effects of an assumed 20 percent growth level in the adjacent rural areas as well as the modeled 89 percent travel growth within Poulsbo's UGA. These peak hour volumes (PHV) are converted to ADT in the following summary, using an assumed ratio of approximately 1:10 based on existing counts.

State Route 3

On SR 3, south of Finn Hill Road daily volumes are increased from approximately 32,000 in 2003 to a forecast volume of 50,000 in 2025, an increase of 56 percent. To the north of Poulsbo, the volumes on SR 3 are increased from approximately 18,000 in 2003 to a forecast volume of 22,000 in 2025, an increase of 22 percent.

State Route 305

On SR 305, south of SR 3 daily volumes are increased from approximately 27,000 in 2003 to a forecast volume of 50,000 in 2025, an increase of 85 percent. This reflects the large amount of traffic turning from SR 3 south to SR 305 east, and the reverse. The large volumes on SR 305 immediately east of SR 3 divide at the Bond Road intersection, splitting between SR 307 (east) and SR 305 (south). From that point southward, the volumes on SR 305 are approximately 16,000 (2003) and 25,000 (2025), an increase of approximately 56 percent. These volumes on SR 305 may increase further if the forecast overloads through the Old Poulsbo Subarea are prevented by travel demand management strategies that shift more traffic to SR 305 via Viking Way and/or Bond Road.

State Route 307

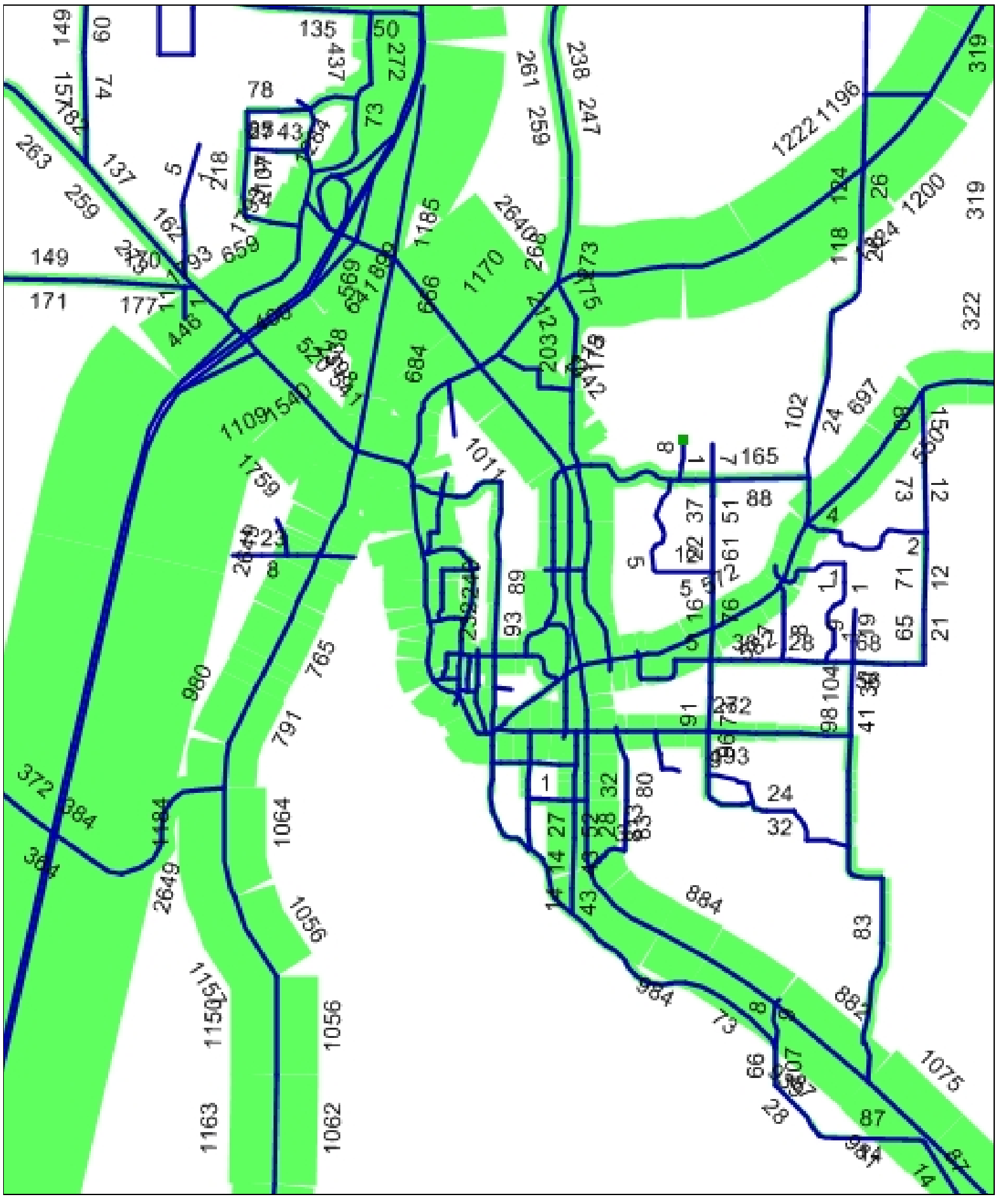
On SR 307, east of SR 305 daily volumes are increased from approximately 17,000 in 2003 to a forecast volume of 25,000 in 2025, an increase of 47 percent.

FUTURE TRANSPORTATION CONDITIONS

2025 Transportation Facilities—No Action

It was initially assumed for the update that there were no new transportation facilities beyond the existing and committed facilities identified for the 2006 transportation conditions.

Figure 5. 2025 Forecast Traffic Demand—No Action Baseline



Note: Annotated numbers show PM peak hour volume by direction of travel.

2025 Traffic Demand

The 2025 traffic demand was obtained from the traffic modeling process described in the previous section. As noted, traffic demand is expected to increase approximately 89 percent in the Poulsbo area between 2006 and 2025. The primary source of new traffic volumes is expected to be rapid development in the West Poulsbo Subarea. However, this growth will be felt citywide as a substantial number of the new trips will have destinations to the east that result in traffic increases on transportation facilities all across town, and especially in the Old Poulsbo Subarea.

2025 Transportation Service Standards

Level of Service Policy

It was assumed for 2025 that the existing City of Poulsbo policy would continue (LOS D desirable, but LOS E minimally acceptable). In addition, the City would continue to recognize the WSDOT standard of LOS E for state highways in urban areas.

2025 Level of Service - No Action

The No Action case for analysis of future conditions assumes conservatively that no new actions will be taken regarding transportation improvements, but that planned growth will occur. This No Action baseline scenario produced a forecast of overloads on numerous road segments.

Facilities Considered

The starting point for analysis of 2025 LOS conditions was that the same existing and committed projects considered for 2006 were in place. Initially, no other improvements were assumed.

Roadway Segments

LOS calculations were performed for key roadway segments in the study subareas. The LOS for roadway segments was calculated using the same segment-based procedures described for the 2006 calculations. The tables in **Appendix B** show the anticipated 2025 functional classification, V/C ratio and the approximate capacity remaining for each key roadway segment in each of the study subareas.

Table 9 summarizes the data from Appendix B to illustrate the 2025 transportation characteristics of key city streets and state highways. Out of 92 segments monitored citywide, 32 segments (35 percent) are deficient—i.e., projected to carry higher loads than the available capacity. The majority of these segments are on roads of higher classifications as well—i.e., principal arterials, minor arterials, and collector arterials. This indicates that congestion on main roads will be severe.

Intersections

LOS results for intersections were estimated on the basis of forecast volumes entering intersections. For this estimation, it was assumed that intersections with future peak hour entering volumes in excess of volume levels that typically satisfy signal warrants would fail to meet LOS standards, unless the existing condition of the intersection was improved. The types of improvements needed may consist of signalization and/or turn pocket channelization, or in some cases other measures. Several locations are identified where a signal is not necessarily the appropriate solution. For these locations, other transportation system management (TSM) alternatives should be evaluated, including such things as four-

way stop controls, roundabouts, reconfiguration of street alignments and turn restrictions. Transportation demand management strategies could also be considered to reduce the forecast volumes and minimize the need for costly mitigation.

Table 9. 2025 Roadway Segment Concurrency Status—No Action

Concurrency Data by Functional Classification	Subareas					Totals for all Subareas
	NE	SE	HC	OP	WP	
Principal Arterials						
Total Segments	-	-	-	-	3	-
Lowest growth factor of segments with permissible growth remaining	-	-	-	-	20%	-
Number of segments with no permissible growth remaining	-	-	-	-	1	1
Minor Arterials						
Total Segments	5	-	1	10	5	-
Lowest growth factor of segments with permissible growth remaining	8%	-	-	20%	159%	-
Number of segments with no permissible growth remaining	1	-	1	6	4	12
Collector Arterials						
Total Segments	1	8	5	4	10	-
Lowest growth factor of segments with permissible growth remaining	114%	126%	12%	149%	100%	-
Number of segments with no permissible growth remaining	-	3	1	2	-	6
Commercial Sub-collectors						
Total Segments	1	1	11	2	-	-
Lowest growth factor of segments with permissible growth remaining	105%	241%	20%	106%	-	-
Number of segments with no permissible growth remaining	-	-	2	1	-	3
Neighborhood Sub-collectors						
Total Segments	8	1	-	4	1	-
Lowest growth factor of segments with permissible growth remaining	21%	-	-	47%	-	-
Number of segments with no permissible growth remaining	3	1	-	2	1	7
Residential Sub-Collectors						
Total Segments	3	6	-	2	-	-
Lowest growth factor of segments with permissible growth remaining	100%	100%	-	29%	-	-
Number of segments with no permissible growth remaining	-	2	-	1	-	3
Total Number of Segments with No Permissible Growth Remaining						**32**

Source: Appendix B

2025 Transportation Service Deficiencies—No Action

Roadway Segments

Based on the analyses shown in Appendix B, there are 32 roadway segments that may not meet City or WSDOT LOS standards in 2025. These segments are shown in **Table 10.**

Table 10. 2025 Deficient Roadway Segments—No Action

Subarea	Functional Classification	Name	From	To
HC	Commercial Sub-collector	10th Avenue	600 ft n/o Liberty	200 ft n/o Liberty
HC	Commercial Sub-collector	10th Avenue	200 ft n/o Liberty	Liberty
HC	Minor Arterial	Hostmark	8th Avenue	SR 305
HC	Collector Arterial	8th Avenue	Hostmark	Iverson
NE	Minor Arterial	Lincoln Drive	w/o Pugh	CL
NE	Neighborhood Sub-collector	Mesford	Caldart	Schooner
NE	Neighborhood Sub-collector	Forest Rock Road	Tenth	Caldart
NE	Neighborhood Sub-collector	Pugh Road	Lincoln Drive	Lillehammer
OP	Minor Arterial	Hostmark	4th Avenue	6th Avenue
OP	Collector Arterial	Iverson	Jensen	4th Avenue
OP	Collector Arterial	Iverson	4th Avenue	7th Avenue
OP	Minor Arterial	Front Street	Bond	Torval Canyon
OP	Minor Arterial	Front Street	Torval Canyon	Jensen (N)
OP	Minor Arterial	Front Street	Jensen (N)	Sunset
OP	Minor Arterial	Front Street	Jensen	4th Avenue
OP	Minor Arterial	Hostmark	4th Avenue	6th Avenue
OP	Commercial Sub-collector	Jensen (S)	Iverson	Sunset
OP	Neighborhood Sub-collector	Torval Canyon	Front	4th Avenue
OP	Neighborhood Sub-collector	4th Avenue	Torval Canyon	Arbutus Court
OP	Neighborhood Sub-collector	4th Avenue	Arbutus Court	Iverson
SE	Neighborhood Sub-collector	Caldart	Hostmark	Gustaf
SE	Collector Arterial	Hostmark	SR 305	11th Avenue
SE	Collector Arterial	Hostmark	11th Avenue	Caldart
SE	Collector Arterial	Noll Road	SR 305	Mesford
SE	Residential Sub-collector	11th Avenue	Hostmark	Sol Vei Way
SE	Residential Sub-collector	12th Avenue	Lincoln Drive	new road D
WP	Commercial Sub-collector	Viking Way	SR 305	N. C. L.
WP	Minor Arterial	Finn Hill Road	W.C.L.	A Street
WP	Minor Arterial	Finn Hill Road	A Street	SR 3
WP	Minor Arterial	Finn Hill Road	SR 3	Viking
WP	Minor Arterial	Lindvig	Viking	Bond
WP	Principal Arterial	Viking Way	300 ft. of Lindvig	SR 305

Intersections

Based on the future travel forecasts, there are 12 intersections with entering volumes that will likely be high enough to fall below LOS standards in 2025 without improvements. **Table 11** summarizes the intersections so determined that may require future improvement to meet LOS standards. Also shown in Table 11 are six other intersections that could have other significant operational problems by 2025 as a result of the issues indicated in the table.

Table 11. 2025 Deficient Intersections—No Action

Subarea	Location	Intersection Issues	LOS
HC	Lincoln at 8th Avenue/Iverson	Spacing and Geometrics	*
HC	Hostmark at 8th Avenue	High Volumes	F
HC	Lincoln at 10th Avenue	High Volumes	F
HC	Liberty at 7th Avenue	Spacing	*
HC	Liberty at 10th Avenue	Spacing	*
HC	10th Avenue at Forest Rock Lane	Spacing	*
HC	SR 307 at Bernt Road	High Volumes	F
OP	Front Street at Torval Canyon	High Volumes	F
OP	Front Street at Jensen (north)	High Volumes	F
OP	Front Street at Sunset (3rd Extension)	High Volumes	F
OP	Front Street at Jensen (south)	High Volumes	F
OP	Front Street at Lincoln/Hostmark	High Volumes	F
NE	Lincoln at Pugh	High Volumes	F
SE	Hostmark at Caldart	High School Peak	*
WP	Finn Hill at Rude	Geometrics	*
WP	Finn Hill at SR 3 Southbound Ramp	High Volumes	F
WP	Finn Hill at SR 3 Northbound Ramp	High Volumes	F
WP	SR 305 at SR 3 Northbound Ramps	High Volumes	F

* Deficiency is based on operational considerations not reflected in peak hour level of service.

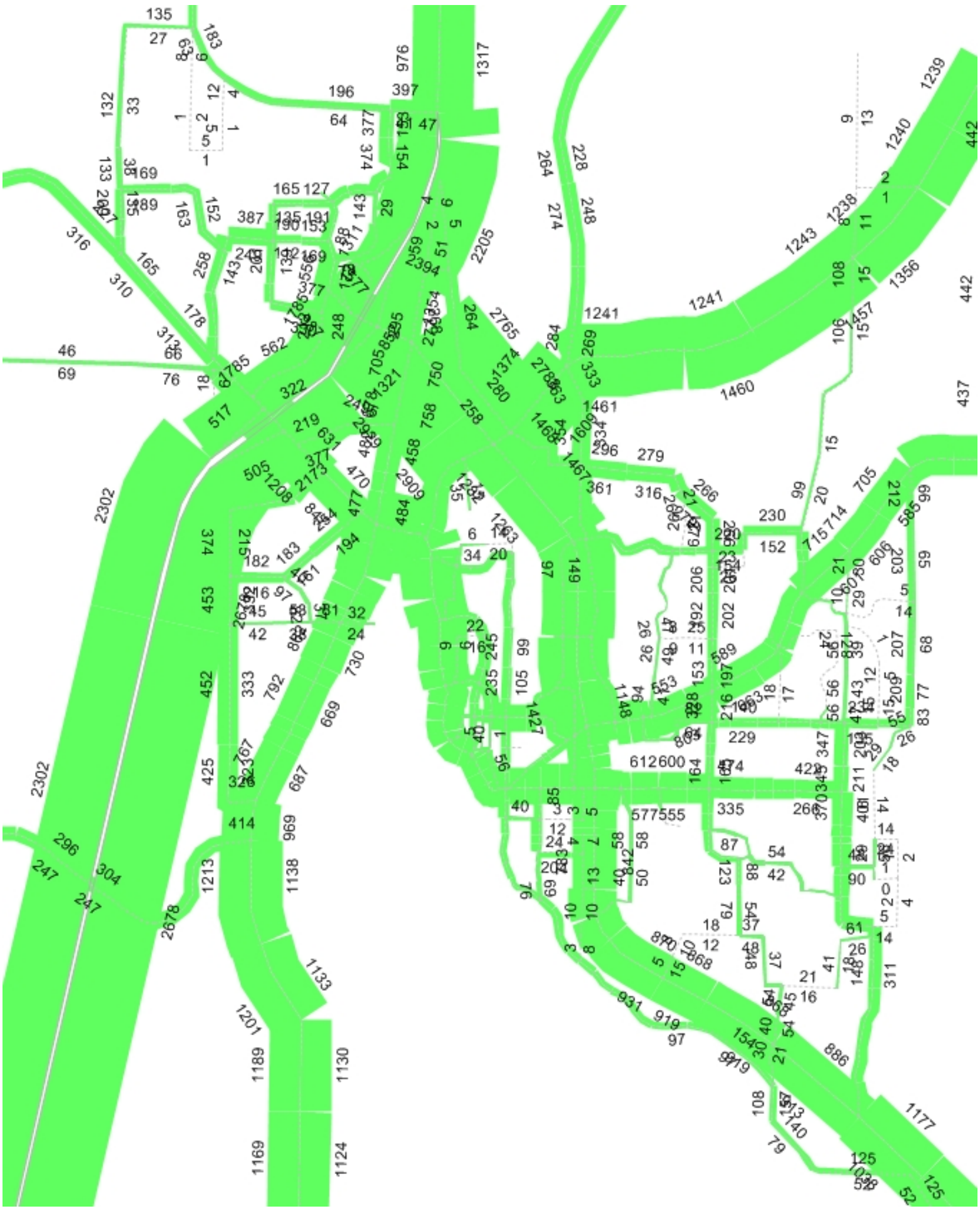
2025 Level of Service—With Improvements

This future scenario incorporates new roads in growth areas, and capacity improvements on existing roads throughout Poulsbo, to remedy the deficiencies described in previous tables. These improvements are described individually in the later section, 2025 Mitigation Requirements.

Revised Forecast

The traffic forecasting model for 2025 was modified to include the capacity improvements assumed for mitigation of the deficiencies identified above, in order to update the demand forecast on all roads. The revised volumes shown in **Figure 6** account for reallocation of some volumes when new road connections are added to the system. The level of service was re-evaluated for this revised forecast as detailed in Appendix C, and further discussed next.

Figure 6. 2025 Forecast Traffic Demand—With Improvements



Facilities Improved

For most locations with future deficiencies, improvements were defined that provide the capacity needed according to the No Action analysis, at reasonable cost and with low likelihood of adverse environmental impacts. Many of the improvement projects on existing roads provide for upgrading to full design standards, such as adding sidewalks and other urban features that are part of the city's design standards but missing or only partly found on existing older roads of rural origins. Turn pockets or turn lanes are added where needed. No new general traffic lanes for through travel are added to any existing arterial corridor; however, at the interchange of SR 3 and Finn Hill Road, two through lanes should be added on Finn Hill Road for adequate operation of a series of coordinated and interconnected signals.

New roads are added to the system at the level of collector arterials or sub-collector roads. These new road connections are essential to the orderly development of growth areas, first to provide for access to developing land parcels, and secondly to provide for efficient circulation within larger subareas. These new roads enable all travelers to follow the most direct paths to ultimate destinations. Of critical importance is the minimizing of emergency vehicle response times. Without the proposed new road connections between neighborhoods, some affected areas would suffer longer response times by first responders, with potentially serious consequences depending on the emergency.

In a few places, directly serving the forecast traffic growth by adding extra lanes would appear to solve the capacity deficiency but that action is not recommended, either for economic or environmental reasons (e.g., Front Street through downtown Poulsbo). The cost of building a wider road would be unacceptably high due to the high cost of acquiring right-of-way through an already built-up area. The social and environmental costs of such widening would also be unacceptably high. For those situations, alternative strategies for *travel demand management* are recommended instead, as further discussed in the later mitigation section.

Roadway Segments

After accounting for the added capacity due to recommended improvements, the LOS calculations were updated for key roadway segments in the study subareas. The LOS for roadway segments was calculated using the same segment-based procedures as before. The tables in **Appendix C** show the anticipated 2025 functional classification, V/C ratio and the approximate capacity remaining for each key roadway segment in each of the study subareas, based on the recommended improvements. Residual deficiencies are noted at locations where capacity improvements are not recommended. These deficiencies are to be mitigated by travel demand management strategies instead.

Table 12 summarizes the data from Appendix C to illustrate the 2025 transportation characteristics of key city streets and state highways. The table shows that some deficiencies remain on 20 segments (18 percent) out of 113 segments, and that the majority of these deficiencies are on routes of lower classifications—i.e., collector and sub-collectors rather than principal and minor arterials. This indicates that the problem of congestion on main roads in the No Action forecast has been largely offset by proposed improvements.

Intersections

LOS results for intersections were updated after accounting for the recommended improvements. These results were satisfactory wherever intersection upgrades were applied, including turn pockets, signalization, roundabouts, or all-way stop controls. Where physical improvements were not deemed feasible or adequate, the recommended mitigation includes travel demand management actions.

Table 12. 2025 Roadway Segment Concurrency Status - with Improvements

Concurrency Data by Functional Classification	Subareas					Totals for all Subareas
	NE	SE	HC	OP	WP	
Principal Arterials						
Total Segments	0	0	0	0	3	3
Lowest growth factor of segments with permissible growth remaining	NA	NA	NA	NA	32%	32%
Number of segments with no permissible growth remaining	0	0	0	0	0	0
Minor Arterials						
Total Segments	1	0	1	10	6	8
Lowest growth factor of segments with permissible growth remaining	22%	NA	7%	4%	10%	4%
Number of segments with no permissible growth remaining	0	0	0	3	3	6
Collector Arterials						
Total Segments	4	8	9	6	18	45
Lowest growth factor of segments with permissible growth remaining	54%	1%	5%	60%	35%	1%
Number of segments with no permissible growth remaining	0	0	1	2	0	3
Commercial Sub-collectors						
Total Segments	3	1	10	2	3	19
Lowest growth factor of segments with permissible growth remaining	35%	134%	3%	44%	66%	3%
Number of segments with no permissible growth remaining	0	0	1	0	0	1
Neighborhood Sub-collectors						
Total Segments	9	8	0	6	4	27
Lowest growth factor of segments with permissible growth remaining	5%	190%	NA	100%	27%	5%
Number of segments with no permissible growth remaining	4	0	0	4	2	10
Residential Sub-Collectors						
Total Segments	7	3	0	1	0	11
Lowest growth factor of segments with permissible growth remaining	122%	69%	NA	100%	NA	69%
Number of segments with no permissible growth remaining	0	0	0	0	0	0
Total Number of Segments with No Permissible Growth Remaining						**20**

Source: Appendix C

On 19 of the 20 segments with forecast overloads, the forecasted deficiency should be addressed by modifying the demand, rather than building additional capacity. This approach is discussed further in the following section.

2025 Transportation Service Deficiencies Remaining - With Improvements

Roadway Segments

Based on the analyses shown in Appendix C, 20 roadway segments are forecast to not meet City or WSDOT LOS standards in 2025. These segments are shown in **Table 13**. Mitigation of these deficiencies should take the form of travel demand management actions or reclassification of roads, since direct road improvements (i.e., adding lanes) are not sensible in 19 of 20 cases.

In several cases of Neighborhood Sub-collectors or a Commercial Sub-collector, the issue could be resolved by reclassifying the road to a higher level so as to qualify the road for higher capacity according to the methodology of Appendix E. This means accepting the higher volumes in combination with the adjacent land uses. A "wait and see" approach will suffice for the present.

In cases involving Minor Arterials, the issue is higher volumes that challenge the physical capacity of the road, with the consequence of a high level of congestion. Most of the problem locations are in the downtown area, along Front Street or connecting streets. Troubled segments on Finn Hill Road and Lindvig Way in West Poulsbo serve much the same traffic demands that also affect the Front Street corridor. Thirteen of the segments in Table 13 are all affected by this underlying issue - the attractiveness of the downtown street system as the most direct route from the west side of Poulsbo to the east side of Poulsbo. The recommended strategy is to pursue travel demand management actions to re-route this demand to other corridors (i.e., the freeway system) that are less direct but have higher capacity. A successful strategy to divert traffic away from the Front Street corridor will also resolve two other sets of problems. Removing trips from Front Street will directly reduce trips on neighborhood sub-collectors in the Old Poulsbo area and will also reduce overloads on Finn Hill Road and Lindvig Way.

In the area of the Finn Hill Road interchange with SR3, there will remain a future need for additional capacity, regardless of the success of the TDM strategy just proposed. A long range program of improvements should be worked out with WSDOT to add two through lanes on Finn Hill Road under SR 3 between Rasmussen Court and the Olhava A Street intersections, and to install a coordinated signal system for those locations and the SR3 ramp intersections between them.

Two proposed neighborhood sub-collector roads in the West Poulsbo area are forecasted to be overloaded in 2025. This condition arises from the assumption of high levels of development in the area to be served by these new roads. The recommended action is to "wait and see", but use this forecast information to vigorously pursue additional road connections in those developing areas. In the case of Cedar Lane, adding one more connection in the service area would likely suffice. In the case of Rasmussen Court Extension, the problem is one of through travel on this new link between Finn Hill Road and Viking Way, and is linked to the high demand at the SR3 interchange. The volume is not above the physical capacity of arterial roads, but is higher than should be accepted on a neighborhood collector. Two alternative solutions are possible: (a) either upgrade the classification of the road to commercial sub-collector and accept the forecast load, or (b) keep the lower classification of neighborhood sub-collector and consciously design the alignment of this new road to be discontinuous or circuitous through the developing area it serves, so as to reduce its appeal for through trips and reduce the demand to the level generated entirely within its service area.

Table 13. 2025 Deficient Roadway Segments Resolved—With Improvements

Sub-area	Functional Classification	Name	From	To	% Over	Recommended Future Mitigation Actions
NE	Neighborhood Sub-collector	Caldart	Youngquist	Lincoln	-3%	Wait; Reclass to Commercial Sub
NE	Neighborhood Sub-collector	Mesford	Caldart	Schooner	-8%	Wait; Reclass to Commercial Sub
NE	Neighborhood Sub-collector	Mesford	Schooner	23rd	-10%	Wait; Reclass to Commercial Sub
NE	Neighborhood Sub-collector	Mesford	23rd	Noll Road	-3%	Wait; Reclass to Commercial Sub
HC	Commercial Sub-collector	10th Ave	200' n/o Liberty	Liberty	-3%	Wait
HC	Collector	Iverson	8th	SR305	-13%	TDM (see OP Subarea)
OP	Collector	Iverson	Jensen	4th	-7%	TDM strategy
OP	Collector	Iverson	4th	7th	-3%	TDM strategy
OP	Minor Arterial	Front Street	Bond	Torval Canyon	-28%	TDM strategy
OP	Minor Arterial	Front Street	Torval Canyon	Jensen (N)	-24%	TDM strategy
OP	Minor Arterial	Front Street	Jensen (N)	Sunset	-11%	TDM strategy
OP	Neighborhood Sub-collector	Jensen (S)	Front	Iverson	-17%	TDM strategy; reclassify
OP	Neighborhood Sub-collector	Torval Canyon	Front	4th Avenue	-37%	TDM strategy
OP	Neighborhood Sub-collector	4th Avenue	Torval Canyon	Arbutus Court	-23%	TDM strategy
OP	Neighborhood Sub-collector	4th Avenue	Arbutus Court	Iverson	-30%	TDM strategy
WP	Minor Arterial	Finn Hill Road	Urdahl	Olhava A Street	-6%	WSDOT signal coordination
WP	Minor Arterial	Finn Hill Road	Olhava A Street	Rasmussen	-2%	WSDOT signal coordination; add through lanes
WP	Minor Arterial	Lindvig	Viking	Bond	-8%	TDM (see OP Subarea)
WP	Neighborhood Sub-collector	Cedar Lane	Finn Hill Road	New M Avenue	-11%	Wait; Reclass; add other roads
WP	Neighborhood Sub-collector	Rasmussen Ext	Finn Hill Road	Viking Way	-33%	Reclass; add other roads; TDM

Intersections

Based on the revised analysis including recommended physical improvements, LOS deficiencies would remain in 2025 at five intersections on Front Street in the downtown area, where direct physical improvements to increase capacity do not appear to be feasible or desirable. **Table 14** summarizes these intersections. As described above for the Front Street corridor and related roads, a strategy of Travel Demand Management should be relied on to alleviate future conditions at these locations, since physical expansion of the intersections does not appear desirable or feasible.

Four intersections at or near the SR 3/Finn Hill Road interchange are likely to have future LOS deficiencies, unless a coordinated signal system is installed between Olhava A Street and Rasmussen Court on Finn Hill Road, including the SR 3 ramp intersections in between. This would be a WSDOT operated system that also controls two city intersections. This short section of Finn Hill Road would also need to be widened for two additional through lanes, to handle the 2025 forecast volumes.

Table 14. 2025 Deficient Intersections Resolved - With Improvements

Subarea	Location	LOS Without Mitigation	Recommended Future Mitigation Actions
OP	Front Street at Torval Canyon	F	TDM Strategy
OP	Front Street at Jensen (north)	F	TDM Strategy
OP	Front Street at Sunset (3rd Extension)	F	TDM Strategy
OP	Front Street at Jensen (south)	F	TDM Strategy
OP	Front Street at Lincoln/Hostmark	F	TDM Strategy
WP	Finn Hill Rd at Olhava A Street	F	Signal coordination
WP	Finn Hill Road at SR 3 SB On Ramp	F	Signal coordination; through lanes
WP	Finn Hill Road at SR 3 NB Off Ramp	F	Signal coordination; through lanes
WP	Finn Hill Road at Rasmussen Court	F	Signal coordination

2025 MITIGATION REQUIREMENTS

This section describes in more detail the recommended plan of transportation improvements that was assumed in the preceding evaluation of 2025 level of service, and adds further discussion of the travel demand management (TDM) strategies needed to mitigate travel growth at locations where physical provision of sufficient capacity is not feasible or desirable.

Mitigation Options

There are generally three strategies for addressing LOS deficiencies identified in the 2025 Forecast with No Action. These are defined as follows and detailed next.

- Add transportation facilities to serve forecast travel demand.
- Apply TDM strategies to divert excess traffic away from problem areas.
- Relax the City's transportation service standards.

A combination of the first two strategies was found to be adequate to meet most of the 20-year forecast needs. Preceding discussion indicated that other remaining deficiencies could be addressed initially by a "wait and see" position, or reclassification of some sub-collector roads if necessary, near the end of the 20-year planning period. There is no need to consider lowering the adopted transportation level of service standards until after TDM strategies have been fully tested at some future date.

Add Transportation Facilities

Table 15 below indicates the improvements to 16 existing roadway segments needed by 2025 to correct potential service deficiencies.

Table 15. 2025 Required Roadway Improvement Projects

No.	Sub area	Classification	Name	From	To	Improvement Needed	Suggested Funding Type *
R1	HC	Commercial Sub-collector (reclass as Collector)	10th Avenue	600 ft n/o Liberty	Liberty	Turn lane sidewalks	Impact fee; frontage
R3	HC	Collector Arterial	8th Avenue	Hostmark	Iverson	Sidewalks; resurface	Impact fee
R4	NE	Neighborhood Sub-collector (Reclass as Collector)	Pugh	Lincoln	C.L.	Sidewalks; resurface	Impact fee; frontage
R5	NE	Minor Arterial	Lincoln	Lauri Vei Loop	UGA Boundary	Left-turn lane, sidewalks, bike lanes	Impact fee; grants
R6	NE	Neighborhood Sub-collector	Mesford	Caldart	Noll	Sidewalks; resurface	Developer
R7	OP	Minor Arterial	Hostmark	4th Avenue	6th Avenue	Sidewalks; resurface	City
R8	OP	Collector Arterial	Iverson	Jensen	4th Avenue	Turn lanes	Impact fee
R9	SE	Neighborhood Sub-collector	Caldart	Hostmark	Gustaf	Sidewalks; resurface	Impact fee
R10	SE	Collector Arterial	Hostmark	SR 305	11th Avenue	Through lanes	SR 305
R11	SE	Collector Arterial	Hostmark	11th Avenue	Noll	Turn lane, sidewalks	Impact fee
R12	SE	Residential Sub-collector	11th Avenue	Hostmark	Sol Vei Way	Sidewalks	Impact fee
R13	SE	Collector Arterial	Noll Road	Mesford	Lincoln	Sidewalks; resurface	Impact fee; frontage
R14	SE	Collector Arterial	Noll Road	SR305	Mesford	Sidewalks; resurface	Impact fee; frontage
R15	WP	Neighborhood Sub-collector	4th Avenue	Arbitus	Torval Canyon	Sidewalks; resurface	Impact fee
R16	WP	Minor Arterial	Finn Hill Road	Rhododendron	Olhava A Street	Sidewalks; resurface	Impact fee; frontage
R-17	WP	Neighborhood Sub-collector	Urdahl Road	Finn Hill Road	Olhava E Street	Sidewalks	Frontage
R-18	WP	Principal Arterial	Viking Way	300' n/o Lindvig	SR 305	Turn lane, sidewalks	Impact fee; frontage
R-19	WP	Commercial Sub-collector (reclassify as collector)	Viking Way	SR 305	N.C.L.	Sidewalks; resurface	Impact fee; frontage
R-20	WP	Local Access (reclass as Commercial Sub-Collector)	Vetter Road	Viking Way	End n/o SR 305	Sidewalks; resurface	Impact fee; frontage
R-21	WP	Local Access (reclass as Commercial Sub-Collector)	Cedar Lane	Finn Hill Rd	New Road "M"	Sidewalks; resurface	Impact fee; frontage
R-22	WP	Local Access (reclass as Commercial Sub-Collector)	Liberty Road	Viking Way	New Road "M"	Sidewalks; resurface	Impact fee; frontage
R-23	NE	Local Access (reclass as Commercial Sub-Collector)	Bernt Road	SR 307	Little Valley Rd	Sidewalks; resurface	Impact fee; frontage
R-24	NE	Local Access (reclass as Commercial Sub-Collector)	Genes Road	Little Valley Road	Approx 12th Avenue	Sidewalks; resurface	Impact fee; frontage
R-25	NE	Local Access (reclass as Neighborhood Sub-Collector)	Johnson Road	SR 305	New Road "M"	Sidewalks; resurface	Impact fee; frontage
R-26	NE	Commercial Sub-collector	Little Valley Road	Forest Rock Lane	UGA Boundary	Sidewalks; resurface	Impact fee; frontage

No.	Sub area	Classification	Name	From	To	Improvement Needed	Suggested Funding Type *
R-27	WP	Minor Arterial	Finn Hill Road	Olhava A Street	Rasmussen Court	Add through lanes; Signal coordination; TDM strategy	Impact fee; WSDOT
TDM1	OP	Minor Arterial	Front Street	Bond Road	4th Avenue	TDM strategy	Impact fee, grant
TDM2	WP	Minor Arterial	Finn Hill Road	Rasmussen Court	Viking Way	TDM strategy	Impact fee; grant
TDM2	WP	Minor Arterial	Lindvig Way	Viking Way	Bond Road	TDM strategy	Impact fee; grant
TDM3	NE	Neighborhood Collector	Forest Rock Lane	10th Avenue	Caldart	TDM strategy	Impact fee
TDM3	NE	Neighborhood Collector	Caldart	Forest Rock	Lincoln	TDM strategy	Impact fee

Source: Appendix D
* Funding types may change on further analysis; most projects could be implemented and funded by two or more methods.

Most of the road segment improvements consist of adding turn lanes, median lanes, sidewalks, and bicycle lanes. Some roads will also require reconstruction of obsolete pavement. A significant emphasis is placed on completion of sidewalks to satisfy the proposed segment-based LOS policy. Without sidewalk improvements on many streets, the additional traffic impacts caused by new developments would create unsafe conditions for pedestrians. The City's design standards require sidewalks on all roads. The segment-based LOS policy enforces the requirement to add sidewalks on older rural roads as a condition for carrying the increased volumes due to urban growth.

The most likely source of funding for each project as suggested in Table 15 is based on the following assumptions:

- "Impact Fee"—The improvement is needed for growth and the need is distributed over several developments.
- "Frontage"—The improvement is needed for growth and could be completed as frontage improvements by abutting developments.
- "City"—The improvement is funded as a city project.
- "SR 305"—The improvement will be implemented by the SR 305 widening project.
- "WSDOT"—The improvement requires approval and/or funding by the Washington State Department of Transportation

Not shown in Table 15 are 16 other segments that were found in Appendix B to be potentially deficient by 2025, but the forecast growth cannot be reasonably served by expansion of existing facilities. These are located primarily in the Old Poulsbo Subarea. The character of that subarea would be endangered by expanding road facilities to handle the traffic increases indicated by the traffic model. Therefore, the second option of travel demand management strategies must be considered to address traffic issues for those thirteen segments. This is discussed further in the following sections.

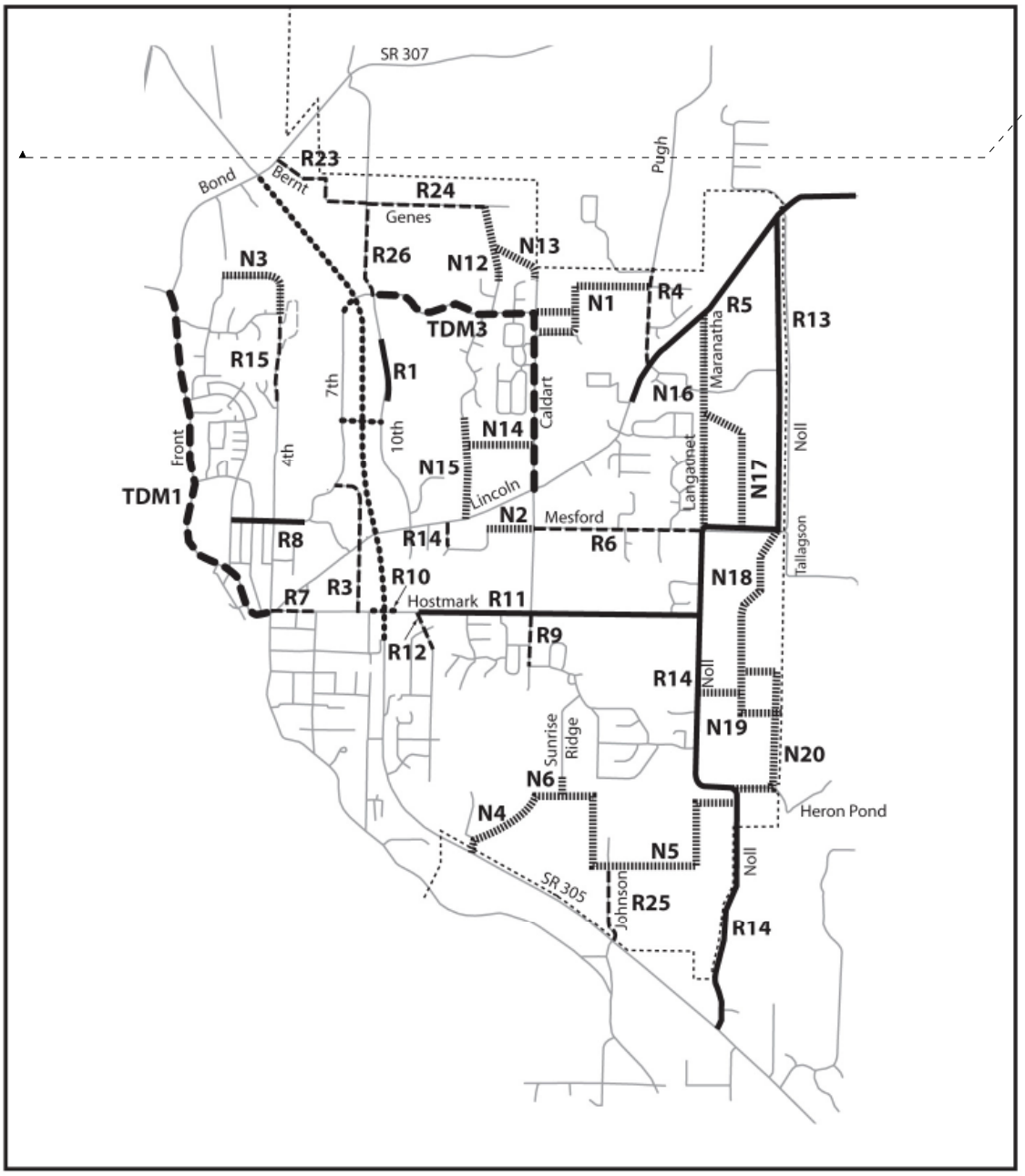
Table 16 shows the new roadway segments that are recommended for consideration by 2025. All projects shown in Table 16 have been designated tentatively for funding by developments since they serve the purpose of providing access to and through undeveloped land. It may be more effective, however, to include some of these roads in the impact fee program to assure timely and orderly implementation, with the cost evenly distributed to all developments in the area served. This requires further investigation after the road locations are included in city plans. Locations of new roadways and roadway improvements are shown in **Figures 7A** and **7B**.

Table 16. 2025 Required New Roadway Segments

No.	Sub area	Class	Name	From	To	Suggested Funding Type *
N1	NE	Neighborhood Sub-collector	Forest Rock Extension	Caldart	Pugh	Developer
N2	NE	Residential Sub-collector	Mesford Extension	13th Avenue	Caldart	Developer
N3	OP	Neighborhood Sub-collector	New Road P	1st Avenue	4th Avenue	Developer
N4	SE	Neighborhood Sub-collector	New Road W	Baywatch Court	Sunset Ridge	Developer
N5	SE	Neighborhood Sub-collector	New Road U	Johnson Road	Noll Road	Developer
N6	SE	Collector Arterial	Sunrise Ridge Extension	Existing End	Johnson Road	Developer
N7	W	Collector Arterial	Olhava E Street	Existing End	Urdahl	Developer
N8	W	Collector Arterial	New Road M	Finn Hill Road	Viking Way	Developer
N9	W	Neighborhood Sub-collector	New Road N	Rhododendron	Urdahl	Developer
N10	W	Neighborhood Sub-collector	Rasmussen Court Extension	Finn Hill Road	Viking Way	Developer
N11	W	Commercial Sub-collector	Vetter Road Extension	Vetter Rd (existing)	SR307	Developer
N12	NE	Residential Sub-collector	12th Avenue	Existing End	Genes Ln	Developer
N13	NE	Commercial Sub-collector	Caldart Extension	Existing End	Genes Ln	Developer
N14	NE	Residential Sub-collector	New Road B	12th Avenue	Caldart	Developer
N15	NE	Residential Sub-collector	12th Avenue	Existing End	Lincoln	Developer
N16	NE	Residential Sub-collector	Langaunet / Maranatha	Mesford	Lincoln	Developer
N17	NE	Residential Sub-collector	New Road Q	Langaunet	Noll Rd (E-W)	Developer
N18	SE	Residential Sub-collector	New Road R	Noll Rd @ Mesford	New Road S	Developer
N19	SE	Residential Sub-collector	New Road S	Noll Rd @ Thistle	New Road T	Developer
N20	SE	Residential Sub-collector	New Road T	New Road S	Noll Rd @ Heron Pond	Developer

Source: Appendix D

* Funding types may change on further analysis; most projects could be implemented and funded by two or more methods.



LEGEND:

- Urban Growth Area
- New Road or Extension
- Add TWLTL, Sidewalks, Bicycle Lanes
- Sidewalks and Reconstruction to City Standards
- SR 305 Widening Project
- Travel Demand Management Corridor

20-Year Road Improvement Plan
East Poulsbo Sub-Areas

Poulsbo Transportation Plan Update

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Figure 7A

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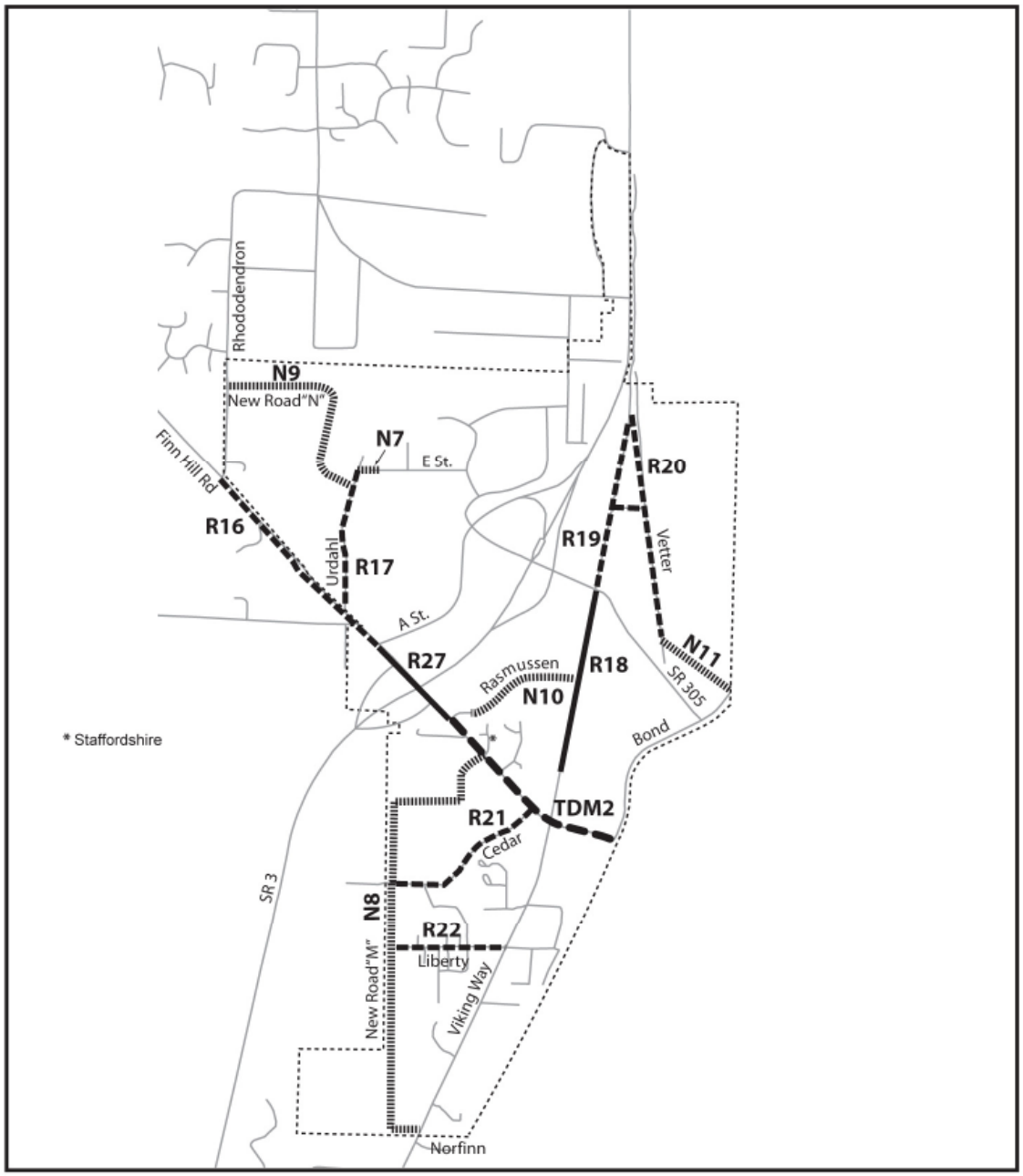

LEGEND:

- Urban Growth Area
- New Road or Extension
- Add TWLTL, Sidewalks, Bicycle Lanes
- Sidewalks and Reconstruction to City Standards
- SR 305 Widening Project
- Travel Demand Management Corridor

20-Year Road Improvement Plan
West Poulsbo Sub-Area

Poulsbo Transportation Plan Update

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Figure 7B

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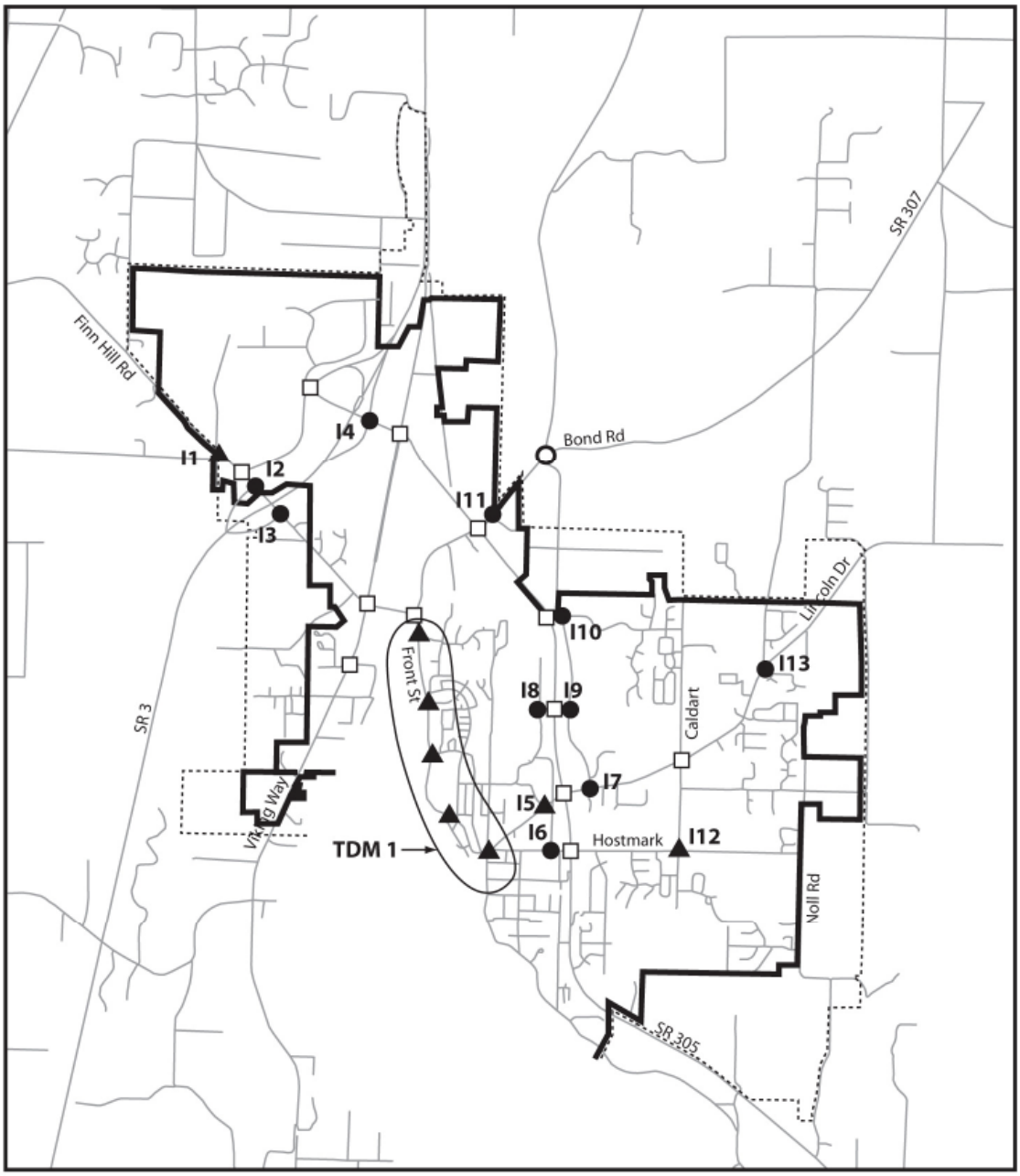
Table 17 shows the improvements to existing intersections that are recommended for consideration by 2025. Intersection improvements are of two general types: signalization or geometric changes. Each intersection will require improvements to operate satisfactorily in the 20-year future, but a traffic signal is not always the right tool. For several locations, other choices should be evaluated, such as roundabouts, four-way stops, or reconfiguration of street connections. On Front Street, travel demand management measures should be pursued instead of signalization or widening. **Figure 8** shows the location of intersection improvements.

Table 17. Required Intersection Projects

No.	Subarea	Location	Improvement Needed	Suggested Funding Type *
I1	WP	Finn Hill at Rude and Urdahl	Potential roundabout	Impact fee
I2	WP	Finn Hill at SR 3 Southbound Ramp	Signal, Through Lanes	Impact fee
I3	WP	Finn Hill at SR 3 Northbound Ramp	Signal, Through Lanes	Impact fee
I4	WP	SR 305 at SR 3 Northbound Ramps	Signal, Channelization	Impact fee
I5	HC	Lincoln at 8th Avenue/Iverson	Potential roundabout	Impact fee
I6	HC	Hostmark at 8th Avenue	Signal	Impact fee
I7	HC	Lincoln at 10th Avenue	Signal	Impact fee
I8	HC	Liberty at 7th Avenue	Signal	Impact fee
I9	HC	Liberty at 10th Avenue	Signal	Impact fee
I10	HC	10th Avenue at Forest Rock Lane	Signal	Impact fee
I11	HC	SR 307 at Bernt Road and Vetter Extension	Signal, Channelization	Impact fee
I12	SE	Hostmark at Caldart	Channelization	Impact fee
I13	NE	Lincoln at Pugh	Signal	Impact fee
I14	WP	Finn Hill at Rasmussen Court	Signal, Channelization	Impact fee
I15	WP	Finn Hill at New Road M	Signal, Channelization	Impact fee
I16	WP	Viking Way at Rasmussen Court Extension	Signal, Channelization	Impact fee
TDM1	OP	Front Street at Torval Canyon	TDM measures	Impact fee
TDM1	OP	Front Street at Jensen (north)	TDM measures	Impact fee
TDM1	OP	Front Street at Sunset (3rd Extension)	TDM measures	Impact fee
TDM1	OP	Front Street at Jensen (south)	TDM measures	Impact fee
TDM1	OP	Front Street at Lincoln/Hostmark	TDM measures	Impact fee

* Funding types may change on further analysis; most projects could be implemented and funded by two or more methods.

Analyses indicate that with these recommendations implemented in a timely manner, the transportation facilities in all but the Old Poulsbo Subarea will be able to accommodate the forecasted 2025 demand and meet desired transportation service standards.



LEGEND:

- City Limits 2005
- Urban Growth Area
- Existing or Funded Signal
- Future Signal, or equivalent controls
- Future Signal - Outside UGA but "Gateway" to Poulsbo
- Future Design Need (other than signal may be best)

Future Intersection Needs

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Figure 8

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Apply Transportation Demand Management Strategies

In those situations where it is not physically possible, economically viable, or socially desirable to meet forecast growth by adding new capacity (e.g., new lanes) in the same location where the demand appears, an alternative strategy may be to divert the forecast traffic growth to other possibilities elsewhere. Collectively, such strategies are described as Transportation Demand Management. The concept is to reduce the demand instead of increasing the supply.

Some common examples of TDM are:

- Speed humps, bumps, chicanes, and other traffic calming devices to discourage through traffic
- All-way stop controls to favor local turning movements over through movements
- Signal timing strategies that favor certain movements over others
- Increased transit operations to provide an alternative to automobile travel
- Support for carpooling and vanpooling to reduce commute trips by automobile
- Provision of continuous high-quality pedestrian and bicycle networks through the affected area
- Provision of increased capacity and better continuity on alternative routes

As mentioned before, 13 roadway segments shown in **Table 18** are also expected to have transportation deficiencies by 2025, but it appears unfeasible to widen those locations to provide more capacity. There are three general groups of related problem locations:

Table 18. 2025 Segments for Transportation Demand Management

Subarea	Class	Name	From	To
NE	Neighborhood Sub-collector	Caldart Avenue	Youngquist	Lincoln
NE	Neighborhood Sub-collector	Mesford Road	Caldart	Noll Road
NE	Neighborhood Sub-collector	Pugh Road	Lincoln	N.C.L.
OP	Minor	Front Street	Bond	Torval Canyon
OP	Minor	Front Street	Torval Canyon	Jensen (N)
OP	Minor	Front Street	Jensen (N)	Sunset
OP	Minor	Front Street	Jensen	4th Avenue
OP	Commercial Sub-collector	Jensen (S)	Iverson	Sunset
OP	Neighborhood Sub-collector	Torval Canyon	Front	4th Avenue
OP	Neighborhood Sub-collector	4th Avenue	Torval Canyon	Arbutus Court
OP	Neighborhood Sub-collector	4th Avenue	Arbutus Court	Iverson
W	Minor	Finn Hill Road	A Street	SR 3
W	Minor	Finn Hill Road	SR 3	Viking
W	Minor	Lindvig	Viking	Bond

(a) Northeast Subarea Neighborhood Sub-collectors with High Volumes

Caldart Avenue, Mesford Road, and Pugh Road are each projected to eventually serve volumes of traffic that will be higher than the allowable capacity provided in Appendix E for Neighborhood Sub-collectors. The forecast overload on Caldart Avenue and on Mesford Road is less than 10 percent above the allowable 4,000 ADT per Appendix E. For both roads, the increased traffic flow stems from the future development of the adjacent areas served by the roads in question. The forecast overload is not an existing issue, but will arise by 2025, or when all adjacent land areas are fully developed. In the case of Caldart Avenue, the traffic increase is partly attributed to the proposed connection to Genes Lane, which is itself an effort to reduce traffic otherwise using Forest Rock Lane.

The issue in these cases is not traffic congestion per se, but rather that the forecast volume will exceed the chosen standard for sub-collectors serving residential neighborhoods. In Appendix E, the allowable capacity for a neighborhood sub-collector is set at 4,000 daily vehicles. This is well below the physical capacity of arterial roads (which is well over 10,000). It reflects a policy to minimize traffic noise, pedestrian/vehicular conflicts, and other traffic impacts on the adjacent residential properties. In the cases of Caldart Avenue and Mesford Road, improvement by adding sidewalks is needed to complete the standard design of those roads so as to support that capacity level. The forecast volumes in 2025 rise to a level slightly above the intended maximum, but that level will not materialize until late in the 20-year planning period—if indeed it occurs at all. Properties fronting on those roads are amenable to development with nearly all new residences taking access from connecting side streets. In the case of Forest Rock Lane, the road is fully developed with sidewalks in place, and over a dozen homes directly fronting on that road.

In the case of Pugh Road, similar issues arise, but the road provides a direct connection north to State Highway 307, and provides access to a large number of parcels in and out of the city. The natural function of this road alignment rises to a higher level, such that classification as a Collector Arterial makes sense. The forecast volumes for Pugh Road are also as high as 5,700 daily vehicles, which is substantially above the recommended maximum for a Neighborhood Sub-collector, but well below the maximum for a Collector Arterial.

Possible strategies to offset the forecast overloads on these roads would include:

- Develop connecting roadways that would divert some travel demand away from the adversely affected roads. This does not appear feasible in practice, since the affected roads are direct routes to the arterial network for adjacent developing areas.

- Impose speed bumps or other traffic calming devices to discourage through traffic. The demand for travel on Forest Rock Lane, Caldart Avenue, and Mesford Road appears to stem from areas legitimately entitled to use those roads for access to the arterial network, so this tactic will not reduce demand significantly. However, it might reduce speeds and so provide a different kind of relief to affected neighbors.

- By policy, rezone undeveloped areas to lower density, to eliminate a portion of the forecast travel demand. This may not be consistent with GMA requirements for urban densities, however.

- By policy, raise the maximum allowable capacity for neighborhood collectors from 4,000 to 5,000 ADT. This would not alleviate the traffic loads but would remove the deficiency from City plans if nothing else can be done.

- By policy, reclassify the roads as Collector Arterials, rather than Neighborhood Collectors, which would raise the allowable capacity similar to the previous example. This would also not alleviate the traffic loads but would remove the deficiency from city plans if nothing else can be done.

The recommended strategy is to do nothing at present, consider traffic calming techniques in the future, and wait until need clearly arises before considering plan-level policy changes.

(b) Old Poulsbo Subarea Through-Traffic

Most of the future overloads would occur on roads in the Old Poulsbo Subarea. The forecast travel increases would cause unwelcome degradation of the character of that historic district. The source of the traffic increases is predominantly the growth of residential and commercial activity in the West Poulsbo Area, especially along Viking Way. This forecast growth inevitably attracts travel between that area and the East Poulsbo Area along SR 305 and east of the highway. The straightest path between those points goes through the Old Poulsbo Subarea.

Widening any roadways in Old Poulsbo, especially Front Street, to accommodate through travel would be contrary to the character and continued success of that historic commercial area. Similarly, it does not appear desirable to carry the excess arterial volumes on other collector streets in the subarea, such as Torval Canyon Road, 4th Avenue, Jensen Avenue, Sunset Way and Iverson Street. The imminent expansion of SR 305 will bring some relief to the downtown area, when completed. Methods should be investigated in future years to preserve those gains, by reducing the attractiveness of downtown area streets for through trips. Options to be considered would include:

- Traffic calming techniques such as speed humps or bumps, to deter through traffic from using subarea streets

- All-way stop controls at all intersections on Front Street and possibly elsewhere in the downtown area

- Coordination of traffic signal controls on Viking Way, Lindvig Way, and Bond Road to encourage more traffic to bypass the downtown area via those roads instead

- Traffic control strategies east of downtown on Iverson Street, Lincoln Way, and Hostmark Street, to encourage traffic to use SR 305 instead to reach West Poulsbo

- Support expanded service citywide by Kitsap Transit to reduce vehicular traffic everywhere

- Encourage carpooling to/from employment locations by such means as preferential parking and cash subsidies to employees who choose not to drive (and Thus, save the employer the cost of a parking space)

(c) Finn Hill Road and Lindvig Road

This minor arterial corridor through the West Poulsbo Subarea is inevitably the carrier of much of the traffic growth arising from development in that area. In addition, Finn Hill Road connects West Poulsbo directly to SR 3 and to the Olhava retail shopping center. Lindvig Road ties West Poulsbo to the eastern majority of the city. Reclassification of these roads would alleviate most of the overload problem on paper, and would in fact bring greater logical consistency to the functional classification plan.

On Finn Hill Road in the vicinity of SR 3, operational improvements to the interchange area may be developed, such as adding turn lanes and signal controls, to maximize the operational capacity of that area. Within the interchange area, two additional through lanes should be added to Finn Hill Road as well, by 2025. Between SR 3 and Viking Way, the route has been fully developed as a 3-lane arterial with sidewalks and bicycle lanes. Adding more through lanes does not appear desirable, although that might need to be reconsidered in the distant future. The forecast demand on 3-lane Finn Hill Road, at up to 24,000 ADT, would actually exceed the demand on 5-lane Viking Way, at 22,000 ADT. Moreover, the classification of Viking Way as a principal arterial appears to be in contradiction to the classification of Finn Hill Road as a minor arterial, since the latter serves more long-distance through travel and connects directly to SR 3, the regional freeway.

Reclassifying Finn Hill Road as a principal arterial would increase the allowable capacity to the maximum possible for the route, and would suffice for many years. The forecast deficiency would not have to be reevaluated until near the end of the 20-year planning period. To obtain this reclassification, the City will need the support of Kitsap County, Puget Sound Regional Council, and WSDOT. Downgrading Viking Avenue to minor arterial status would be a desirable and logical companion change, and would help to satisfy federal guidelines limiting the amount of allowable principal road miles in an area.

Along with Finn Hill Road, the connecting route via Lindvig Road and Bond Road to SR 305 deserves to be reclassified as a principal arterial. This would be consistent with the strategy mentioned above to encourage use of that route to connect east and west parts of Poulsbo, without going through the downtown area. Signal timing strategies at both ends of Lindvig Road to protect the downtown area could be better supported if the route is designated as principal arterial.

Congestion on Lindvig Road appears to be inevitable, a reflection of the central place of that road in the Poulsbo traffic network. Future traffic management strategies should focus on optimizing signal timing for through movements, and optimizing the capacity of the corridor by maximizing the available turn pockets and storage lanes at the two intersections with Viking Way and with Bond Road.

Relax Transportation Service Standards

An acceptable balance of transportation facilities and travel demand will be achieved in 2025 by improving facilities and implementing travel demand management strategies as described above. It should not be necessary to relax the City's transportation service standards in the 20-year planning period. Some overload situations may arise near the end of the period that would be dealt with by reclassifying certain roads as described above.

Mitigation Costs

The total amount of future transportation system needs is estimated to cost a total of $125 million, including the cost of new sub-collector roads within developments as well as the cost of upgrading existing roads and intersections throughout the city and including a few road segments in the urban growth area slated for future annexation to the city. Of this total, the majority ($74 million) represents new sub-collector roads providing circulation into and through subdivisions, which will be constructed by developers to City standards as part of site development plans (Projects N-1 through N-20 in Figure 6). The improvements to the existing citywide road network that are needed for growth are projected to cost $31 million (Projects R-1 through R-29, and I-1 through I-16, and TDM-1). These projects would be funded by a combination of public and private sources.

Roadway Improvement Costs

Preliminary roadway segment costs were determined by applying planning level unit costs for required lineal feet of improvements. Specific unit costs for sidewalks, turn lanes, bike lanes, roadway widening and new roadways were developed and applied to the lengths of various improvements required.

As an illustration of the cost factors used in Appendix D, the cost to construct a complete new road consisting of two travel lanes, a median turn lane, two bicycle lanes, and curb/gutter/sidewalk on both sides, is projected to cost $10 million per mile, including right-of-way acquisition, planning and design, and contingencies for unknown factors. These cost factors reflect recent high increases in the cost of steel and asphalt, and other inflation effects versus older cost estimates.

Costs in future years will rise with inflation. To keep the transportation plan's costs up to date, the 2006 cost estimates used in this report should be annually updated for the change in the construction cost index in the Puget Sound region, or for Washington State generally.

The estimated total cost of existing roadway improvements needed by 2025 is $48 million as detailed in **Appendix D.**

This amount does not include new roads within subdivisions that would be provided for by developers as part of their site development obligations. The estimated cost of these roads amounts to an additional $74 million. New roads N-1 through N-20 are an important part of the future transportation plan, even though their cost does not appear in the public finance plan. It is most important to identify these roads in the transportation plan, to ensure that new developments when they occur are properly coordinated with those roads and provide for their respective portions of such roads.

Intersection Improvement Costs

Preliminary intersection costs were determined by applying planning level unit costs for various intersection improvements. Specific unit costs for signalization, roundabout construction rechannelization, realignment, and two-way and all-way stop-control were developed and applied to the various intersection locations. The estimated cost of intersection improvements needed by 2025 is about $7 million as detailed in **Appendix D.**

Mitigation Funding Scenarios

Developers will provide 100 percent of the new road projects needed within new subdivisions. The cost of improvements to existing roads and existing intersections would be born by a combination of public and private sources. The total amount to be covered is $48 million for road improvements, and $7 million for intersections, or $55 million total. This amount may vary in the future, as refinements are added to change the assumptions in this report.

Table 19 shows some of the options the City could pursue to fund the transportation projects needed to balance transportation facilities and demand in 2025. Not all options apply to all projects and additional work is needed to match specific projects and funding sources and to be sure adequate funding is identified for all projects. The amount of funding foreseeable based on current levels of taxation and grant programs is estimated at $11 million. This is far less than the forecast need calculated above as $55 million.

Table 19. Mitigation Projects Funding Sources

Funding Source	Typical Projects	Approximate Funding Available
Gas Tax	All transportation related projects	$ 500,000
State/Federal Grants	Local agency capacity and safety projects	5,000,000
Legislative Grants	Usually specific project of economic interest	500,000
Other Agencies	Roads of significance for WSDOT and Kitsap County	1,500,000
REET 1	Real Estate Excise Tax	1,750,000
REET 2	Real Estate Excise Tax	1,750,000
	Funding Totals	**$ 11,000,000**

The additional funding need is approximately $44 million to implement all of the improvements needed for 2025. To develop this amount of funding will require a combination of additional public funds, impact fees and other developer contributions over the next 20 years.

IMPACT FEES AND OTHER DEVELOPMENT-BASED MITIGATION

Impact fees are authorized by the Growth Management Act, as one method of raising funds for transportation improvements needed for growth. In order for a GMA impact fee to be lawfully enacted, the underlying analysis of growth forecasts, deficiency assessment, and fiscal analysis, all must be included in the adopted Transportation Element of the Comprehensive Plan. Based on the assumptions of this section, the financial shortfall is $44 million in 2006 dollars. The travel forecasting analysis in Table 8 identified a travel demand growth of 9,510 peak hour trips, based on the forecasted residential growth of 3,500 dwelling units and 2.4 million square feet of commercial development, over 20 years. Of that amount, about 3,000 trips are derived from residential growth and 6,500 are derived from commercial growth; however, much of the commercial trip generation must be discounted for impact fee purposes because it represents a double-counting of trips already considered at the residential end of the trip, or it represents a "pass-by" trip that adds no impacts to the road system away from the site itself. The net new trip generation representing trips originating at commercial sites in Poulsbo and destined for locations outside Poulsbo is estimated at 20 percent of the raw total, or 1,300 trips. Thus, the net basis for allocating costs via impact fees is the sum of 3,000 residential-based trips and 1,300 net new commercial-based trips, or 4,300 net new peak hour trips. On a daily basis, this is equivalent to 43,000 trips.

If the entire unmet demand is gathered via impact fees, and typical trip generation rates are used for dwellings and for commercial development, the $44 million amount could be raised by a fee schedule that averages $1,024 per daily trip.

Rate per Daily Trip
Total unmet need = $44 million
Future growth in trip generation = 43,000 daily trips
Unfunded cost of growth per daily trip = $1,024

This would be fairly apportioned to residential and commercial developments as follows:

Application to Dwellings:

Most residential development consists of single-family units generating 10 daily trips. Townhome and condominium developments generate about 8 daily trips, while apartment developments typically generate about 6 daily trips. For illustration purposes, the single family rate is calculated here.

Average trip rate = 10 daily trips per single-family dwelling
Fee Rate = $10,240 per single-family dwelling

Application to Non-residential Developments:

Non-residential developments have a wide range of trip generation characteristics, ranging from as low as 10 daily trips per 1,000 square feet (office buildings) to over 100 daily trips per 1,000 square feet (fast food restaurants). Separate trip rates would apply to each different category of development. The broad average rate for all planned development citywide as represented in Table 8 is 25 daily trips, which is broadly representative of neighborhood-scale retail developments. After discounting for pass-by trips and intra-city double-counted trips, the net new trip generation for impact fee purposes would be reduced to about 5 trips per 1,000 square feet.

Effective trip rate = 5 net new daily trips per 1,000 square feet
Fee Rate = $5,120 per 1,000 square feet

Adjustment Factors

The illustration above does NOT constitute a proposed impact fee schedule for Poulsbo, and should be viewed as raw information provided as a starting point for development of an impact fee policy. Before an impact fee policy is adopted, additional consideration of the following issues should be undertaken, to assure the policy is balanced and equitable:

- Improvements provided by developments in lieu of fees
- Adjustment of fees for relative trip lengths between different development types
- Adjustment of fees for location within Poulsbo
- Additional funding possibilities from local sources (allocation of city general revenues)
- Additional funding possibilities from other sources (future grants, future state legislation)

These potential adjustment factors represent alternative ways to allocate costs. Depending on the degree to which each option is applied, the amount of the impact fee could vary significantly. **Table 20** illustrates several hypothetical combinations of assumptions that demonstrate this potential range. The variables considered are the amount of public sector funds provided (expressed as multiples of the $11 million amount estimated in Table 20) and the proportion of the remaining costs that are contributed directly by developers in the form of site-related frontage improvements and/or site access roads built to City collector standards.

Table 20. Alternative Impact Fee Schedules (Fee per Daily Trip)

Amount of Public Sector Funds	0% Direct Developer Construction	20% Direct Developer Construction	40% Direct Developer Construction	60% Direct Developer Construction
$11 million	1,024	819	**614**	410
$22 million	768	614	**461**	307
$33 million	512	410	**307**	205
$44 million	256	205	**154**	102
$55 million	0	0	**0**	0
Basis: $55 million need amortized over 43,000 daily trips.				

If the most conservative assumption is made that none of the needed projects are provided by developer contributions such as frontage improvements, then the fee rate is given in the first column. Based on the estimate above that $11 million would be forthcoming from grants and other public sources, the indicated fee schedule would be $1,024 per daily trip.

Analysis of frontage options provided in Appendix D suggests that the likely contribution from direct developer construction as frontage improvements would be about 40 percent. Using that estimate and the $11 million assumption for public funds, then the fee schedule would be based on a rate of $614 per daily trip. This is shown in the table at the top row of the shaded (40%) column.

If future public sector funds were assumed to be greater than $11 million, then the fee schedule would decrease accordingly, as indicated in various rows of the table. In the ultimate extreme, if public sector funds were to equal $55 million, then there is no unmet need, and no basis for impact fees at all, according to the rules of the Growth Management Act.

The impact fee schedule ultimately adopted should be clearly based on the need to balance the financial assumptions over a multi-year period, in Poulsbo. There is no technical reason for impact fees in Poulsbo to match those of any other jurisdiction. Each jurisdiction allocates its financial resources differently. Some use local funds (general revenues) for transportation, and some do not. Success with obtaining grants from state and regional entities varies considerably between jurisdictions. The amount of direct developer contributions depends on local development standards.

Impact fees are provided in state law as one more optional tool for local governments provided in state law, and are not a requirement. The key requirement of state law is that the need for impact fees be demonstrated in the comprehensive plan, based clearly on the cost of capacity needed for future growth and after accounting for all other foreseeable resources. Impact fees may not be used for existing deficiencies, and impact fees must be allocated to each class of development based on a reasonable relationship to the impacts of development. A recent State Supreme Court decision reviewed the City of Olympia's impact fee practices, and affirmed that cities have considerable latitude in determining what that reasonable relationship is.

The court also clarified that a citywide flat-rate fee schedule is permissible. Impact fees need not demonstrate the same degree of proportional measurement of impacts that is customary with impact mitigation based on the State Environmental Policy Act. Adjustments such as mentioned above may have merit for reasons of equity, but are beyond the minimum expectations set down in that Supreme Court decision.

Fees Imposed by Other Jurisdictions

The range of impact fees collected by other jurisdictions is very broad. On a per-daily-trip basis, fees in the range of $200 to $400 are relatively common. High-growth cities in King County have collected impact fees in the range of $500 to $750 per daily trip for several years. The City of Sammamish is presently considering a fee equivalent to $1,500 per daily trip, based on actual needs and adopted plans, after considering an initial calculation equivalent to $2,500 per daily trip.

NEXT STEPS

The next steps for the City of Poulsbo's transportation plan update is to focus on refining the analyses and findings with public input. These tasks are incorporated in the following steps:

- Conduct public review of draft plan
- Revise assumptions if necessary to balance the plan
- Identify impact fee requirement to balance the plan
- Refine the draft plan as appropriate
- Adopt Transportation Element Update to Comprehensive Plan
- Develop impact fee schedules from Transportation Element
- Develop concurrency management procedures

APPENDICES

APPENDIX A -
ROAD SEGMENT CONCURRENCY STATUS
2005 TRAFFIC ON COMMITTED ROADS

Appendix A. ROAD SEGMENT CONCURRENCY STATUS - 2005 Traffic on Committed Roads

(using Capacity Table rev 8/06)

a. NORTHEAST POULSBO SUBAREA

Sub area	Class	Name	From	To	Allowable Capacity	Best Available Count	Reserved Pipeline Growth	Count + Growth	Available Growth Reserve	Permissible Growth Factor (%)	Flag	Segment
NE	Minor	Lincoln Dr	10th	12th	18,000	10,000	-	10,000	8,000	80%		101
NE	Minor	Lincoln Dr	12th	w/o Caldart	15,000	9,651	-	9,651	5,349	55%		102
NE	Minor	Lincoln Dr	w/o Caldart	Ridgewood	16,000	8,801	-	8,801	7,199	82%		103
NE	Minor	Lincoln Dr	Ridgewood	w/o Pugh	13,000	8,171	-	8,171	4,829	59%		104
NE	Minor	Lincoln Dr	w/o Pugh	CL	7,150	6,881	-	6,881	269	4%		105
NE	Nbhd Sub	Forest Rock Rd	Tenth	Caldart	4,000	1,500	-	1,500	2,500	167%		106
NE	Nbhd Sub	Caldart Ave	Forest Rock	NCL	3,400	-	-	-	3,400	100%		107
NE	Nbhd Sub	Caldart Ave	Forest Rock	Youngquist	3,400	1,000	-	1,000	2,400	240%		108
NE	Nbhd Sub	Caldart Ave	Youngquist	Lincoln	3,400	1,721	-	1,721	1,679	98%		109
NE	Comml Sub	Caldart Ave	Lincoln	Mesford	10,000	4,551	-	4,551	5,449	120%		110
NE	Nbhd Sub	Mesford	Caldart	Schooner	2,200	1,450	-	1,450	750	52%		111
NE	Nbhd Sub	Mesford	Schooner	23rd	3,400	1,450	-	1,450	1,950	134%		112
NE	Nbhd Sub	Mesford	23rd	Noll Rd	2,800	1,451	-	1,451	1,349	93%		113
NE	Collector	Noll Rd	Mesford	Lincoln	4,950	2,541	-	2,541	2,409	95%		114
NE	Nbhd Sub	Pugh Rd	Lincoln Dr	Lillehammer	2,800	1,451	-	1,451	1,349	93%		115
NE	Res Sub	Forest Rock Extn	Caldart	Pugh	-	-	-	-	-	100%		116
NE	Res Sub	New Ave A	Forest Rock	New St B	-	-	-	-	-	100%		117
NE	Res Sub	New St B	New Ave A	Caldart	-	-	-	-	-	100%		118

Appendix A. ROAD SEGMENT CONCURRENCY STATUS - 2005 Traffic on Committed Roads

(using Capacity Table rev 8/06)

b. SOUTHEAST POULSBO SUBAREA

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Cumulative Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	Segment
SE	Comml Sub	Caldart	Mesford	Hostmark	11,600	3,401	-	3,401	8,199	241%		201
SE	Nbhd Sub	Caldart	Hostmark	Gustaf	2,800	1,701	-	1,701	1,099	65%		202
SE	Res Sub	Gustaf	Caldart	Bjorn St	3,000	1,000	-	1,000	2,000	200%		203
SE	Res Sub	Bjorn St	Gustaf	Noll Rd	3,000	601	-	601	2,399	399%		204
SE	Collector	Noll Rd	Mesford	Hostmark	6,580	2,121	-	2,121	4,459	210%		205
SE	Collector	Noll Rd	Hostmark	Thistle Ct	2,250	1,800	-	1,800	450	25%		206
SE	Collector	Noll Rd	Thistle Ct	Bjorn St	2,250	1,401	-	1,401	849	61%		207
SE	Collector	Noll Rd	Bjorn St	Storhoff	2,250	1,241	-	1,241	1,009	81%		208
SE	Collector	Noll Rd	Storhoff	SR 305	2,250	921	-	921	1,329	144%		209
SE	Collector	Hostmark	SR305	11th	12,400	9,501	-	9,501	2,899	31%		210
SE	Collector	Hostmark	11th	Caldart	7,990	7,001	-	7,001	989	14%		211
SE	Collector	Hostmark	Caldart	Noll Rd	8,670	3,831	-	3,831	4,839	126%		212
SE	Res Sub	11th Avenue	Hostmark	Sol Vei Way	1,650	1,100	-	1,100	550	50%		213
SE	Res Sub	12th Ave	Lincoln	new road D	750	440	-	440	310	70%		214
SE	Res Sub	new road D	12th Avenue	new road E	750	-	-	-	750	100%		215
SE	Res Sub	new road E	new road D	new road F	750	-	-	-	750	100%		216
SE	0				#N/A	-	-	-	#N/A	100%		217

Appendix A. ROAD SEGMENT CONCURRENCY STATUS - 2005 Traffic on Committed Roads

(using Capacity Table rev 8/06)

c. HIGHWAY COMMERCIAL SUBAREA

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Reserved Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	Segment
HC	Comml Sub	10th Ave	Forest Rock	600 ft n/o Libe	9,800	4,891	-	4,891	4,909	100%		301
HC	Comml Sub	10th Ave	600 ft n/o Libe	200 ft n/o Libe	8,330	7,651	-	7,651	679	9%		302
HC	Comml Sub	10th Ave	200 ft n/o Libe	Liberty	9,800	7,651	-	7,651	2,149	28%		303
HC	Comml Sub	10th Ave	Liberty	500 ft s/o Libe	9,180	4,851	-	4,851	4,329	89%		304
HC	Comml Sub	10th Ave	500 ft s/o Libe	Lincoln	12,800	3,591	-	3,591	9,209	256%		305
HC	Comml Sub	Liberty	7th Ave	SR305	11,000	9,101	-	9,101	1,899	21%		306
HC	Comml Sub	Liberty	SR305	10th Ave	11,000	5,101	-	5,101	5,899	116%		307
HC	Comml Sub	7th Ave	Liberty	Ex. End	12,000	3,401	-	3,401	8,599	253%		308
HC	Comml Sub	7th Ave Extn prop	Ex. End	SR 305	-	-	-	-	-	100%		309
HC	Collector	7th Ave	Iverson	Liberty	12,000	7,571	-	7,571	4,429	58%		310
HC	Collector	8th Ave	Iverson	Transit Ctr	7,650	3,161	-	3,161	4,489	142%		311
HC	Collector	8th Ave	Transit Ctr	7th Ave	9,000	3,160	-	3,160	5,840	185%		312
HC	Comml Sub	Iverson	7th Ave	8th Ave	12,000	7,811	-	7,811	4,189	54%		313
HC	Collector	Iverson	8th Ave	SR305	12,000	8,711	-	8,711	3,289	38%		314
HC	Comml Sub	7th Ave Extn prop	SR305	Bond Rd	-	-	-	-	-	100%		315
HC	Minor	Hostmark	8th Ave	SR305	14,500	9,501	-	9,501	4,999	53%		316
HC	Collector	8th Ave	Hostmark	Iverson	2,250	3,561	-	3,561	(1,311)	-37%	**	317
HC	0				#N/A	-	-	-	#N/A	100%		318
HC	0				#N/A	-	-	-	#N/A	100%		319

Appendix A. ROAD SEGMENT CONCURRENCY STATUS - 2005 Traffic on Committed Roads

(using Capacity Table rev 8/06)

d. OLD POULSBO SUBAREA

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Cumulative Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	Segment
OP	Minor	Front St	Bond	Torval Canyon	18,000	15,901	-	15,901	2,099	13%		401
OP	Minor	Front St	Torval Canyon	Jensen (N)	18,000	17,081	-	17,081	919	5%		402
OP	Minor	Front St	Jensen (N)	Sunset	16,000	14,191	-	14,191	1,809	13%		403
OP	Minor	Front St	Sunset	Jensen (S)	16,000	9,471	-	9,471	6,529	69%		404
OP	Minor	Front St	Jensen	4th Ave	13,000	10,051	-	10,051	2,949	29%		405
OP	Minor	Hostmark	4th Ave	6th Ave	11,050	8,731	-	8,731	2,319	27%		406
OP	Minor	Hostmark	6th Ave	8th Ave	16,000	9,171	-	9,171	6,829	74%		407
OP	Minor	Fjord Dr	Hostmark	6th Ave	9,100	1,661	-	1,661	7,439	448%		408
OP	Minor	Fjord Dr	6th Ave	9th Ave	11,050	1,901	-	1,901	9,149	481%		409
OP	Minor	Lemolo Shore Dr	9th Ave	S. C. L.	5,200	1,681	-	1,681	3,519	209%		410
OP	Collector	6th Ave	Hostmark	Fjord Dr	10,800	701	-	701	10,099	1441%		411
OP	Nbhd Sub	9th Ave	Fjord Dr	Harrison	2,200	241	-	241	1,959	813%		412
OP	Res Sub	Harrison	6th Ave	9th Ave	750	240	-	240	510	213%		413
OP	Collector	Lincoln	Hostmark	Iverson	7,650	3,000	-	3,000	4,650	155%		414
OP	***Nbhd Sub***	Jensen (S)	Front (S)	Iverson	4,000	2,391	-	2,391	1,609	67%		415
OP	***Comml Sub***	Jensen (S)	Iverson	Sunset	9,000	8,001	-	8,001	999	12%		416
OP	Comml Sub	Jensen (N)	Sunset	Front (N)	9,000	3,211	-	3,211	5,789	180%		417
OP	Collector	Iverson	Jensen	4th Ave	9,400	8,881	-	8,881	519	6%		418
OP	Collector	Iverson	4th Ave	7th Ave	12,000	11,051	-	11,051	949	9%		419
OP	***Res Sub***	Torval Canyon	Front	4th Ave	3,000	3,951	-	3,951	(951)	-24%	**	420
OP	Nbhd Sub	4th Ave	Torval Canyon	Arbitus Ct	3,400	3,000	-	3,000	400	13%		421
OP	Nbhd Sub	4th Ave	Arbitus Ct	Iverson	4,000	3,401	-	3,401	599	18%		422
OP	0				#N/A	-	-	-	#N/A	100%		423
OP	0				#N/A	-	-	-	#N/A	100%		424
OP	0				#N/A	-	-	-	#N/A	100%		425

Appendix A. ROAD SEGMENT CONCURRENCY STATUS - 2005 Traffic on Committed Roads

(using Capacity Table rev 8/06)

e. WEST POULSBO SUBAREA

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Reserved Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	Segment
W	Principal	Viking Way	S. C. L.	Lindvig	37,000	20,711	-	20,711	16,289	79%		501
W	Principal	Viking Way	Lindvig	300' n.	28,500	8,121	-	8,121	20,379	251%		502
W	Principal	Viking Way	300 n'	SR305	10,175	5,461	-	5,461	4,714	86%		503
W	***Nbhd Sub***	Viking Way	SR305	N. C. L.	2,200	681	-	681	1,519	223%		504
W	Minor	Finn Hill Rd	W.C.L.	A Street	7,975	8,161	-	8,161	(186)	-2%	**	505
W	Minor	Finn Hill Rd	A Street	SR 3	7,975	10,021	-	10,021	(2,046)	-20%	**	506
W	Minor	Finn Hill Rd	SR 3	Viking	19,500	10,021	-	10,021	9,479	95%		507
W	Minor	Lindvig	Viking	Bond	29,000	23,611	-	23,611	5,389	23%		508
W	Minor	Bond	Lindvig	SR305	16,000	6,321	-	6,321	9,679	153%		509
W	Collector	A Street	Finn Hill Rd	WalMart South	13,600	-	-	-	13,600	100%		510
W	Collector	A Street	WalMart South	WalMart North	13,600	-	-	-	13,600	100%		511
W	Collector	A Street	WalMart North	B Street	22,600	-	-	-	22,600	100%		512
W	Collector	B Street	A Street	C Street	23,600	-	-	-	23,600	100%		513
W	Collector	C Street	B Street	E Street	19,600	-	-	-	19,600	100%		514
W	Collector	C Street	E Street	H Street	13,600	-	-	-	13,600	100%		515
W	Collector	D Street	C Street	H Street	18,000	-	-	-	18,000	100%		516
W	Collector	D Street	H Street	Parnell Rd	12,000	-	-	-	12,000	100%		517
W	Collector	E Street	C Street	End	18,000	-	-	-	18,000	100%		518
W	Collector	H Street	C Street	D Street	12,000	-	-	-	12,000	100%		519
W	0				#N/A	-	-	-	#N/A	100%		520
W	0				#N/A	-	-	-	#N/A	100%		521

APPENDIX B -
ROAD SEGMENT CONCURRENCY STATUS
BUILDOUT GROWTH ON COMMITTED ROADS

Appendix B - ROAD SEGMENT CONCURRENCY STATUS

(using Capacity Table rev 8/06)

a. NORTHEAST POULSBO SUBAREA

Scenario = **Buildout Growth on Committed Roads 050406**

Sub area	Class	Name	From	To	Allowable Capacity	Best Available Count	Forecast Growth	Count + Growth	Available Growth Reserve	Permissible Growth Factor (%)	Flag	Inventory Segment	Indicated Improvement Need
NE	Minor	Lincoln Dr	10th	12th	18,000	10,000	4,770	14,770	3,230	32%		101	
NE	Minor	Lincoln Dr	12th	w/o Caldart	15,000	9,651	4,590	14,241	759	8%		102	
NE	Minor	Lincoln Dr	w/o Caldart	Ridgewood	16,000	8,801	2,840	11,641	4,359	50%		103	
NE	Minor	Lincoln Dr	Ridgewood	w/o Pugh	13,000	8,171	2,260	10,431	2,569	31%		104	
NE	Minor	Lincoln Dr	w/o Pugh	CL	7,150	6,881	4,820	11,701	(4,551)	-66%	**	105	third lane, sidewalks, bike lanes
NE	Nbhd Sub	Forest Rock Rd	Tenth	Caldart	4,000	1,500	3,190	4,690	(690)	-46%	**	106	third lane, sidewalks, bike lanes
NE	Nbhd Sub	Caldart Ave	Forest Rock	NCL	3,400	-	80	80	3,320	100%		107	
NE	Nbhd Sub	Caldart Ave	Forest Rock	Youngquist	3,400	1,000	(290)	710	2,690	269%		108	
NE	Nbhd Sub	Caldart Ave	Youngquist	Lincoln	3,400	1,721	(170)	1,551	1,849	107%		109	
NE	Comml Sub	Caldart Ave	Lincoln	Mesford	10,000	4,551	690	5,241	4,759	105%		110	
NE	Nbhd Sub	Mesford	Caldart	Schooner	2,200	1,450	1,090	2,540	(340)	-23%	**	111	sidewalks
NE	Nbhd Sub	Mesford	Schooner	23rd	3,400	1,450	880	2,330	1,070	74%		112	
NE	Nbhd Sub	Mesford	23rd	Noll Rd	2,800	1,451	640	2,091	709	49%		113	
NE	Collector	Noll Rd	Mesford	Lincoln	4,950	2,541	850	3,391	1,559	61%		114	
NE	Nbhd Sub	Pugh Rd	Lincoln Dr	Lillehammer	2,800	1,451	3,210	4,661	(1,861)	-128%	**	115	sidewalks & reclassify
NE	Res Sub	Forest Rock Extn	Caldart	Pugh	-	-	2,530	2,530	(2,530)	100%		116	
NE	Res Sub	New Ave A	Forest Rock	New St B	-	-	(90)	(90)	90	100%		117	
NE	Res Sub	New St B	New Ave A	Caldart	-	-	170	170	(170)	100%		118	

Appendix B - ROAD SEGMENT CONCURRENCY STATUS

(using Capacity Table rev 8/06)

b. SOUTHEAST POULSBO SUBAREA

Scenario = **Buildout Growth on Committed Roads 050406**

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Cumulative Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	Inventory Segment	Indicated Improvement Need
								-	-	0%			
SE	Comml Sub	Caldart	Mesford	Hostmark	11,600	3,401	10	3,411	8,189	241%		201	
SE	Nbhd Sub	Caldart	Hostmark	Gustaf	2,800	1,701	1,050	2,751	49	3%		202	sidewalks
SE	Res Sub	Gustaf	Caldart	Bjorn St	3,000	1,000	360	1,360	1,640	164%		203	
SE	Res Sub	Bjorn St	Gustaf	Noll Rd	3,000	601	190	791	2,209	368%		204	
SE	Collector	Noll Rd	Mesford	Hostmark	6,580	2,121	430	2,551	4,029	190%		205	
SE	Collector	Noll Rd	Hostmark	Thistle Ct	2,250	1,800	1,570	3,370	(1,120)	-62%	**	206	sidewalks
SE	Collector	Noll Rd	Thistle Ct	Bjorn St	2,250	1,401	1,040	2,441	(191)	-14%	**	207	sidewalks
SE	Collector	Noll Rd	Bjorn St	Storhoff	2,250	1,241	1,230	2,471	(221)	-18%	**	208	sidewalks
SE	Collector	Noll Rd	Storhoff	SR 305	2,250	921	1,100	2,021	229	25%		209	sidewalks
SE	Collector	Hostmark	SR305	11th	12,400	9,501	4,890	14,391	(1,991)	-21%	**	210	add sidewalks, turn lane
SE	Collector	Hostmark	11th	Caldart	7,990	7,001	4,280	11,281	(3,291)	-47%	**	211	add sidewalks, turn lane
SE	Collector	Hostmark	Caldart	Noll Rd	8,670	3,831	2,370	6,201	2,469	64%		212	
SE	Res Sub	11th Avenue	Hostmark	Sol Vei Way	1,650	1,100	700	1,800	(150)	-14%	**	213	sidewalks
SE	Res Sub	12th Ave	Lincoln	new road D	750	440	290	730	20	5%		214	
SE	Res Sub	new road D	12th Avenue	new road E	750	-	290	290	460	100%		215	
SE	Res Sub	new road E	new road D	new road F	750	-	50	50	700	100%		216	

Appendix B - ROAD SEGMENT CONCURRENCY STATUS

(using Capacity Table rev 8/06)

c. HIGHWAY COMMERCIAL SUBAREA

Scenario = **Buildout Growth on Committed Roads 050406**

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Reserved Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	Inventory Segment	Indicated Improvement Need
								-	-	0%			
HC	Comml Sub	10th Ave	Forest Rock	600 ft n/o Libe	9,800	4,891	3,910	8,801	999	20%		301	
HC	Comml Sub	10th Ave	600 ft n/o Libe	200 ft n/o Libe	8,330	7,651	3,900	11,551	(3,221)	-42%	**	302	3rd lane, sidewalks, bike lanes
HC	Comml Sub	10th Ave	200 ft n/o Libe	Liberty	9,800	7,651	5,610	13,261	(3,461)	-45%	**	303	3rd lane, sidewalks, bike lanes
HC	Comml Sub	10th Ave	Liberty	500 ft s/o Libe	9,180	4,851	2,130	6,981	2,199	45%		304	
HC	Comml Sub	10th Ave	500 ft s/o Libe	Lincoln	12,800	3,591	2,030	5,621	7,179	200%		305	
HC	Comml Sub	Liberty	7th Ave	SR305	11,000	9,101	80	9,181	1,819	20%		306	
HC	Comml Sub	Liberty	SR305	10th Ave	11,000	5,101	3,820	8,921	2,079	41%		307	
HC	Comml Sub	7th Ave	Liberty	Ex. End	12,000	3,401	500	3,901	8,099	238%		308	
HC	Comml Sub	7th Ave Extn prop	Ex. End	SR 305	-	-	2,120	2,120	(2,120)	100%		309	
HC	Collector	7th Ave	Iverson	Liberty	12,000	7,571	2,400	9,971	2,029	27%		310	
HC	Collector	8th Ave	Iverson	Transit Ctr	7,650	3,161	330	3,491	4,159	132%		311	
HC	Collector	8th Ave	Transit Ctr	7th Ave	9,000	3,160	210	3,370	5,630	178%		312	
HC	Comml Sub	Iverson	7th Ave	8th Ave	12,000	7,811	2,190	10,001	1,999	26%		313	
HC	Collector	Iverson	8th Ave	SR305	12,000	8,711	2,230	10,941	1,059	12%		314	
HC	Comml Sub	7th Ave Extn prop	SR305	Bond Rd	-	-	-	-	-	100%		315	
HC	Minor	Hostmark	8th Ave	SR305	14,500	9,501	5,370	14,871	(371)	-4%	**	316	sidewalks, turn lanes
HC	Collector	8th Ave	Hostmark	Iverson	2,250	3,561	1,510	5,071	(2,821)	-79%	**	317	sidewalks, turn lanes

Appendix B - ROAD SEGMENT CONCURRENCY STATUS

(using Capacity Table rev 8/06)

d. OLD POULSBO SUBAREA

Scenario = **Buildout Growth on Committed Roads 050406**

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Cumulative Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	Inventory Segment	Indicated Improvement Need
								-	-	0%			
OP	Minor	Front St	Bond	Torval Canyon	18,000	15,901	9,650	25,551	(7,551)	-47%	**	401	divert traffic
OP	Minor	Front St	Torval Canyon	Jensen (N)	18,000	17,081	7,630	24,711	(6,711)	-39%	**	402	divert traffic
OP	Minor	Front St	Jensen (N)	Sunset	16,000	14,191	5,030	19,221	(3,221)	-23%	**	403	divert traffic
OP	Minor	Front St	Sunset	Jensen (S)	16,000	9,471	3,350	12,821	3,179	34%		404	
OP	Minor	Front St	Jensen	4th Ave	13,000	10,051	3,050	13,101	(101)	-1%	**	405	divert traffic
OP	Minor	Hostmark	4th Ave	6th Ave	11,050	8,731	3,130	11,861	(811)	-9%	**	406	sidewalks
OP	Minor	Hostmark	6th Ave	8th Ave	16,000	9,171	5,040	14,211	1,789	20%		407	
OP	Minor	Fjord Dr	Hostmark	6th Ave	9,100	1,661	1,760	3,421	5,679	342%		408	
OP	Minor	Fjord Dr	6th Ave	9th Ave	11,050	1,901	390	2,291	8,759	461%		409	
OP	Minor	Lemolo Shore Dr	9th Ave	S. C. L.	5,200	1,681	970	2,651	2,549	152%		410	
OP	Collector	6th Ave	Hostmark	Fjord Dr	10,800	701	(620)	81	10,719	1529%		411	
OP	Nbhd Sub	9th Ave	Fjord Dr	Harrison	2,200	241	(30)	211	1,989	825%		412	
OP	Res Sub	Harrison	6th Ave	9th Ave	750	240	290	530	220	92%		413	
OP	Collector	Lincoln	Hostmark	Iverson	7,650	3,000	170	3,170	4,480	149%		414	
OP	***Nbhd Sub***	Jensen (S)	Front (S)	Iverson	4,000	2,391	480	2,871	1,129	47%		415	
OP	***Comml Sub***	Jensen (S)	Iverson	Sunset	9,000	8,001	3,550	11,551	(2,551)	-32%	**	416	add turn lane
OP	Comml Sub	Jensen (N)	Sunset	Front (N)	9,000	3,211	2,380	5,591	3,409	106%		417	
OP	Collector	Iverson	Jensen	4th Ave	9,400	8,881	4,100	12,981	(3,581)	-40%	**	418	add turn lane
OP	Collector	Iverson	4th Ave	7th Ave	12,000	11,051	4,380	15,431	(3,431)	-31%	**	419	add turn lane
OP	***Res Sub***	Torval Canyon	Front	4th Ave	3,000	3,951	2,020	5,971	(2,971)	-75%	**	420	divert traffic
OP	Nbhd Sub	4th Ave	Torval Canyon	Arbitus Ct	3,400	3,000	1,720	4,720	(1,320)	-44%	**	421	add sidewalks; divert traffic
OP	Nbhd Sub	4th Ave	Arbitus Ct	Iverson	4,000	3,401	1,980	5,381	(1,381)	-41%	**	422	add sidewalks; divert traffic

Appendix B - ROAD SEGMENT CONCURRENCY STATUS

(using Capacity Table rev 8/06)

e. WEST POULSBO SUBAREA

Scenario = **Buildout Growth on Committed Roads 050406**

								-	-	0%			
Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Reserved Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	Inventory Segment	Indicated Improvement Need
W	Principal	Viking Way	S. C. L.	Lindvig	37,000	20,711	1,520	22,231	14,769	71%		501	
W	Principal	Viking Way	Lindvig	300' n.	28,500	8,121	7,160	15,281	13,219	163%		502	
W	Principal	Viking Way	300 n'	SR305	10,175	5,461	6,410	11,871	(1,696)	-31%	**	503	sidewalks, turn lane
W	***Nbhd Sub***	Viking Way	SR305	N. C. L.	2,200	681	4,050	4,731	(2,531)	-372%	**	504	reclass as collector; add sidewalks
W	Minor	Finn Hill Rd	W.C.L.	A Street	7,975	8,161	5,310	13,471	(5,496)	-67%	**	505	sidewalks
W	Minor	Finn Hill Rd	A Street	SR 3	7,975	10,021	11,020	21,041	(13,066)	-130%	**	506	add lanes (or divert traffic)
W	Minor	Finn Hill Rd	SR 3	Viking	19,500	10,021	14,220	24,241	(4,741)	-47%	**	507	add lanes (or divert traffic)
W	Minor	Lindvig	Viking	Bond	29,000	23,611	8,650	32,261	(3,261)	-14%	**	508	add lanes (or divert traffic)
W	Minor	Bond	Lindvig	SR305	16,000	6,321	(390)	5,931	10,069	159%		509	
W	Collector	A Street	Finn Hill Rd	WalMart South	13,600	-	9,920	9,920	3,680	100%		510	
W	Collector	A Street	WalMart South	WalMart North	13,600	-	5,400	5,400	8,200	100%		511	
W	Collector	A Street	WalMart North	B Street	22,600	-	4,870	4,870	17,730	100%		512	
W	Collector	B Street	A Street	C Street	23,600	-	6,020	6,020	17,580	100%		513	
W	Collector	C Street	B Street	E Street	19,600	-	3,300	3,300	16,300	100%		514	
W	Collector	C Street	E Street	H Street	13,600	-	1,780	1,780	11,820	100%		515	
W	Collector	D Street	C Street	H Street	18,000	-	2,780	2,780	15,220	100%		516	
W	Collector	D Street	H Street	Parnell Rd	12,000	-	6,410	6,410	5,590	100%		517	
W	Collector	E Street	C Street	End	18,000	-	1,520	1,520	16,480	100%		518	
W	Collector	H Street	C Street	D Street	12,000	-	4,830	4,830	7,170	100%		519	

APPENDIX C -
ROAD SEGMENT CONCURRENCY STATUS
BUILDOUT GROWTH WITH MITIGATION IMPROVEMENTS

A. NORTHEAST POULSBO SUBAREA

Scenario = **Buildout Growth with Planned Mitigation Improvements 100306**

Sub area	Class	Name	From	To	Allowable Capacity	Best Available Count	Forecast Growth	Count + Growth	Available Growth Reserve	Permissible Growth Factor (%)	Flag	VISUM Segment	Indicated Improvement Need
NE	Minor	Lincoln Dr	10th	12th	18,000	10,000	4,760	14,760	3,240	22%		101	
NE	Minor	Lincoln Dr	12th	w/o Caldart	15,000	9,651	4,830	14,481	519	4%		102	
NE	Minor	Lincoln Dr	w/o Caldart	Lauri Vey	18,000	8,801	3,820	12,621	5,379	43%		103	
NE	Minor	Lincoln Dr	Lauri Vey	w/o Pugh	15,000	8,171	2,720	10,891	4,109	38%		104	bike lanes
NE	Minor	Lincoln Dr	w/o Pugh	CL	15,000	6,881	5,170	12,051	2,949	24%		105	third lane, sidewalks, bike lanes
NE	Comml Sub	Genes Ln	Little Valley	12th Ave	9,000	100	6,570	6,670	2,330	35%		120	Class as Comm'l sub; sidewalks
NE	Nbhd Sub	Forest Rock Rd	Tenth	Caldart	4,000	1,500	2,180	3,680	320	9%		106	
NE	Comml Sub	Caldart Ave	Forest Rock	End	9,000	-	5,450	5,450	3,550	65%		107	sidewalks
NE	Nbhd Sub	Caldart Ave	Forest Rock	Youngquist	4,000	1,000	2,820	3,820	180	5%		108	sidewalks
NE	Nbhd Sub	Caldart Ave	Youngquist	Lincoln	4,000	1,721	2,410	4,131	(131)	-3%	**	109	sidewalks; TDM
NE	Comml Sub	Caldart Ave	Lincoln	Mesford	10,000	4,551	2,470	7,021	2,979	42%		110	
NE	Nbhd Sub	Mesford	Caldart	Schooner	4,000	1,450	2,910	4,360	(360)	-8%	**	111	sidewalks; TDM
NE	Nbhd Sub	Mesford	Schooner	23rd	4,000	1,450	2,970	4,420	(420)	-10%	**	112	sidewalks; TDM
NE	Nbhd Sub	Mesford	23rd	Noll Rd	4,000	1,451	2,660	4,111	(111)	-3%	**	113	sidewalks; TDM
NE	Collector	Noll Rd E-W	Mesford	Noll Rd North	9,000	2,541	3,300	5,841	3,159	54%		114	sidewalks
NE	Collector	Noll Rd North	Noll Rd E-W	Kevos Pond D	9,000	2,000	2,860	4,860	4,140	85%		123	sidewalks
NE	Collector	Noll Rd North	Kevos Pond D	Lincoln	9,000	2,000	2,780	4,780	4,220	88%		122	sidewalks
NE	Collector	Pugh Rd	Lincoln Dr	Lillehammer	9,000	1,451	4,270	5,721	3,279	57%		115	sidewalks; reclassify
NE	Nbhd Sub	Forest Rock Extn	Caldart	Pugh	4,000	-	3,740	3,740	260	7%		116	
NE	Res Sub	12th Ave	Genes Ln	Forest Rock	3,000	-	490	490	2,510	512%		121	
NE	Res Sub	12th Ave	Forest Rock	New St B	3,000	600	540	1,140	1,860	163%		117	
NE	Res Sub	12th Ave	New St B	Lincoln	3,000	-	1,350	1,350	1,650	122%		119	
NE	Res Sub	New St B	12th Ave	Caldart	3,000	-	360	360	2,640	733%		118	
NE	Res Sub	New Road Q	Langaunet Ln	Noll Rd E-W	3,000	-	300	300	2,700	900%		124	
NE	Res Sub	Maranatha Ln	Lincoln	Kevos Pond D	3,000	-	510	510	2,490	488%		125	
NE	Res Sub	Langaunet Ln	Kevos Pond D	Noll Rd E-W	3,000	-	1,030	1,030	1,970	191%		126	

B. SOUTHEAST POULSBO SUBAREA

Scenario = **Buildout Growth with Planned Mitigation Improvements 100306**

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Cumulative Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	VISUM Segment	Indicated Improvement Need
SE	Comml Sub	Caldart	Mesford	Hostmark	11,600	3,401	1,550	4,951	6,649	134%		201	
SE	Collector	Caldart	Hostmark	Gustaf	9,000	1,701	2,570	4,271	4,729	111%		202	sidewalks; reclassify
SE	Res Sub	Gustaf	Caldart	Bjorn St	3,000	1,000	350	1,350	1,650	122%		203	
SE	Res Sub	Bjorn St	Gustaf	Noll Rd South	3,000	601	310	911	2,089	229%		204	
SE	Collector	Noll Rd South	Mesford	Hostmark	9,000	2,121	4,590	6,711	2,289	34%		205	sidewalks
SE	Collector	Noll Rd South	Hostmark	Thistle Ct	9,000	1,800	5,490	7,290	1,710	23%		206	sidewalks
SE	Collector	Noll Rd South	Thistle Ct	Bjorn St	9,000	1,401	4,320	5,721	3,279	57%		207	sidewalks
SE	Collector	Noll Rd South	Bjorn St	Storhoff	9,000	1,241	3,820	5,061	3,939	78%		208	sidewalks
SE	Collector	Noll Rd South	Storhoff	SR 305	9,000	921	2,790	3,711	5,289	143%		209	sidewalks
SE	Collector	Hostmark	11th	Caldart	14,600	7,001	7,400	14,401	199	1%		211	sidewalks, bike lanes, TWLTL
SE	Collector	Hostmark	Caldart	Noll Rd South	13,600	3,831	5,810	9,641	3,959	41%		212	sidewalks, bike lanes, TWLTL
SE	Res Sub	11th Avenue	Hostmark	Sol Vei Way	3,000	1,100	680	1,780	1,220	69%		213	sidewalks Hostmark -curve
SE	Nbhd Sub	New Road R	Noll Rd E-W	New Road T	4,000	-	230	230	3,770	1639%		217	
SE	Nbhd Sub	New Road S	New Road R	Noll Rd South	4,000	-	60	60	3,940	6567%		218	
SE	Nbhd Sub	New Road T	Noll Rd South	New Road S	4,000	-	1,380	1,380	2,620	190%		219	
SE	Nbhd Sub	New Road U	Johnson Rd	Noll Rd South	4,000	-	870	870	3,130	360%		220	
SE	Nbhd Sub	New Road V	Sunrise Ridge	Johnson Rd	4,000	-	700	700	3,300	471%		221	
SE	Nbhd Sub	New Road W	SR 305	Sunrise Ridge	4,000	-	200	200	3,800	1900%		222	
SE	Nbhd Sub	Sunrise Ridge	New Road W	Caldart Ave	4,000	-	1,330	1,330	2,670	201%		223	
SE	Nbhd Sub	Johnson Rd	SR305	New Road U	4,000	-	940	940	3,060	326%		224	

C. HIGHWAY COMMERCIAL SUBAREA

Scenario = **Buildout Growth with Planned Mitigation Improvements 100306**

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Reserved Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	VISUM Segment	Indicated Improvement Need
HC	Comml Sub	10th Ave	Forest Rock	600 ft n/o Libe	9,800	4,891	4,020	8,911	889	10%		301	sidewalks
HC	Comml Sub	10th Ave	600 ft n/o Libe	200 ft n/o Libe	10,800	7,651	2,560	10,211	589	6%		302	sidewalks
HC	Comml Sub	10th Ave	200 ft n/o Libe	Liberty	10,800	7,651	3,480	11,131	(331)	-3%	**	303	sidewalks; TDM
HC	Comml Sub	10th Ave	Liberty	500 ft s/o Libe	9,180	4,851	3,220	8,071	1,109	14%		304	
HC	Comml Sub	10th Ave	500 ft s/o Libe	Lincoln	12,800	3,591	2,920	6,511	6,289	97%		305	
HC	Comml Sub	Liberty	7th Ave	SR305	11,000	9,101	-	9,101	1,899	21%		306	
HC	Comml Sub	Liberty	SR305	10th Ave	11,000	5,101	1,280	6,381	4,619	72%		307	
HC	Comml Sub	7th Ave	Liberty	Ex. End	12,000	3,401	(120)	3,281	8,719	266%		308	
HC	Comml Sub	7th Ave Extn prop	Ex. End	SR 305	9,000	-	4,070	4,070	4,930	121%		309	
HC	Collector	7th Ave	Iverson	Liberty	12,000	7,571	3,910	11,481	519	5%		310	
HC	Collector	8th Ave	Iverson	Transit Ctr	7,650	3,161	930	4,091	3,559	87%		311	
HC	Collector	8th Ave	Transit Ctr	7th Ave	9,000	3,160	780	3,940	5,060	128%		312	
HC	Comml Sub	Iverson	7th Ave	8th Ave	12,000	7,811	3,850	11,661	339	3%		313	
HC	Collector	Iverson	8th Ave	SR305	12,000	8,711	5,020	13,731	(1,731)	-13%	**	314	TDM Strategy
HC	Minor	Hostmark	8th Ave	SR305	17,500	9,501	6,840	16,341	1,159	7%		316	turn lane
HC	Collector	Hostmark	SR305	11th	18,400	3,561	13,230	16,791	1,609	10%		315	thru lanes
HC	Collector	8th Ave	Hostmark	Iverson	9,000	3,561	2,640	6,201	2,799	45%		317	sidewalks
HC	Collector	Bernt Rd	SR305	City Limits	2,250	500	-	500	1,750	350%		318	
HC	Collector	Bernt Rd	City Limits	Little Valley Rc	2,250	1,000	-	1,000	1,250	125%		319	
HC	Collector	Little Valley Rd	Forest Rock L	Bernt Rd	2,250	1,000	-	1,000	1,250	125%		320	

D. OLD POULSBO SUBAREA

Scenario = **Buildout Growth with Planned Mitigation Improvements 100306**

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Cumulative Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	VISUM Segment	Indicated Improvement Need
OP	Minor	Front St	Bond	Torval Canyon	18,000	15,901	9,030	24,931	(6,931)	-28%	**	401	TDM Strategy
OP	Minor	Front St	Torval Canyon	Jensen (N)	18,000	17,081	6,640	23,721	(5,721)	-24%	**	402	TDM Strategy
OP	Minor	Front St	Jensen (N)	Sunset	16,000	14,191	3,870	18,061	(2,061)	-11%	**	403	TDM Strategy
OP	Minor	Front St	Sunset	Jensen (S)	16,000	9,471	1,870	11,341	4,659	41%		404	
OP	Minor	Front St	Jensen	4th Ave	13,000	10,051	2,460	12,511	489	4%		405	TDM Strategy
OP	Minor	Hostmark	4th Ave	6th Ave	13,000	8,731	2,910	11,641	1,359	12%		406	TDM Strategy
OP	Minor	Hostmark	6th Ave	8th Ave	16,000	9,171	5,100	14,271	1,729	12%		407	
OP	Minor	Fjord Dr	Hostmark	6th Ave	9,100	1,661	3,210	4,871	4,229	87%		408	
OP	Minor	Fjord Dr	6th Ave	9th Ave	11,050	1,901	1,600	3,501	7,549	216%		409	
OP	Minor	Lemolo Shore Dr	9th Ave	S. C. L.	5,200	1,681	1,290	2,971	2,229	75%		410	
OP	Collector	6th Ave	Hostmark	Fjord Dr	10,800	701	(170)	531	10,269	1934%		411	
OP	Nbhd Sub	9th Ave	Fjord Dr	Haugen	2,200	241	(420)	(179)	2,379	100%		412	
OP	Res Sub	Harrison	6th Ave	9th Ave	750	240	(370)	(130)	880	100%		413	
OP	Collector	Lincoln	Hostmark	Iverson	7,650	3,000	1,220	4,220	3,430	81%		414	
OP	***Nbhd Sub***	Jensen (S)	Front (S)	Iverson	4,000	2,391	2,400	4,791	(791)	-17%	**	415	TDM Strategy
OP	***Comml Sub***	Jensen (S)	Iverson	Sunset	9,000	8,001	40	8,041	959	12%		416	
OP	Comml Sub	Jensen (N)	Sunset	Front (N)	9,000	3,211	3,060	6,271	2,729	44%		417	
OP	Collector	Iverson	Jensen	4th Ave	13,400	8,881	5,510	14,391	(991)	-7%	**	418	turn lanes AND TDM Strategy
OP	Collector	Iverson	4th Ave	7th Ave	16,500	11,051	6,030	17,081	(581)	-3%	**	419	turn lanes AND TDM Strategy
OP	Collector	Sunset	Front	Jensen	9,000	1,000	4,630	5,630	3,370	60%		424	
OP	Collector	3rd Ave	Jensen	Iverson	9,000	100	5,540	5,640	3,360	60%		423	
OP	Nbhd Sub	New Road N	1st Ave	4th Ave	4,000	-	400	400	3,600	900%		425	
OP	***Nbhd Sub***	Torval Canyon	Front	4th Ave	4,000	3,951	2,390	6,341	(2,341)	-37%	**	420	reclassify as Nbhd Sub AND TDM Strategy
OP	Nbhd Sub	4th Ave	Torval Canyon	Arbitus Ct	4,000	3,000	2,170	5,170	(1,170)	-23%	**	421	sidewalks; TDM Strategy
OP	Nbhd Sub	4th Ave	Arbitus Ct	Iverson	4,000	3,401	2,330	5,731	(1,731)	-30%	**	422	sidewalks; TDM Strategy

E. WEST POULSBO SUBAREA

Scenario = **Buildout Growth with Planned Mitigation Improvements 100306**

Sub area	Class	Name	From	To	Allowable Capacity	Count Volume	Reserved Pipeline Growth	Count + Growth	Available Growth Reserve	Growth Margin (%)	Flag	VISUM Segment	Indicated Improvement Need
W	Principal	Viking Way	S. C. L.	Lindvig	37,000	20,711	(90)	20,621	16,379	79%		501	
W	Principal	Viking Way	Lindvig	300 n' of Lindv	28,500	8,121	3,570	11,691	16,809	144%		502	
W	Principal	Viking Way	300 n' of Lindv	SR305	18,500	5,461	8,550	14,011	4,489	32%		503	sidewalks, turn lane
W	Comml Sub	Viking Way	SR305	Vetter Rd	10,000	681	5,330	6,011	3,989	66%		504	reclassify; sidewalks
W	Comml Sub	Vetter Rd	Viking Wa	Existing End	10,000	100	5,320	5,420	4,580	85%		529	reclassify; sidewalks
W	Comml Sub	Vetter Rd Extn	Existing End	SR 307	10,000	-	5,380	5,380	4,620	86%		530	reclassify; sidewalks
W	Minor	Finn Hill Rd	Rhododendror	Urdahl	14,500	8,161	4,910	13,071	1,429	11%		527	sidewalks
W	Minor	Finn Hill Rd	Urdahl	A Street	14,500	8,161	7,270	15,431	(931)	-6%	**	505	sidewalks
W	Minor	Finn Hill Rd	A Street	Rasmussen	30,500	10,021	20,990	31,011	(511)	-2%	**	506	TDM Strategy; add lanes
W	Minor	Finn Hill Rd	Rasmussen	Viking	19,500	10,021	7,690	17,711	1,789	10%		507	TDM Strategy
W	Minor	Lindvig	Viking	Bond	29,000	23,611	7,890	31,501	(2,501)	-8%	**	508	TDM Strategy
W	Minor	Bond	Lindvig	SR305	16,000	6,321	3,160	9,481	6,519	69%		509	
W	Collector	A Street	Finn Hill Rd	WalMart Sout	13,600	-	8,170	8,170	5,430	66%		510	
W	Collector	A Street	WalMart Sout	WalMart North	13,600	-	3,930	3,930	9,670	246%		511	
W	Collector	A Street	WalMart North	B Street	22,600	-	7,540	7,540	15,060	200%		512	
W	Collector	B Street	A Street	C Street	23,600	-	6,400	6,400	17,200	269%		513	
W	Collector	C Street	B Street	E Street	19,600	-	5,080	5,080	14,520	286%		514	
W	Collector	C Street	E Street	H Street	13,600	-	3,590	3,590	10,010	279%		515	
W	Collector	D Street	C Street	H Street	18,000	-	2,550	2,550	15,450	606%		516	
W	Collector	D Street	H Street	Parnell Rd	12,000	-	4,620	4,620	7,380	160%		517	
W	Collector	E Street	C Street	Olhava End	18,000	-	3,220	3,220	14,780	459%		518	
W	Collector	H Street	C Street	D Street	12,000	-	4,120	4,120	7,880	191%		519	
W	Collector	H Street West	C Street	I Street	10,600	-	3,180	3,180	7,420	233%		520	
W	Collector	I Street	H Street West	E Street	10,600	-	4,130	4,130	6,470	157%		521	
W	Collector	I Street	E Street	JStreet	10,600	-	3,400	3,400	7,200	212%		522	
W	Collector	JStreet	I Street	A Street	10,600	-	7,070	7,070	3,530	50%		523	
W	Collector	E Street	Olhava End	Urdahl	9,000	-	6,360	6,360	2,640	42%		524	
W	Collector	Urdahl Rd	Finn Hill Rd	E Street	9,000	-	4,400	4,400	4,600	105%		525	
W	Collector	New M Ave	Finn Hill Rd	Liberty Rd	10,000	-	6,410	6,410	3,590	56%		531	
W	Collector	New M Ave	Liberty Rd	Viking Way (S	10,000	-	7,400	7,400	2,600	35%		532	
W	Nbhd Sub	New N St	Rhododendror	Urdahl	4,000	-	3,150	3,150	850	27%		526	
W	Nbhd Sub	Cedar Ln	Finn Hill Rd	New M Ave	4,000	-	4,480	4,480	(480)	-11%	**	533	Reclassify; sidewalks; TDM
W	Nbhd Sub	Liberty Rd	Viking Way	New M Ave	4,000	-	1,940	1,940	2,060	106%		534	Reclassify; sidewalks; TDM
W	Nbhd Sub	Rasmussen Ct. Ex	Finn Hill Rd	Viking Way	4,000	-	5,960	5,960	(1,960)	-33%	**	528	Reclassify; sidewalks; TDM

APPENDIX D -
PLANNING LEVEL 2025
MITIGATION COST ESTIMATES

Appendix D - PLANNING LEVEL 2025 MITIGATION COST ESTIMATES

Roadway Segment Improvements

In 2006 dollars - adjust for inflation in future years

Project No.	Sub area	Existing Classification	Name	From	To	Improvement Needed	Lineal Feet	TWLTL (Cost per Lineal Foot: 350)	Side walks (580)	Bike Lanes (330)	Thru Lanes (700)	Overlay Pvmnt (50)	Apply TDM	Total Project Cost	Estimated Dvlpmnt Frontage	Net Public Cost
R-1	HC	Commercial Sub-collector	10th Avenue	600 ft n/o Liberty	200' n/o Liberty	Turn lane, sidewalks	400	350	580					$ 372,000	75%	$ 93,000
R-3	HC	Collector Arterial	8th Avenue	Hostmark	Iverson	Sidewalks; resurface	1,100		580			50		$ 693,000	0%	$ 693,000
R-4	NE	Collector Arterial	Pugh Road	Lincoln	city limits	Sidewalks; resurface	2,600		580			50		$ 1,638,000	50%	$ 819,000
R-5A	NE	Minor Arterial	Lincoln Rd	Lauri Vei	w/o Pugh	Bike lanes	1,000			330				$ 330,000	0%	$ 330,000
R-5B	NE	Minor Arterial	Lincoln Rd	w/o Pugh	UGA Boundary	Turn lane, sidewalks, bike lanes	3,300	350	580	330				$ 4,158,000	0%	$ 4,158,000
R-6	NE	Neighborhood Sub-collector	Mesford	Caldart	Noll Rd	Sidewalks; resurface	2,600		580			50		$ 1,638,000	0%	$ 1,638,000
R-7	OP	Minor Arterial	Hostmark	4th Avenue	6th Avenue	Sidewalks; resurface	700		580			50		$ 441,000	0%	$ 441,000
R-8	OP	Collector Arterial	Iverson	Jensen	7th Avenue	Turn lane	1,300	350						$ 455,000	0%	$ 455,000
R-9	SE	Neighborhood Sub-collector	Caldart	Hostmark	Gustaf	Sidewalks; resurface	800		580			50		$ 504,000	0%	$ 504,000
R-10	SE	Collector Arterial	Hostmark	SR 305	11th Avenue	Thru lanes	500				700			$ 350,000	0%	$ 350,000
R-11	SE	Collector Arterial	Hostmark	11th Avenue	Noll Rd	Turn lane, sidewalks	4,300	350	580					$ 3,999,000	0%	$ 3,999,000
R-12	SE	Residential Sub-collector	11th Avenue	Hostmark	Sol Vei Way	Sidewalks	500		580					$ 290,000	0%	$ 290,000
R-13	NE	Collector Arterial	Noll Rd	Mesford	Lincoln	Turn lane, sidewalks	6,400	350	580					$ 5,952,000	50%	$ 2,976,000
R-14	SE	Collector Arterial	Noll Rd	SR 305	Mesford	Turn lane, sidewalks	8,400	350	580					$ 7,812,000	50%	$ 3,906,000
R-15	OP	Neighborhood Sub-collector	4th Avenue	Arbitus	Torval Canyon	Sidewalks; resurface	1,400		580			50		$ 882,000	0%	$ 882,000
R-16	WP	Minor Arterial	Finn Hill Road	Rhododendron	Olhava A Street	Sidewalks; resurface	3700		580			50		$ 2,331,000	75%	$ 582,750
R-17	WP	Neighborhood Sub-collector	Urdahl	Finn Hill Rd	Olhava E Street	Sidewalks; resurface	2,400		580			50		$ 1,512,000	100%	$ -
R-18	WP	Principal Arterial	Viking Way	300' n/o Lindvig	SR 305	Turn lane, sidewalks	3,200	350	580					$ 2,976,000	75%	$ 744,000
R-19	WP	Commercial Sub-collector	Viking Way	SR 305	N.C.L.	Reclassify as collector arterial, sidewalks, resurface	3,000		580			50		$ 1,890,000	75%	$ 472,500
R-20	WP	Local Access	Vetter Rd	Viking Way	End n/o SR 305	Classify as Comml Sub-collector, Sidewalks, resurface	2,500		580			50		$ 1,575,000	100%	$ -
R-21	WP	Local Access	Cedar Ln	Finn Hill Rd	New Road "M"	Classify as Comml Sub-collector, Sidewalks, resurface	2,700		580			50	100	$ 1,701,100	100%	$ -
R-22	WP	Local Access	Liberty Rd	Viking Way	New Road "M"	Classify as Comml Sub-collector, Sidewalks, resurface	2,000		580			50		$ 1,260,000	25%	$ 945,000
R-23	NE	Local Access	Bernt Rd	SR307	Little Valley Rd	Classify as Comml Sub-collector, Sidewalks, resurface	1,800		580			50		$ 1,134,000	50%	$ 567,000
R-24	NE	Local Access	Genes Rd	Little Valley Rd	Approx 12th Ave	Classify as Comml Sub-collector, Sidewalks, resurface	2,000		580			50		$ 1,260,000	75%	$ 315,000
R-25	NE	Local Access	Johnson Rd	SR 305	New Road "M"	Classify as Nbhd Sub-collector, Sidewalks, resurface	800		580			50		$ 504,000	75%	$ 126,000
R-26	NE	Commercial Sub-collector	Little Valley Rd	Forest Rock Ln	UGA Boundary	Classify as Comml Sub-collector, Sidewalks, resurface	1,800		580			50		$ 1,134,000	75%	$ 283,500
R-27	WP	Minor Arterial	Finn Hill Road	Olhava A Street	Rasmussen Ct	Add thru lanes; TDM strategy	1,300				700		100	$ 910,100	0%	$ 910,100
R-28	WP	Minor Arterial	Finn Hill Road	Rasmussen Ct	Viking Way	TDM strategy							100	$ 100	0%	$ 100
R-29	WP	Minor Arterial	Lindvig Way	Viking Way	Bond Rd	TDM strategy							100	$ 100	0%	$ 100

"Estimated Development Frontage" represents portion of project abutting developable parcels; for budget purposes only

Subtotal, public+private roadway improvement costs $ 47,701,400

Subtotal, Public Cost for Roadway Segment Improvements $ 26,480,050

New Roadway Segments

In 2006 dollars - adjust for inflation in future years

Project No.	Sub area	Class	Name	From	To	Improvement Needed	Lineal Feet	Cost per foot	Site Factor	Total Project Cost	Estimated Dvlpmnt Frontage	Net Public Cost
N-1	NE	Neighborhood Sub-collector	Forest Rock Extension	Caldart	Pugh	New two-lane road to full City standards	2,000	1,400	1.00	$ 2,800,000	100%	$ -
N-2	NE	Residential Sub-collector	Mesford Extension	13th Avenue	Caldart	New two-lane road to full City standards	700	1,400	1.00	$ 980,000	100%	$ -
N-3	OP	Neighborhood Sub-collector	New Road 'P"	1st Avenue	4th Avenue	New two-lane road to full City standards	1,000	1,400	1.50	$ 2,100,000	100%	$ -
N-4	SE	Neighborhood Sub-collector	New Road "W"	Baywatch Ct	Sunrise Ridge	New two-lane road to full City standards	1,500	1,400	1.50	$ 3,150,000	100%	$ -
N-5	SE	Neighborhood Sub-collector	New Road "U"	Johnson Rd	Noll Road	New two-lane road to full City standards	2,800	1,400	1.50	$ 5,880,000	100%	$ -
N-6	SE	Collector Arterial	Sunrise Ridge Extension	Exsting End	Johnson Rd	New two-lane road to full City standards	2,000	1,500	1.50	$ 4,500,000	100%	$ -
N-7	W	Collector Arterial	Olhava E Street	Exsting End	Urdahl Rd	New two-lane road to full City standards	800	1,500	1.00	$ 1,200,000	100%	$ -
N-8	W	Collector Arterial	New Road "M"	Finn Hill Road	Sherman Hill Rd	New two-lane road to full City standards	9,800	1,500	1.20	$ 17,640,000	100%	$ -
N-9	W	Neighborhood Sub-collector	New Road "N"	Rhododendron	Urdahl	New two-lane road to full City standards	2,100	1,500	1.00	$ 3,150,000	100%	$ -
N-10	W	Neighborhood Sub-collector	Rasmussen Ct Extension	Finn Hill Road	Viking Way	New two-lane road to full City standards	1,600	1,500	1.00	$ 2,400,000	100%	$ -
N-11	W	Commercial Sub-collector	Vetter Rd Extension	Vetter Rd (existing)	SR 307	New two-lane road to full City standards	1,200	1,500	1.20	$ 2,160,000	100%	$ -
N-12	NE	Residential Sub-collector	12th Ave	Existing End	Genes Ln	New two-lane road to full City standards	1,000	1,500	1.00	$ 1,500,000	100%	$ -
N-13	NE	Commercial Sub-collector	Caldart Extension	Existing End	Genes Ln	New two-lane road to full City standards	1,400	1,500	1.50	$ 3,150,000	100%	$ -
N-14	NE	Residential Sub-collector	New Road "B"	12th Ave	Caldart	New two-lane road to full City standards	1,100	1,500	1.00	$ 1,650,000	100%	$ -
N-15	NE	Residential Sub-collector	12th Ave	Existing End	Lincoln Rd	New two-lane road to full City standards	1,600	1,500	1.00	$ 2,400,000	100%	$ -
N-16	NE	Residential Sub-collector	Langaunet / Maranatha Ln	Mesford Rd	Lincoln Rd	New two-lane road to full City standards	3,300	1,500	1.00	$ 4,950,000	100%	$ -
N-17	NE	Residential Sub-collector	New Road "Q"	Langaunet Ln	Noll Rd E-W	New two-lane road to full City standards	2,000	1,500	1.00	$ 3,000,000	100%	$ -
N-18	SE	Residential Sub-collector	New Road "R"	Noll Road @ Mesford	New Road "S"	New two-lane road to full City standards	1,400	1,500	1.00	$ 2,100,000	100%	$ -
N-19	SE	Residential Sub-collector	New Road "S"	Noll Road @ Thistle Ct	New Road "T"	New two-lane road to full City standards	3,600	1,500	1.00	$ 5,400,000	100%	$ -
N-20	SE	Residential Sub-collector	New Road "T"	New Road "S"	Noll Road @ Heron Pond	New two-lane road to full City standards	2,400	1,500	1.00	$ 3,600,000	100%	$ -

"Estimated Development Frontage" represents portion of project abutting developable parcels; for budget purposes only

Subtotal, public+private new roadway costs $ 73,710,000

Subtotal, Public Cost for New Roadway Segments $ -

Intersection Improvements

In 2006 dollars - adjust for inflation in future years

Project No.	Sub area	Location	Improvement Needed	Unit	Unit Cost	Total Project Cost	Estimated Dvlpmnt Frontage	Net Public Cost
I-1	WP	Finn Hill at Rude/Urdahl	Roundabout or complex signals	1	700,000	$ 700,000	0%	$ 700,000
I-2	WP	Finn Hill at SR 3 Southbound Ramp	Signal & Channelization	1	400,000	$ 400,000	0%	$ 400,000
I-3	WP	Finn Hill at SR 3 Northbound Ramp	Signal & Channelization	1	400,000	$ 400,000	0%	$ 400,000
I-4	WP	SR 305 at SR 3 Northbound Ramps	Signal & Channelization	1	400,000	$ 400,000	0%	$ 400,000
TDM-1	OP	Front Street at Torval Canyon	TDM Strategy	1	200,000	$ 200,000	0%	$ 200,000
TDM-1	OP	Front Street at Jensen (north)	TDM Strategy	1	200,000	$ 200,000	0%	$ 200,000
TDM-1	OP	Front Street at Sunset (3rd Extension)	TDM Strategy	1	200,000	$ 200,000	0%	$ 200,000
TDM-1	OP	Front Street at Jensen (south)	TDM Strategy	1	200,000	$ 200,000	0%	$ 200,000
TDM-1	OP	Front Street at Lincoln/Hostmark	TDM Strategy	1	200,000	$ 200,000	0%	$ 200,000
I-5	HC	Lincoln at 8th Avenue/Iverson	Potential roundabout	1	700,000	$ 700,000	0%	$ 700,000
I-6	HC	Hostmark at 8th Avenue	Signal	1	300,000	$ 300,000	0%	$ 300,000
I-7	HC	Lincoln at 10th Avenue	Signal	1	300,000	$ 300,000	0%	$ 300,000
I-8	HC	Liberty at 7th Avenue	Signal	1	300,000	$ 300,000	0%	$ 300,000
I-9	HC	Liberty at 10th Avenue	Signal	1	300,000	$ 300,000	0%	$ 300,000
I-10	HC	10th Avenue at Forest Rock Lane	Signal	1	300,000	$ 300,000	0%	$ 300,000
I-11	HC	SR 307 at Bernt Road & Vetter Extn	Signal & Channelization	1	400,000	$ 400,000	0%	$ 400,000
I-12	SE	Hostmark at Caldart	Channelization	1	100,000	$ 100,000	0%	$ 100,000
I-13	NE	Lincoln at Pugh	Signal	1	300,000	$ 300,000	0%	$ 300,000
I-14	WP	Finn Hill at Rasmussen	Signal & Channelization	1	400,000	$ 400,000	0%	$ 400,000
I-15	WP	Finn Hill at New Road "M"	Signal & Channelization	1	400,000	$ 400,000	0%	$ 400,000
I-16	WP	Viking Way at Rasmussen Extn	Signal & Channelization	1	400,000	$ 400,000	0%	$ 400,000

"Estimated Development Frontage" represents portion of project abutting developable parcels; for budget purposes only

Subtotal, public+private intersection costs $ 7,100,000

Public Cost for Intersections $ 7,100,000

Total Public Cost for Transportation Plan $ 33,580,050

APPENDIX E -
CAPACITY REFERENCE TABLE

Appendix E

Allowable Capacity of Roadways Based on Design Features

This methodology provides capacity values for planning and concurrency management purposes that reduce the allowed capacity of a facility from the ideal maximum, if design standards are not met. For additional explanations and definitions of terms, refer to Poulsbo Traffic Study, Appendix A, "Allowable Capacity of Roads Based on Design", David Evans & Associates, 2004

Note: some values have been changed here, compared to the original document.

Level of Service Ranges

The allowable capacity is used to evaluate traffic volumes as follows.

LOS	Range of Volume/Capacity Ratio		
A	0%	up to	59.99%
B	60%	up to	69.99%
C	70%	up to	79.99%
D	80%	up to	89.99%
E	90%	up to	99.99%
F	100%	and over	

Daily Capacity Per Through Travel Lane At Full Design Standard

The maximum potential capacity is determined by the the number of through travel lanes, and augmentation features as follows.

Road Class	Base Capacity Per Lane	Add Two-Way Left-Turn Lane	Add Left Turn Pocket	Add Right Turn Pocket	Add Bike Lane	Add Pavement Width >13 ft
Principal	8500	3000	1500	1500	1000	800
Minor	6500	3000	1500	1500	1000	800
Collector	4500	3000	1000	1000	800	400
Comml Sub	4500	3000	1000	1000	800	400
Nbhd Sub	2000	na	na	na	na	na
Res Sub	1500	na	na	na	na	na
Local	600	na	na	na	na	na

Adjustment Factors for Missing Design Elements

The daily capacity calculated above is multiplied by the following factors to adjust for missing pedestrian design elements.

Functional Classification	2 Sidewalks	1 Sidewalk 1 Shoulder	1 Sidewalk 0 Shoulder	0 Sidewalk 2 Shoulder	0 Sidewalk 1 Shoulder	0 Sidewalk 0 Shoulder
All	100%	85%	70%	55%	40%	25%

Example:

For a two-lane Minor arterial with bike lanes and a left-turn pocket at key intersections, but no sidewalks and a walkable shoulder on one side only.

Base Capacity = 2 x 6500 = 13,000 daily vehicles	13,000	daily vehicles
Additional Capacity for bike lanes = 2 x 1,000 = 2,000	2,000	"
Additional Capacity for left turn pocket = 1,500	1,500	"
Allowable Capacity with Full Design Standard =	**16,500**	"
Adjustment for design deficiency =	**40%**	
Adjusted Capacity for Reduced Design =	**6,600**	daily vehicles

If traffic volume is **6,250** then V/C is **95%** and LOS is **E**

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