CHAPTER 4 ~~OPERATIONS~~ SR 305

THE SR 305 HIGHWAY IS THE STATE HIGHWAY'S PRIMARY CONNECTION (VIA THE WSF) BETWEEN SEATTLE AND ~~MOBILITY~~

the Kitsap Peninsula. Traffic during the morning and evening peak travel hours has continued to worsen resulting in long delays. This chapter reviews the issues associated with SR 305 and its impact to the City's roadway system. The chapter also describes ~~the~~a special study that was performed, and recommendations for future actions.

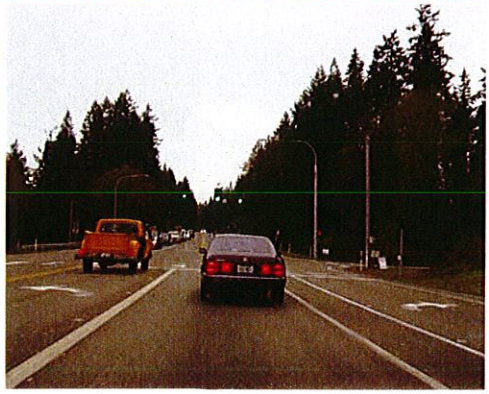
Summary of SR 305 Issues

SR 305 is significant to the City's roadway system as the major north-south travel corridor on the Island, not only for through traffic traveling to and from the ferry dock, but also for Island residents and employees. The goals and policies address the LOS standard, access to the Island via the Agate Pass Bridge, improvements to the highway, impacts to the highway from the City's Comprehensive Plan elements, and off-Island improvements that affect on-Island traffic.

As a state highway, WSDOT is the agency that is responsible for the operation and maintenance of SR 305. This means that WSDOT sets the minimum LOS standard and is responsible for the funding and implementation of any improvements to the highway. According to WSDOT policy, control of the highway within a City's corporate limits can be transferred to the City if its population is greater than 22,500. According to US Census data, Bainbridge Island exceeded this population threshold in 2010 with a population of 23,025, according to US Census data. As a result, some of the responsibility for highway improvements could shift to the City, however, because SR 305 is a regional facility and is listed as a Highway of Statewide Significance, some responsibility could also remain with the WSDOT.

SR 305 LOS Impacts

The traffic analysis (described in Chapter 4) shows that current conditions on SR 305 do not meet the WSDOT minimum LOS standards, and future traffic will be even worse. Currently, along the SR305 Corridor all collector street intersections fail and one secondary arterial intersection (Koura Rd.) do not meet level of service standards. The PM peak hour average speed along the seven-mile corridor is currently 16 miles per hour, with several roadway segments operating below the average speed. The problem is most severe at the north end of the study area, where there are large back-ups beginning at the Suquamish Way intersection and Agate Pass Bridge. By 2021, all of these locations will have failed LOS. Additionally, by 2035 the Day Road intersection will be LOS D and approaching falling below standard. The corridor is forecasted to operate with an average speed of 14 mph by 2035, which is less than one-third the posted 45 mph speed limit at the north end of the Island. The



expected level of service for the highway without improvement – described as the No Action alternative – are shown for the 2015 and 2035 years in Figures 4-1, and 4-2.

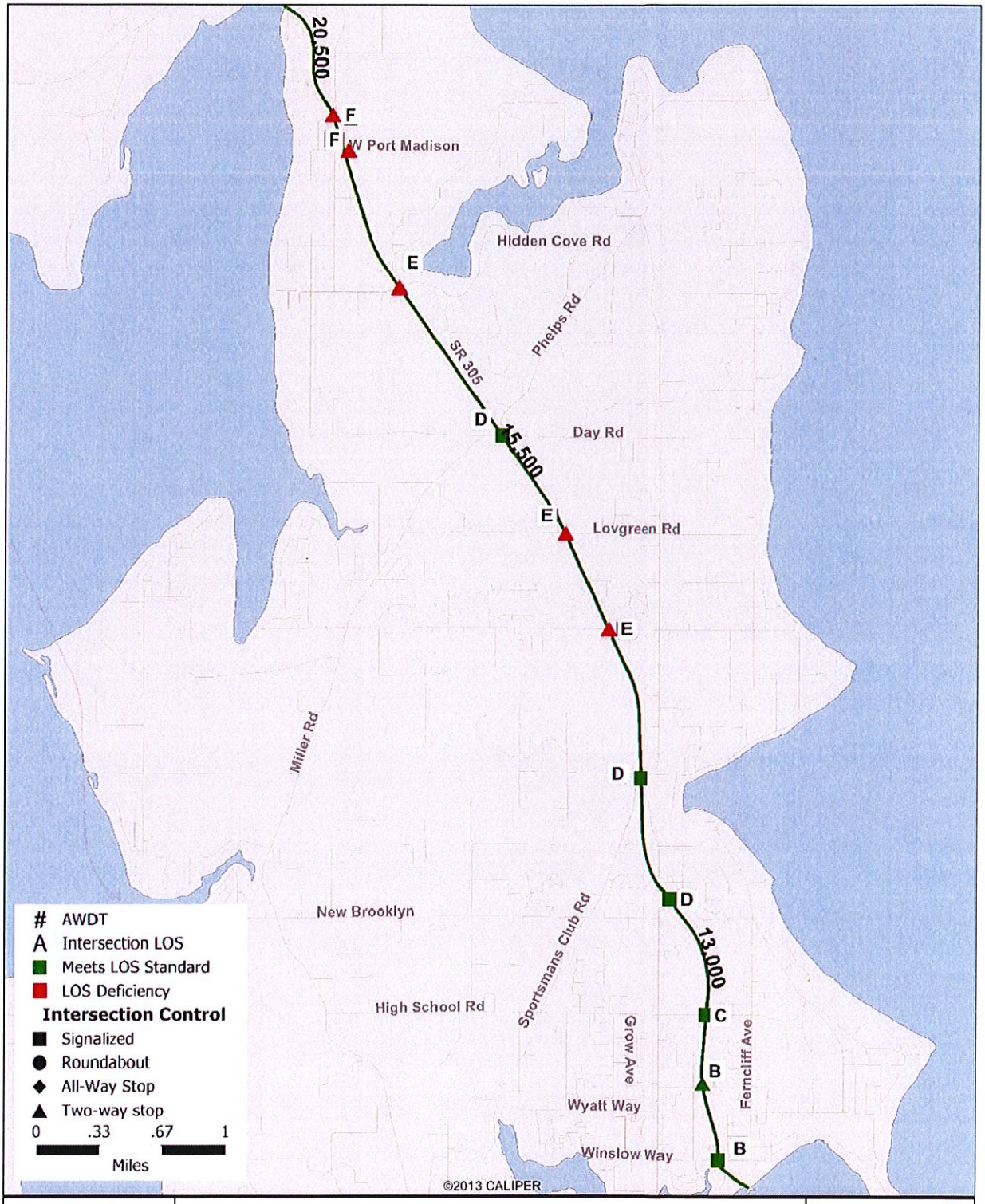


Figure 4-1

SR 305 Level of Service
Existing Conditions

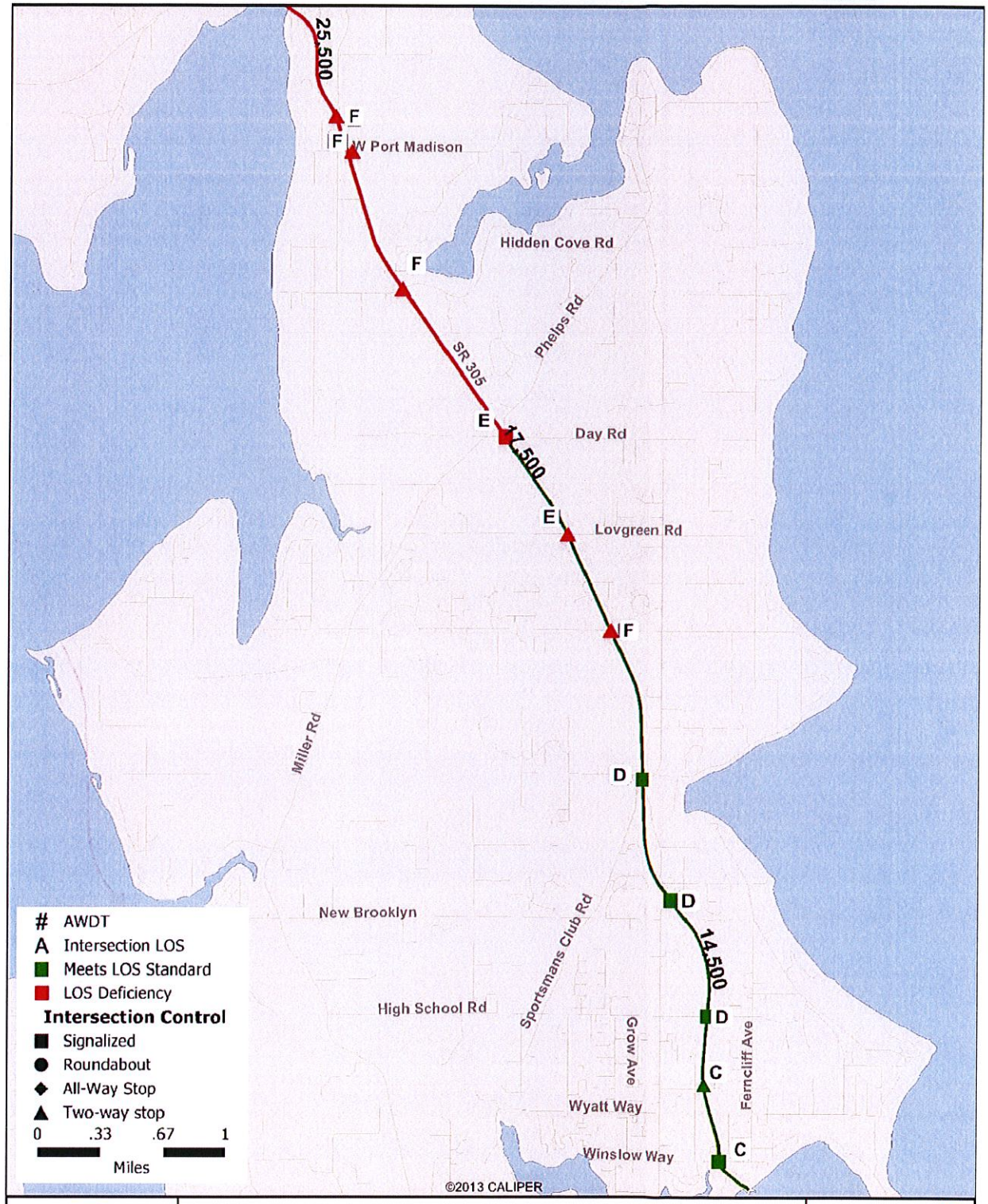


Figure 4-2
SR 305 Level of Service
2035 No Action

What Makes SR 305 Different?

The traffic issues on SR 305 are different than the issues associated with the rest of the Island's roadway system for several reasons. First, the highway facility is owned and operated by the WSDOT. This is significant because WSDOT would be the lead agency and would have primary decision-making and financial responsibility for improvements to the highway. Second, even though the highway functions as a main north-south corridor for Island travel, it is also heavily used by regional traffic and is a Highway of Statewide Significance, especially by vehicles traveling to and from the ferry terminal in Winslow. Because the WSF controls the ferry schedule, they have a great deal of influence on when and how much ferry traffic is using the highway. Third, the highway experiences substandard levels of service over most of the seven-mile length of the highway on the Island and the Agate Pass Bridge. Improvements to the highway would require several large projects that could be expected to require significant time to complete the planning, design, and construction of each, and a significant financial outlay.

This Plan updates the 2004 Island-Wide Transportation Study. The 2004 Study forecasted significant traffic growth on SR 305 which has not occurred as anticipated. This study updates the SR 305 travel demand and level of service forecasts using the planning and operational models described in Chapter 4 of this Plan, which yielded a more modest growth forecast than described in the 2004 Study. The updated Plan studied the roadway network on the Island, which does not include the intersection of SR 305 and Suquamish Way to the north of the Agate Pass Bridge. It is understood that short- and long-term improvements along SR 305 must consider the SR 305 corridor as a whole and that congestion at Suquamish Way could impact operations ~~and current and future vehicle~~ on the Bainbridge Island roadway network.

SR 305 Special Study

Because of the major issues associated with SR 305 improvements, a preliminary study was undertaken to determine what kind of possible improvements could resolve the traffic issues without looking into the environmental, financial, or other issues associated with the improvements. The goal of the study was to identify possible improvements along the SR305 to compare their effectiveness to improve mobility ~~for the City's roadway system. Mobility is the measure of how well vehicles can get around on the roadway system – the opposite of congestion. Island residents expect a high level of~~ along the corridor, improve permeability across the corridor, and provide reliable access to neighborhoods whose only access is from SR305. Based on this information, the NMTAC and Staff, could include recommendations in the IWTP to better position the City to advocate for improvements.

Because SR 305 is a state facility, all improvements would require a commitment by WSDOT to be constructed. The City could participate in the improvements in order to improve mobility ~~to coincide with~~and level of service for the ~~character of their community.~~ City roadway system.

Special Study Alternatives

Three preliminary alternatives were developed to examine different future scenarios to see if there is a way to overcome the SR 305 operational deficiencies. Alternatives for at grade signalized intersections, at grade roundabouts, and separated grade intersection improvements where modeled. Refer to Figures 4-3, 4-4,and 5-5.

Special Study Results and recommendations for further study

The ~~high levels~~three improvement alternatives were analyzed and compared to see how well they were able to meet LOS minimum standards. The special study compares at-grade and separated grade alternatives. Both at grade and separated grade alternatives maintain an acceptable LOS at intersections. However, in some locations alternative longer routes would need to be taken to access intersections meeting LOS standards. Additional intersection improvements could be evaluated in a more comprehensive plan. Roadway level of service failures are not mitigated in either of the two alternatives but would require additional roadway capacity along the SR305 corridor (e.g. in the form of added travel lanes) or decreased volume. Note that it is assumed in the analysis that the SR305 intersection at Suquamish Way will be improved so as not to have a ripple effect on Island intersection locations.

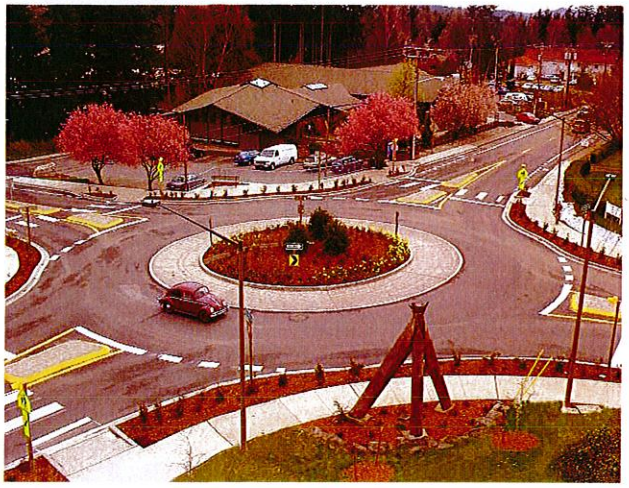
Further study is needed to design alignments and develop reliable cost estimates to adequately plan for maintaining adequate level of service both currently and in the next 20 years along SR 305. Grade separated alternatives would be significantly more costly to implement than at grade alternatives. Both alternatives achieve acceptable LOS. Therefore, it may be difficult to justify the additional cost of grade-separated alternatives, especially larger interchanges. Some combination of intersection improvements and limited access is needed to reduce congestion ~~experienced during peak periods, especially on and around SR 305, is a common source of frustration for drivers.~~ and provide for reliable access. It may be practical to incorporate less extensive grade separation options for both motorized and/or non- motorized modes to maintain permeability along the corridor.

~~Level of service standards are used to provide a basis for the mobility analysis. This Plan used planning and operational models developed by Transportation Solutions, Inc. in TransCAD and Synchro software, respectively, to analyze current conditions (based on traffic counts and existing roadway network information) and to forecast future levels of service (based on traffic generated by forecasted land use and roadway network changes). The structure of the roadway network was analyzed by reviewing the roadway classification system, connectivity, access, and road standards.~~

~~Existing Roadway System~~

~~The Plan of existing conditions provides an analysis of the current operating conditions and provides a baseline for future comparisons. The City of Bainbridge Island's transportation system is made up of a network of roadways, pedestrian facilities, bikeways, the ferry terminal, and formal and informal trails. Each of these elements is important to the mobility or movement of people and goods within and to destinations beyond the Island. This chapter focuses on the roadway system only; the non-motorized, bus transit, and ferry systems are described in Chapters 7 & 8.~~

The roadway system is designed for the movement of people and goods throughout the community. Major regional transportation features of the Island include the Washington State Ferry Terminal, which connects Bainbridge Island to downtown Seattle; and State Route 305, which connects the Island to the Kitsap and Olympic Peninsula. State Route 305 is the Island's principal transportation corridor, providing an important north-south connection.



The State system is supported by a City roadway system that connects residential areas to the highway and retail and employment areas. The City's arterial, collector, and residential street system provides roadway connections and access to properties within the City.

Travel Corridors

The following important commuter, shopping business, school, and freight/commercial corridors are identified for the Island:

- *Commute Corridors* – SR 305, Winslow Way, Wyatt Way, Ferncliff Avenue, High School Road, Day Road, Blakely Avenue, Eagle Harbor Drive, Baker Hill Road, Miller Road, and North Madison Avenue.
- *Shopping Corridors* – SR 305, Winslow Way, High School Road, Madison Avenue, Ericksen Avenue, Wyatt Way, Lynwood Center Road, and Valley Road.
- *School Corridors* – High School Road, New Brooklyn Road, Sportsman Club Road, Madison Avenue, Day Road, North Madison Avenue, and Blakely Avenue
- *Freight Corridors* – SR 305, Day Road, Miller Road, Fletcher Bay Road, Sportsman's Club Road, High School Road, Madison Avenue, and Winslow Way.

Roadway Inventory

The City's roadway system consists of approximately 140 miles of paved roads, and another 20 miles of unpaved roads. The City maintains a Geographic Information System (GIS) that includes the roadway system. The GIS database includes characteristics for each roadway segment, including length, pavement width, functional classification, posted speed, sidewalks, and transit and bicycle facilities. A spreadsheet is maintained that includes sign inventory information. The City periodically conducts an island-wide traffic counting and develops volume and traffic speed information for its major roadways. This Plan was updated in 2014 with TSI traffic counts.

Roadway Classifications

Roadway functional classification is defined as "the process by which streets and highways are grouped into classes, or systems, according to the character of traffic service that they are intended to provide". The City divides Island roadways into four functional classifications: principal arterial, secondary arterial, collector, and local access roads. These classifications are described in Table 4-1.

Table 4-1. Functional Classifications

Classification	Definition
Principal Arterial	Carry the highest levels of traffic in the system at the greatest speed for the longest uninterrupted distance, often with some degree of access control. Used for through trips, and provide connections within the system.
Secondary Arterial	Carry high level of traffic at a moderate speed, sometimes for through trips. Often serve as access to high-intensity land uses such as major employers or larger commercial centers; provide connections within the system.
Collector	Connect traffic from residential roads to arterials at a lower speed, carrying lower levels of traffic than arterials. Serve neighborhood centers.
Local Access	Carry low levels of traffic at low speeds. Serve as access to residential and commercial areas and are not used for through trips.

Streets and highways are assigned one of these classes, depending on the character of the traffic (i.e., local or long distance) and the degree of land access that they allow. Typically, a trip will use a combination of different road classes, with each classification having a specific function with regard to access and travel speed. Arterials provide a high degree of mobility and less access, while local access roads provide a high level of access and less mobility. Collectors provide a balance between access and mobility and connect the system.

Each roadway in the City's system has been assigned a functional classification, which reflects its operational characteristics including traffic volumes, surrounding land uses, and travel speeds. Figure 4-1 shows the functional classes of the arterials and collectors. Other roadways are local access.

The following changes to roadway classifications since 2004 are included in this update to the IWTP: Halls Hill Road from Blakely Hill to Rockaway Bluff from Local Access to Collector, Wallace Way from Madison Avenue to Ericksen Avenue from Local Access to Collector, and Upper Farms Road from Collector to Local Access.

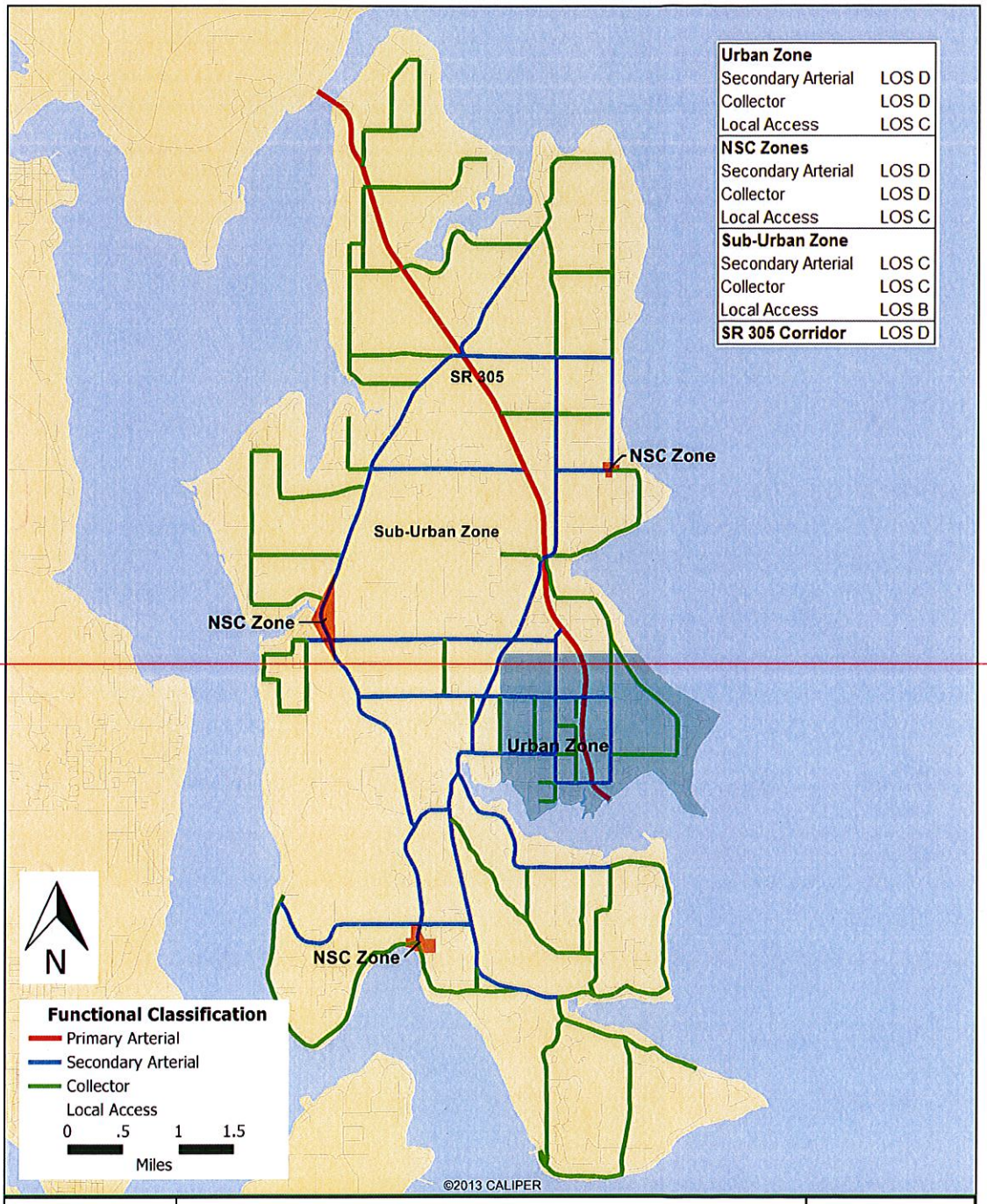


Figure 4-2

Recommended Level of Service Standards

Road Standards

The City of Bainbridge Island has established its roadway street and design standards as part of its *Engineering Design and Construction Standards and Specifications*. These standards set the minimum requirements for constructing roadways and are applicable to all new roadway construction and modifications to existing roadways within the City of Bainbridge Island. The road and street design standards follow the functional classification system described above and establish separate standards for urban and suburban areas of the Island.

The City has both urban and suburban standards. Urban standards are intended to apply within the urban center of Winslow, the urban town centers including Lynwood, Island Center, and Rolling Bay, and the Day Road industrial Center. Urban standards apply in all locations with R2.9 and greater zoning and/or effective density. The City may require urban standards to be applied in other areas in close proximity for system continuity.

The roadway standards were created in 1997 and an update is needed to better address non-motorized elements and low impact development.

Level of Service

This section describes the Level of Service (LOS) standards used in this document. LOS provides a method for measuring the performance of the transportation system. The City uses a minimum standard for LOS that is used to determine if adequate mobility is being provided on the roadway system. LOS standards and method of measurement have been coordinated with Washington State Department of Transportation, Washington State Ferries, Kitsap County, and Kitsap Transit to ensure that standards used in this document are consistent.

LOS Defined

LOS is a measurement used in transportation planning to assess the operating performance of the transportation system. For roadways, LOS measures the degree of traffic congestion along a roadway varying from LOS A (free-flow traffic with minimal delays) to LOS F (highly-constrained traffic with long delays).

The Highway Capacity Manual (HCM) (Transportation Research Board, Special Report 209) establishes quantitative methodologies for determining level of service for differing types of facilities. The methodologies vary for intersections, roadways, freeway, and highway, but all follow the LOS A - F classification and provide a consistent method of measuring the performance of the transportation system. Table 4-3 describes the operation of the transportation system at each LOS ranking.

Table 4-3: Level of Service Descriptions

Level of Service	Description
LOS A	Free flow traffic conditions with very low delay at intersections.
LOS B	Reasonably unimpeded traffic operations with only short traffic delays at intersections.
LOS C	Stable operating conditions with average traffic delays at intersections
LOS D	Operating conditions result in lower travel speeds and higher delays at intersections.
LOS E	Travel speeds are substantially restricted with problems likely to occur at intersections.
LOS F	Roadway operations are over capacity with extreme delays likely at intersections.

LOS is measured differently for roadways and intersections. For roadways, LOS is measured as a function of traffic volume and roadway capacity. For intersections, LOS is measured as a function of vehicle delay in clearing the intersection.

Roadway LOS Measurement

Roadway LOS is measured by the relationship between traffic volume (V) and capacity (C) of the roadway. As the volume of traffic using the roadway approaches, the capacity of the roadway (V/C approaching 1.0), the level of service deteriorates. Table 4-4 relates volume/capacity to LOS measurements for roadways.

Table 4-4. Roadway Level of Service and Volume/Capacity Ratio

LOS	*Volume/Capacity (V/C) Ratio*
A	*Less than 0.6*
B	*0.60 to less than 0.70*
C	*0.70 to less than 0.80*
D	*0.80 to less than 0.90*
E	*0.90 to less than 1.00*
F	*More than 1.00*

Traffic volumes can be counted or they can be calculated using the traffic model by analyzing land uses that are served by the roadway. Bainbridge Island roadway capacity policy is defined in the City Design and Construction Standards; see Table 4-5. No policy is currently defined for arterial roadway capacity. There is some inconsistency between the City's current capacity policy and an engineering-based approach to roadway capacity calculation which would typically consider the physical structure of the roadway, including the number of lanes, type of intersection controls, widths of lanes and shoulders, and design speed. The City's capacity standards should be reviewed and updated during the roadway design standard update process.

The roadway levels of service described in this Plan are based upon current capacity policy. In lieu of an arterial capacity policy, this Plan calculated arterial segment LOS based on an approach which is currently used by the City of Sammamish and which is consistent with the state of engineering practice.

Table 4-4. Existing Roadway Capacity Policy

Functional Classification	Area Type	Capacity (ADT)
Secondary Arterial	Urban	> 3,000
Secondary Arterial	Suburban	>2,000
Collector	Urban	2,000 to 3,000
Collector	Suburban	1,000 to 2,000
Residential	Urban	< 2,000
Residential	Suburban	< 1,000

To improve the LOS for a roadway, either the capacity must be increased or the volume of traffic using the road must be decreased. To increase the capacity, the City can look at several options such as roadway improvements ranging from adding signals or separated turn lanes to an intersection to roadway widening. To reduce traffic volumes, the City can explore options such as changing allowable land uses or modifying individual travel behavior. This section focuses on capacity improvements. Chapter 7 discusses other travel modes and methods of transportation demand management.

Intersection LOS measurement

Intersection LOS is measured by the amount of delay experienced by a vehicle waiting to clear an intersection. Delay at a signalized intersection can be caused by waiting for the signal or waiting for the queue ahead to clear the signal. Delay at un-signalized intersections is caused by waiting for a break in traffic or waiting for a queue to clear the intersection. Table 4-6 shows the amount of delay used to determine LOS for signalized and un-signalized intersections. Roundabout-controlled intersections use the same LOS thresholds as signalized intersections.

Table 4-6. Intersection LOS and Delay

LOS	Signalized Delay per Vehicle (sec/veh)	Unsignalized Delay per Vehicle (sec/veh)
A	0-10	0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50

Different delay standards are used for signalized (stop light controlled) and unsignalized (stop sign controlled) intersections. For signalized and all-way stop controlled intersections, the LOS is the amount of delay per vehicle caused by control and is reported for the intersection as a whole. For un-signalized intersections, where there are controls only on the minor approaches,

Generally, speaking…

Roadways that are LOS E or F fail the standard.

LOS D is okay for certain arterials and collectors in urban areas

LOS A, B or C are within the standard for all arterials and collectors

~~the LOS is estimated by the average delay per vehicle and is reported for only minor approaches to the intersection.~~

~~City LOS Standard~~

~~The City of Bainbridge Island's LOS standard designates the minimum operational performance of the roadway system that must be maintained. If traffic volumes cause a roadway to fall below the minimum LOS standard, improvements or other mitigation must be made to bring the facility back to the designated LOS standard. Level of service standards are normally prescribed for the p.m. peak hour (most congested hour) of the traffic system, which typically occurs between 4:45 and 5:45 in the evening on Bainbridge Island.~~

~~The recommended minimum LOS standard uses the City's roadway classification system, and four zones that reflect the differences in the Island's character: Urban, Sub-Urban, Neighborhood Services Centers, and the SR 305 Corridor. Within each of these categories, individual minimum LOS standards were established for secondary arterials, collectors, and residential roadways. These are shown in Figure 4-2 and described below.~~

~~***Urban Zone – (applies to roadways and intersections in the most developed areas of the City, mainly the greater Winslow area)***~~

- ~~Secondary Arterial – LOS D~~
- ~~Collector – LOS D~~
- ~~Local Access – LOS C~~

~~***Neighborhood Service Centers (NSC) Zone – (applies to roadways and intersections within the City-defined Centers of Rolling Bay, Island Center, and Lynwood Center)***~~

- ~~Secondary Arterial – LOS D~~
- ~~Collector – LOS C~~
- ~~Local Access – LOS C~~

~~***Sub-Urban Zone – (applies to roadways and intersections in areas outside of the Winslow core and the NSC – the remainder of the Island)***~~

- ~~Secondary Arterial – LOS C~~
- ~~Collector – LOS C~~
- ~~Local Access – LOS B~~

~~***SR 305 Corridor – (applies to state highways and is established by the State)***~~

- ~~All Roadways– LOS D~~

~~SR-305 LOS Standard~~

~~The LOS standard for state facilities is set by the Washington State Department of Transportation as a Highway of Statewide Significance (HSS) under RCW 47.06.140. The HSS designation requires that SR-305 be evaluated using a LOS Standard designated by WSDOT. While WSDOT internally evaluates roadways using its own methodology, WSDOT has assigned a level of service standard for SR-305 as LOS D-mitigate for City planning purposes. This standard requires that congestion be mitigated when the peak period operation of the state facility falls below LOS D.~~

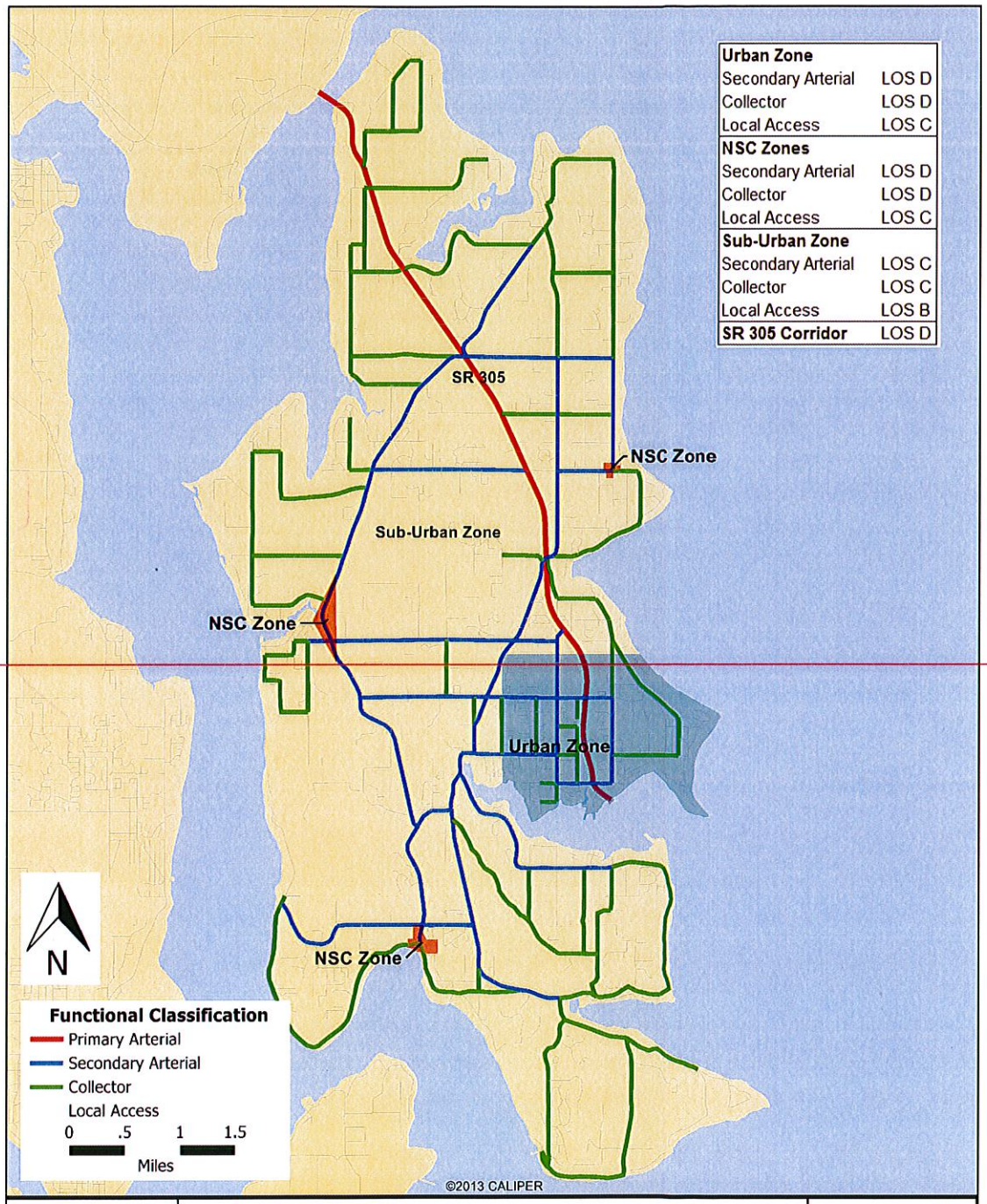


Figure 4-2

Recommended Level of Service Standards

Existing Traffic Conditions

This section describes the traffic conditions for the 2014 Plan year. The Plan is based on traffic data collected for roadway segments in 2012 and intersection counts in 2014.

Transportation Model

A consultant, Transportation Solutions, Inc. (TSI) developed a citywide transportation model to estimate existing travel demand and to provide a tool for forecasting future travel demand on City roadways. Current and future travel demand were used as inputs to a citywide operational model, developed using Synchro software, to evaluate current and forecasted PM peak hour levels of service throughout the city's roadway network. The demand model is based upon the concept of vehicle trips; pedestrians and cyclist demand is not forecasted. Similarly, carpool, vanpool, or transit users are represented by single vehicles in the model.

For analysis of existing conditions, the TransCAD-based model used existing land use data from Kitsap County and Puget Sound Regional Council (PSRC), roadway information from the City, and TSI traffic counts to reproduce existing trips and their paths, from origin to destination, through the citywide roadway network.

Land use was collected from Kitsap County at the individual parcel level and aggregated to create 241 transportation analysis zones (TAZs) which covered the entirety of the City. Two external zones were created to represent travel demand at the ferry terminal and at the north end of the Island.

Trip generation was based upon existing land use and trip generation rates established by the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition* and calibrated based on knowledge of local conditions and travel patterns. It was observed during calibration, for example, that single-family trip generation rates on Bainbridge Island were lower than the nationally-calibrated averages published by ITE. This reduced single family trip rate may be associated with a growing percentage of retirees living on the Island. Peak hour ferry trip generation rates were estimated from the WSDOT Ferries Division *2013 Origin-Destination Travel Survey Report*.

Trips were distributed through the TAZ network using a doubly-constrained gravity model, which assumes that trips produced at a given origin and attracted to a given destination are proportional to the total trip productions at the origin and the total trip attractions at the destination. Trip impedance was calculated free flow travel time as input to a gamma function with calibration parameters adjusted based on local knowledge and relationships established in other regional models, including the Kitsap County travel demand model.

The last step of the demand modeling process was to assign trips from origin to destination zones via the roadway network. Roadway information including width, number of lanes by direction, and presence of non-motorized facilities were used to estimate roadway capacity. TransCAD's stochastic user equilibrium assignment process iteratively loads the roadway network until a travel time equilibrium solution is found.

For operational analysis, a citywide traffic model was developed in Synchro software, using roadway information obtained from the City, satellite and street-level imagery collected from Google Earth, and traffic counts collected in 2014 by TSI. Relevant roadway information for operational analysis included number of lanes, intersection channelization, traffic control devices,

speed limits, and lane width. Observed PM peak hour traffic volumes were applied to the roadway network to calculate intersection levels of service.

Peak Hour Traffic Volumes

The City of Bainbridge Island collects traffic count data on a periodic basis to assess changes in traffic patterns, to collect information for its concurrency program, and to track the operational characteristics of the Island. In 2012, the City contracted an update of Island-wide traffic counts and travel speeds. In 2014, the City contracted intersection counts. This information was utilized in the traffic model developed by TSI. The data is included in Appendix E of this report.

WSDOT Ferry Travel Survey

Washington State Department of Transportation (WSDOT) conducts origin-destination (OD) surveys every six to seven years as a way to accurately capture and measure the travel patterns of ferry passengers. Passengers were asked about their typical routes, how they get to and from ferry terminals, and the purpose of their trips. The most recent survey was conducted in October 2013 and results were published in August 2014.

Surveys were administered to ferry riders during weekdays and Saturdays in October 2013. Over 17,000 survey questionnaires were collected system-wide, with 92 percent of collected surveys sufficiently complete for analysis. Survey responses were used to develop a database of ferry user characteristics, including trip origin and destination patterns. TSI reviewed and processed survey results for the Seattle-Bainbridge route and used them as inputs to the citywide travel demand and traffic operations models.

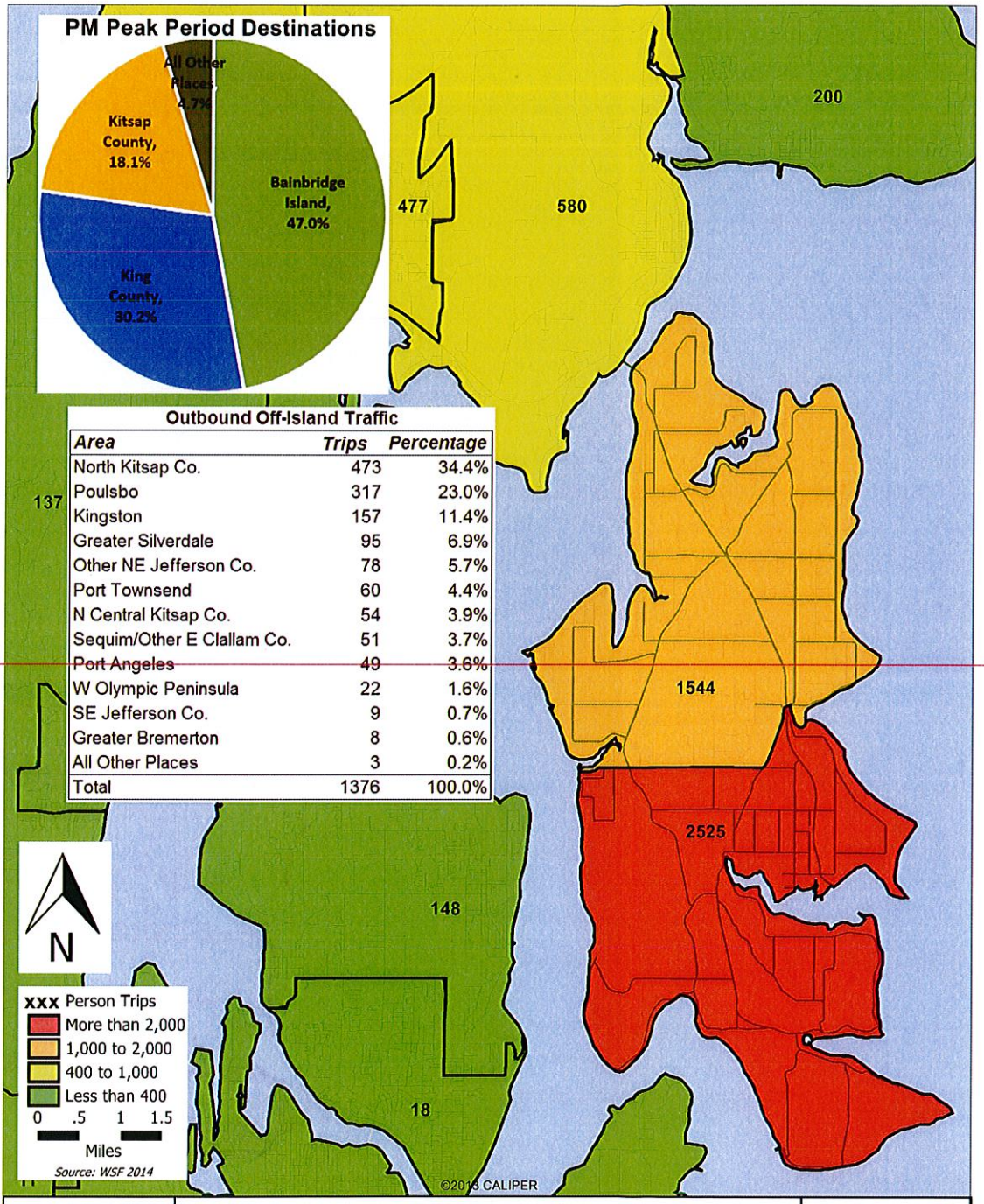
Figure 4-3 summarizes survey findings for the Seattle-Bainbridge Island ferry.

Highlights of the survey results are summarized below:

- Ferry ridership has declined slightly since 2006, with approximately 17,000 riders per day in 2013 compared to 18,000 riders per day in 2006. Vehicle boardings decreased by 7 percent during that period.
- The Seattle-Bainbridge route has shown an aging ridership, with the number of passengers over age 64 increasing from 8 percent in 2006 to 17 percent in 2013. System-wide, average passenger age increased from 42 in 1993 to 48 in 2006 and 49 in 2013. Currently 18 percent of riders are retired and another 14 percent are planning to retire in the next five years.
- Approximately 25 percent of weekday riders telecommute at least one day per week, up from 20 percent in 2006.
- The proportion of work- and school-related trips decreased and the proportion of recreation and shopping trips increased between 2006 and 2013.
- Of the 6,070 total (eastbound and westbound) ferry trips during the 3:00 to 7:00 PM weekday peak period, 67 percent had an origin or destination on Bainbridge Island, while the remaining 33 percent had off-Island trip ends. This indicates the WSF terminal's regional nature, with one in three travelers originating or destined for off-Island locations.
- The City of Poulsbo and other North Kitsap County locations accounted for 57% of the off-Island destinations. Other primary destinations included the cities of Kingston, Silverdale, Port Townsend, and Sequim. The results indicate that while much of off-Island traffic is coming from areas adjacent to Bainbridge Island, as many as 40% of off-Island drivers

could take advantage of new or improved service to downtown Seattle from Kingston or Bremerton.

- Nearly 70 percent of total weekday PM peak period ferry trips are destined westbound, with the other 30 percent of trips destined primarily for locations within Seattle.



Outbound Off-Island Traffic

Area	*Trips*	*Percentage*
North Kitsap Co.	473	34.4%
Poulsbo	317	23.0%
Kingston	157	11.4%
Greater Silverdale	95	6.9%
Other NE Jefferson Co.	78	5.7%
Port Townsend	60	4.4%
N Central Kitsap Co.	54	3.9%
Sequim/Other E Clallam Co.	51	3.7%
Port Angeles	49	3.6%
W Olympic Peninsula	22	1.6%
SE Jefferson Co.	9	0.7%
Greater Bremerton	8	0.6%
All Other Places	3	0.2%
Total	1376	100.0%

Figure 4-3
Ferry Terminal Person Trips, 2013 PM Peak Period (3-7 PM)

Existing LOS

The travel demand model was calibrated using a process that compares the counted roadway volumes to modeled flows which are based on land use and roadway network data. The calibrated TransCAD model and Synchro intersection analysis software were used to determine the 2014 LOS for the intersections in the study area.

Figures 4-4 and 4-5 show the 2014 LOS for the Island as a whole and for the Winslow area. The LOS for each intersection is shown by approach in Table 4-7. All intersections modeled on SR305 north of High School Road currently do not meet minimum LOS standards with the exception of the signal at Day Road. Day Road however is close to exceeding the standard. In urban areas, the Madison/Wyatt intersection currently fails the minimum LOS standard but will be improved to LOS A upon completion of a planned roundabout.

The intersection of Wyatt Way and Grow Avenue has been converted from all-way stop to two-way stop control. This resulted in a decline in intersection level of service from LOS C to LOS F and results in intersection LOS failure based on existing standards. Under two-way stop control, vehicles on Grow Avenue experience high delay while vehicles on the Wyatt Way approaches experience LOS A with no delay. The control change was implemented to reduce traffic volume on Grow Avenue and maintain the street's ability to serve non-motorized users. However, the City should continue to evaluate options to maintain both vehicular and non-motorized level of service at this intersection.

Roadway LOS failures occur on SR 305 north of Day Road and on several collector roadway segments throughout the Island. As previously discussed, segment LOS is based upon volume-to-capacity ratio, which in turn depends on City capacity policy. There are no engineering-based (e.g. Highway Capacity Manual-based) segment capacity failures other than on SR 305. However, the current City capacity policy yields LOS failures on the following roadways:

- Madison Avenue from Day Road to Mary Sam Lane
- Phelps Road from Hidden Cove Road to Madison Avenue
- Pleasant Beach Drive from Point White Drive to Lytle Road
- Weaver Road from High School Road to Wyatt Way
- Ferncliff Avenue from Yaquina Ave to Lofgren Road
- Lofgren Road from Ferncliff Avenue to Moran Road
- Moran Road from Lofgren Road to Madison Avenue
- Winslow Way from Madison Avenue to Wood Avenue
- Parfitt Way from Madison Avenue to Wood Avenue
- Ericksen Avenue from Winslow Way to Wyatt Way
- Country Club Road from Blakely Avenue to Fort Ward Hill Road

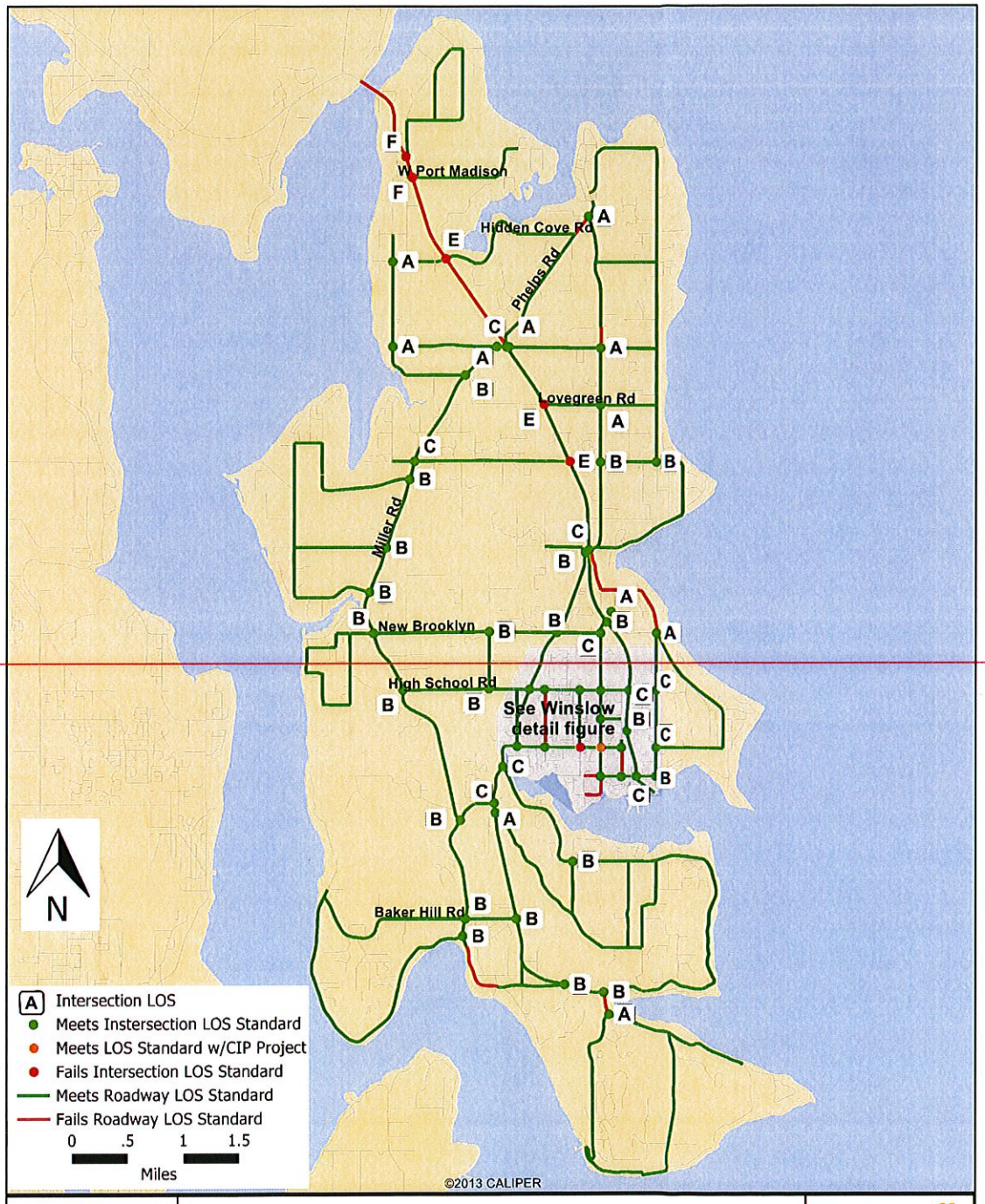


Figure 4-4
2014 Citywide Level of Service

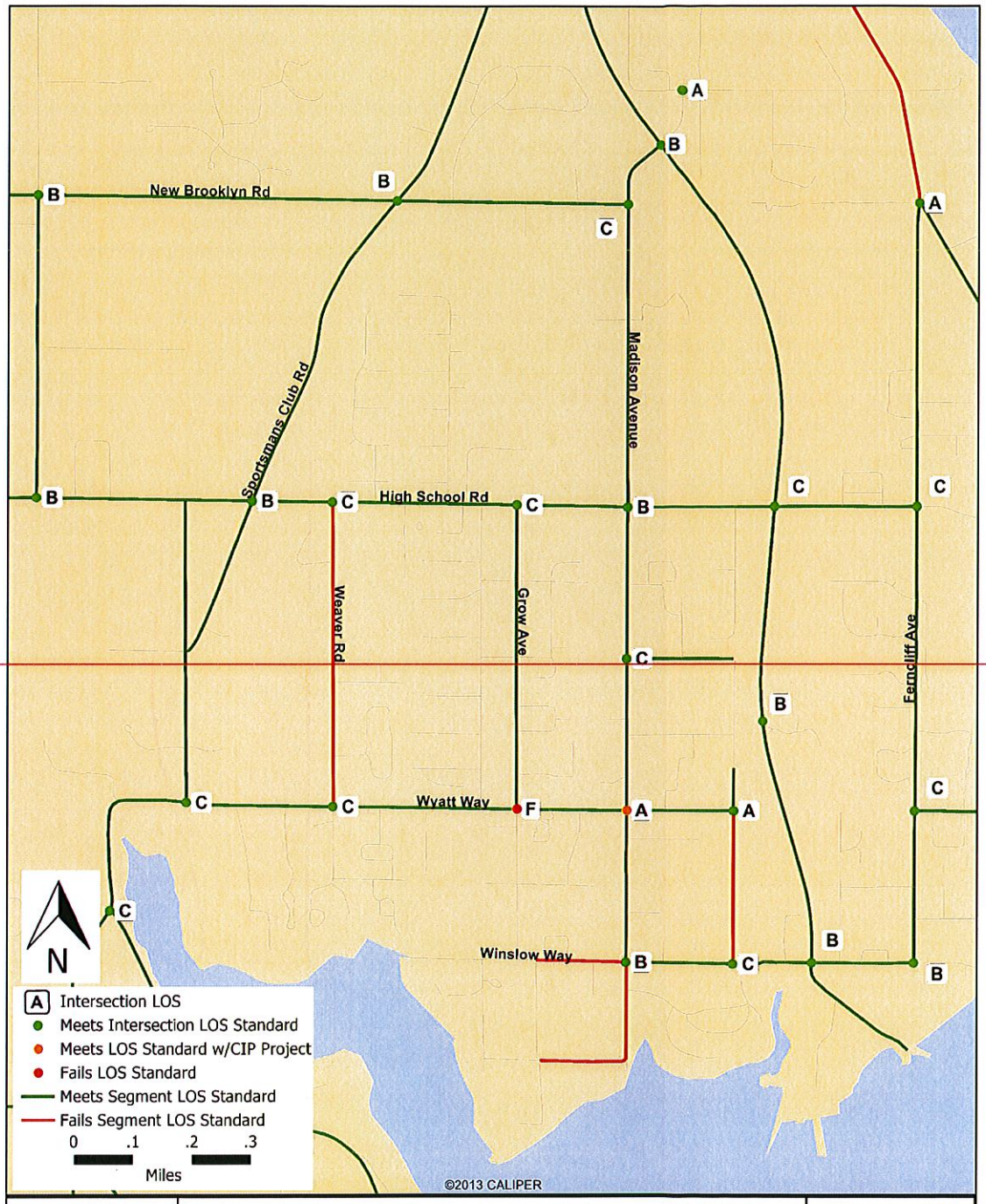


Figure 4-5
2014 Winslow Level of Service

Table 4-7. Intersections PM Peak Hour LOS Analysis – 2014 Baseline

Intersection	Control Type	Roadway Class	EB	WB	NB	SB	Inter-section LOS	Meets Minimum LOS
Urban Zone								
High School Rd/Grow Ave	TWSC	A/C	--	--	C	--	C	Yes
High School Rd/Madison Ave	Roundabout	A/A	A	B	B	B	B	Yes
High School Rd/Ferncliff Ave	AWSC	A/C	B	A	C	A	C	Yes
Madison Ave/Wallace Way	TWSC	A/C	C	C	--	--	C	Yes
Winslow Way/Ericksen Ave	TWSC	A/C	--	--	--	C	C	Yes
Winslow Way/Madison Ave	AWSC	A/A	B	B	C	B	B	Yes
Wyatt Way/Grow Avenue	AWSC	A/C	C	C	B	B	C	Yes
Wyatt Way/Madison Ave	AWSC	A/A	C	C	F	D	E	No**
NSC Zone								
New Brooklyn Rd/Miller Rd	AWSC	A/A	B	B	C	C	B	Yes
Sub-Urban Zone								
Blakely Ave/Bucklin Hill Rd	TWSC	A/A	C	--	--	--	C	Yes
Eagle Harbor Dr/Bucklin Hill Rd	TWSC	A/A	--	C	--	--	C	Yes
High School Rd/Sportsman Club Rd	AWSC	A/A	B	B	B	B	B	Yes
Miller Road/Koura Road	TWSC	A/A	B	C	--	--	C	Yes
Wyatt Way/Finch Road	TWSC	A/A	--	C	--	--	C	Yes
SR 305								
SR 305/Agatewood Road	TWSC	H/C	--	F	--	--	F	No
SR 305/Seabold Road	TWSC	H/C	F	F	--	--	F	No
SR 305/Hidden Cove Road	TWSC	H/C	E	E	--	--	E	No
SR 305/Day Road	Signal	H/A	D	D	C	C	C	Yes
SR 305/Lovegreen Road	TWSC	H/C	C	E	--	--	E	No
SR 305/Koura Road	TWSC	H/A	E	--	--	--	E	No
SR 305/Sportsman Club Rd	Signal	H/A	C	E*	E*	C	D	Yes*
SR 305/Madison Avenue	Signal	H/A	D	C	C	B	C	Yes
SR 305/High School Road	Signal	H/A	E*	B	B	C	C	Yes*
SR 305/Winslow Way	Signal	H/A	C	D	C	A	C	Yes

H = Highway A = Arterial C= Collector R=Residential
AWSC = All-Way Stop Control TWSC = Two-Way Stop Control / Minor Street Stop
**Approach does not meet LOS standard; however, overall intersection LOS is met.*
***With planned roundabout intersection will operate at LOS A.*

Future Traffic Conditions

This section identifies the land use forecast methodology and results used to identify the future needs and deficiencies of the transportation system. Two time periods were studied: 2021, representing the six-year short-term planning period, and 2035, representing the 20-year long-term planning period. 2035 matches the long-term planning horizon of Puget Sound Regional Council (PSRC), the region's major planning entity.

Land Use Forecast

The transportation model used PSRC and Kitsap County land use forecasts to determine future PM peak hour trip growth by transportation analysis zone (TAZ). Trip growth forecasts were distributed and assigned to the future roadway network to generate expected future traffic growth citywide.

Determination of Base Year Land Use

Base year land use was provided by Kitsap County in the form of GIS-based tax parcel data. This data was cleaned and refined based on recent satellite and street-level photography, then categorized according to the following modeled land use types:

- Single-Family Housing
- Multi-Family Housing
- Senior/Assisted/Retirement Housing
- Retail
- General Office
- Industrial and Manufacturing
- Warehouse/Utility/Storage
- Hotel
- Hospital/Nursing Home
- Park and Ride
- School
- Recreation/Entertainment
- Church

Land use data was subsequently aggregated to create 241 transportation analysis zones (TAZs), with each TAZ representing a distinct geographical trip generating unit in the travel demand model. Table 4-8 describes the modeled 2014 land use quantities. The base year travel demand model was calibrated using 2014 traffic counts to establish a tool that reflects vehicle traffic and travel patterns for each of the TAZs.

Table 4-8. 2014 Land Use

Land Use Category	Quantity	Units
Single-Family Housing	8,517	Dwelling Units
Multi-Family Housing	1,311	Dwelling Units
Senior/Assisted/Retirement Housing	212	Dwelling Units
Retail	589	KSF
General Office	316	KSF
Industrial and Manufacturing	163	KSF
Warehouse/Utility/Storage	226	KSF
Hotel	96	Rooms
Hospital/Nursing Home	69	KSF
Park and Ride	841	Stalls
School	3,355	Students
Recreation/Entertainment	207	KSF
Church	121	KSF

Land Use Forecasts (2021 and 2035)

The next step in the transportation modeling process was to incorporate land use forecasts to the calibrated base year travel demand model in order to establish 2021 and 2035 traffic forecasts.

The year 2035 transportation model horizon matches the land use forecasting horizon used by PSRC and Kitsap County. In order to convert regional 2035 land use forecasts to the level of detail required by the citywide transportation model, housing and employment growth forecasts were geographically distributed to the TAZ level according to zoning and estimated land capacity. Employment growth forecasts were converted to gross floor area or equivalent modeled units using relationships established by the Institute of Transportation Engineers, U.S. Department of Energy, and San Diego Association of Governments.

Table 4-9 shows the citywide residential and employment forecasts used in this Plan.

Table 4-9. 2021 and 2035 Forecasts

	Households	% Change from Base	Employees	% Change from Base
2014 Base Year	10,040	--	7,779	--
2021 Forecast	10,948	9%	8,715	12%
2035 Forecast	12,763	27%	10,587	36%

Growth in households is assumed to occur at an annual rate of approximately 1.3 percent per year during the planning period. Employment growth is expected at 1.7 percent per year. The 2035 forecasts assigned a moderate rate of growth throughout the Island with the greatest commercial growth in the designated Neighborhood Service Centers, industrial growth focused in areas currently zoned business/industrial, and residential housing growth occurring in areas where the greatest potential for new housing under the existing zoning could occur. The 2021 forecasts were based on a straight-line interpolation of growth for each TAZ, with the assumption that the distribution of employment and housing would be proportionate to the 2035 scenario.

Future Traffic Operations

This section describes the future traffic conditions on the City's roadway system for 2021 and 2035. Future traffic conditions were estimated for 2021 and 2035 using the results of the land use and employment forecasts, roadway network information, and the calibrated travel demand model (including calibrated trip generation, distribution, and traffic assignment submodels).

2021 Traffic Forecast

The 2021 traffic forecast was developed by applying a linear interpolation of forecasted 2035 land use growth to the calibrated base year planning model. Forecasted traffic growth was then applied to the Synchro traffic operations model to analyze 2021 levels of service. Where LOS was shown to fall below the minimum LOS threshold by 2021, mitigating improvements were added to the road network. This section describes the results of the 2021 analysis.

2016-2021 Programmed Improvements

A number of improvements are scheduled in the 2015 Capital Improvement Program to occur prior to 2021. These programmed improvements have been added into the 2021 transportation model forecast and assumed in the LOS calculations.

The following improvements which impact level of service are assumed to be in place by 2021:

- *Madison / Wyatt* – The intersection control will be changed to a signal or roundabout.
- *Wyatt/ Grow* – The intersection control will be changed to two way stop control. This work will be performed in conjunction with pedestrian crossing improvements and is intended to limit cut through traffic on Grow. The level of service for the north and south legs of the intersection would be allowed to decline in order to mitigate cut through traffic.

2021 LOS

The traffic model provides a representation of the expected traffic under 2021 conditions. Results of the 2021 forecast show continued heavy congestion and poor level of service along SR305 and some minor intersection problems in the Urban Zone around Winslow.

Roadway LOS

Roadway LOS failures occur on some relatively low volume collector roadways due to the capacity policy described above. These failures may not exist if capacity policy is revised to represent a Highway Capacity Manual or similar approach. Traffic congestion along SR305 is expected to continue.

Intersection LOS

The traffic model was used to identify locations where intersections may be the cause of poor operations. Table 4-10 shows the results of the 2021 Plan year intersection LOS analysis. Without mitigation, one intersection in the Urban Zone – Madison Avenue N / Wyatt Way NE – fails to meet the minimum LOS standards. In the Suburban Zone, the intersection of Bucklin Hill Rd. and Blakely Ave. is forecasted to fail at LOS D. Several intersections on secondary arterials in the Urban Winslow Area operate at LOS C.

On SR 305, the intersections at Agatewood Road, Seabold Road, Hidden Cove Road, Lovegreen Road, and Koura Road all fail to meet the minimum standard. By the 2021 forecast year, SR 305 corridor congestion continues to deteriorate with the intersections at Hidden Cove Rd. and Koura Rd. falling from LOS E to LOS F.

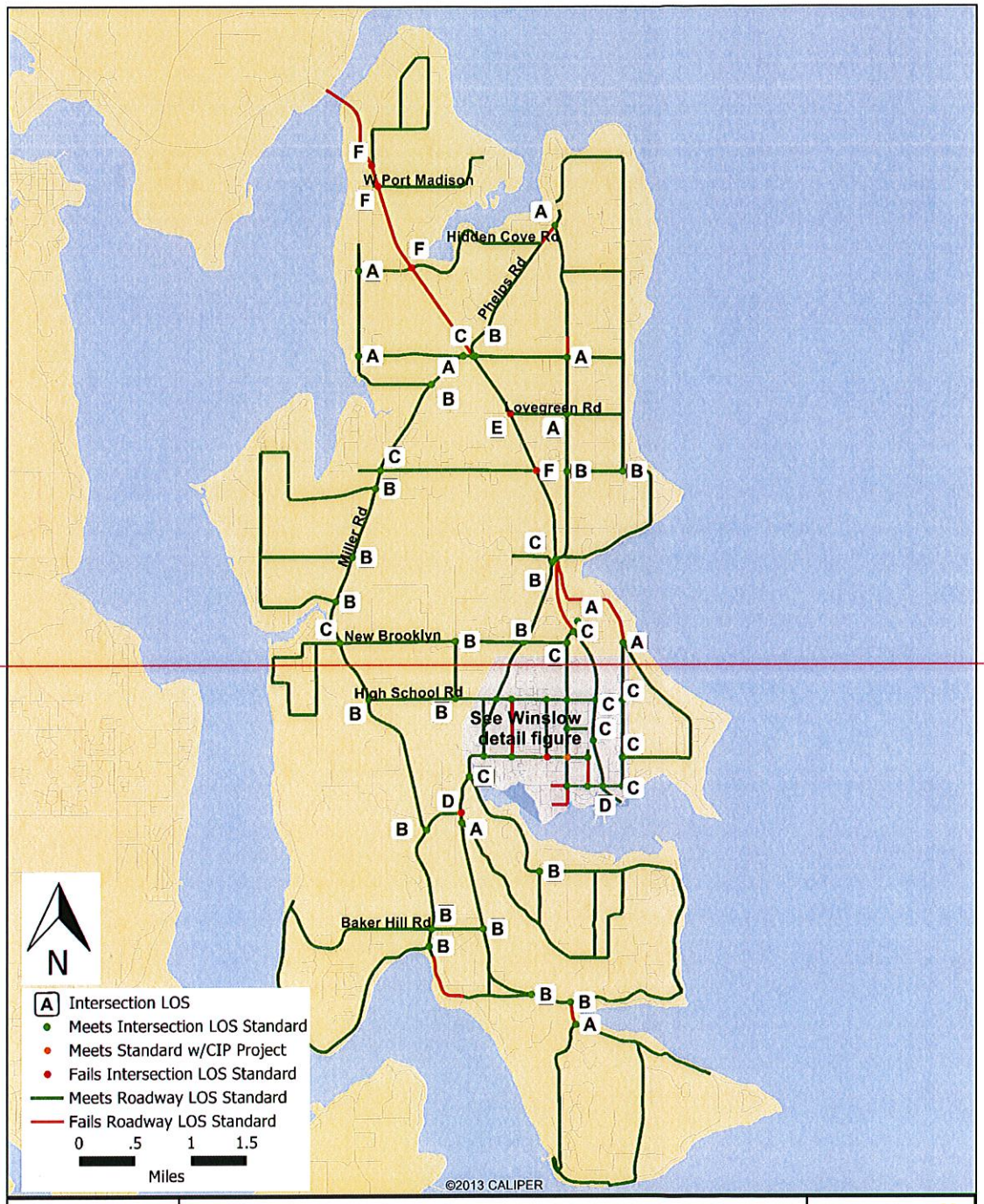


Figure 4-6
2021 Citywide Level of Service

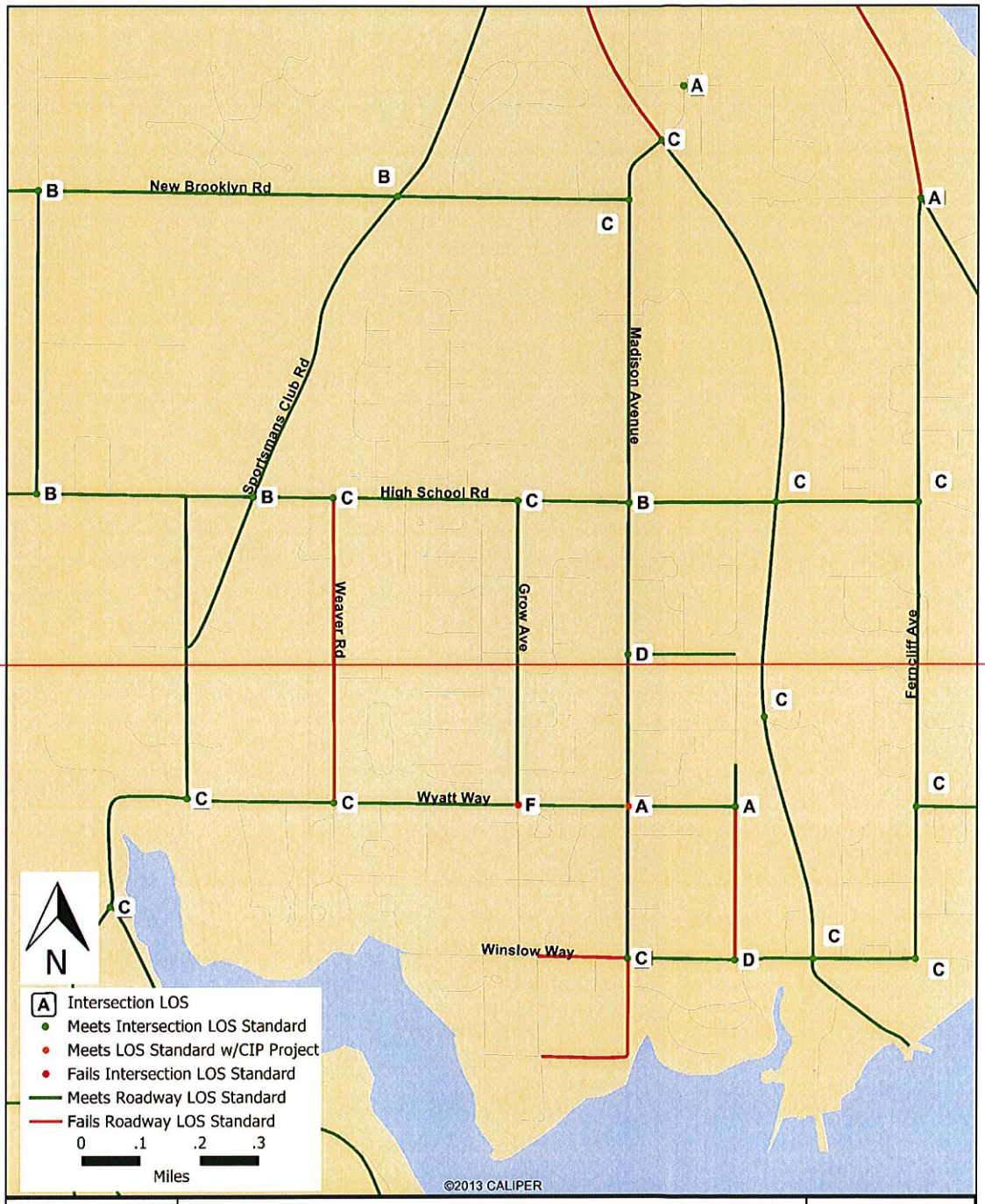


Figure 4-7
2021 Winslow Level of Service

2016-2021 Mitigation

Each intersection and roadway segment identified as below the minimum LOS standard in 2021 was studied to see if mitigation actions could improve the intersection LOS to the minimum standard. Targeted roadway improvements can correct an intersection or roadway that fails to meet the minimum LOS standard.

City Mitigation

For intersections in the City's roadway system where the expected LOS is below the minimum standard, the following mitigation is proposed:

- *Blakely Ave/ Bucklin Hill Rd* – An intersection control improvement such as a signal or a roundabout would improve the intersection to LOS A. The intersection will be studied to determine what specific improvement should be constructed; however, the roundabout would be the preferred method by the community according to the survey conducted for this Plan.
- *Winslow Way/ Erickson Ave & Bjune* – Limited access, no left turns from Ericksen Ave is proposed for this location for peak hours. The improvement would result in LOS C at this location. This improvement would reduce conflicts in the offset intersection reducing congestion and improving safety for all users.
- *Madison Ave/ Wallace Way* – Limited access, no left turns from Wallace Way is proposed for this location for peak hours. The improvement would result in LOS C at this location.

WSDOT Mitigation

Five SR 305 intersections and two roadway segments currently fail to meet LOS and will continue to deteriorate. Table 4-10 describes improvements that could mitigate LOS failures, such as adding turning lanes or signalization. Refer to chapter 5 of this Plan for recommendations.

Table 4-10. Intersections PM Peak Hour LOS Analysis – 2021 Forecast

Intersection	EB	WB	NB	SB	Inter-section LOS	Mitigation
Urban Zone						
High School Rd/Grow Ave	--	--	C	--	C	
High School Rd/Madison Ave	B	B	B	B	B	
High School Rd/Ferncliff Ave	B	B	C	A	C	
Madison Ave/Wallace Way	C	C	--	--	C	Prohibit WB left turns from Wallace Way. LOS D without mitigation.
Winslow Way/Ericksen Ave	--	--	--	C	C	Prohibit SB left turns from Ericksen Avenue. LOS D without mitigation.
Winslow Way/Madison Avenue	B	B	C	B	C	
Wyatt Way/Grow Avenue	--	--	F	C	F	After planned conversion from AWSC to TWSC
Wyatt Way/Madison Ave	A	A	A	A	A	Planned roundabout.
NSC Zone						
New Brooklyn Rd/Miller Rd	B	B	C	C	C	
Sub-Urban Zone						
Blakely Ave/Bucklin Hill Rd	A	--	A	A	A	Roundabout. LOS D without mitigation.
Eagle Harbor Dr/Bucklin Hill Rd	--	C	--	--	C	
High School Rd/Sportsman Club Rd	B	C	B	B	B	
Miller Road/Koura Road	B	C	--	--	C	
Wyatt Way/Finch Road	--	--	--	C	C	
SR 305						
SR 305/Agatewood Road	--	D	A	A	A	Signal. LOS F without mitigation.
SR 305/Seabold Road	D	D	A	A	A	Signal. LOS F without mitigation.
SR 305/Hidden Cove Road	C	B	A	A	A	Signal. LOS F without mitigation.
SR 305/Day Road	D	D	C	C	C	
SR 305/Lovegreen Road	C	C	A	A	A	Signal. LOS E without mitigation.
SR 305/Koura Rd	C	--	A	A	A	Signal. LOS F without mitigation.
SR 305/Sportsman Club Road	A	A	C	C	C	
SR 305/Madison Avenue	D	C	C	B	C	
SR 305/High School Road	C	C	B	B	C	
SR 305/Winslow Way	C	D	A	A	C	

**Approach does not meet LOS standard; however, overall intersection LOS is met.*

2035 Traffic Forecast

The analysis of 2035 traffic conditions provides a long-range view of how the roadway system will operate on the Island. The 2035 traffic forecast considers housing and employment growth forecasted by PSRC and by Kitsap County, as well as any roadway network changes that would impact traffic operations. This section describes the results of the 2035 analysis.

2021-2035 Model Forecast Improvements

Few projects have been programmed into the traffic model to be constructed between 2021 and 2035. The City's traffic plan has not been updated since 2004 and was not formally adopted. The State has recently begun longer term planning for the SR305 and other corridors. Because only a few improvements have been included in planning documents beyond the six-year period for either City or State facilities in the study area.

The following improvements are assumed to be in place by 2035:

- *SR305 / Suquamish* – A roundabout is planned for this intersection. This intersection is outside the study are for this Plan and is not evaluated in the traffic model.

2035 LOS

The traffic model produces a forecast of 2035 traffic conditions, which are shown in Figure 4-8 and 4-9. Results of the 2035 forecast show continued heavy congestion and poor level of service along SR305 and some minor intersection problems in the Urban Zone around Winslow.

Roadway LOS

Analysis of the expected traffic in 2035 shows that most of the City's roadway system would continue to meet the minimum LOS standards with the roadway system in Winslow, including SR 305 intersections, generally operating acceptably. Based on the City's existing capacity policy, some roadway LOS failures would still exist on several collector roadways throughout the Island. For the 2035 forecast year, SR 305 is expected to fall below the minimum LOS standard from Madison Avenue to the north end of the Island.

Intersection LOS

The intersection analysis results from the 2035 Plan year are shown in Table 4-11. Assuming the identified short term planning horizon improvements are provided in the urban zone, no further intersection improvements are needed or anticipated. By 2035, the increase in traffic on SR 305 is expected to result in continued deterioration of intersection operations. Excessive delay would occur at nearly all of the intersections north of Madison Avenue. The intersections at SR 305 and Agatewood Road, Seabold Road, Hidden Cove Road, Lovegreen Road, and Koura Road would all be at LOS F. The poor operation of the highway would cause it to act as a barrier to cross-Island traffic, impacting operations of the City's roadway system as a whole.

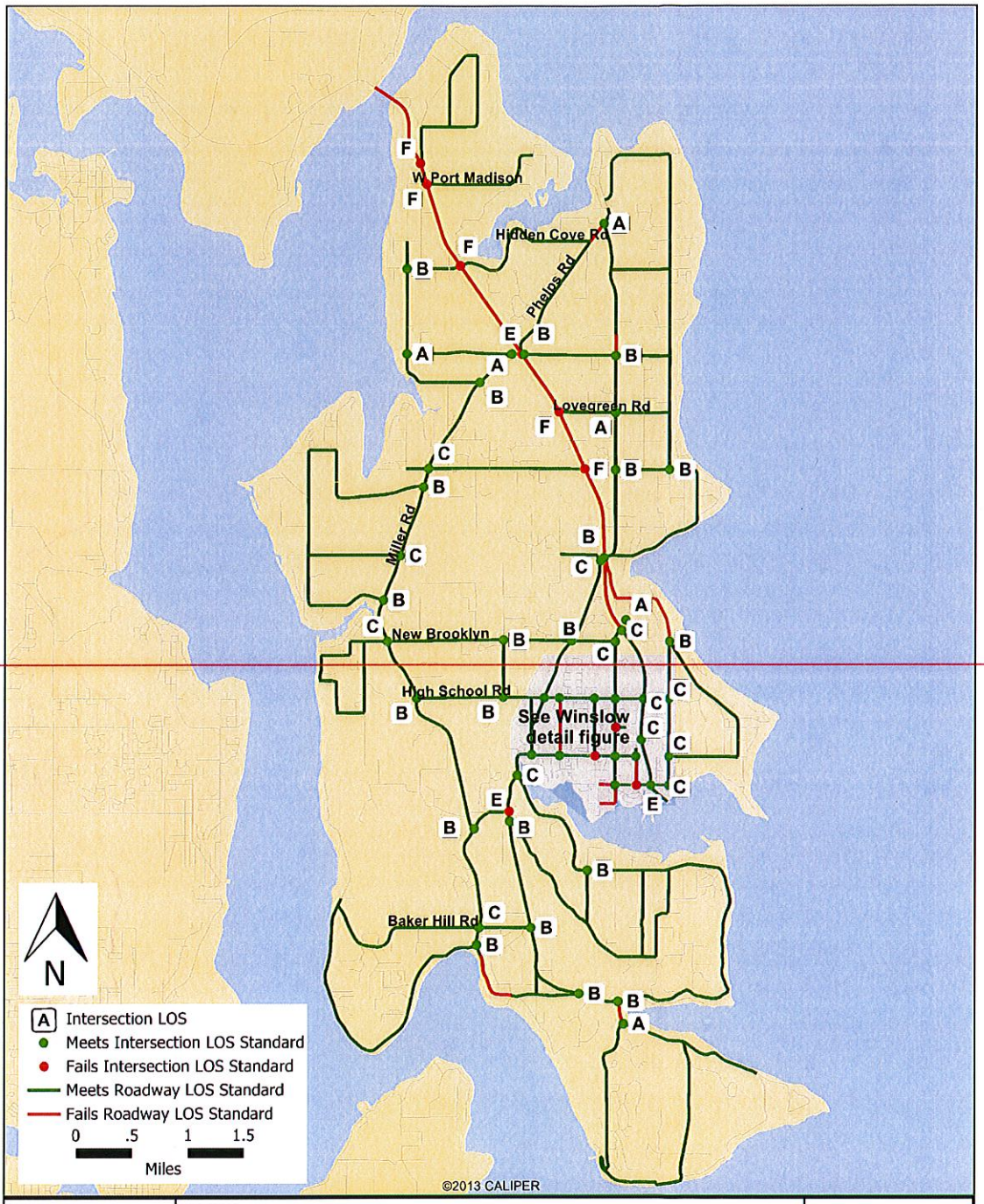


Figure 4-8
2035 Citywide Level of Service

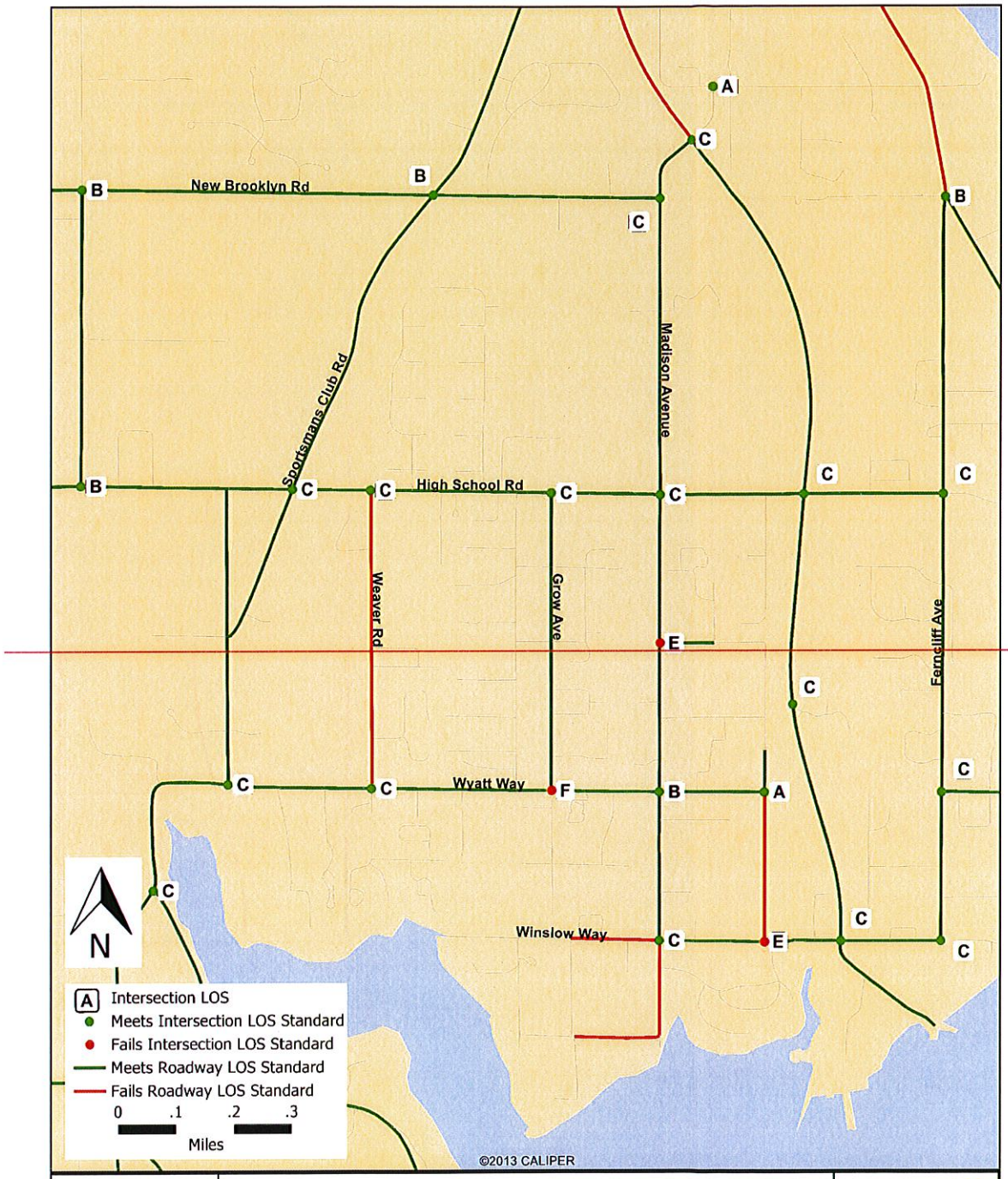


Figure 4-9
2035 Winslow Level of Service

Table 4-11. Intersections PM Peak Hour LOS Analysis – 2035 Forecast

Intersection	EB	WB	NB	SB	Inter-section LOS	Mitigation
Urban Zone						
High School Rd/Grow Ave	--	--	C	--	C	
High School Rd/Madison Avenue	B	B	C	B	B	
High School Rd/Ferncliff Ave	C	B	D	B	C	
Madison Ave/Wallace Way	-	C	-	-	C	Prohibit SB left turns from Ericksen Avenue. LOS E without mitigation.
Winslow Way/Ericksen Ave	-	-	--	C	C	Prohibit SB left turns from Ericksen Avenue. LOS E without mitigation.
Winslow Way/Madison Avenue	C	C	D	C	C	
Wyatt Way/Grow Avenue	--	--	F	D	F	No mitigation identified.
Wyatt Way/Madison Avenue	A	B	A	A	A	
NSC Zone						
New Brooklyn Rd/Miller Rd	B	C	D	D	C	
Sub-Urban Zone						
Blakely Ave/Bucklin Hill Rd	A	--	A	B	A	Roundabout. LOS E without mitigation.
Eagle Harbor Dr/Bucklin Hill Rd	--	C	--	--	C	
High School Rd/Sportsman Club Rd	A	B	A	A	B	
Miller Road/Koura Road	C	C	--	--	C	
Wyatt Way/Finch Road	--	--	--	C	C	
SR 305						
SR 305/Agatewood Road	--	E*	A	A	A*	Signal. LOS F without mitigation.
SR 305/Seabold Road	D	D	B	A	A	Signal. LOS F without mitigation.
SR 305/Hidden Cove Road	D	D	B	A	B	Signal. LOS F without mitigation.
SR 305/Day Road	D	C	B	C	C	Add NB/SB queue lane
SR 305/Lovegreen Road	C	C	A	A	A	Signal. LOS F without mitigation.
SR 305/Koura Road	D	--	A	A	A	Signal. LOS F without mitigation.
SR 305/Sportsman Club Road	A	A	D	C	C	
SR 305/Madison Avenue	D	C	C	B	C	
SR 305/High School Road	C	C	B	C	C	
SR 305/Winslow Way	D	D	B	B	C	

**Approach does not meet LOS standard; however, overall intersection LOS is met.*

2021-2035 Mitigation

Mitigating the LOS for the City intersections would require minor improvements which can be programmed into the City's future transportation improvements program. The increased traffic volume expected to use SR 305 in 2035 would overwhelm the existing facility, resulting in a situation that cannot easily be mitigated.

City Mitigation

Improvement to intersection channelization and/or intersection control can mitigate the substandard LOS at all of the City intersections. The following projects are proposed to improve LOS at the four identified substandard intersections:

- *Bucklin Hill/ Eagle Harbor Drive* – An intersection control improvement such as a signal or a roundabout would improve the intersection LOS to B. The intersection will be studied to determine what specific improvement should be constructed; however, the roundabout would be the preferred method due to the three way configuration, traffic calming benefit for downhill traffic, and avoiding operational resource impacts of signals.
- *Bucklin Hill Road/ Blakely Avenue* – An intersection control improvement such as a signal or a roundabout would improve the intersection LOS to B. The intersection will be studied to determine what specific improvements should be constructed; however, the roundabout would be the preferred method due to traffic calming and operations resource considerations.
- *Madison Avenue/* Wallace Way – An intersection control improvement such as prohibiting left turns during peak traffic hours is recommended.

WSDOT Mitigation

In 2035, most of the intersections and roadway segments along the seven-mile SR 305 corridor within the study area will operate at LOS F. This problem is based on lack of roadway capacity that affects the intersection operation as well, making it extremely difficult to mitigate individual locations. Any mitigation that is proposed would need to be examined on a corridor basis, and would need to be consistent with WSDOT operational objectives, as well as City's goals and objectives with regard to traffic operations, environmental and community character concerns. An individual solution for each problem location would not provide an adequate assessment of the corridor-wide issues that are present on the highway.

There are a number of possible solutions that could be proposed to mitigate the corridor. In order to adequately explore possible solutions, a special study was performed for this corridor. The results of the study are explained in Chapter 5.

Other Mobility Issues

There other issues that affect the mobility of traffic on the roadway network. These issues include factors that influence how traffic operates and connects to the City's roadway system. The three areas discussed in this section includes the connectivity of the roadway system, access management, and special study areas identified by the Steering Committee.

Connectivity

Connectivity is defined as the level of connections between roadways in a transportation system. In concept, connectivity describes the efficiency of travel between any two points on the roadway system. A high level of connectivity is characterized by a well-developed street network, available alternative routes, quick response times for emergency vehicles, good mobility for pedestrians

and bicyclists, and an efficient use of the roadway system. A low level of connectivity is characterized by numerous dead-end streets, cul-de-sacs, and roadways that do not connect, resulting in poor response times for emergency vehicles, circuitous routing of pedestrian and bicycle travel, and inefficiencies in traffic flow. Low connectivity can also result in interrupted access to areas in the event of a road closure such as a traffic accident or landslide, which can result in the loss of development opportunities for some properties if they aren't served by the public roadway system, and can cause a high level of congestion and bypass traffic on the available streets.

On Bainbridge Island, an example of an area with relatively high connectivity is the Winslow subarea, where the street network is more developed and few streets end in dead-ends or cul-de-sacs. However; there are areas in Winslow where there are "super blocks" which inhibit connectivity. Many of the sub-urban areas have low connectivity with few alternate connections and wide street spacing, requiring difficult routing between areas.

Connectivity improvements are usually undertaken to solve potential safety problems or to improve traffic flow. New connections can be constructed to provide access to undeveloped properties, or alternative access in areas where there is only one roadway serving many homes or businesses, where the existing road is unstable due to steep slopes or erosion, or where an alternative route is needed to provide relief to an overly congested route.

Seventeen connectivity projects have been identified across the Island to be developed as traffic and other needs dictate. These are shown in Figure 4-10 (general area of connection shown with star) and described in Figure 4-11. The potential connections shown are recommended for development by the Steering Committee. The recommendations were developed by looking at the needs of schools, fire and emergency medical response, and other public facilities, as well as access to landlocked properties. Each potential connection will be considered separately as traffic patterns and emergency response times warrant, will be studied to identify potential impacts, and will include discussions with affected property owners. Connections will be included with other nearby projects if possible. Connectivity improvements are not included in this Plan's 2035 traffic model.

Access Management

Access management is the control of the number and location of access points along a roadway, in order to provide access to property, maximize safety for all roadway users, and optimize roadway operations. Access management is especially important on arterial roadways and highways where there is or may be high travel speeds and traffic volumes are desired.

Access management is generally implemented on roadways for three reasons: to improve roadway operations, to improve safety, and to improve access to properties. Roadways operate best when all vehicles travel in a straight line. Conflict points occur when the path of one vehicle crosses the path of another. These can be at intersections, driveways, or at other locations where vehicles turn. Vehicles that slow to make turning movements, accommodate merging traffic, or allow crossing traffic flows all contribute to the reduction in the number of cars that can travel through a corridor. Reducing conflict point's increases capacity and traffic speeds.

Multiple conflict points not only slow traffic and reduce roadway capacity, but also increase the potential for accidents. Rear-end and turning vehicle collisions can be minimized through the use of access management strategies that reduce conflict points. Too many conflict points can also

interfere with access to properties by making it difficult for vehicles to turn across traffic, or by restricting turning movements. Access management can also improve access to individual properties by organizing driveways at locations where turning movements are safer and easier.

On Bainbridge Island, access is a major issue along SR-305 corridor, particularly north of Hidden Cove Road. Along this stretch of the highway there are multiple driveways and streets where the only access to properties is via the State Highway.

Techniques that can be applied to increase the mobility and safety of a travel corridor vary from development of shared access points to the installation of medians or other turning restrictions. The objective of an access management program is to provide access to a property while limiting negative impacts to the property.

Control techniques fall into two categories: driveway access and roadway operation. Driveway access controls prescribe the number and location of driveways for properties along a roadway segment. Roadway operation controls provide for access to properties and cross streets. The following list identifies the techniques included in each category:

Driveway Access Controls:

- internal circulation between parcels
- shared driveways
- limits on number, spacing, and size of driveways
- consolidation of access for adjacent parcels
- use of one-way driveways
- right-in/right-out (RIRO) access
- development of access driveways on minor streets

Roadway Operation Controls:

- refuge lanes or two-way continuous left turn lanes
- turning movement limitations through signage and channelization
- construction of deceleration lanes
- raised medians that limit left turns
- traffic signals at high volume locations
- provisions for U-turns

The State of Washington supports the use of access management strategies to protect its key roadways and travel corridors. RCW 47.50.010 requires that access be managed along all state facilities:

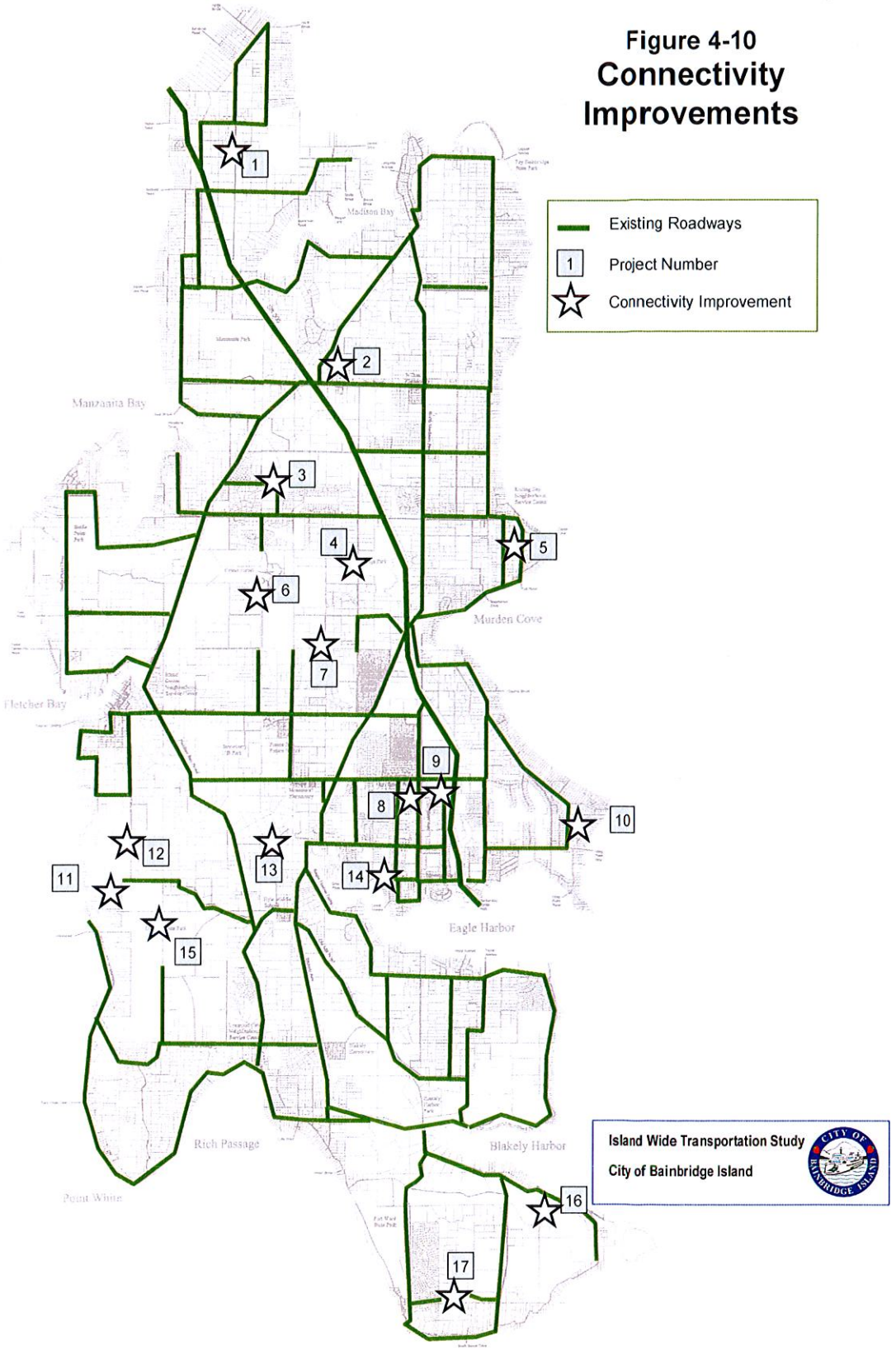
~~*"Regulation of access to the state highway system is necessary in order to protect the public health, safety, and welfare, to preserve the functional integrity of the state highway system, and to promote the safe and efficient movement of people and goods within the state."*~~

~~While the institution of access management may not solve the corridor's congestion problems, adoption of access management strategies and practices will increase the efficiency and safety of the corridor while minimizing the impacts on existing property owners.~~

~~The City of Bainbridge Island does not currently have a formal access management program. Some aspects of access management, such as number and location of driveways and internal parcel circulation, are monitored by the Public Works Department during the site plan review process.~~

~~WSDOT manages access on state highways, including SR 305 as it crosses the Island. This highway is classified as *Partial Access Control*, which has the following definition: "Access approaches are permitted for selected public streets, roads, some crossings, and existing private driveways. No commercial approaches are permitted and no direct access if Public Street or road access is available."~~

Figure 4-10
Connectivity Improvements



~~Figure 4-11~~
~~Guide To Potential Connectivity Improvements~~

1. ~~**Agate Pass Road** – The extension of Agate Pass Road between Dolphin Road and W. Port Madison Road would provide a secondary access to the area and lessen traffic impacts and delay at the intersection of Agatewood Road/SR 305.~~

2. ~~**Phelps Road** – The realignment of Phelps Road, east of current intersection with Day Road would improve the intersection's geometrics and intersection spacing from Day Road/SR 305.~~

3. ~~**Fieldstone/Bayhill Road** – The extension of Bay Hill Road to Fieldstone Lane would in improve neighborhood circulation.~~

4. ~~**Wardwell Road** – The connection between Wardwell Road and Koura Road would improve the circulation opportunities in the central Island area, provide a secondary access to the Wardwell Road area, and provide access to undeveloped parcels. One alternative may be to provide non-motorized through access and limit motorized use.~~

5. ~~**Manitou Beach Road** – This proposed segment would provide a connection between upper Manitou Beach Road and Falk Road providing a secondary access to the area where shoreline erosion problems threaten sections of Manitou Beach Road.~~

6. ~~**Mandus Olson Road** – The connection of north and south portions of Mandus Olson Road would provide better circulation throughout the area, a through connection between the two existing street segments, and access to undeveloped parcels. There is currently an unimproved gravel path at this location limited to non-motorized use. One alternative may be to limit this route to non-motorized use.~~

7. ~~**Paulanna Road** – The extension of Paulanna Road to Buesit Lane would provide secondary access to the area and could connect north to Wardwell Road.~~

8. ~~**Ihland Way** – The connection of Ihland Way through to Madison Avenue would break up the superblock between Wyatt Way and High School Road.~~

9. ~~**Ericksen Avenue** – The connection between Ericksen Avenue and Hildebrand Lane would eliminate the existing connection through the bank parking lot and improve the mobility of the transportation system.~~

10. ~~**Dingley/Alder/Fairview** – This project would connect segments between these dead-end roadways to improve neighborhood connectivity.~~

11. ~~**Marshall Road** – The extension of Marshall Road west to Crystal Springs Road would be an important link in developing a system of streets in the largely undeveloped southwest area of the Island. The current roadway is a long dead-end with a single access point.~~

12. **Springridge Road** – The extension of Springridge Road south to Marshall Road extension (see #11) would be part of the circulation improvements to the southwest portion of the Island. This roadway would also provide access to undeveloped parcels.

13. **Wyatt Way/Fletcher Bay** – Develop a western extension of Wyatt Way between Bucklin Hill Road and Fletcher Bay Road to provide secondary access to south Island locations and provide access to undeveloped parcels.

14. **Shepard Way** – This connection between Grow Avenue and Nicholson Place would create a secondary access and better circulation in the area for motorized and non-motorized users. There is currently an unimproved gravel path at this location limited to non-motorized use.

15. **Deerpath Lane** – The extension of Deerpath Lane north to NE Marshall Road would increase the connectivity in this south Island area. The current roadway is a long dead-end with a single access point.

16. **Country Club Road** – The connection between Country Club Road and Toe Jam Hill Road would provide an access around a potential shoreline erosion area.

17. **Darden Lane** – The project would connect Fort Ward Hill Road and Toe Jam Hill Road by developing a roadway segment connecting Evergreen Avenue and Darden Lane.

18. **Reitan Road** - Providing an access on both sides of the highway is recommended to maintain reliable access to the neighborhood as the only access is from SR305. This improvement would allow limited access for a section of SR305.

19. **Agate Beach Land** - Providing a frontage road to link this and other properties fronting SR305 is recommended to maintain reliable access. This improvement would allow limited access for a section of SR305.

The SR305 corridor as it exists today and with any future improvements will have a significant impact on many aspects of transportation on Bainbridge Island. Further study should be inclusive

of and comprehensive to address all aspects. The following issues have been identified for inclusion in further study of the corridor:

- Operations of adjoining roadway networks and connectivity – The study should consider the effectiveness of the adjacent roadway networks along the corridor. There may be opportunities to mitigate cut through traffic and improve connectivity. There may be impacts to circulation and neighborhoods.
- Corridor Permeability – The 2004 IWTS included a special study that looked at two improvement scenarios. The first scenario, Alternative A, assumed increasing congestion would not be mitigated and interchanges and crossings to restore east-west travel along the corridor. Permeability for all modes remains a key consideration for any scenario.
- Maintaining reliable access for neighborhood – For many neighborhoods, such as in the Agate Pass and West Port Madison areas, the only access is from roadways that connect to SR305. Maintaining reliable access is an important aspect of any scenario.
- Sound to Olympics Trail and Inter-Island Trails – The City envisions a network of regional and sub-regional separated pathways along and crossing the SR305 corridor. The existing and potentially wider highway presents a barrier to many users. Permeability for active modes of transportation is a key consideration for intersection and other improvements.
- Bus Transit – Improving efficiency of and access to transit along the corridor is an important aspect that should be studied and integrated into all scenarios. Collaboration with Kitsap Transit is needed to explore possibilities.

Other SR 305 Issues

The deficient level of service is the most significant issue currently affecting the City's transportation system. The bridge, park and ride, and off-Island improvement issues will be addressed in future studies in conjunction with an overall plan for SR 305 improvements. The City should take a leadership role in initiating studies to develop improvement projects and not defer to WSDOT's timeline and priorities. The City should partner with Kitsap Transit and others to reduce vehicular demand on the Highway.

SR 305 Recommendations

Since the 2004 IWTS, WSDOT has implemented a number of intersection projects including the following:

- Signal improvements at N. Madison.
- Signal timing optimization for peak hour ferry offloading at the Winslow Way intersection
- Signal timing optimization for the Day road intersection to improve access from Day and Miller.
- Bike through lane on right improvements to the north and south legs of the intersections at Madison, Sportsman's Club/ N. Madison, and Day Roads.

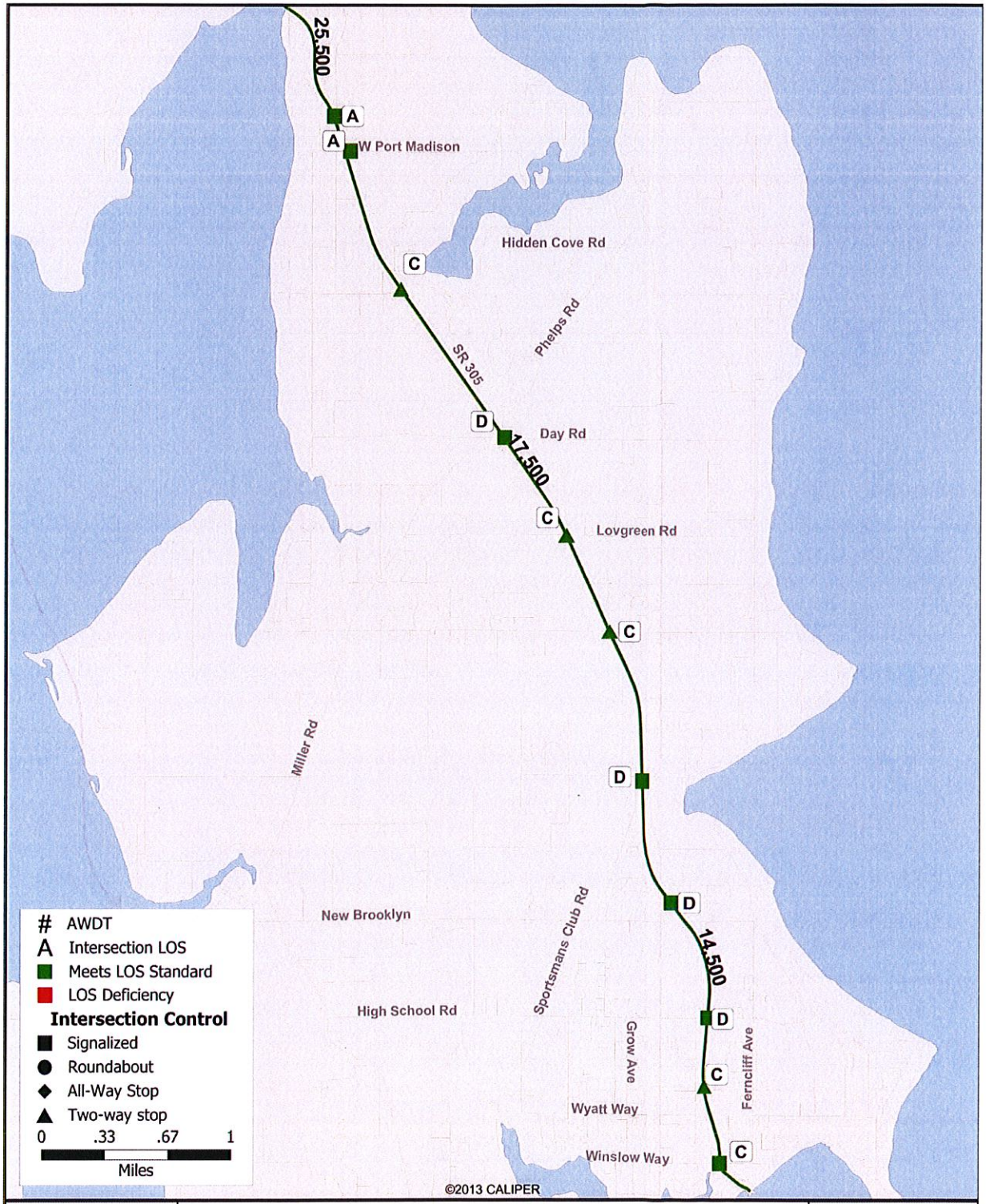


Figure 4-3
SR 305 Level of Service
2035 Alternative A

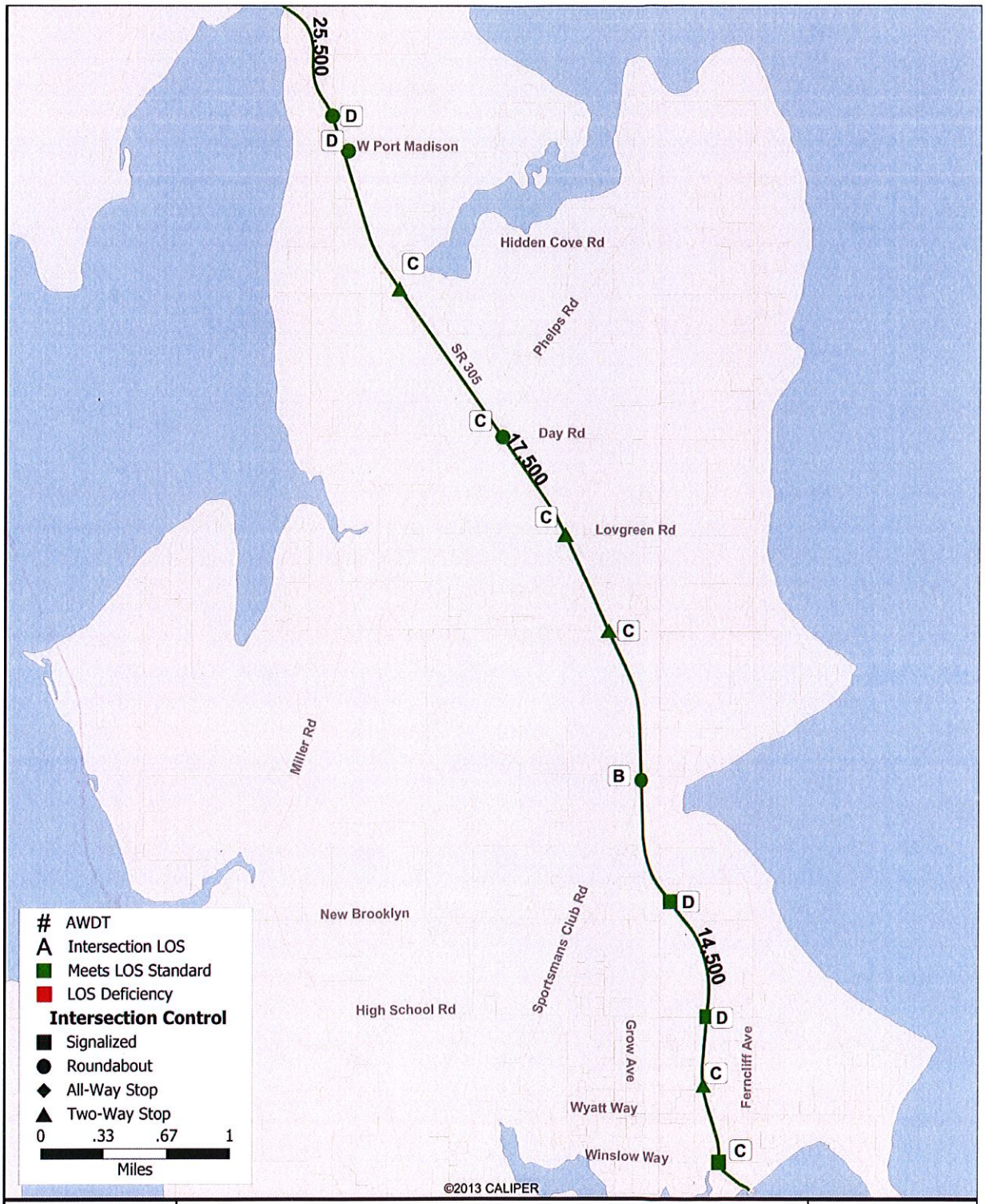


Figure 4-4
SR 305 Level of Service
2035 Alternative B

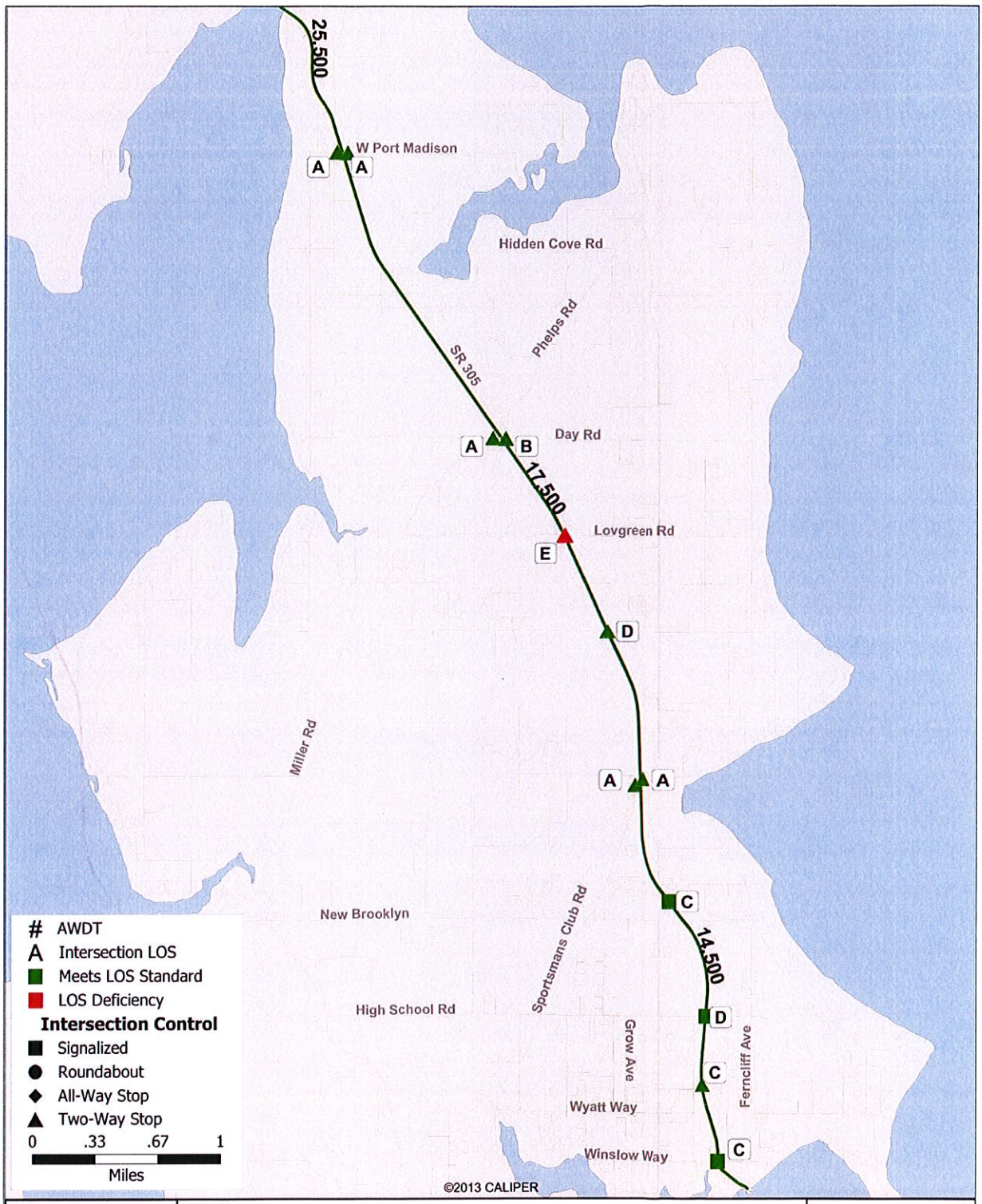


Figure 4-5
SR 305 Level of Service
2035 Alternative C

A number of interim and long term recommendations are as follows based on the special Study.

Interim Improvements:

The following interim improvements are recommended at the time of this Report for the next 6 years:

- Support WSDOT's proposed right hand turn lane at the south leg of the Suquamish Intersection, including bicycle lane, and pedestrian sidewalk and crossing improvements.
- Advocate for WSDOT to include "do not block" intersection signage at intersections north of Day Road, Hidden Cove, West Port Madison, and Agate Point in the above WSDOT project.
- Intersection improvements at West Port Madison eliminating access to Seabold and providing a receiving lane (similar to Agate Pass) for south bound traffic. The intent of this proposal is to reduce cut through traffic in the Seabold neighborhood and improve access to SR305 from West Port Madison Road.
- Advocate for consistent 8 foot or wider paved shoulders along the full length of the corridor to accommodate cyclists and pedestrians.
- Advocate for the Sound to Olympics Trail and its branch trails.
- Advocate for improved access to ferry and bus transit including park and ride and bike parking opportunities both on and off island.

Long Term Recommendations:

The following Long Term specific improvement projects are recommended:

- Advocate for improvements at the intersection to Suquamish to address north south mobility/capacity.
- Advocate for capacity improvements to roadway segments north of the Miller Road intersection. Alternatives may include HOV lanes, a reversible HOV lane, or shoulder use by HOV's. Consider accommodation for bus rapid transit.
- Advocate for Agate Pass Bridge replacement.
- Advocate for a separated pathway for non-motorized users in conjunction with other improvements.
- Advocate for limited access improvements at Reitan in conjunction with the bridge replacement. This would include access for Reitan and possibly connection frontage roads from both sides of the highway in conjunction with the bridge replacement.
- Advocate for intersection improvements at Agate Point & West Port Madison to restore access to these "highway locked" areas. A joint signal may be the most economical solution, is spaced evenly with adjacent signals allowing for signal synchronization, and would mitigate for continuous traffic at peak hours should the WSDOT proposed round-about be constructed at Suquamish Way. Note that this signal could be programed to flash yellow/ red during non-peak hours.
- Advocate for intersection improvements at Day Road. Improvements to accommodate additional (4 lanes) in the north-south direction at the signalized intersection would help with queuing for operational efficiency. The Phelps Road intersection with Day Road is in close proximity to SR305. If funding can be secured for a two lane round about it may be a preferred solution to address this complexity. With either a wider signalized intersection or two lane round about additional facility investments would also be needed to accommodate pedestrians and cyclists.

The above recommendations are based on information from the special study that was included in the update of this Plan. The special study was limited to the LOS data developed using the updated traffic data and traffic model. Further study and preliminary design and engaging the community in a process for decision making is recommended prior to developing and prioritizing specific improvement projects. The priorities for funding have been assumed to be reducing traffic congestion on SR305 and maintaining access at intersection locations with no alternative access.

At the time of the writing of this Plan a gas tax increase had been passed by the State Legislature. The City of Bainbridge along with Kitsap County, The Suquamish Tribe, and the City of Poulsbo are organizing a multi-agency effort to plan improvements for the corridor. WSDOT is undertaking a State wide effort for planning corridors "Corridor Sketches" including SR305.

The new State funding may provide for intersection improvement at Suquamish Way and as much as $6M dollars of improvements on Bainbridge Island. The level of funding for Bainbridge could address intersection improvement and other related work at the Day Road intersection, the Agatewood/ W. Port Madison intersections, and possibly some limited access roadway improvements. At other intersections along SR305 where there are alternative routes to access SR305 access restrictions would be employed for peak hours, until additional funding can be secured.