Transportation Plan Update - 2016
Final

Prepared for

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1 EXECUTIVE SUMMARY

This Transportation Plan Update supports the City of Poulsbo (City) Comprehensive Plan Update by addressing the transportation network. This update evaluates current transportation characteristics in the city and forecasts how these characteristics are expected to change in the future based on land use and employment plans for the City. From the adopted land use plan, the future travel demand has been forecast and the transportation improvements to meet the needs of 20+ years of growth have been identified.

1.1 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. The City of Poulsbo requires a LOS E or better be maintained.

The only roadway segment to operate at a LOS F in the existing condition is Viking Way from the south county line to Bovela Lane (or about a 0.5 mile section of roadway).

1.2 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 2,134 dwelling units and 1,735,620 square feet of commercial development, a total of 67,200 new daily trips would be generated within the Poulsbo Urban Growth Area, including potential annexation areas. This is a 48 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 nearly 100 percent accuracy. Using this model, the increase in travel demand was assigned to the road network to identify future conditions and evaluate future capacity needs.

1.3 Future Needs Assessment

In order to serve the projected travel demand and comply with LOS standards, a few strategies were applied. These strategies include identifying improvements to increase the capacity, or applying travel demand management to reduce the vehicle volume. Capacity improvements were identified where the improvements are logical and consistent with land use plans. However, in some areas, travel demand cannot easily be accommodated by adding capacity. In those areas, travel demand instead will be metered or reduced by travel demand management.

The transportation improvements needed by 2036 are detailed in the Year 2036 Build (With Improvements) section of this report (Section 6.1.1). The capacity improvements identified include:

- Nineteen 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.

- Twenty-two 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.
- Ten projects will improve the capacity of intersections with signalization, channelization, roundabouts, and two-way or all-way stop controls.

1.4 Implementation

The recommended plan would be implemented gradually, as growth occurs. The actual timing of needs may take more or less than the 20 years assumed in this study. The overall cost of the listed needs would be approximately $131 million in 2016 dollars. The majority of this cost (approximately $77 million) would be funded by developers through construction of new City streets which would be dedicated to the City. The remaining $54 Million would be funded through the City's Capital Improvement Plan.

A conservative estimate of available public resources of all kinds over 20+ years is $33.8 million. The remaining $20.1 million would need to be raised through Traffic Impact Fees (TIF's). The anticipated new development over the 20-year planning horizon is estimated to generate 18,240 new daily trips from residential land uses and 49,040 new daily trips from commercial land uses. After discounting 25% of the commercial trips to avoid double-counting by-pass trips, there would be a total of 55,020 new daily trips on which the TIF would be based. This equates to a TIF of $366 per new daily trip.

1.5 Purpose of Document

This transportation plan update is based on prior studies and an updated forecasting model to identify future transportation deficiencies in 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 2036 (see **Figure 1**).

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 2016 City Comprehensive Plan Update
- Concurrency Ordinance
- Traffic Impact Fee Ordinance

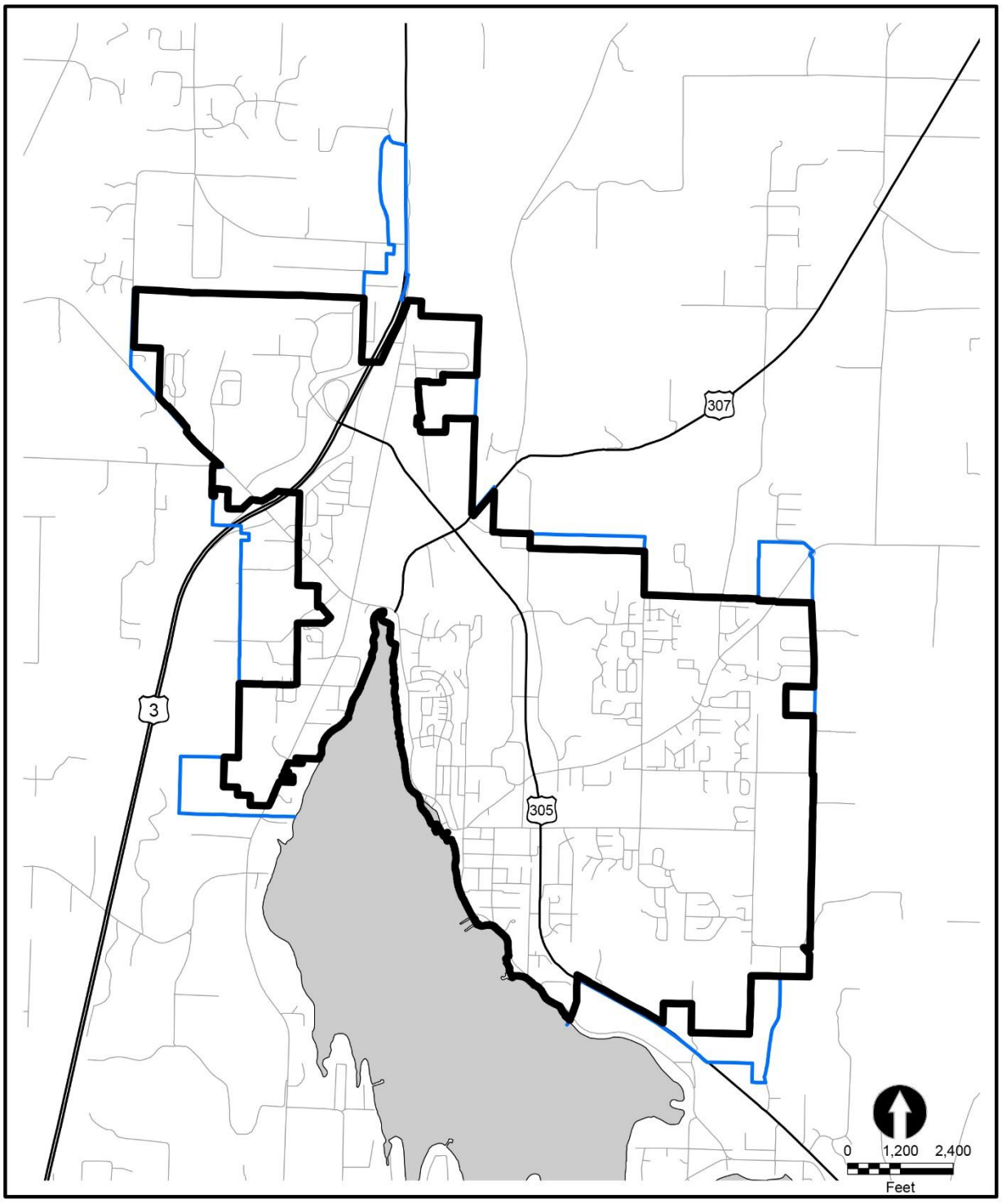


Figure 1. City Limits and Urban Growth Area

2 METHODOLOGY

2.1 Traffic Operations Level of Service Method

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.

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). The following summarizes how LOS is calculated.

- For intersections, LOS is determined by measuring the average delay per vehicle during the peak hours.
- For road sections, LOS is based on a comparison of the road's volume against the capacity. The capacity for each road ranges depending on several factors including the number of lanes, speed, classification, and compliance with design standards. If the road does not meet urban design standards, the capacity is reduced. This measures the ability of the entire road corridor to safely provide for pedestrian and bicycle needs along with vehicular travel. This is further described in Appendix A.

The measures and values that define each service level are shown in **Table 1** and differ according to the type of facility.

Table 1. 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

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.

2.2 Travel Demand Forecast Method

A traffic forecasting model for the City of Poulsbo has been developed and predicts future traffic volumes, based on input assumptions about future land use. The model uses the VISUM software (PTV Group version 14.0), 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 (traffic 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 ("internal-external" trips), and to account for non-stop movements that pass through Poulsbo ("external-external" trips).

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 forecasting model was validated to existing conditions. The modeled volumes closely match actual observed counts. The correlation coefficient (R-squared statistic) achieved was nearly 100 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.

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.

For the purposed of the future forecast, the residential development total in terms of dwelling units corresponds to the PSRC-mandated population target of 14,808 and assumes development of most urban growth areas at urban densities.

Growth factors for the external areas presented by these links were developed consistent with the Kitsap County and WSDOT's transportations models, which forecast growth between 1.0 and 2.7 percent per year on those external links over the 20+ year forecast.

On the residential population side, the future traffic model used a modified "build out" land development assumption. This scenario provides a "worst-case" analysis for future planning purposes (within the City's current population allocation ceiling) because it reveals the potential future traffic conditions that could someday occur, if the City's population were to reach its allocation target of 14,808 residents. Whether and when this build out target would materialize will depend on market conditions. For planning purposes, the assumption is that this would occur in about 20 years, which appears reasonable based upon current trends.

On the commercial/industrial development side, there are no PSRC growth targets or a ceiling mandate for growth management purposes. That said, it appears that the planned build out of non-residential land in Poulsbo is reasonable, because the resulting percentage increase in non-residential activity is slightly 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 a few roadways which will require capacity improvements to accommodate the demand and meet concurrency requirements. An improvement program to resolve those future deficiencies is the subject of a following section.

3 EXISTING 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 existing facilities.

3.1 Roadway Network

3.1.1 Functional Classification Composition

The transportation network includes a series of highways, principal and minor arterials, collectors, and local roadways. **Table 2** summarizes the total miles of roadway within the City and the arterial classification composition.

Table 2. Miles of Roadway and Functional Classification Composition

Type	FHWA Guideline Percent of Total Miles	With Current Functional Classification (Federal)
Principal arterial system	5 to 10%	4% (<2 miles)
Principal Arterial system plus Minor Arterial systems	15 to 25%	23% (11 miles)
Collector street system	5 to 10%	15% (7 miles)
Local street system	65 to 80%	62% (29 miles)

The values in **Table 2** were calculated assuming total of 46 miles of local roadway within the City limits, and do not include SR-3, 305, and 307. **Figure 2** depicts the City of Poulsbo's arterial network and classification.

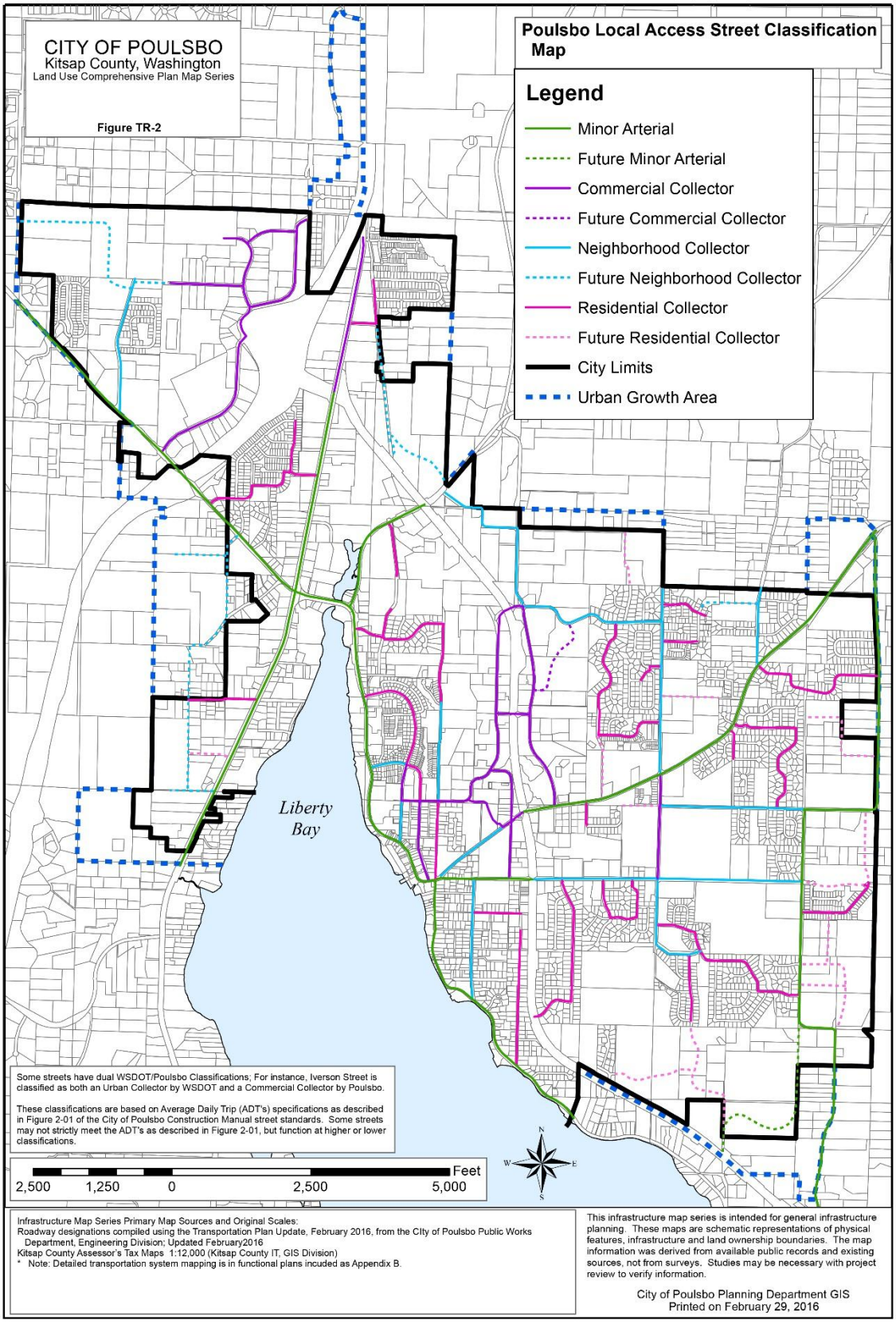


Figure 2. Arterial Network and Functional Classification

3.1.2 Historic Traffic Growth

The 2015 Poulsbo travel demand model was based on traffic counts collected between the years of 2010 and 2015. This data was used to establish the existing year conditions and includes daily and for the PM peak hour counts and were obtained from the City of Poulsbo and WSDOT. The growth trends for annual average daily traffic (AADT) and PM peak hour traffic counts between 2010 and 2015 were identified and are described below.

3.1.2.1 AADT Growth Trends

The AADTs between 2010 and 2014 for the six locations on State Routes (SR) 305, 307, and 3, as well as on the City's street, are shown in **Table 3**. Three out of six locations experienced no growth between 2010 and 2014 and one location experienced negative growth over the same time period. Overall the AADT at those locations between 2010 and 2014 only yielded approximately 1.6 percent growth. The historic AADT volumes with a red growth trend line for each location are shown in **Figure 3**.

Table 3. Historical Growth Trends based on AADT

No.	Location	Two-Way AADT					Difference between 2010 and 2014 (AADT, %)
		2010	2011	2012	2013	2014	
1	SR 305 after Delate Road	21,000	-	-	-	21,000	0 (0%)
2	SR 305 before Hostmark Street	22,000	-	-	-	22,000	0 (0%)
3	SR 307 at PTR R096	16,000	16,000	16,000	16,000	17,000	1,000 (6.3%)
4	SR 3 before Ramp SR 305	29,000	31,000	30,000	30,000	30,000	1,000 (3.4%)
5	SR 3 after Ramp SR 305	22,000	22,000	22,000	22,000	22,000	0 (0%)
6	NE Forest Rock Ln w/o 12th Ave NE	2,200	-	-	-	2,000	-200 (-9.1%)
Overall		**112,100**	**-**	**-**	**-**	**114,000**	**1,800 (1.6%)**

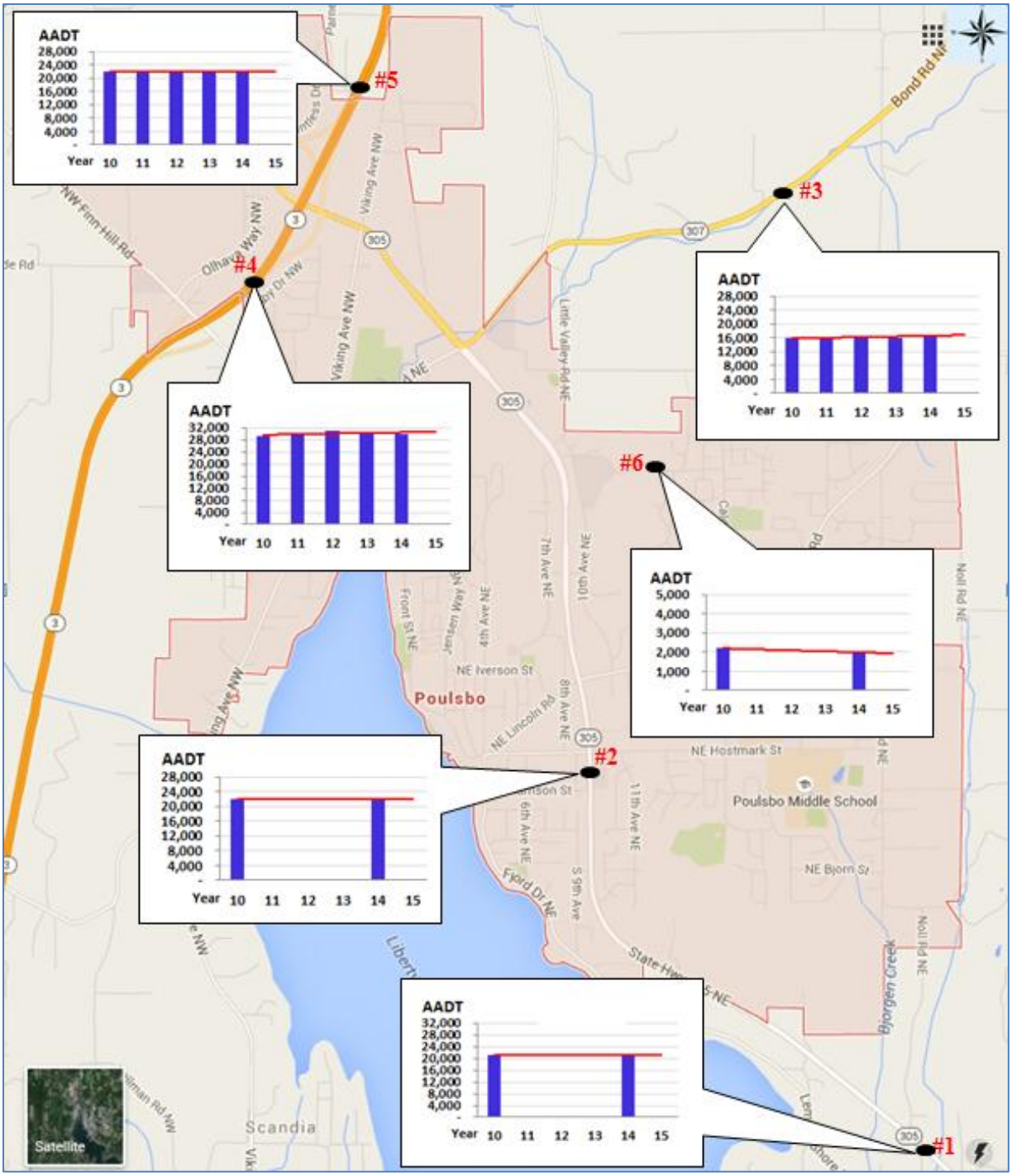


Figure 3. Historic Traffic Growth Trends –Daily

3.1.2.2 PM Peak Hour Growth Trends

The PM peak hour traffic counts were compared for four locations based on the available counts collected in the PM peak hour in both 2010 and 2014 at the same locations. The PM peak hour traffic counts in both 2010 and 2014 (or 2015 as applicable) at the four locations within the City's limits or adjacent to the City area are shown in **Table 4**. Two out of four locations experienced negative traffic growth. Overall the PM peak hour traffic counts at the four locations between 2010 and 2014 (or 2015 as applicable) yielded approximately 1.7 percent growth. The snapshot of the PM peak hour traffic count chart with a red growth trend line for each location is shown in **Figure 4**.

Table 4. Historical Growth Trends based on PM Peak Hour Counts

No.	Location	Two-Way PM Peak Hour Counts (VPH)		Difference between 2010 and 2014 (VPH, %)
		2010	2014	
1	NE Forest Rock Ln w/o 12th Ave NE	236	243	7 (3%)
2	NE Lincoln Road w/o NE Kevos Pond Dr	570	550	-20 (-3.5%)
3	6th Avenue NE n/o NE Harrison St	223	133	-90 (-40.4%)
4	SR 307 near NE City Limits	1,537	1,684	147 (9.6%)
Overall		**2,566**	**2,610**	**44 (1.7%)**

* VPH = vehicles per hour

The AADT and PM peak hour traffic counts within the City's limits and the adjacent area overall yielded approximately 1.6 percent and 1.7 percent growth, respectively, between 2014 and 2010, which can be translated into an annual growth rate of approximately 0.4 percent for both daily traffic and PM peak hour traffic.

3.1.3 Traffic Volumes

Citywide intersection turning movement counts were collected at 48 intersections in the PM peak hour in 2010. An annual growth rate of 0.4 percent which results in a total growth rate of 2 percent over the 5-year period was used to grow the 2010 traffic counts to derive the 2015 baseline traffic volumes.

Average daily traffic (ADT) volumes for inventoried roadway segments are shown in Appendix B and the VISUM model volumes are shown in **Figure 5**.

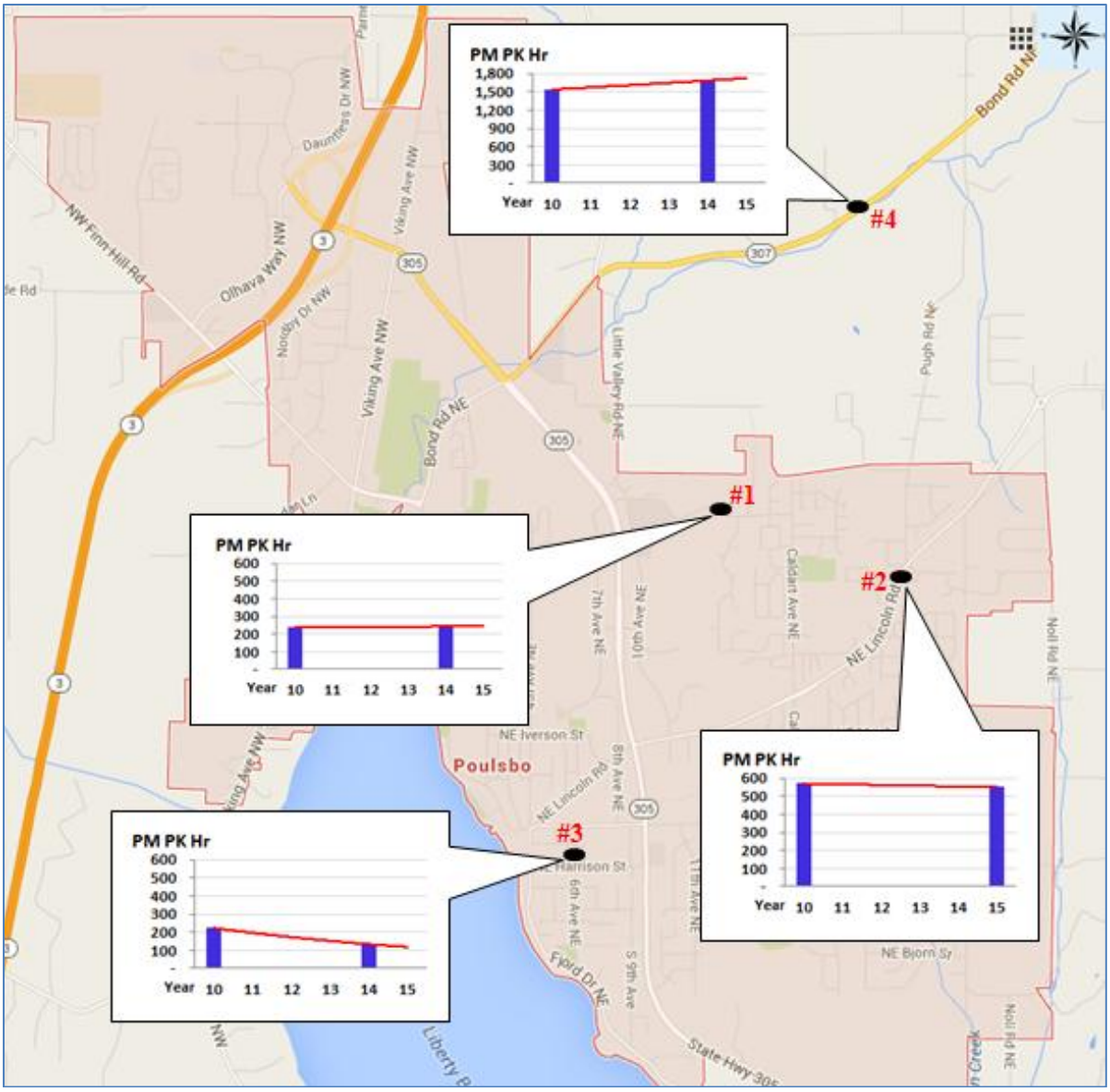
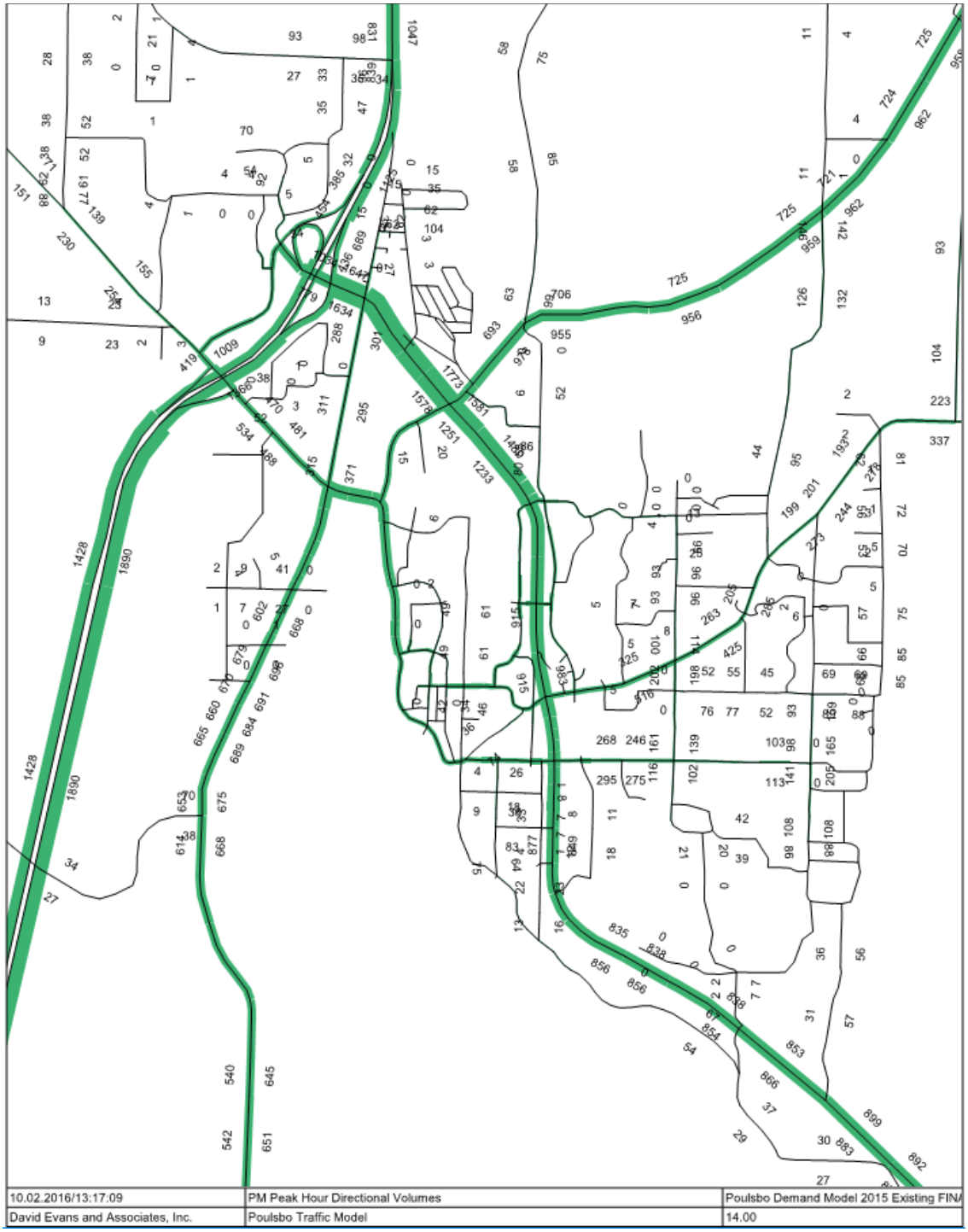


Figure 4. Historic Traffic Growth Trends – PM Peak Hour



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

Figure 5. Existing (2015) PM Peak Hour Traffic Volumes

3.1.4 Roadway and Intersection Level of Service and Deficiencies

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 following describes the findings from the LOS analysis and identifies deficiencies.

3.1.4.1 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 A. The tables in Appendix B show for each roadway segment the functional classification, capacity, volume, the volume to capacity (V/C) ratio, and LOS.

The only roadway segment to operate at a LOS F in the existing condition is Viking Way from the south county line to Bovela Lane (or about a 0.5 mile section of roadway).

3.1.4.2 Intersections

In the 2006 Transportation Element of the comprehensive plan, intersection LOS was conducted. Based on that analysis, several intersection improvement projects were identified and have subsequently been completed. In 2010 the City obtained detailed turning movement counts for 48 intersections in and near Poulsbo. Between 2010 and today, traffic volumes have increased at a rate of about 0.4% per year, or a total growth of only about 2%. The 2010 intersection volumes are summarized in Appendix G.

3.2 Non-motorized Facilities

The 2012 Urban Paths of Poulsbo plan establishes the City's vision for development of a trail network to connect neighborhoods, parks, shopping, and schools within Poulsbo as well as provide connections to the regional trail systems leading into Kitsap County and beyond. In addition to identifying the type and location of nonmotorized facilities planned in Poulsbo, the plan emphasizes the importance of environmental protection, recognizes the need for partnerships in order to implement the vision, and prioritizes projects.

Within Poulsbo, the built and natural environments influence the development of nonmotorized facilities. The City's roadway network includes State Routes 3, 305, and 307 as well as arterials, collectors, and neighborhood residential streets. In some of the areas, there is limited space within the right-of-way to install new facilities, such as bicycle lanes or added shoulders. Safety is a significant concern along highways and high-volume streets. Most of the land within the incorporated city limits is developed with a variety of land uses. Some of these areas do not have sidewalks, making connections difficult. Also, unless there is a preexisting easement, the City does not intend to develop trails across private property without the owner's consent. Topographic changes, streams, and frontage along Liberty Bay create an appealing setting for bicycle and pedestrian activities.

The Urban Paths of Poulsbo plan envisions a nonmotorized network using existing trails and infrastructure. Though there are extensive sidewalks within Poulsbo and many parks include trails, they do not result in a complete network. The goal of the plan is to develop connectivity between the existing facilities in order to complete, link, and improve key pedestrian and bike routes throughout the city.

Complete and continuous routes may comprise a mix of facilities. The Urban Paths of Poulsbo plan includes the following categories and types of nonmotorized facilities:

- Pedestrian: Wilderness, Recreational, Infrastructure
  - Wilderness trails are narrow, low impact, hand built dirt paths that generally follow the natural grade. They do not disturb significant natural vegetation and typically do not comply with accessibility standards outlined in the Americans with Disabilities Act.
  - Recreational trails are generally wide packed gravel. They generally meet recreational standards for access when topography allows.
  - Shared use paths are designed to accommodate two-way travel for pedestrians, cyclists, and other non-motorized travelers. They are typically separated from motor vehicle traffic by vegetated open space, barrier, or curb.
  - Infrastructure may be sidewalks, shared use paths, paved trails, boardwalks, or wide shoulders.
- Bicycle: Routes, Sharrows and Shared Use Paths
  - Bike routes may be comprised of bike lanes, a sharrow symbol on low speed roads, shoulders or shared use paths. Sharrows are roadway markings indicating that the travel lane is shared by vehicles and bicycles. They are placed in the travel lane to indicate where people should cycle.
- Water Trails
  - Water trails for non-motorized craft require access to the water. Signage denoting small boat launch sites that can be read from both on land and from the water help access these trails.

Figure PRO-3 in the *Urban Paths of Poulsbo* plan identifies the location of existing facilities throughout the City as of 2011. These include the City's pedestrian network which has approximately 142,500 linear feet of trails, 123,000 feet of which are sidewalks. The existing bicycle network includes 25,500 feet of bicycle lanes, 19,500 feet of road shoulders, and 1,200 feet of shared use paths. Since that time, the City has completed the following projects:

- **Fish Park to Nelson Park:** Installed signs to point pedestrians to crossings under Lindvig Road to Fish Park
- **American Legion Park:** Repaired existing pathways within park
- **Hostmark General improvements:** Installed sidewalks, curbs, bike lanes up Hostmark on the south side of the street; Installed last piece of missing sidewalk on Hostmark near swimming pool parking lot
- **Poulsbo Elementary School:** Installed shared use path from Noll/Hostmark to Poulsbo Elementary; Installed 3-way stop at Hostmark and Noll
- **Strawberry Field Complex:** Installed an asphalt ADA ramp from Poulsbo Elementary parking lot to Strawberry
- **Lincoln Road:** Installed traffic signal/crosswalk installed to Safeway; Completed roundabout and sidewalks at Lincoln/Noll
- **Lincoln/Pugh/Kevos Pond:** Installed crosswalk across Lincoln Road between Pugh and Kevos Pond Roads
- **Lincoln/Pugh/Kevos Pond:** Completed a missing sidewalk piece across Lincoln Road between Pugh and Kevos Pond Roads

3.3 Public Transportation Service and Facilities

Access to and around the City of Poulsbo is provided by regional and local bus service operated by Kitsap and Jefferson Transit, and connections across the Puget Sound are provided by the WSDOT ferry service.

Kitsap Transit is the primary provider of bus transit services and facilities in Poulsbo. There are four routes that provide Poulsbo with all-day bus service Monday through Saturday, one route that provides all-day bus service Monday through Friday, and one route that provides peak-only service on weekdays. Additionally, Jefferson Transit provides limited bus service Monday through Saturday via the Poulsbo Transfer Center. There is no bus service in Poulsbo on Sundays. **Figure 6** displays the routes serving Poulsbo. **Table 5** summarizes the routing, areas served, span of service, and the frequency of bus routes serving Poulsbo.

In addition to fixed route transit service, Kitsap Transit provides Worker/Driver buses from several different areas in Kitsap County to the Puget Sound Naval Station and SubBase Bangor. Each route has one trip per day in the am and one in the pm. Trips are open to anyone and are free for federal employees. Five Worker/Driver bus routes have at least one stop in Poulsbo. These routes and stops are detailed in **Table 6**.

Figure 6. Kitsap Transit System Map

Table 5. Bus routes serving Poulsbo

	ROUTE	ROUTING	AREAS SERVED	SPAN OF SERVICE	FREQUENCY
Kitsap Transit	32	Poulsbo to Silverdale, primarily via State Route 3	Silverdale Transfer Center, Front Street, Finn Hill Road, Jensen, Iverson, Poulsbo Transfer Center, Doctor's Clinic	Weekdays: 7:00 am – 8:50 pm	Hourly; includes drop offs on request from 7:10 pm – 8:50 pm
				Saturdays: 10:00 am-5:00 pm	Hourly
	33	Silverdale and the Bainbridge Ferry Terminal with stops in Poulsbo, via State Route 305, Viking Way NW, Silverdale Way NW and Ridgetop Blvd NW	Randall Way, Ridgetop, Viking Way, Keyport Junction, Poulsbo Junction Park & Ride, Gateway Fellowship Park & Ride, Bainbridge Island Ferry Terminal; Service primarily travels to the Bainbridge Ferry Terminal in the am and to the Silverdale Transfer Center in the pm	Peak only weekdays: 4:20 am – 7:35 am (includes one trip from the Bainbridge Ferry Terminal to the Silverdale Transfer Center) and 3:40 pm – 8:50 pm	Varies; headways range from 35-60 minutes; trips timed to coincide with ferry arrivals and departures; trips that begin at the ferry terminal will wait for the ferry to arrive and passengers to transfer to the bus before departing
	43	Service within Poulsbo	Poulsbo Transfer Center, Doctors Clinic & Group Health, Downtown Poulsbo, NK Medical Center, Olympic College, Wal-Mart, Viking Avenue, Hostmark, Central Market, Poulsbo Village	Weekdays: 9:40 am – 4:25 pm	Hourly
				Saturdays: 10:40 am – 3:25 pm	Hourly
	44	Service within Poulsbo	Poulsbo Transfer Center, Doctors Clinic & Group Health, Library, Hostmark Apartments, Downtown Poulsbo, Viking Avenue, Olympic College, Wal-Mart, North Kitsap Medical Center, Central Market, 10th Avenue	Weekdays: 7:25 am – 7:50 pm	30 minutes
				Saturdays: 10:25 am – 4:50 pm	30 minutes
	90	Poulsbo to the Bainbridge Ferry Terminal, some trips are continuation of Route 33 trips to/from Silverdale	Poulsbo Junction Park & Ride, Poulsbo Nazarene Park & Ride, North Kitsap Baptist Church Park & Ride, Gateway Fellowship Park & Ride, Poulsbo Transfer Center, Clearwater Park & Ride, Bainbridge Ferry Terminal	Weekdays: 4:40 am – 8:30 pm	Varies; headways range from 35-60 minutes; trips timed to coincide with ferry arrivals and departures; trips that begin at the ferry terminal will wait for the ferry to arrive and passengers to transfer to the bus before departing
				Saturdays: 10:40 am – 4:50 pm	Hourly
	92	Poulsbo, Kingston, and Suquamish via State Route 305, Suquamish Way NE, Miller Bay Road NE and State Route 104	Poulsbo Transfer Center, Suquamish Park & Ride, Kountry Korners, Kingston Ferry Terminal	Weekdays: 8:30 am – 5:00 pm	Hourly
Jefferson Transit	7	Poulsbo, Port Ludlow, Port Hadlock, and Port Townsend via State Route 305, State Route 104, Paradise Bay Road, Oak Bay Road, State Route 116 and State Route 19	Poulsbo Transfer Center, Shine Tidelands, Paradise Bay, Port Ludlow, Oak Bay, Port Hadlock, Port Townsend	Weekdays: 7:25 am – 6:40 pm	Four daily inbound trips (two in the a.m. and two in the p.m.) and four daily outbound trips (two in the a.m. and two in the p.m.)
				Saturdays: 10:40 am – 4:05 pm	Two daily inbound trips (one in the a.m. and one in the p.m.) and two daily outbound trips (one in the a.m. and one in the p.m.)

Table 6. Worker/Driver Bus Routes and Stops in Poulsbo

Route	Stops
Kingston	Bond Road NE and NW Lindvig Way
North End Express	Bond Road NE and NW Lindvig Way
Suquamish	• NE Hostmark Street at State Route 305 • Poulsbo Junction
Viking Express	WalMart at Olhava Way NW
Winslow	• Gateway Fellowship Park and Ride • NW Finn Hill Road and State Route 3

Kitsap Transit has six park-and-ride facilities in or near Poulsbo, primarily connecting to Bainbridge Island's Washington State Ferry terminal. Kitsap Transit also has a transfer center in Poulsbo, providing connections to Jefferson County and other Kitsap Transit bus routes. **Table 7** details the location, number of spaces, and routes serving the park-and-ride and transfer facilities in Poulsbo.

Table 7. Park-and-ride and transfer facilities in Poulsbo

Facility Name	Location	Number of Parking Spaces	Routes Serving
Gateway Fellowship	18901 8th Ave. NE	138	Kitsap Transit: 33, 44, 90, Worker/Driver Buses to Puget Sound Naval Shipyard: Winslow, Suquamish
North Kitsap Baptist Church	20516 Little Valley Rd. NE	57	Kitsap Transit: 90
Poulsbo Junction	Viking Avenue NW & NW Lindvig Way	35	Kitsap Transit: 33, 43, 44, 90, Worker/Driver Buses to Puget Sound Naval Shipyard: Winslow, Suquamish
Poulsbo Church of the Nazarene	22097 Viking Way NW	100	Kitsap Transit: 33, 90
North Base Park & Ride (under construction)	SR305 and Viking Avenue NW	269	Kitsap Transit: 32, 33, 43, 44, 90, 92 Jefferson Transit: 7
Poulsbo Transfer Center	State Route 305 between NE Liberty Road and NE Lincoln Road	11	Kitsap Transit: 32, 33, 41, 43, 44, 90, 92 Jefferson Transit: 7

High occupancy vehicle lanes are located on SR 305. Transit is permitted to use these facilities.

Three Washington State ferry terminals are located near Poulsbo at Kingston, Bainbridge Island and Bremerton. Ferries utilizing these terminals carry vehicles, bicycles, and passengers. The Bainbridge ferry terminal is approximately 12 miles southwest of Poulsbo and the primary route to it is via SR 305. The Kingston ferry terminal is approximately 11 miles northeast of Poulsbo. It can be reached via SR 104. Primary travel routes are along SR 305/Suquamish Way NE and SR 307. The ferry terminal is located at Bremerton approximately 17 miles from Poulsbo and is primarily accessed via SR 3 and SR 303. All three terminals have parking lots at or near them. Most are lots that customers must pay to use the parking lots. Kitsap Transit provides bus service to and from Poulsbo to both ferry terminals.

The ferry terminals at Kingston and Bainbridge Island provide a connection to the PSRC designated Regional Growth Centers on the Kitsap Peninsula of Bremerton, Silverdale, and the Puget Sound Industrial Center – Bremerton.

4 LAND USE CHANGES AND TRIP GENERATION FORECAST

Travel demand on the transportation network is generated by the adjacent land uses. An inventory of existing and future land uses is the essential foundation for traffic growth forecasts and transportation planning for growth.

Poulsbo's future boundaries are defined by the Urban Growth Area (UGA) agreed to between the City and Kitsap County. **Figure 7** depicts existing land uses, current City Limits as well as the boundary of the UGA. This expanded area provides sufficient land for the city to realize its mandated growth target for the year 2036, for a total population of 14,808 within the expanded city including Urban Growth Area (existing city plus UGA). The existing population is 9,775 inside the current city limits.

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 147 Traffic Analysis Zones (TAZs) to cover the existing city area and the Urban Growth Area.

Development densities were based on the current city zoning map, less the adjustments described above. The resulting total of future dwelling units was consistent with the future population level of 14,808 for which the City is required to plan by the Puget Sound Regional Council (PSRC). The anticipated growth in commercial development is roughly equivalent to the anticipated growth of dwelling units and population. This proportional relationship indicates an economically balanced planned growth scenario for the City.

Based on the existing and future land use scenarios, the total trip generation was calculated for all TAZs in the City plus the urban growth areas, using standard trip generation rates from the Institute of Transportation Engineers (ITE), *Trip Generation Manuals (Ninth Edition)* (see Appendix E). The results are summarized in **Table 8**. Commensurate with the overall population, residential, and non-residential growth level of approximately 50 percent, the citywide growth in trip generation is expected to be 48 percent.

Table 8. Total Land Use for Traffic Forecasting (City + Urban Growth Area)

Planning Year	Population	Dwelling Units	Commercial/Non-residential Sq. Ft.	PM Peak Hour Vehicle Trips (vph)	Daily Vehicle Trips
Existing (2015)	9,775	4,304	3,646,580	13,986	139,860
2036	14,808	6,438	5,382,200	20,714	207,140
Growth (Actual, %)	**5,033 (51%)**	**2,134 (50%)**	**1,735,620 (48%)**	**6,728 (48%)**	**67,280 (48%)**

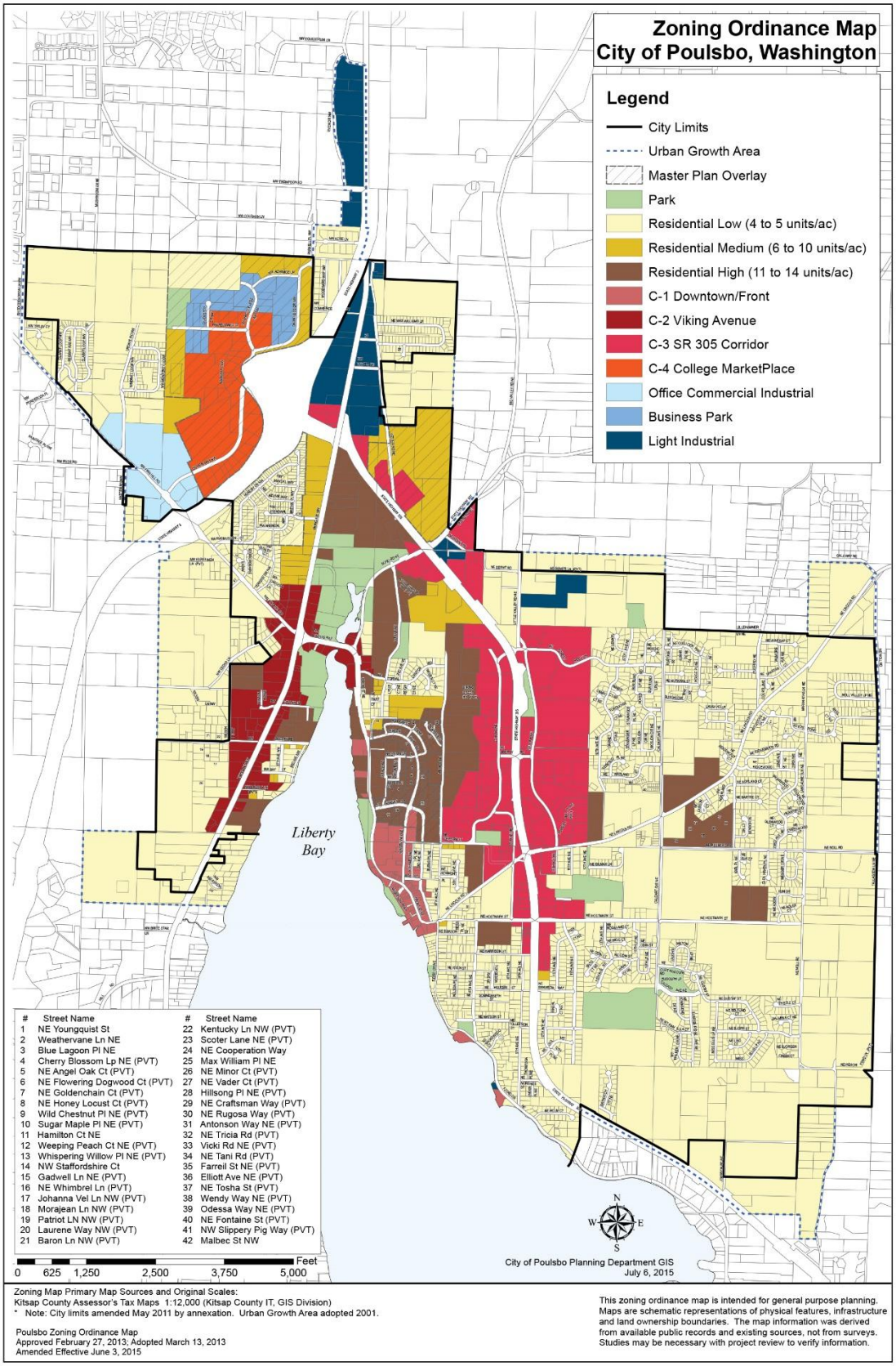


Figure 7. Zoning Map

5 YEAR 2036 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.

5.1 Roadway Network

5.1.1 Traffic Volumes

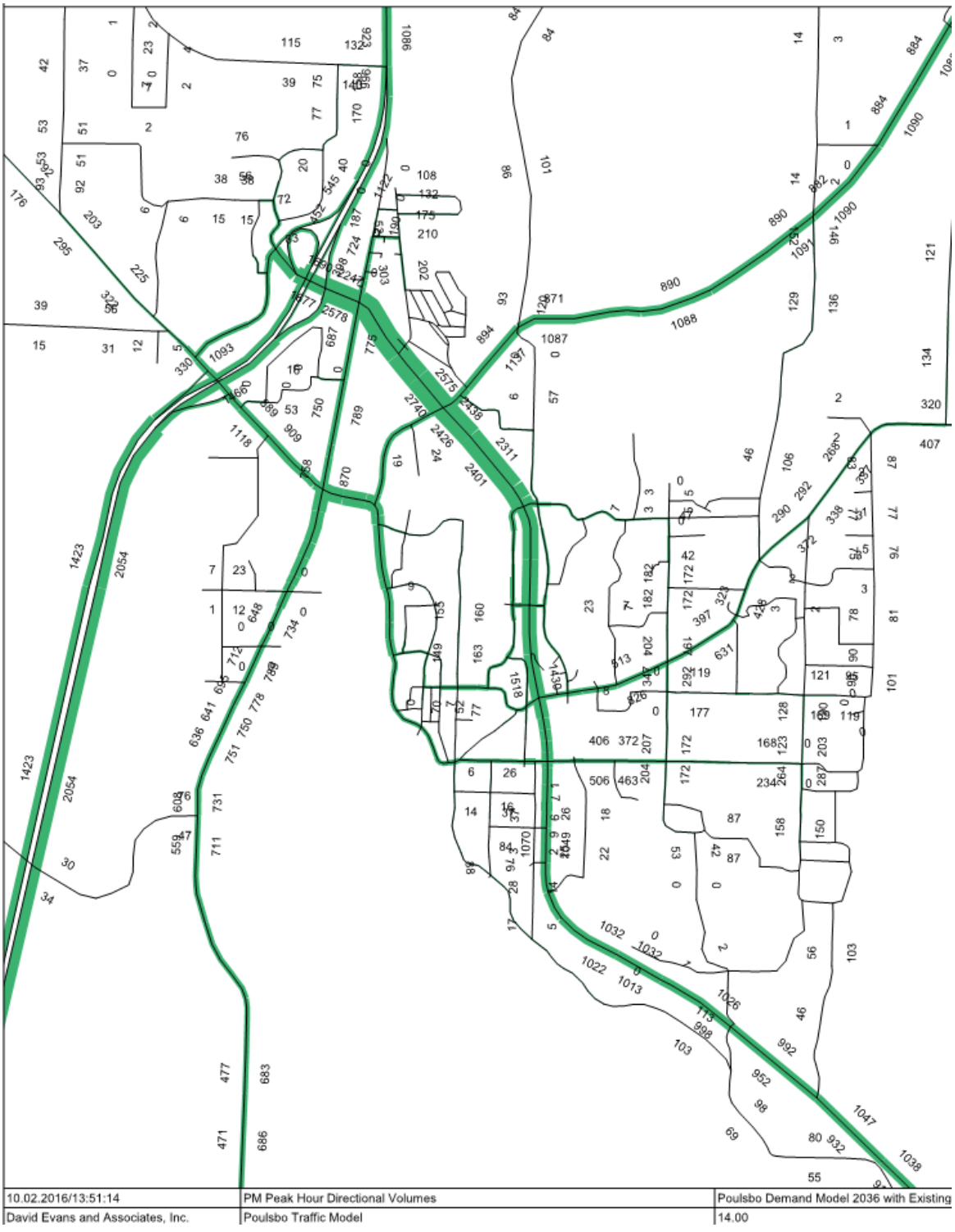
The 2036 traffic demand was obtained from the traffic modeling process described in the Methodology section (Section 2.2). As noted, traffic demand is expected to increase approximately 48 percent in the Poulsbo area between 2015 and 2036. The primary source of new traffic volumes is expected to be rapid development in the commercial areas on the west side of Poulsbo. 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 downtown Poulsbo.

5.1.1.1 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 **Figure 8** include the effects of growth within the City's UGA as well as growth in the adjacent rural areas. These peak hour volumes (PHV) are converted to ADT in the following summary, using an assumed ratio of approximately one PM peak hour trip per ten daily trips, based on existing counts. **Table 9** summarizes the increases in traffic volumes on the state routes within the City of Poulsbo.

Table 9. 2036 No Action – State Route ADTs

State Route (SR)	Location	2015 Existing	2036 No Action	Growth (Actual, %)
SR 3	Just south of Finn Hill Rd	34,560	36,220	1,660 (5%)
	North of SR 305	19,560	20,930	1,370 (7%)
SR 305	Just east of SR 3	34,200	50,260	16,060 (47%)
	Just south of Hostmark	18,150	22,350	4,200 (23%)
SR 307	Just north of SR 305	15,500	20,170	4,670 (30%)
	Just south of Finn Hill Rd	34,560	36,220	1,660 (5%)



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

Figure 8. 2036 No Action PM Peak Hour Traffic Volumes

5.1.2 Roadway and Intersection Level of Service and Deficiencies

5.1.2.1 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 2016 calculations. The tables in Appendix C show the anticipated 2036 functional classification, V/C ratio and the LOS for each key roadway segment in each of the study subareas.

Out of 97 segments analyzed citywide, 12 segments (12 percent) are deficient—i.e., projected to carry higher loads than the available capacity. These segments are shown in **Table 10**.

5.1.2.2 Intersections

Based on the future travel forecasts, there are 10 intersections with entering volumes or geometric constraints that will likely result in operations to fall below LOS standards in 2036 without improvements. **Table 11** summarizes the intersections so determined that may require future improvement to meet LOS standards.

5.2 Non-motorized Facilities

Between now and the year 2036, as development density increases, non-motorized volumes are expected to increase. However, without additional capacity improvements to the system, non-motorized travel will degrade.

5.3 Public Transportation Service and Facilities

As population, employment, and roadway congestion increases, transit demand will increase. This higher utilization of transit could put pressure on the transit system.

Table 10. 2036 No Action - Roadway Deficiencies

Name	From	To	Functional Classification	2036 No Action Capacity	2015 Volume	Increase in Traffic Volumes (2015 to 2036)	2036 No Action Volume (2015 + Growth)	Volume to Capacity Ratio	LOS
Front St	Bond	Torval Canyon	Minor	18,000	15,802	11,573	27,375	1.52	F
Front St	Torval Canyon	Jensen (N)	Minor	18,000	14,344	8,094	22,438	1.25	F
Front St	Jensen (N)	Sunset	Minor	16,000	12,844	5,698	18,542	1.16	F
Iverson	Jensen	4th Ave	Comml Collector	9,400	8,052	2,156	10,208	1.09	F
Iverson	4th Ave	7th Ave	Comml Collector	12,000	8,531	3,698	12,229	1.02	F
Torval Canyon	Front	4th Ave	Res Collector	4,000	1,531	3,417	4,948	1.24	F
Viking Way	South County Line	Bovela	Minor	13,600	17,291	1,313	18,604	1.37	F
Viking Way	Bovela	Lindvig	Minor	29,000	17,552	13,104	30,656	1.06	F
Viking Way	300 n' of Lindvig	SR305	Minor	14,875	6,313	9,719	16,031	1.08	F
Viking Way	SR305	Vetter Rd	Comml Collector	8,500	4,292	10,010	14,302	1.68	F
Finn Hill Rd	A Street	Rasmussen	Minor	14,500	10,354	7,802	18,156	1.25	F
Lindvig	Viking	Bond	Minor	29,000	20,958	13,635	34,594	1.19	F

Table 11. 2036 No Action – Intersection Deficiencies

Intersection Location	Control Type	Intersection Issue	LOS	Source
Finn Hill at Rude and Urdahl	Stop-sign control	High volumes, Geometrics	F (Year 2025)	Appendix C: Draft Transportation Plan 2006
Finn Hill at Rasmussen Court	Stop-sign control	High volumes	F (Year 2025)	Appendix C: Draft Transportation Plan 2006
Finn Hill at New Road "M"	Stop-sign control	High volumes	Estimated F after development	
Viking Way at Stendahl Court Extension	Stop-sign control	High volumes	Estimated F after development	
SR 307 at Bernt Road	Stop-sign control	High volumes	F (Year 2025)	Appendix C: Draft Transportation Plan 2006
Hostmark at 8th Avenue	Stop-sign control	High volumes	F (Year 2025)	Appendix C: Draft Transportation Plan 2006
Lincoln at Pugh	Stop-sign control	High volumes	F (Year 2025	Appendix C: Draft Transportation Plan 2006
Noll Road at Mesford	Stop-sign control	High volumes	Estimated F after development	
Noll Road at Hostmark	Stop-sign control	High volumes	Estimated F after development	
7th and Liberty	Stop-sign control	High volumes	Estimated F	Poulsbo Comprehensive Plan 2009
10th Avenue and Forest Rock Lane	Stop-sign control	High volumes	Estimated F	Poulsbo Comprehensive Plan 2009
8th Avenue and Lincoln Road	Stop-sign control	High volumes	Estimated F	Poulsbo Comprehensive Plan 2009
Front Street and Torval Canyon	Stop-sign control	High volumes	Estimated F	Poulsbo Comprehensive Plan 2009
Front and Jensen	Stop-sign control	High volumes	Estimated F	Poulsbo Comprehensive Plan 2009
Front, Fjord and Hostmark	Stop-sign control	High volumes	Estimated F	Poulsbo Comprehensive Plan 2009
Lindvig Way at Viking Avenue	Signal	High volumes	Estimated F	Poulsbo Comprehensive Plan 2009
Lindvig Way/Finn Hill Road at Viking Avenue	Signal	High volumes	Estimated F	Poulsbo Comprehensive Plan 2009

6 2036 BUILD (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, 2036 Mitigation Requirements.

6.1 Roadway Network

6.1.1 Planned Improvements

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 (see **Table 12**). Turn pockets or turn lanes are added where needed. No new general traffic lanes for through travel are added to any existing arterial corridor.

New roads are added to the system at the level of collector arterials or sub-collector roads (see **Table 13** and **Figure 9**). 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.

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 employ alternative mitigation measures that address impacts associated with the adoption of these LOS F standards but do not necessarily add capacity. These measures may include Transportation Demand Management (TDM) or Transportation System Management (TSM) actions or projects. These strategies may divert the forecast traffic growth to other possibilities elsewhere, but more importantly may encourage and support other transportation modes including transit and non-motorized facilities, as well as safety improvements such as pedestrian enhancements, signal timing optimization, pavement striping, signage and lighting, geometric modifications or other measures intended to accomplish the same goals. Collectively, such strategies are described as Transportation Demand Management in this plan and the City's adopted TIP.

Table 12. Roadway Improvement Projects

2016 Project No.	Existing Functional Classification	Name	From	To	Improvement Needed
R-1	Commercial Collector	10th Avenue	600 ft n/o Liberty	Liberty	Turn lane, sidewalks
R-2	Commercial Collector	8th Avenue	Hostmark	7th Avenue	Sidewalks one side; resurface; widen
R-3	Neighborhood Collector	Pugh Road	Lincoln	City Limits	Sidewalks; resurface
R-4	Neighborhood Collector	Mesford	20th Avenue	Noll Rd	Sidewalks; widen; overlay
R-5	Neighborhood Collector	Hostmark	4th Avenue	6th Avenue	Sidewalks; resurface
R-6	Neighborhood Collector	Caldart	Hostmark	Gustaf	Sidewalks; resurface
R-7	Residential Collector	11th Avenue	Hostmark	Sol Vei Way	Sidewalks
R-8	Minor Arterial	Noll Road	Storhoff	Mesford	Turn lanes; Sidewalks; Bike Lane; Shared Use Path
R-9	Neighborhood Collector	Langaunet/ Maranatha	Mesford	Lincoln	Widen, construct curb, gutter, sidewalk and shared use path
R-10	Neighborhood Collector	4th Avenue	Iverson	Torval Canyon	Sidewalks; resurface
R-11	Minor Arterial	Finn Hill Road	W. City Limits	Olhava A Street	Sidewalks; widen; bike lanes; resurface
R-12	Residential Collector	Liberty Rd	Viking Way	New Road "M"	Sidewalks, resurface
R-13	Local Access	Bernt Rd	SR307	Little Valley Rd	Non-motorized improvements; resurface
R-14	Minor Arterial	Johnson Rd	SR 305	Sunrise Ridge Extension	Resurface; bike lanes
R-15	Local Access – Residential Access	Little Valley Rd	Forest Rock Ln	Bernt	Sidewalks, resurface
R-16	Neighborhood Collector	Hamilton Court	Jensen Way	1st Avenue	Pavement restoration, sidewalks, drainage
R-17	Residential Collector	4th Avenue	Iverson Street	Hostmark Street	Remove and reconstruct sidewalks
R-18	Neighborhood Collector	Lincoln Road	Hostmark	SR-305	Remove and reconstruct sidewalks
R-19	Commercial Collector	3rd Avenue	Iverson	Hostmark	Sidewalk one side; Bike lane; Resurface

Table 13. New Roadways

2016 Project No.	Functional Classification	Name	From	To	Improvement Needed
N-1	Neighborhood Collector	New Road “N”	Rhododendron	Urdahl	New two-lane road to full City standards
N-2	Neighborhood Collector	Olhava E Street	Existing End	Urdahl	New two-lane road to full City standards
N-3	Neighborhood Collector	Vetter Road Extension	Vetter Road (existing)	SR 305	New two-lane road to full City standards
N-4	Neighborhood Collector	New Road “K”	New Road “M”	West UGA boundary	New two-lane road to full City standards
N-5/6	Neighborhood Collector	New Road “M”	Finn Hill Road	Viking Way	New two-lane road to full City standards
N-7	Residential Collector	New Road “L”	Viking Avenue @ Liberty Shores	New Road "M"	New two-lane road to full City standards
N-8	Residential Collector	12th Avenue Extension (N)	Existing End	Genes Lane	New two-lane road to full City standards
N-9	Neighborhood Collector	Forest Rock Lane Extension	Caldart Avenue	Pugh	New two-lane road to full City standards
N-10	Residential Collector	Laurie Vei Extension	Laurie Vei Loop	Caldart	New two-lane road to full City standards
N-11	Residential Collector	12th Avenue Extension (S)	Existing End	Lincoln	New two-lane road to full City standards
N-12	Residential Collector	Mesford Road Extension	Gilmax Lane	Caldart	New two-lane road to full City standards
N-13	Commercial Collector	New Road “Z”	Forest Rock Lane	10th Avenue	New two-lane road to full City standards
N-14	Residential Collector	New Road “Q”	Langaunet	Noll Road (E-W)	New two-lane road to full City standards
N-15	Residential Collector	New Road “R”	Noll Road @ Mesford	Hostmark Street	New two-lane road to full City standards
N-16	Residential Collector	New Road “S”	Noll Road @ Soccer Fields	New Road "R"	New two-lane road to full City standards
N-17	Residential Collector	New Road “Y”	New Road “S”	New Road "T"	New two-lane road to full City standards
N-18	Residential Collector	New Road “T”	Noll Road @ Thistle Ct.	Noll Road @ Heron Pond Ln.	New two-lane road to full City standards
N-19	Residential Collector	New Road “U”	Bjorn Street	New Road "T"	New two-lane road to full City standards
N-20	Residential Collector	New Road “W”	Baywatch Court	Johnson Road	New two-lane road to full City standards
N-21	Residential Collector	Sunrise Ridge Extension	Existing End	Johnson Road	New two-lane road to full City standards
N-22	Minor Arterial	New Road “X” (South Segment Noll Road Corridor)	Johnson Road	Noll Road	New two-lane road to full City standards, bike lane and S.U.P.

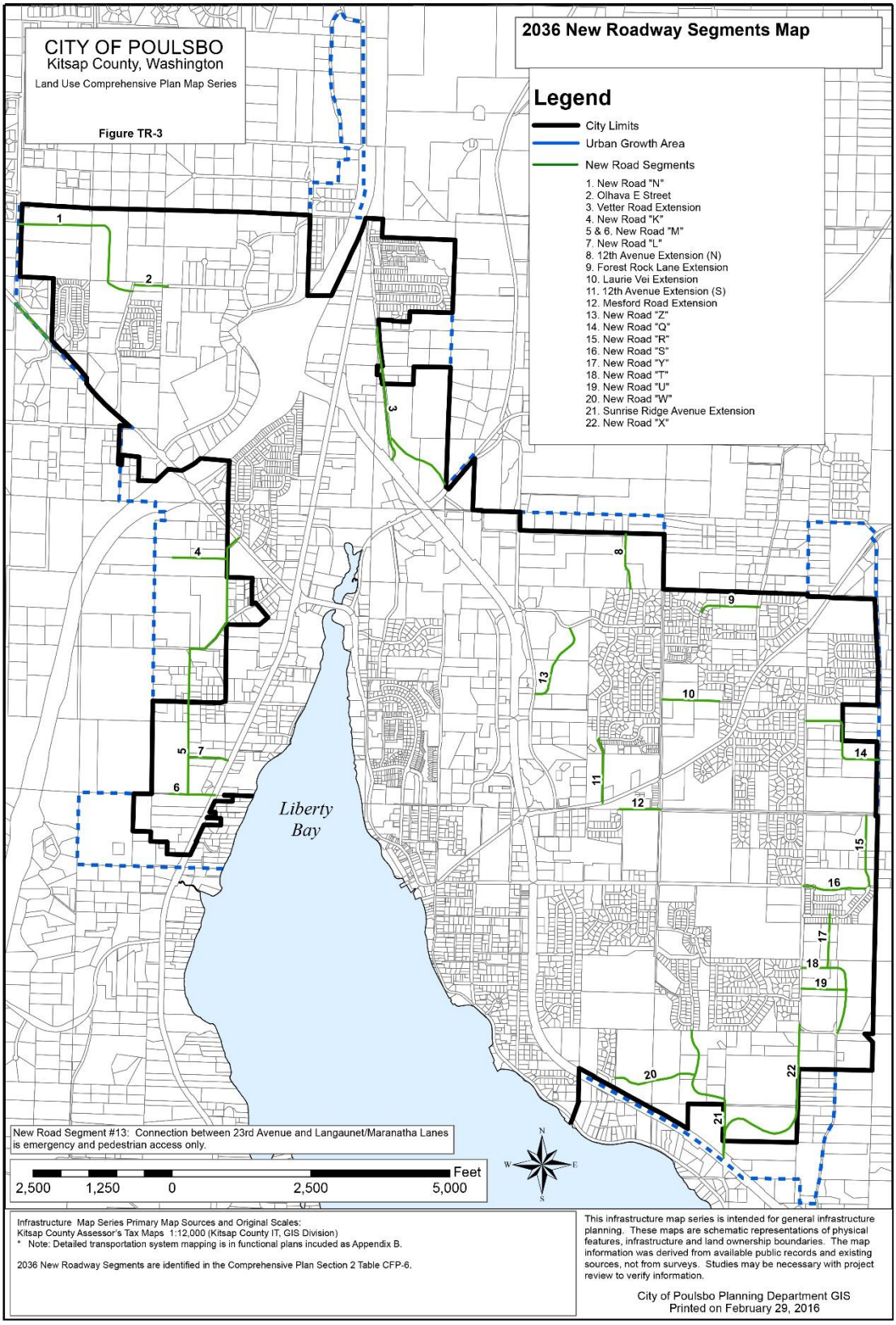


Figure 9. New Roadway Segments

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.

In addition to the roadway projects (new roadways or improvements to the existing system), 11 intersection improvement projects have been identified. The improvements fall into two categories: change in stop control (add a signal, stop sign, or modify to a roundabout) or geometric changes. **Figure 10** shows the location of intersection improvements. **Table 14** shows the improvements to existing intersections that are recommended for consideration by 2036.

Table 14. Planned Intersection Projects

Project No.	Location	Improvement Needed
I-1	Finn Hill at Rude and Urdahl	Intersection Control/Signal
I-2	Finn Hill at Rasmussen Court	Signal, Channelization
I-3	Finn Hill at New Road "M"	Signal, Channelization
I-4	Viking Way at Stendahl Court Extension	Signal, Channelization
I-5	Vetter Extension at SR 305	Channelization (New Intersection)
I-6	SR 307 at Bernt Road	Channelization
I-7	Hostmark at 8th Avenue	Intersection Control/Turn Lanes
I-8	Lincoln at Pugh	Signal, Channelization
I-9	Noll Road at Mesford	Mini-roundabout
I-10	Noll Road at Hostmark	Signal, Channelization

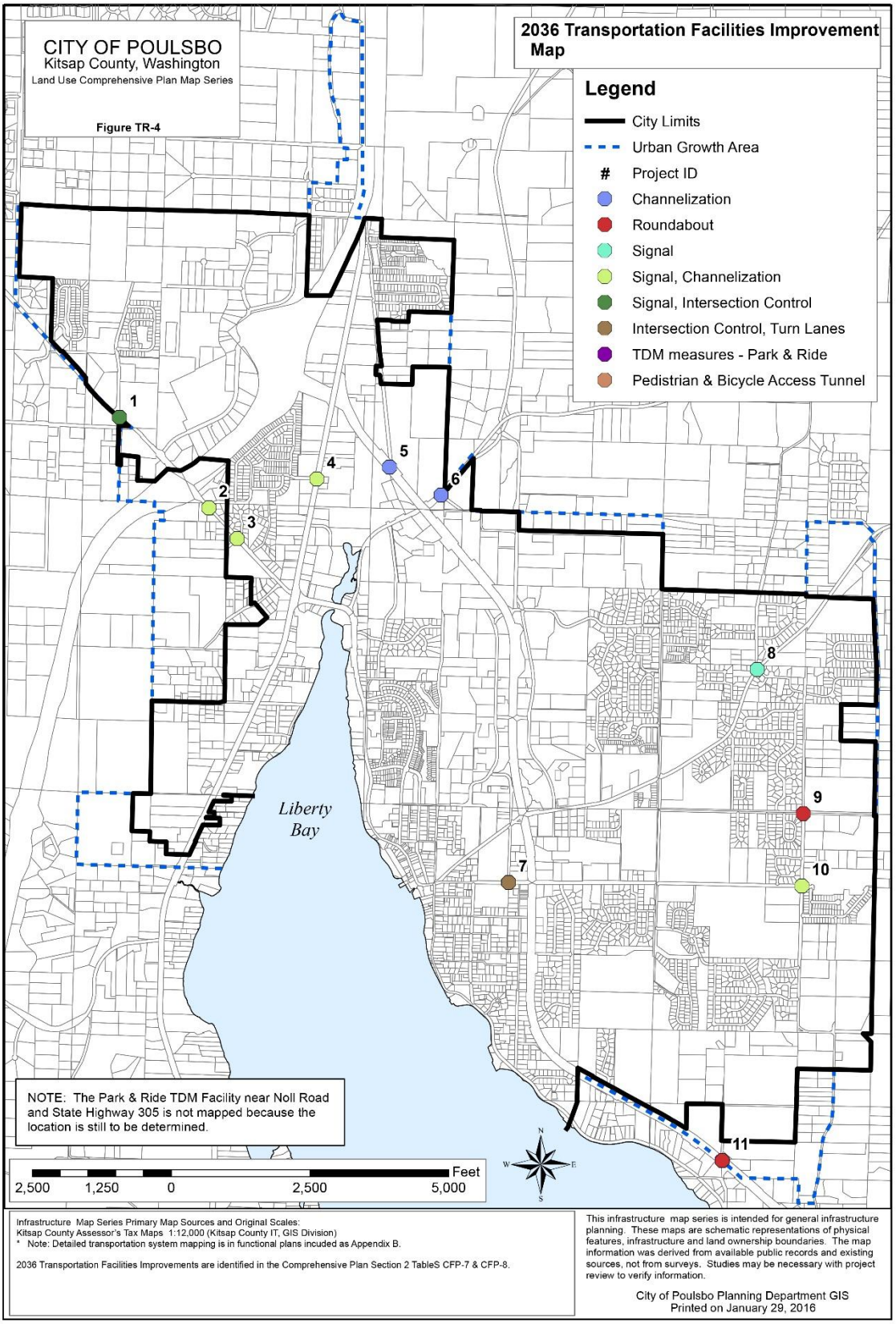


Figure 10. Intersection Improvement Map

6.1.2 Traffic Volumes

The traffic forecasting model for 2036 was modified to include the capacity improvements identified above, in order to update the demand forecast on all roads. The revised volumes shown in **Figure 11** account for reallocation of some volumes when new road connections are added to the system.

6.1.3 Roadway and Intersection Level of Service and Deficiencies

The following sections describe the roadway and intersection level of service and deficiencies for a year 2036 Build (with Improvements) condition. PM peak hour traffic volumes are shown in **Figure 11**.

6.1.3.1 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 D show the anticipated travel demand, V/C ratio and LOS with the proposed improvements in place. 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 15 shows the segments with remaining capacity deficiencies. The forecasted deficiency should be addressed by modifying the demand, rather than building additional capacity.

Table 15. 2036 Build (With Improvements) – Roadway Deficiencies

Name	From	To	Functional Classification	2036 Build Capacity	2036 Build Volume (2015 + Growth)	Volume to Capacity Ratio	LOS	Recommended Future Mitigation Actions
Front St	Bond	Torval Canyon	Minor Arterial	18,000	24,958	1.39	F	TDM, Accept LOS F
Front St	Torval Canyon	Jensen (N)	Minor Arterial	18,000	20,948	1.16	F	TDM, Accept LOS F
Front St	Jensen (N)	Sunset	Minor Arterial	16,000	18,073	1.13	F	TDM, Accept LOS F
Torval Canyon	Front	4th Ave	Res Collector	4,000	4,021	1.01	F	TDM, Accept LOS F
Viking Way	S. C. L.	Bovela	Minor Arterial	13,600	18,479	1.36	F	TDM, Accept LOS F
Lindvig	Viking	Bond	Minor Arterial	29,000	32,479	1.12	F	TDM, Accept LOS F

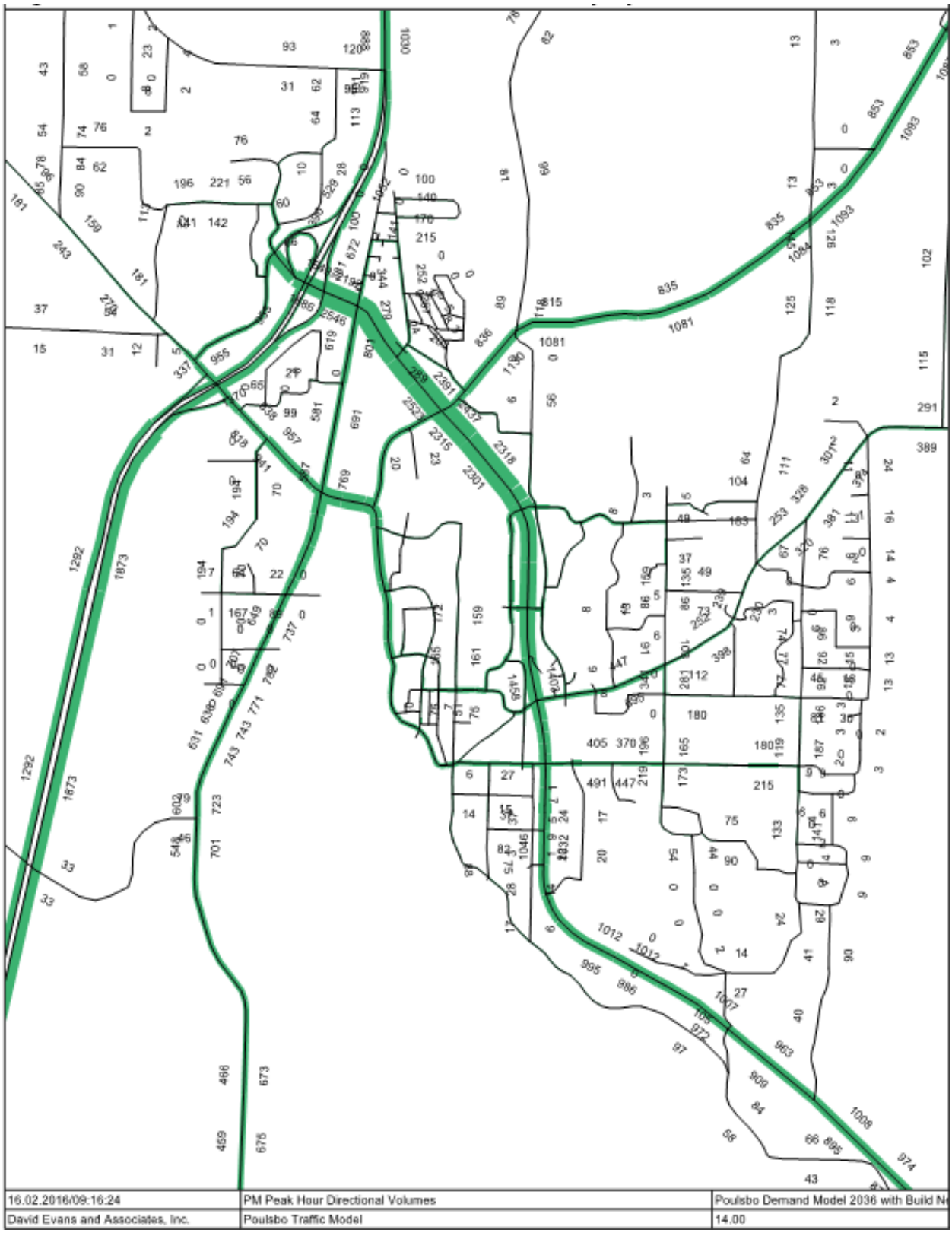


Figure 11. 2036 Build (With Improvements) PM Peak Hour Traffic Volumes

6.1.3.2 Intersections

Nine of the intersections identified as deficient in the 2036 No Action condition are planned to be improved to the City's LOS standard through future design studies, by improving the geometric conditions or by modifying the stop control (such as installing a roundabout or signal). One new intersection is also planned. **Table 16** lists the intersections and improvement needed.

Table 16. 2036 Build (With Improvements)

Intersection Location	Control Type	Improvement Needed
Finn Hill at Rude and Urdahl	Stop-sign control	Intersection Control/Signal
Finn Hill at Rasmussen Court	Stop-sign control	Signal, Channelization
Finn Hill at New Road "M"	Stop-sign control	Signal, Channelization
Viking Way at Stendahl Court Extension	Stop-sign control	Signal, Channelization
Vetter Extension at SR 305 (New Intersection)	Stop-sign control	Channelization
SR 307 at Bernt Road	Stop-sign control	Channelization
Hostmark at 8th Avenue	Stop-sign control	Intersection Control/Turn Lanes
Lincoln at Pugh	Stop-sign control	Signal, Channelization
Noll Road at Mesford	Stop-sign control	Mini-roundabout
Noll Road at Hostmark	Stop-sign control	Signal, Channelization

In addition to the intersections where improvements are planned, there are eight intersections where adding capacity is considered infeasible without adversely impacting community resources. **Table 17** lists the intersections where the City will adopt LOS F as the standard. Note however that while adopting LOS F as the standard for these intersections, alternate mitigation measures for addressing these deficiencies are recommended. Refer to paragraphs 6.1 and 8.1.

Table 17. Intersections Adopting LOS F Standard

7th and Liberty	Stop-sign control
10th Avenue and Forest Rock Lane	Stop-sign control
8th Avenue and Lincoln Road	Stop-sign control
Front Street and Torval Canyon	Stop-sign control
Front and Jensen	Stop-sign control
Front, Fjord and Hostmark	Stop-sign control
Lindvig Way at Viking Avenue	Signal
Lindvig Way/Finn Hill Road at Viking Avenue	Signal

6.2 Non-motorized Facilities

Table 18 outlines the funding commitments included in the 2016-2021 City Improvement Plan for the nonmotorized projects in Poulsbo. For some projects, nonmotorized improvements are part of a larger project scope.

Table 18. 2016-2021 CIP Nonmotorized Projects

PROJECT NAME	PHASE(S)
Morrow Manor Park	Design, Construction
Vista Park	Design
Centennial Park	Design, Construction
Noll Road Improvements Phase III	Right-of-way acquisition, Construction
Finn Hill Reconstruction	Design, Construction
3rd Avenue Iverson to Hostmark	Design, Construction
Liberty Bay Waterfront Trail	Design, Construction

Poulsbo regularly funds the design, right-of-way acquisition, and construction of nonmotorized facilities. The City also seeks grant funding and partnerships with other agencies, private developers, and volunteer organizations as other resources to fund nonmotorized investments. Past partners have included National Park Service, the Rivers, Trail and Conservation Assistance Program, the Kitsap Health District, the Great Peninsula Conservancy, the Cultural Arts Foundation of the Northwest, North Kitsap Trails Association, West Sound Cycling Club, and Kitsap Volkssporters.

Since adoption of the Urban Paths of Poulsbo plan, surveys have shown that improvement of sidewalks and trails is a top priority for Poulsbo residents. Bicycle lanes are also a high priority. Poulsbo commits staff and funding to plan and develop nonmotorized facilities and also seeks partnerships with other government agencies, local organizations, and citizens in order to further leverage these financial investments. The City of Poulsbo Comprehensive Plan update will include policies to guide the future development of nonmotorized facilities. Figure PRO-3 in the Urban Paths of Poulsbo plan identifies all nonmotorized facilities planned for the City of Poulsbo.

The Urban Paths of Poulsbo plan includes a prioritized list of nonmotorized projects. Since its adoption in 2012, the City has made progress in advancing several of them. The total remaining planned nonmotorized improvements outlined in the Urban Paths of Poulsbo plan include those outlined in **Table 19**. **Table 19** describes each project, outlines the purpose and need for each project, identifies whether it is a short term or long term project, and includes the status of each project.

Table 19. Future Non-motorized Projects

Trails Priorities – Pedestrian Improvements				
Project Title	**Short term vs Long term**	**Project Description**	**Project Purpose and Need**	**Project Status**
Waterfront/Shoreline Areas				
Liberty Bay Waterfront Trail	Long term	Extend waterfront trail to run entire length of city limits along Liberty Bay. This project is outlined in 3 phases: North of waterfront park to the head of the bay. South of waterfront park down Fjord Drive to the south city limits. West side of the city from the head of the bay to the south city limits.	Far and away the top priority named by the public — expressed through the trails survey and during multiple outreach events — is a continuous trail along the shore of Liberty Bay, especially the east side of the bay. This project requires joint planning with the engineering department.	The City has obtained federal funding for this project and is currently in the design and environmental phase.
American Legion Park to Fish Park	Short term	Install signs to point pedestrians to crossings under Lindvig Road to Fish Park.	The routes by Liberty Bay Auto and Thai Restaurant under Lindvig are not well known yet provide an excellent safe route across to Fish Park. Low-cost, high-impact improvement.	The Liberty Bay Waterfront Trail project is in design phase.
Waterfront Park Access	Short term	Crosswalks and/or signs warning motorists of foot traffic would enhance pedestrian safety through Anderson Parkway and sub-parking lot by boat ramp.	This section has sidewalks along the way but reaching sidewalks on Front and Hostmark Streets from the waterfront requires navigating through a parking lot. Work with engineering dept for parking lot issues.	Anderson Parkway renovation completed March 2013. Pedestrian improvements included crosswalks/pedestrian improvements and landscaping areas
Eastside - School Area				
General improvements	Short term	Install crosswalks at Mesford Road, Langaunet Lane and Noll Road.	This crossroads is along the school route and popular with runners, walkers and bicyclists. Although the intersection already is a 4-way stop, motorists have been observed failing to yield the right-of-way to pedestrians. Work with the engineering dept on crosswalk placement.	Will be completed by private development.
Other Eastside Improvements				
12th Avenue	Short term	Install signs to direct pedestrians and bicyclists through Caldart Heights across from mobile home park.	This attractive shortcut is less steep than the top of Forest Rock Lane.	

Table 19. Future Non-motorized Projects (continued)

Trails Priorities – Pedestrian Improvements				
Project Title	**Short term vs Long term**	**Project Description**	**Project Purpose and Need**	**Project Status**
Wilderness Park	Short term	Install sign identifying trailhead on Hostmark	Wilderness Park is a jewel in the middle of the city that is little-known by locals. A prominent sign marks the trailhead on the east, but no signs identify trailheads on the west, which are tucked behind parking lots of the NE corner of Highway 305/Hostmark and Olympic Place office complex.	Sign is there; much of the invasive vegetation has been removed. Additional signage may be warranted.
Wilderness Park	Long Term	On street connection between 10th Avenue and the base of Wilderness Park.	Would connect a large residential development with the park, which eventually ends up at the schools.	
Deer Run	Short term	Install crosswalk on Gustaf Road leading to pathway that connects Deer Run to Poulsbo Middle School.	Enhances safety for students crossing Gustaf to and from the connector path. Gustaf is a popular route for motor vehicle traffic moving between Noll Road and Caldart Avenue. Work with the engineering dept on crosswalk placement.	
10th Avenue	Short term	Add one or two crosswalks across 10th Avenue near Hattaland Park and Stella's.	Pedestrians using the sidewalk on the west side of 10th Avenue must continue to Forest Rock Lane to find a crosswalk onto the Central Market side of the street. Most people, rather than travel that extra distance, will cross by the driveway leading into Stella's. A crosswalk would alert motorists to watch for pedestrians. Work with the engineering dept on crosswalk placement.	
Central Market and other 10th Avenue businesses; and the Forest Rock Hills development	Long term	Trail from Caldart Avenue on the east to 10th Avenue and/or from office parks off 12th Avenue.	Pedestrian access from the east to this well-traveled commercial district is limited to busy, noisy Lincoln Road and steep Forest Rock Lane. Pedestrians wishing to reach the 10th Avenue business corridor from the south side of Lincoln dodge traffic to cross at random points.	Discussions of a possible solution have included a possible trail easement from the FRH sewer vault down to 10th Avenue NE. Mid-block crosswalks are not encouraged due to safety reasons.
Raab Park	Short term	Improved signage for the nature trail.	Additional signage directing people to the nature trail from within the park and from the 11th Avenue end.	
Noll Road: Lincoln to Mesford	Long term	Shoulder enhancement/grading to increase safety for foot and bicycle traffic.	Popular with runners and cyclists. West side is city/east side is Kitsap County. Right now drivers who are being courteous cross over the center divider to give walkers, runners and bikers plenty of room. That is OK on the straightaway but dicey near the blind curve at Tallagson. May be improved as development occurs on Noll. Planned as a shared use path.	

6.3 Public Transportation Service and Facilities

Both Kitsap Transit and Jefferson Transit have Transit Development Plans (TDPs) for the years 2015-2020. The Kitsap Transit TDP does not identify any specific service or capital improvements within the City of Poulsbo during this time frame. The plan includes the following Preservation action strategy that reflects upon the state Transportation Service Objectives:

Continue a long-range service planning process with the Kitsap Transit Board of Commissioners focusing heavily on partnerships with other Kitsap County jurisdictions to include transit planning to ensure transit and transportation alternatives are included in their work on the comprehensive plan updates that are to be published in 2016.

The City of Poulsbo Comprehensive Plan update will include policies describing the integration of transit service in the city's transportation network.

The Jefferson Transit TDP identifies the Kitsap County Connections among their ten highest priority service project ratings from public and customer comments and staff. Specific service projects include:

- Evaluate needs for connection to Kingston Ferry and Olympic College-Poulsbo campus
- Service for Poulsbo branch of Olympic College
- Evaluate service change for transfer to Kitsap Transit to Bainbridge ferry at Olympic College
- Increase weekend services to/from Poulsbo & reinstate Sunday service if Kitsap Transit does.

Direct express service to Poulsbo from Sequim was identified as a regional connection as part of the unranked service projects included in the plan.

The City of Poulsbo does not currently have any funding committed for future improvements to transit facilities. However the City is committed to being an active partner with Kitsap Transit and Jefferson Transit to increase options for access to and the use of transit in Poulsbo. For example, the City anticipates construction of sidewalk improvements in conjunction with larger capital improvements, which will improve access to transit. Additionally, the City of Poulsbo and Kitsap Transit have preliminarily identified a potential partnership opportunity to develop a park-and-ride at the intersection of Noll Road and SR 305 as part of the City's planned Noll Road improvements. Both agencies are committed to further exploring this opportunity, including the pursuit of grant funding.

The SR 305 Park and Ride is included in **Table 20** below.

Table 20. Capital Improvement Projects for TDM, Transit, and Trails

	Project Title	Description	Improvement Needed	Total Project Cost
City-Wide TDM and Traffic Calming				
T-1	Year 2016-2021 Program	City wide, annual priorities TBD	Minor improvements	$ 300,000
Transit Improvements				
T-2	Park and Ride	Noll Road	150-space Park & Ride	$ 7,400,000
Trail Improvements				
T-3	Liberty Bay Waterfront Trail		New Shared-Use Path	$ 3,500,000
	Total			**$ 11,200,000**

7 CAPITAL IMPROVEMENTS COST

Appendix F shows the transportation capital projects that are recommended for consideration by 2036. Projects are categorized as roadway segment improvements, new roadway segments, intersection improvements, and finally TDM/Transit/Trails. Costs and assumptions on project delivery are discussed below.

7.1 Mitigation Costs

The total amount of future transportation system needs is estimated to cost a total of $131 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 ($77 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-21 in **Figure 9**). The improvements to the existing citywide road network that are needed for growth, transit and non-motorized uses are projected to cost $54 million (Projects R-1 through R-19 on **Table 12**, project N-22 on **Table 13**, projects I-1 through I-10 on **Table 14** and projects T-1 through T-3 on **Table 20**). These projects would be funded primarily by public sources.

7.2 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, shared use paths, 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 F, 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 approximately $10 million per mile, including right-of-way acquisition, planning and design, and contingencies for unknown factors.

Costs in future years will rise with inflation. To keep the transportation plan's costs up to date, the 2016 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 2036 is approximately $31.3 million as detailed in Appendix F.

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 $77 million. New roads N-1 through N-21 (all assumed to be built by developers) 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.

7.3 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 2036 is about $3.5 million as detailed in Appendix F.

7.4 Transportation Demand Management, Transit, and Trail Costs

In future years a greater emphasis will be placed on transportation solutions other than increasing capacity for automobiles. **Table 20** summarizes the capital projects which will involve Transportation Demand Management (TDM), improvements to Transit facilities, and Trails. The TDM improvements will be funded by the City. Transit and Trail projects are assumed to be funded in partnership with other public agencies and with grant funds.

7.5 Mitigation Funding Scenarios

Developers will provide 100 percent of the new road projects needed within new subdivisions. The cost of improvements to existing roads, existing intersections, and other projects in the City's 20-year CIP would be borne by a combination of public and private sources. The total amount to be covered is $54 million. This amount may vary in the future, as refinements are added to change the assumptions in this report.

Table 21 shows some of the options the City could pursue to fund the transportation projects needed to balance transportation facilities and demand in 2036. 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.

Table 21. Mitigation Projects Funding Sources

Funding Source	Typical Projects	Approximate Funding Available
Gas Tax	All transportation related projects	$ 825,000
State/Federal Grants	Local agency capacity and safety projects	$29,000,000
Fund 311	All transportation related projects	$1,500,000
Other Sources	All transportation related projects	$2,500,000
Funding Totals		**$ 33,825,000**

The additional funding need is approximately $20.1 million to implement all of the improvements needed for 2036. 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.

7.6 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.

The City of Poulsbo instituted a Traffic Impact Fee (TIF) in 2006 The fee was based on projected funding needs and projected new trips in the 2006 Transportation Plan Update. The current TIF is $283 per new daily trip. Residential dwelling units are assumed to generate 10 daily trips, so the TIF is $2,830 per new residential dwelling unit. Trip generation for commercial uses is based on the ITE Trip Generation Manual Ninth Edition.

This 2016 Transportation Plan Update follows the same basic methodology for establishing the TIF per new daily trip. Based on the assumptions of this section, the financial shortfall is $20.1 million in 2016 dollars. The travel forecasting analysis in **Table 8** identified a travel demand growth of 67,280 daily trips, based on the forecasted residential growth of 2,134 dwelling units and 1.7 million square feet of commercial development, over 20 years. Of that amount, 18,240 trips are derived from residential growth and 49,040 are derived from commercial growth; however, some 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 75 percent of the raw total, or 36,780 daily trips. Thus, the net basis for allocating costs via impact fees is the sum of 18,240 residential-based trips and 36,780 net new commercial-based trips, or 55,020 net new daily 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 $20.1 million amount could be raised by a fee schedule that averages $366 per daily trip, as calculated below.

Rate per Daily Trip =

- Total unmet need = $20.1 million
- Future growth in trip generation = 55,020 daily trips
- Unfunded cost of growth per daily trip = $366

8 LEVEL OF SERVICE POLICY AND CONCURRENCY

8.1 Level of Service Policy

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.

8.2 Concurrency

The concurrency ordinance ensures the City is identifying system needs to meet growth projections, has an adequate funding mechanism to mitigate expected impacts, and has a process to track system capacity. The system capacity (total number of trips within the City of Poulsbo) is based on the mitigation identified in the plan, and funded through impact fees and other sources, are considered the "trip bank" for determining concurrency under GMA. The City would develop and manage a "trip bank log" that tracks debits to the bank from new development, larger developments would also be required to submit a traffic impact analysis to investigate local impacts. As long as the trip bank maintains a positive balance and nearby roadway segments and intersections meet standards, the City is in compliance with concurrency requirement. The total number of vehicle trips allowed is calculated based on the projected land use for the City as well as the adopted transportation level of service. The City of Poulsbo's trip generation rates used in the Comprehensive Plan Transportation Element can be used to convert land use to vehicle trips. Projects which degrade roadway segments and intersections below the adopted standards will be required to mitigate their impacts and improve the facility to an acceptable standard.

9 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
- Refine the draft plan as appropriate
- Adopt Transportation Element Update to Comprehensive Plan
- Develop impact fee schedules from Transportation Element
- Develop concurrency management procedures

Appendix A

Capacity Reference Table

Appendix B

Road Segment Concurrency Status 2015 Traffic on Committed Roads

Appendix C

Road Segment Concurrency Status Buildout Growth on Committed Roads

Appendix D

Road Segment Concurrency Status Buildout Growth with Mitigation Improvements

Appendix E

Trip Generation Table

Appendix F

Planning Level 2025 Mitigation Cost Estimates

Appendix G

Intersection Turning Movement Volumes (2010)

Appendix H

ADA Transition Plan