



Carolyn Callaway

Appendix B

TRANSPORTATION TECHNICAL DOCUMENT

Transportation Plan Technical Document

Prepared by Jefferson County Public Works (2018) and Transpo Group (2017)

DRAFT May 2018

| | | |
|----------|--|-----------|
| 1 | County-wide | 3 |
| 1.1 | Criteria Used In Transportation Decisions..... | 3 |
| 1.2 | Existing Conditions..... | 8 |
| 1.3 | Land Use and Transportation Planning Method..... | 26 |
| 2 | Urban Growth Area | 41 |
| 2.1 | Existing Conditions..... | 41 |
| 2.2 | Transportation Projections..... | 47 |
| 2.3 | Capital Facilities..... | 54 |
| 2.4 | Conclusion..... | 61 |

Exhibits

| | | |
|-------------|--|----|
| Exhibit 1-1 | Level of Service Definitions - Roadways..... | 4 |
| Exhibit 1-2 | Functional Classification - East County..... | 11 |
| Exhibit 1-3 | Functional Classification - West County..... | 12 |
| Exhibit 1-4 | Jefferson County Transportation Network - Traffic Collisions by Roadway..... | 13 |
| Exhibit 1-5 | Average Accident Rate 2013-2016..... | 14 |
| Exhibit 1-6 | Bicycle and Pedestrian Collisions (2013-2016)..... | 15 |
| Exhibit 1-7 | Jefferson Transit Routes: Ridership - June 2016..... | 17 |

| | | |
|--------------|---|----|
| Exhibit 1-8 | Transit Routes..... | 18 |
| Exhibit 1-9 | Freight Routes..... | 21 |
| Exhibit 1-10 | On-Road Bicycle Routes..... | 23 |
| Exhibit 1-11 | Multi-Purpose Trails..... | 24 |
| Exhibit 1-12 | Land Use Forecasts for County Areas..... | 28 |
| Exhibit 1-13 | Existing and Forecast ADT and LOS | 29 |
| Exhibit 1-14 | Existing Traffic Volumes and Level of Service | 38 |
| Exhibit 2-1 | Roadway Functional Classification Descriptions..... | 41 |
| Exhibit 2-2 | Study Intersections..... | 44 |
| Exhibit 2-3 | Existing Intersection LOS | 46 |
| Exhibit 2-4 | Land Use Forecasts for UGA..... | 47 |
| Exhibit 2-5 | Intersection Delay and Level of Service | 48 |
| Exhibit 2-6 | Road Segment Average Daily Trips and Level of Service | 49 |
| Exhibit 2-7 | Forecast 2038 Baseline and With Project Intersection Operations | 53 |
| Exhibit 2-8 | UGA Transportation Capital Project Map..... | 57 |
| Exhibit 2-9 | UGA Transportation Capital Project List..... | 58 |

1 County-wide

1.1 CRITERIA USED IN TRANSPORTATION DECISIONS

The County evaluates several factors when deciding which transportation improvements should be undertaken. These factors include whether the roadway meets the adopted level of service (LOS) standard, identified operational and safety factors, and the County's transportation goals and policies.

Level of Service Standards

Level of service (LOS) is a multi-dimensional measurement of the quality of service provided by the existing transportation system. The concept of LOS has traditionally been used in transportation planning and engineering to describe an actual or expected operating condition for a road. A lower LOS implies worsening conditions, either as perceived by the traveler, or as a measure of efficient movement. LOS is the desired minimal operational condition for a facility, something against which actual conditions can be assessed. By applying LOS standards and then monitoring the actual LOS, a jurisdiction can implement a system for establishing traffic flow objectives, prioritizing transportation projects and funding, and directing growth of the transportation network.

LOS can be described by one or more factors, such as travel times, levels of congestion, volume of use compared to system capacity, frequency of service, comfort and convenience, or safety. LOS measurements can address other modes of transportation including transit or bicycles. The Growth Management Act requires the establishment of a level of service standard as a gauge for evaluating the performance of the existing transportation network, including roads and transit. LOS is also used to determine whether transportation improvements or transportation services will be made available to serve proposed development.

Vehicular Traffic - Level of Service

For roadways, LOS is typically described in terms of congestion, which may be measured by average travel speed or vehicular density. Exhibit 1-1 provides general definitions of LOS categories typically used by traffic engineers for roadways. Six levels of service are defined from A to F with LOS A representing the best operating conditions and LOS F the worst.

Jefferson County's adopted level of service standards are consistent with the standards established by the PRTP and the Washington State Department of Transportation. These standards are as follows:

- ▶ Rural Roads (roads outside an urban boundary line) = LOS C
- ▶ Urban Roads (roads within an urban boundary line) = LOS D
- ▶ Master Planned Resort Roads (roads within an MPR boundary line) = LOS D
- ▶ Hwys of Statewide Significance HSS/Tourist Corridors (rural corridors carrying an urban level of traffic) = LOS D

The LOS standards adopted in this plan for County roadways and State Routes, including the existing Average Daily Traffic (ADT) and the maximum ADT are shown in Exhibit 1-1 below. The maximum ADT is considered the roadway capacity for LOS evaluation. The roadway capacity is based on the Highway Capacity Manual (HCM) (Transportation Research Board, 6th Edition) for rural two-lane highways and urban streets. The roadway capacity considers features of the roadway, such as number of lanes, turn lanes, shoulder width, and intersection controls. State Route capacities were also consistent with generalized daily service volumes found in HCM.

EXHIBIT 1-1 Level of Service Definitions - Roadways

| Level of Service Category | Definition |
|---------------------------|---|
| Level of Service A | Describes a condition of free flow with low volumes and high speeds. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. Stopped delay at intersections is minimal. Volumes are less than 29 percent of capacity. |
| Level of Service B | Represents reasonably unimpeded traffic flow operations at average travel speeds. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tensions. Volumes are between 29 and 47 percent of capacity. |
| Level of Service C | In the range of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. The selection of speed is now significantly affected by interactions with others in the traffic stream, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level. Volumes are between 47 and 68 percent of capacity. |
| Level of Service D | Represents high-density, but stable flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level. Volumes are between 68 and 88 percent of capacity. |
| Level of Service E | Represents operating conditions at or near the maximum capacity level. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor disturbances within the traffic stream will cause breakdowns. Volumes are between 88 and 95 percent of capacity. |

| Level of Service Category | Definition |
|---------------------------|---|
| Level of Service F | Describes forced or breakdown flow, where volumes are above theoretical capacity. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations, and operations within the queue are characterized by stop-and-go waves which are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Volumes are greater than 95 percent of capacity. |

Currently, all County roadways and State Routes are operating at, or above, the established LOS standards. The Exhibit below depicts existing daily traffic volumes and LOS standards for specific County roadways and State Routes.

Transit - Level of Service

Transit service within Jefferson County is maintained and operated by Jefferson Transit Authority (JTA), which defines the transit level of service methodology. The Transit Development Plan 2017-2022 & 2016 Annual Report (JTA, August 2017) provides goals for the transit operations and services which include: preserve existing system, improve safety and security, improve mobility, promote healthy communities, protect the environment, improve efficiency of services, and promote the economy. JTA has plans to update the Transit Comprehensive Plan which may further refine transit levels of service methods and standards. Jefferson County defaults to JTA's definition and findings of transit levels of service, but will collaborate with JTA on County's transit system service needs.

Concurrency

Background

Concurrency is one of the requirements of Washington's Growth Management Act. Concurrency occurs when public facilities or services needed to accommodate growth and development are provided at the time that development occurs. Transportation concurrency is intended to ensure that transportation facilities are available to accommodate expected traffic increases resulting from development. This will ensure orderly growth and development and avoid significant transportation impacts such as unacceptable levels of congestion. Achieving concurrency may require transportation improvements ranging from constructing physical improvements (e.g., wider travel lanes or shoulders, additional travel lanes, intersection improvements, or traffic signals) to implementing travel demand management techniques (e.g., improved transit service, rideshare programs, or staggered shift times for larger employers).

Coordinating transportation planning and capital facility planning is an essential part of implementing concurrency. This requires maintaining an inventory of existing transportation facilities and their level of service, forecasting traffic growth particularly in areas designated for intense growth and development, projecting necessary improvements and their cost, identifying revenue sources to fund those improvements, and prioritizing improvements in the County's Six-

Year Transportation Improvements Program. Achieving concurrency may require contributions from developers that are commensurate with the transportation impacts generated by their project. This issue is discussed in more detail below under Issues.

WSDOT has separated highways into two categories—highways of statewide significance (HSS) and regionally significant highways (non-HSS). HSS routes in Jefferson County include: US 101, SR 19, SR 20, and SR 104. The LOS standards for HSS facilities are set forth by State law. State law sets LOS D for HSS facilities in urban areas and LOS C for HSS facilities in rural areas. However, GMA explicitly exempts HSS routes from concurrency requirements.

Issues

Jefferson County is in an unusual situation because all of the roadways identified in the Transportation Element's analysis as requiring capacity improvements are State Routes and are, therefore, outside of the County's jurisdiction. At the same time, these State Routes form the bulk of the County's arterial system and are not subject to concurrency under GMA, but are integral components of the transportation system within the County.

While Jefferson County does have needs associated with transportation facility safety, road shoulders, pedestrian facilities, and intersection capacity, the County is currently focusing primarily on resolving LOS issues for the State Routes within the County that are forecast to exceed capacity. To address these LOS deficiencies matters, Jefferson County has been an active and regular participant in the development of the Peninsula Regional Transportation Plan and regularly coordinates with the WSDOT to help address potential impacts as new development takes place.

The analysis of capacity-related improvements has focused on equity. Two main issues have been identified. The first concerns State Routes and the regional traffic carried by those routes through local jurisdictions. The second concerns the scale of responsibility for achieving LOS standards.

Increases in regional traffic flow, appropriately, should not be attributed to local development. Jefferson County has regarded the need to share the burden of addressing LOS deficiencies between locally and regionally-generated traffic as an important point of discussion because State Routes provide both local and regional travel routes. As regional travel routes, State Routes within Jefferson County provide access to the Olympic Peninsula and the Pacific Ocean and, therefore, are important links in supporting the regional economy. At the same time, developers of projects that serve local needs should not be required to mitigate declines in LOS that result from regional traffic growth. This is one reason Highways of Statewide Significance are exempt from local concurrency requirements.

There are also differences between roads that have the same functional classification, but serve a community or area differently. For example, SR 104 and SR 19 are both State Routes and principal arterials, but SR 104 does not serve adjacent needs to the extent that SR 19 does. Local development will affect mobility on SR 19 to a greater degree than SR 104. Maintaining through travel capacity on SR 104 is a higher priority than on SR 19. But as growth occurs within the Irondale-Port Hadlock UGA, the SR 19 corridor will become congested, unless appropriate improvements are made and access controls are implemented. The LOS standards address these differences in character.

A second equity issue surrounding LOS deficiencies is the scale of responsibility -- is a small developer as responsible for mitigation of impacts as a large developer? The resolution of this question centers around how development review is conducted and how appropriate mitigation is decided upon.

A strict translation of the law would place developers of all sizes equally responsible for impacts exceeding the LOS threshold. That is, a small developer whose project generated enough trips to exceed the threshold would be held equally responsible as a large developer. This potential inequity could be avoided by developing a transportation impact fee program that focuses on the proportion of impact. Without a transportation impact fee program to help mitigate the impacts of growth, mitigation will need to continue to be obtained as part of the State Environmental Policy Act (SEPA) process.

Conclusions

Jefferson County should continue to implement concurrency and address LOS deficiencies utilizing the SEPA review process, which allows the County to obtain mitigation fees on the basis of significant LOS impacts rather than a more strict "impact/no impact" approach.

Regulations would be required under either the strict or the flexible approach to concurrency. However, under the flexible approach, the regulations are guided by policies that identify when concurrency requirements should be implemented and focus on significant impacts requiring mitigation. The policies would identify the criteria to be used to determine when concurrency should be implemented. For example, a policy could state that concurrency mitigation should occur when a development contributes more than a particular percentage of the existing traffic volume to a roadway. On the other hand, policy could state that mitigation is required for all developments that contribute more than a set number of Average Annual Daily Trips (AADT) to the roadway system. Developments that generate less AADT than this would be considered to have no mitigation responsibility.

At the policy level, careful consideration regarding the utilization of adjacent land and direct access to highways should be made. For example, policies might aim to preserve through travel capacity as a priority along SR 19, due to high volumes passing through to Port Townsend and the impact that urban development within the Irondale-Port Hadlock UGA may have on the mobility of this roadway. Typical policies could address appropriate uses adjacent to SR 19 or access management.

The Transportation Element and this Technical Document projects that no concurrency issues or LOS deficiencies will occur on County roads during the planning period. However, other issues relating to safety, road shoulders, pedestrian facilities, and intersection capacity for intersections with state highways may arise.

Transportation Demand Management Strategies

Transportation Demand Management (TDM) strategies promote travel efficiency and energy conservation while reducing the adverse environmental impacts of the transportation system. In addition, TDM strategies lessen the need for additional capacity improvements by decreasing

dependence on single-occupancy vehicle use and preserving capacity on existing roadways. The additional capacity created throughout the County's transportation system can reduce the need for improvements. These strategies can include commute trip reduction and demand and system management strategies, telecommuting, non-motorized travel, site design standards, ridesharing, encouraging commercial and freight shipping during off-peak hours, staggered shift times, flexible work schedules and public transportation.

These strategies are typically achieved through employer-based programs with technical assistance available from WSDOT, [JTA](#), [WA Rideshare](#), and [Transportation Choices Coalition](#). The Department of Transportation also provides incentives to individual employers willing to provide a financial benefit to employees for reducing drive-alone commuting. The County should recognize and financially support efforts to advance TDM techniques by funding [subsidized proven programs](#), [research](#), planning and public information towards implementing these strategies.

Safety, Maintenance, and Preservation

Safety programs seek to reduce the frequency and severity of traffic accidents through identification of high accident locations, corridors, or elements. Maintenance and preservation practices protect the transportation infrastructure through regular repairs as well as responding to emergency situations such as mudslides, [culvert washouts](#), or flooding.

1.2 EXISTING CONDITIONS

Jefferson County's current transportation system is divided into two main categories: motorized and non-motorized. The motorized transportation system includes all automobile and transit travel and freight traffic, as well as some motorized transportation modes that travel on off-road routes (e.g., air and waterborne freight). The non-motorized transportation system includes both on-road and off-road modes for pedestrian and bicycle travel. The non-motorized transportation system is described in detail in the Non-motorized Transportation and Recreational Trails Plan.

This section also discusses accident data, weather-related traffic hazard areas, and emergency service routes.

Motorized Transportation System - Vehicular

A description of the motorized transportation system in Jefferson County begins with an overview of the roadway functional classification system. This system is a hierarchy of roadway types. Each type is described by standards that guide the road's design, use, and travel volumes.

Roadway Functional Classification

Roadways are categorized according to their role and use in carrying vehicles. The categorization is a hierarchy of roadways ranging from principal and minor arterials and major and minor collectors to local access roads and streets. The different categories vary in their ability to carry traffic for long distances, and in their ability to provide access to land uses.

Principal arterials provide the most mobility. They provide for regional and inter-regional travel, typically carrying large volumes of through traffic, with limited direct access to abutting properties.

Minor arterials compliment and support the principal arterial systems. They provide more access to adjacent land uses, but still function primarily to link destination points. Minor arterials tend to link intra-city destinations instead of inter-regional.

Collectors provide more access to adjacent land uses than arterials, but they do not provide the full access that local streets provide. These roads collect and distribute traffic between neighborhoods and business areas, and the rest of the arterial system. They provide for easy and direct access to abutting properties and carry low to moderate volumes of traffic. Major collectors are those collectors that carry higher volumes of traffic directly to the arterial system. Minor collectors typically carry lower traffic volumes directly from local access roads or from less densely populated areas and distribute the traffic to major collectors or directly to the arterial system.

Local access roads provide direct access to abutting land uses and carry traffic to the collector/arterial system. Local access roads typically carry low volumes of traffic, at low speeds. Because of the generalized level of analysis provided in a comprehensive plan, the inventory for the transportation element does not present traffic data on all local roads, only those carrying higher volumes or linking significant collectors.

The County's road network and functional classifications are depicted in Exhibit 1-2 ~~Level of Service Definitions—Roadways~~ and Exhibit 1-3.

State Routes, roads owned and operated by the Washington State Department of Transportation, provide for regional and interregional travel. State routes within the County are US 101 and State Routes 19, 20, 104, and 116. They are classified according to how they function, for example, as principal or minor arterials or collectors. US 101, and State Routes ~~19, 20 and 104~~ are classified as principal arterials. SR104 is a rural expressway. SR19 is a rural minor arterial. SR 116 is classified as a major collector.

SR 19 is designated as a Highway of Statewide Significance (HSS) ~~and while~~ its functional classification ~~is a principal~~ remains a minor arterial. This change reflects the highway's increasing importance within the region as an HSS route that links SR 104 to Port Townsend. Although SR 19 currently serves adjacent needs (direct access) more readily than other principal arterials, unfavorable restrictions to mobility that may develop through this corridor should be avoided.

The Peninsula Regional Transportation Planning Organization has designated US 101, SR 19, SR 20, and SR 104 in Jefferson County as highways of statewide significance and SR116 as a highway of regional significance ~~tourist corridors~~, using criteria developed by the PRTPO. These criteria

require that PRTPO Technical Advisory Committee members agree that such corridors serve as a primary conduit providing access ~~to and from tourist attractions and mobility~~. ~~In addition, full WSDOT design standards apply to these identified "tourist corridors" which include a minimum of 8 feet wide shoulders. However, a modified design level may apply based on a corridor or project specific basis. Road segments along tourist corridors not meeting these design standards were listed as deficient and improvement projects were recommended.~~

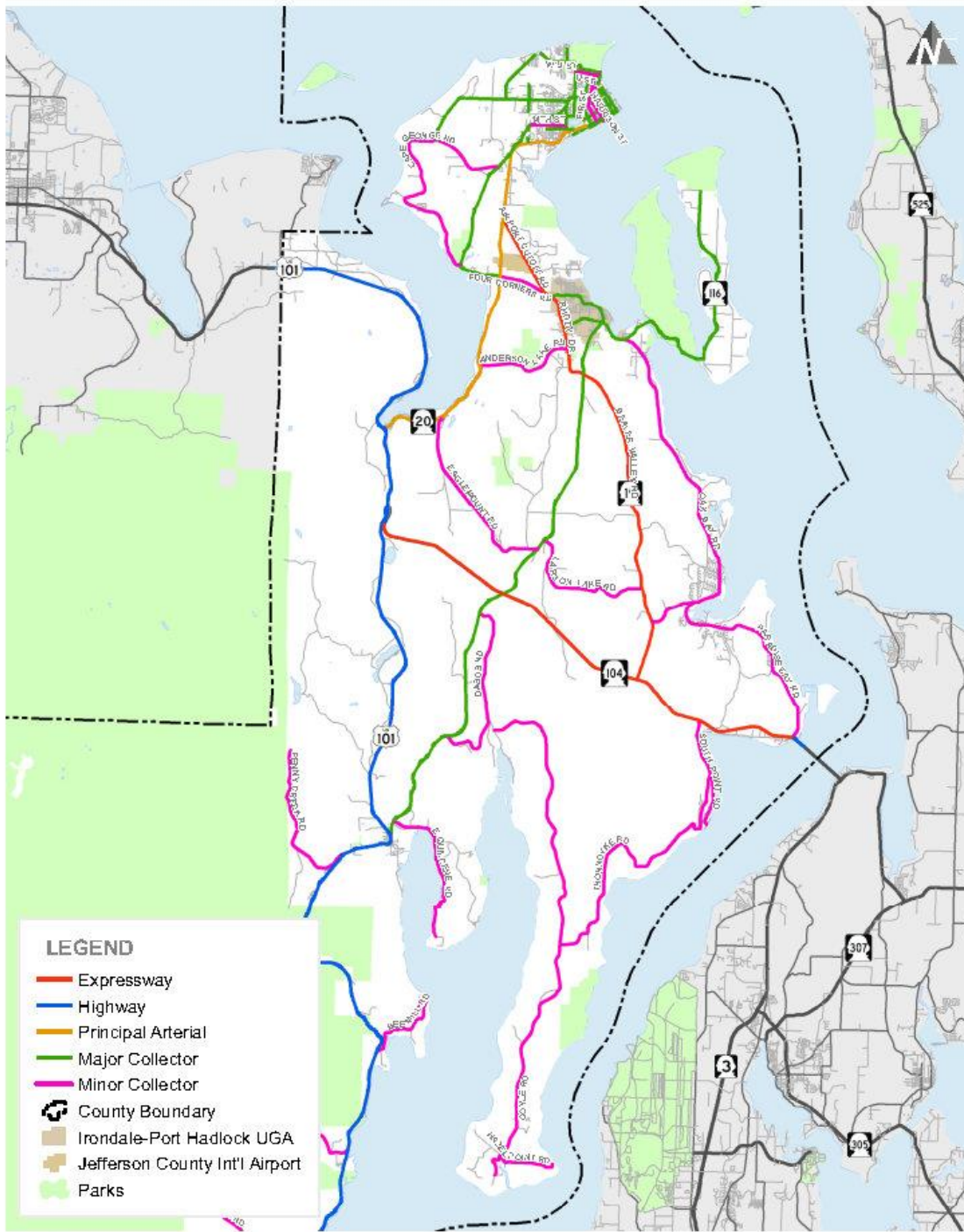
The County Road inventory consists of 399.2855.85 miles of County Roads Thru Lane Surface: Major Rural Collectors = 36.354.66 miles; Minor Rural Collectors = 102.1251.65 miles; Local Rural Access = 255.67449.12 miles; and Urban Collectors = 5.1361.54 miles; ~~and Urban Access = 8.88 miles~~. There are also ~~26-32~~ County-owned bridges. This inventory does not include City of Port Townsend streets and State Routes. All roadways and bridges maintained by the County are evaluated and ranked for inclusion in the Six-Year Transportation Improvement Program (TIP), as funding becomes available. The County resurfaces approximately 20 to 30 ~~to 40~~ miles of road annually.

Road design standards are based on a roadway's function and use as determined by the Federal Functional Classification System. There are numerous County Roads that are classified as rural local access roads that, in fact, function as collectors. They provide access to commercial and industrial developments and to dense residential neighborhoods. Generally, roads classified as rural local access are not eligible for grant funding. Since only limited local road funds are available, improvements to these roads are not typically funded and collector road standards are not applied when improvement are made.

In order to provide needed improvements to these roads and ensure that appropriate standards are applied, a local functional classification system could be developed that recognizes these distinctions. Such a system could create additional classifications such as Residential Neighborhood Collector and Commercial and Industrial Area Local Collector.

Many of the County's roadways have minimal, gravel shoulders except in limited locations bordering suburban development, commercial areas, and various public facilities. In these more developed areas, some roadways have paved shoulders and/or sidewalks in addition to an upgraded roadway cross section. The County also has a large number of roads with unimproved, gravel surfaces. ~~The County's Transportation Improvement Plan includes a program to upgrade these road by chip sealing them.~~

EXHIBIT 1-2 Functional Classification - East County



Source: Transpo Group 2017

EXHIBIT 1-3 Functional Classification - West County



Traffic Safety

The goal of the transportation system is to move people and goods in a safe and efficient manner. Within any region, certain locations will have a higher incidence of collisions than others due to factors such as general physical characteristics of the roadway and speed limits. Exhibit 1-4 below lists collisions rates for both County Roads and State Routes in Jefferson County

EXHIBIT 1-4 Jefferson County Transportation Network - Traffic Collisions by Roadway

| Roadway | Length/MP | ADT* | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------------------------|-------------|-------|------|------|------|------|------|------|
| Anderson Lake Rd | 2.77 miles | 1,500 | 0 | 0 | 0 | 4 | 4 | 0 |
| Cape George Road | 7.55 miles | 2,300 | 0 | 0 | 6 | 3 | 4 | 3 |
| Cedar Avenue | 0.63 miles | 1,000 | 1 | 0 | 0 | 0 | 0 | 0 |
| Center Road | 15.01 miles | 3,100 | 0 | 0 | 13 | 11 | 16 | 4 |
| Chimacum Road | 1.57 miles | 5,000 | 0 | 0 | 1 | 1 | 3 | 0 |
| Coyle Road | 14.97 miles | 400 | 0 | 0 | 1 | 4 | 2 | 1 |
| Dabob Road | 5.23 miles | 500 | 0 | 0 | 1 | 1 | 0 | 0 |
| S. Discovery Rd | 4.84 miles | 3,000 | 1 | 1 | 7 | 6 | 10 | 2 |
| Eaglemount Road | 5.34 miles | 600 | 0 | 0 | 1 | 1 | 1 | 0 |
| Four Corners Rd | 1.29 miles | 2,600 | 0 | 0 | 0 | 1 | 1 | 0 |
| Fredericks Street | 0.22 miles | 400 | 0 | 0 | 0 | 0 | 1 | 0 |
| Hastings Avenue | 2.80 miles | 1,600 | 1 | 1 | 3 | 1 | 2 | 4 |
| Upper Hoh Road | 12.04 miles | 300 | 0 | 0 | 0 | 2 | 2 | 0 |
| Irondale Road | 1.93 miles | 5,400 | 0 | 0 | 9 | 5 | 5 | 0 |
| Larson Lake Road | 4.06 miles | 300 | 0 | 0 | 0 | 0 | 1 | 0 |
| Mason - Thomas - Patison Streets | 0.83 miles | 900 | 0 | 0 | 3 | 0 | 1 | 0 |
| Mill Road | 0.77 miles | 1,900 | 0 | 0 | 1 | 0 | 1 | 0 |
| Oak Bay Road | 9.94 miles | 3,600 | 0 | 0 | 11 | 5 | 14 | 0 |
| Oil City Road | 10.98 miles | 200 | 0 | 0 | 1 | 0 | 1 | 0 |
| Paradise Bay Rd | 6.00 miles | 3,500 | 0 | 0 | 6 | 8 | 6 | 3 |
| Prospect Avenue | 1.38 miles | 2,700 | 0 | 0 | 0 | 0 | 3 | 0 |
| South Point Road | 3.05 miles | 1,100 | 0 | 0 | 3 | 0 | 0 | 0 |
| Swansonville Rd | 3.21 miles | 600 | 0 | 0 | 2 | 0 | 1 | 0 |
| Teal Lake Road | 3.46 miles | 300 | 0 | 0 | 1 | 2 | 1 | 0 |
| Thorndyke Road | 8.52 miles | 800 | 0 | 0 | 6 | 1 | 2 | 0 |

| Roadway | Length/MP | ADT* | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------|------------------|--------|------|------|------|------|------|------|
| West Valley Road | 5.56 miles | 500 | 0 | 0 | 2 | 3 | 3 | 0 |
| SR 19 | MP 0.00 – 9.10 | 10,000 | 9 | 18 | 20 | 17 | 18 | 25 |
| SR 19 | MP 9.10 – 11.88 | 13,000 | 8 | 4 | 11 | 13 | 7 | 12 |
| SR 19 | MP 11.88 – 14.09 | 14,000 | 11 | 6 | 9 | 15 | 17 | 10 |
| SR 20 | MP 0.00-7.79 | 5,200 | 21 | 19 | 28 | 20 | 32 | 20 |
| SR 20 | MP 7.79-9.78 | 18,000 | 5 | 9 | 11 | 8 | 12 | 14 |
| US 101 | MP 143.98-184.62 | 1,100 | 24 | 15 | 17 | 15 | 14 | 17 |
| US 101 | MP 274.63-314.01 | 6,100 | 49 | 66 | 58 | 50 | 71 | 75 |
| SR 104 | MP 0.20-14.67 | 10,600 | 34 | 36 | 16 | 46 | 57 | 52 |
| SR 116 | MP 0.00-1.98 | 6,000 | 10 | 2 | 1 | 5 | 6 | 2 |
| SR 116 | MP 1.98-9.83 | 1,200 | 7 | 4 | 1 | 4 | 7 | 6 |

N/A - Not Available

*ADT - On roads with multiple segments, the highest ADT was used

To obtain a better understanding of the collision and safety characteristics of Jefferson County, collision data for State Route segments identified in Exhibit 1-4 was used to calculate Average Collision Rates. This rate is based on millions of vehicle miles traveled on each segment and ADT. This rate is easily comparable to statewide averages and State Routes with similar characteristics to Jefferson County. The Average Collision Rate for 2013-2016 is presented in Exhibit 1-5.

EXHIBIT 1-5 Average ~~Collision Accident~~ Rate 2013-2016

| Roadway | Milepost | ADT | 2013 | 2014 | 2015 | 2016 | Average Collision Rate 2013-2016* |
|---------|------------------|--------|------|------|------|------|-----------------------------------|
| SR 19 | MP 0.00 – 9.10 | 10,000 | 20 | 17 | 18 | 25 | 0.65 |
| SR 19 | MP 9.10 – 11.88 | 13,000 | 11 | 13 | 7 | 12 | 0.81 |
| SR 19 | MP 11.88 – 14.09 | 14,000 | 9 | 15 | 17 | 10 | 1.13 |
| SR 20 | MP 0.00-7.79 | 5,200 | 28 | 20 | 32 | 20 | 1.69 |
| SR 20 | MP 7.79-9.78 | 18,000 | 11 | 8 | 12 | 14 | 0.91 |
| US 101 | MP 143.98-184.62 | 1,100 | 17 | 15 | 14 | 17 | 0.92 |

| Roadway | Milepost | ADT | 2013 | 2014 | 2015 | 2016 | Average Collision Rate 2013-2016* |
|---------|------------------|--------|------|------|------|------|-----------------------------------|
| US 101 | MP 274.63-314.01 | 6,100 | 58 | 50 | 71 | 75 | 0.72 |
| SR 104 | MP 0.20-14.67 | 10,600 | 16 | 46 | 57 | 52 | 0.77 |
| SR 116 | MP 0.00-1.98 | 6,000 | 1 | 5 | 6 | 2 | 0.81 |
| SR 116 | MP 1.98-9.83 | 1,200 | 1 | 4 | 7 | 6 | 1.30 |
| Average | | | | | | | 0.97 |

*Collisions per million vehicle miles of travel

Source: WSDOT 2016 Collisions in Jefferson County; Jefferson County Collision Data Summary

WSDOT compiles State Highway accident data for all 39 Counties in Washington. The average rate, on State Routes in Jefferson County, in 2015 was 1.20 collisions per million vehicle miles of travel. Statewide, in 2015, the collision rate per million vehicle miles of travel was 1.96. Compared to statewide averages, Jefferson County currently experiences a relatively low number of collisions.

Collision rates are evaluated to determine which roadways, if any, have potential safety issues. However, the collision data does not reveal the cause of collisions, it only indicates areas where further investigation of may be necessary. Further investigation at collision locations helps define the problem and appropriate solutions.

Exhibit 1-6 summarizes the number of collisions involving a bicycle or a pedestrian from 2013 through 2017 along the major roadways in Jefferson County. Few collisions involving a bicycle or a pedestrian occurred, with less than one collision per year for all roadway segments.

EXHIBIT 1-6 Bicycle and Pedestrian Collisions (2013-2016)

| Roadway | Milepost | ADT | Bike Collisions | Pedestrian Collisions |
|---------|------------------|--------|-----------------|-----------------------|
| SR 19 | MP 0.00 - 9.10 | 10,000 | 0 | 0 |
| SR 19 | MP 9.10 - 11.88 | 13,000 | 2 | 2 |
| SR 19 | MP 11.88 - 14.09 | 14,000 | 0 | 3 |
| SR 20 | MP 0.00-7.79 | 5,200 | 0 | 0 |
| SR 20 | MP 7.79-9.78 | 18,000 | 1 | 0 |
| US 101 | MP 143.98-184.62 | 1,100 | 0 | 1 |
| US 101 | MP 274.63-314.01 | 6,100 | 2 | 1 |

| Roadway | Milepost | ADT | Bike Collisions | Pedestrian Collisions |
|---------|---------------|--------|-----------------|-----------------------|
| SR 104 | MP 0.20-14.67 | 10,600 | 0 | 2 |
| SR 116 | MP 0.00-1.98 | 6,000 | 1 | 1 |
| SR 116 | MP 1.98-9.83 | 1,200 | 1 | 0 |

Weather-Related Traffic Hazards

Inclement weather affects driving conditions, contributes to accidents, and can damage roadways. Higher elevation areas of some roads, such as Dosewallips and Duckabush Roads, are subject to freezing conditions. During periods of thawing, the Public Works Department installs signs informing travelers of load-limit restrictions, because heavy loads can damage the road structure. Some roadway segments require sanding during winter conditions, including Irondale Road, Flagler Road/Oak Bay Road intersection, SR 19 Beaver Valley Road/Center Road/Chimacum Road intersection, Walker Mountain above 700 feet elevation, Dosewallips and Duckabush River Roads, and several roads in the Brinnon area. In addition, some roads are subject to flooding and washouts during storm events. These include the Oil City Road, Quinault-South Shore Road, and Upper Hoh Road. In the past few years, the Upper Hoh Road has experienced severe flooding and washout damage and has been totally closed on several occasions.

Emergency Service Routes and Facilities

During emergencies or disasters, the highway system is crucial for evacuation and the delivery of supplies. The County has developed an Emergency Management Plan (~~September 1996~~2013) that addresses transportation issues and needs.

The Emergency Management Plan provides for actions to be taken in the event that certain transportation systems become disabled. It requires the cooperation of various County departments, police and sheriff's departments, the City of Port Townsend, Jefferson Transit, school districts, and the State of Washington. Major routes of travel in the County include northbound on SR 101; westbound on SR 104; northbound on Center Road, SR 19, and eastbound on the Ness' Corner Road segment of SR 116.

Fire trucks, sheriff's vehicles and ambulances must also be considered as part of the evaluation of emergency service routes. These vehicles must be able to respond to emergencies as quickly as possible. Access to roadways by emergency vehicles, as they leave the station, as well as the road conditions on the way to the emergency, are both safety concerns. Potential safety hazard locations include the Fire District 1 access to SR 19 in Chimacum and the Fire District 6 access to SR 19 at Airport Road. ~~Fire District 1 has requested a fire signal from the Washington State Department of Transportation.~~

Public Transit

Jefferson Transit was created in 1981 to provide transportation services primarily to transit-dependent persons. Jefferson Transit provides service between Port Townsend and Jefferson

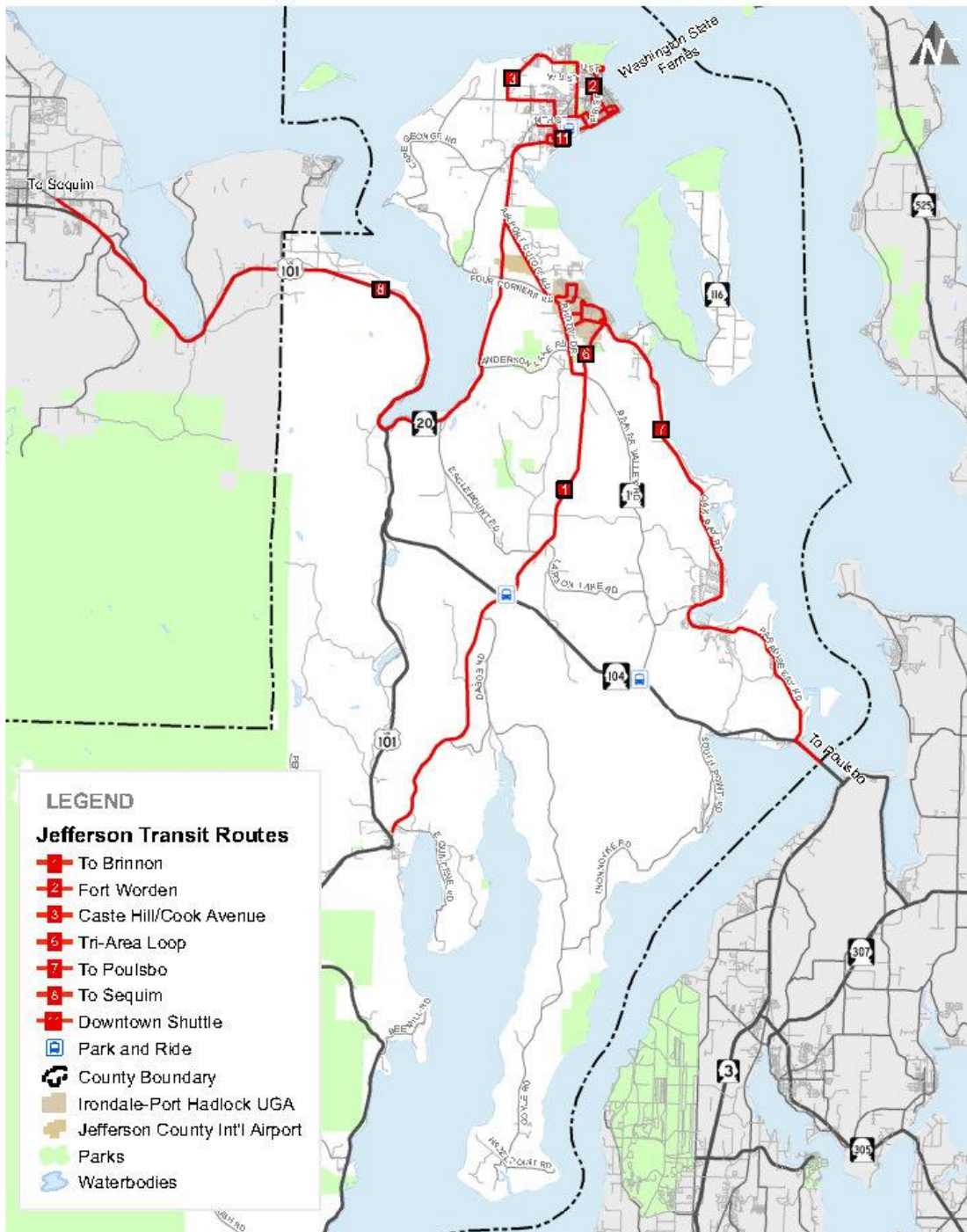
County communities including Port Hadlock, Port Ludlow, Quilcene, and Brinnon with additional service to Sequim and Poulsbo. Jefferson Transit provides links to adjoining transit systems including Island Transit, Kitsap Transit (from Route 7), Clallam Transit (from Route 8), Mason Transit (from Route 1) and Grays Harbor Transit (West Jefferson Transit service connecting Forks and Amanda Park along the Pacific Coast). The link with Kitsap Transit provides Transit Service to the Washington State Ferry terminals in Bainbridge Island and Kingston. Bicycle racks are available on all Jefferson Transit routes. Exhibit 1-7 describes the destinations, passenger trips, and ridership per service hour for June 2016. Major transit routes are depicted in Exhibit 1-8.

EXHIBIT 1-7 Jefferson Transit Routes: Ridership – June 2016

| Route | Route Number | Passenger Trips | Passengers/Service Hour |
|--|--------------|-----------------|-------------------------|
| Brinnon (M-F) | 1 | 1,665 | 8.46 |
| Brennon (Sat) | 1 | 152 | 8 |
| Fort Worden (M-F) | 2 | 1,760 | 15.87 |
| Fort Worden (Sat) | 2 | 296 | 17.62 |
| Castle Hill (M-F) | 3 | 1,687 | 15.21 |
| Castle Hill (Sat) | 3 | 251 | 14.94 |
| Tri-Area A (M-F) | 6 | 1,335 | 13.79 |
| Tri-Area A (Sat) | 6 | 82 | 10.73 |
| Tri-Area B (M-F) | 6 | 1,142 | 15.87 |
| Tri-Area B (Sat) | 6 | 98 | 14.33 |
| Poulsbo (M-F) | 7 | 2,194 | 11.49 |
| Poulsbo (Sat) | 7 | 180 | 10.71 |
| Sequim (M-F) | 8 | 1,948 | 11.53 |
| Sequim (Sat) | 8 | 72 | 5.47 |
| Downtown Shuttle (M-F) | 11 | 6,980 | 29.88 |
| Downtown Shuttle (Sat) | 11 | 1,003 | 28.17 |
| West Jefferson (M-Sat) | | 1,667 | 4.1 |
| Fixed Route Total | | 22,512 | 13.09 |
| Dial-A-Ride (M-Sun) | | 1,144 | 2.80 |
| Other (Specials, Contracts, Vanpools) | | 1,032 | |
| Total Passenger Trips | | 24,688 | |

Source: Jefferson Transit, 2016.

EXHIBIT 1-8 Transit Routes



Source: Transpo Group 2017

Air, Waterborne, & Freight Travel

Airports

The Jefferson County International Airport (JCIA) is owned and operated by the Port of Port Townsend. It is situated about four miles southwest of the City of Port Townsend on about 316 acres. Its runway is about 3,000 feet in length, and over 107 aircraft are based there. The Airport is designated as a General Aviation (GA) airport by the FAA's National Plan of Integrated Airport Systems (NPIAS). ~~In 2010~~ ~~Annually~~, the total operations ~~equaled~~ ~~approximately~~ 58,030, a small percentage of which are air taxi and commuter service and the majority of which are general aviation flights. Airport use is anticipated to increase in the future. ~~The Port has adopted a master plan in 2014.~~ ~~The Port's Airport Master Plan Update (July, 2014) identifies an expansion plan to meet a 2.8% growth rate for its 107 based aircraft and to stay within FAA requirements for safety and efficient airside and landing facilities. The Port will apply for airport development grants for eligible components of its preferred airport layout plan.~~ The airport is designated and zoned as an Essential Public Facility by Jefferson County. Some airport master plan recommendations address height, noise, and other factors. (Port of Port Townsend, 2014)

Ferry Service

Ferry service is provided by the Washington State Ferry System (WSF) to Whidbey Island via the Port Townsend/ ~~Keystone-Coupeville~~ ferry route, and to the greater Puget Sound through Kitsap County via the Kingston/Edmonds, Bainbridge Island/Seattle, Bremerton/Seattle, and Southworth/Vashon/Fauntleroy routes. The ferry service can accommodate automobiles, pedestrians, bicyclists, kayaks, and canoes. A private carrier, Puget Sound Express ~~and whale watch tour operator~~, provides passenger-only service between Port Townsend and the San Juan Islands.

~~WSF service at Port Townsend is provided by a Kwa-di Tabil class ferry with capacity for 64 vehicles and 748 pedestrians. Propelled by diesel, the primary and spare vessels have 15 knot speeds and are susceptible to tidal and weather conditions in the Strait of Juan de Fuca. Schedules vary according to the season, with fewer crossings during the winter months. Reservations are required nearly all-year long to secure a vehicle fare on the auto deck. Service between Port Townsend and Coupeville, in general, begins at 6:30 a.m., with the last ferry leaving Coupeville at 9:10 p.m. Special fares are available for registered vanpools containing seven or more regular passengers. Discounted fares are also available to qualifying passengers with a Regional Reduced Fare Permit, Medicare card or other identification of disability or over 65 years of age. Bicycles are surcharged a small fee. WSF service at Port Townsend is provided by two Steel Electric Class ferries. Schedules vary according to the season, with fewer crossings during the winter months. Service between Port Townsend and Keystone, in general, begins at 6:30 a.m., with the last ferry leaving Keystone at 9:15 p.m. Special fares are available for authorized vanpools containing seven or more regular passengers. Special fares are also available to disabled passengers, however, not all terminals and vessels are wheelchair accessible.~~ The ferry system supports a tourism loop that runs through the North Cascades Highway. The system brings visitors to the City of Port Townsend and experiences overloads, particularly on weekends and holidays ~~during summer months.~~

Development of additional passenger-only runs from Port Townsend to areas within greater Puget Sound is a long-range option for Washington State Ferries or other ferry boat operators. Expanded foot ferry service would potentially decrease auto-dependent trips within the city and increase pedestrian, bike transportation and reliance on the JTA downtown shuttle to the regional transit hub, Haines Place. is an option. Expanded ferry service would potentially increase commerce within the city, but may also result in higher seasonal or permanent populations.

Freight Travel

There are three basic forms of freight travel in Jefferson County: truck, waterborne (shipping and ferry) and air. Trucking is the predominant mode of freight transportation. Most of the total westbound truck freight is carried over the Hood Canal Bridge, towards Port Townsend, or up US 101 through Shelton.

Washington State Ferries are also a part of the freight transport system in the County, carrying commercial trucks from East Puget Sound via Keystone to Port Townsend.

WSDOT maintains a classification system for freight corridors statewide, including Jefferson County.

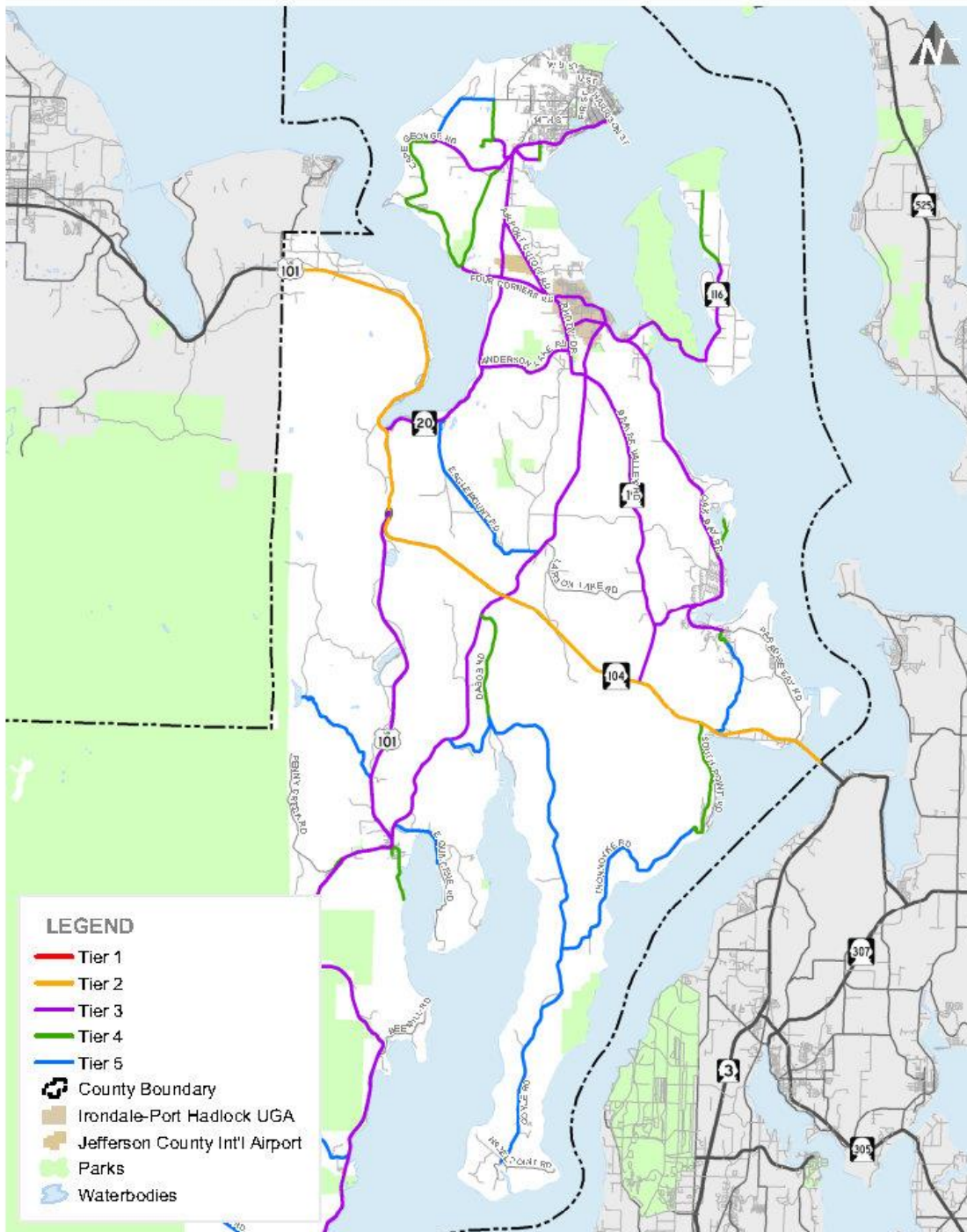
The Washington State Freight and Goods Transportation System (FGTS) classifies highways, county roads, and city streets according to the average annual gross truck tonnage they carry. Truck tonnage values are derived from actual or estimated truck traffic count data that is converted into average weights by truck type.

The FGTS uses five truck classifications, T-1 through T-5, depending on the annual gross tonnage the roadway carries. Jefferson County has roadways or roadway segments that fall into every classification level, except for T-1.

- ▶ T-1: more than 10 million tons per year
- ▶ T-2: 4 million to 10 million tons per year
- ▶ T-3: 300,000 to 4 million tons per year
- ▶ T-4: 100,000 to 300,000 tons per year
- ▶ T-5: at least 20,000 tons in 60 days and less than 100,000 tons per year

Corridors with the highest annual gross tonnage, T-1 and T-2 routes, are also identified as Strategic Freight Corridors. SR-104 and ~~I-104~~US 101 are T-2 routes that run through Jefferson County and connect to other freeways in Washington and Oregon. Freight corridors are illustrated in Exhibit 1-9.

EXHIBIT 1-9 Freight Routes



Source: Transpo Group 2017

Non-motorized Transportation System

Given the rural nature of Jefferson County, travel occurs predominantly by motorized vehicle. However, bicycle and pedestrian circulation are important transportation modes that are used by County residents. More residents would likely use non-motorized transportation modes if adequate and more extensive facilities were available. Many County roads lack adequate shoulders that would make bicycling and walking safer and more enjoyable. Pedestrian facilities including sidewalks and walking paths would improve conditions for walking to school and in densely developed areas such as Port Hadlock. Off-road trails would provide alternative routes for non-motorized travel.

In order to fulfill policies and action items of the Transportation Element and develop a systematic approach for providing additional non-motorized transportation facilities, a Non-motorized Transportation and Recreational Trails Plan was adopted in 2010 in conjunction with an update of the Parks, Recreation, and Open Space Plan. The Non-motorized Transportation and Recreational Trails Plan has a detailed inventory of non-motorized transportation and recreational trail facilities, goals and policies, design standards, a list of potential projects, discussion of alternative funding strategies, and alternative capital facilities plans. Exhibit 1-10 and Exhibit 1-11 depict existing and proposed on-road bicycle routes and multi-purpose trails, respectively.

As part of the Non-Motorized Transportation Plan, a standard of providing 0.5 miles of multipurpose trail per 1,000 residents is established for Jefferson County. As of the 2010 Non-Motorized Plan, [Chapter 5](#), there were 48.2 miles of multipurpose trail, and a 2010 population of 29,872, resulting in roughly 1.6 miles of trail per 1,000 residents. [confirm](#) [This includes sidewalks, bike lanes, and other trails and therefore is greater than the length of trails addressed in the Parks, Recreation, and Open Space Plan summarized in the Capital Facilities Plan Technical Appendix.](#)

In 2038, the forecast population is 39,221 and will result in approximately 1.2 miles of trail per 1,000 residents, still above the 0.5 miles per 1,000 residents required.

EXHIBIT 1-10 On-Road Bicycle Routes

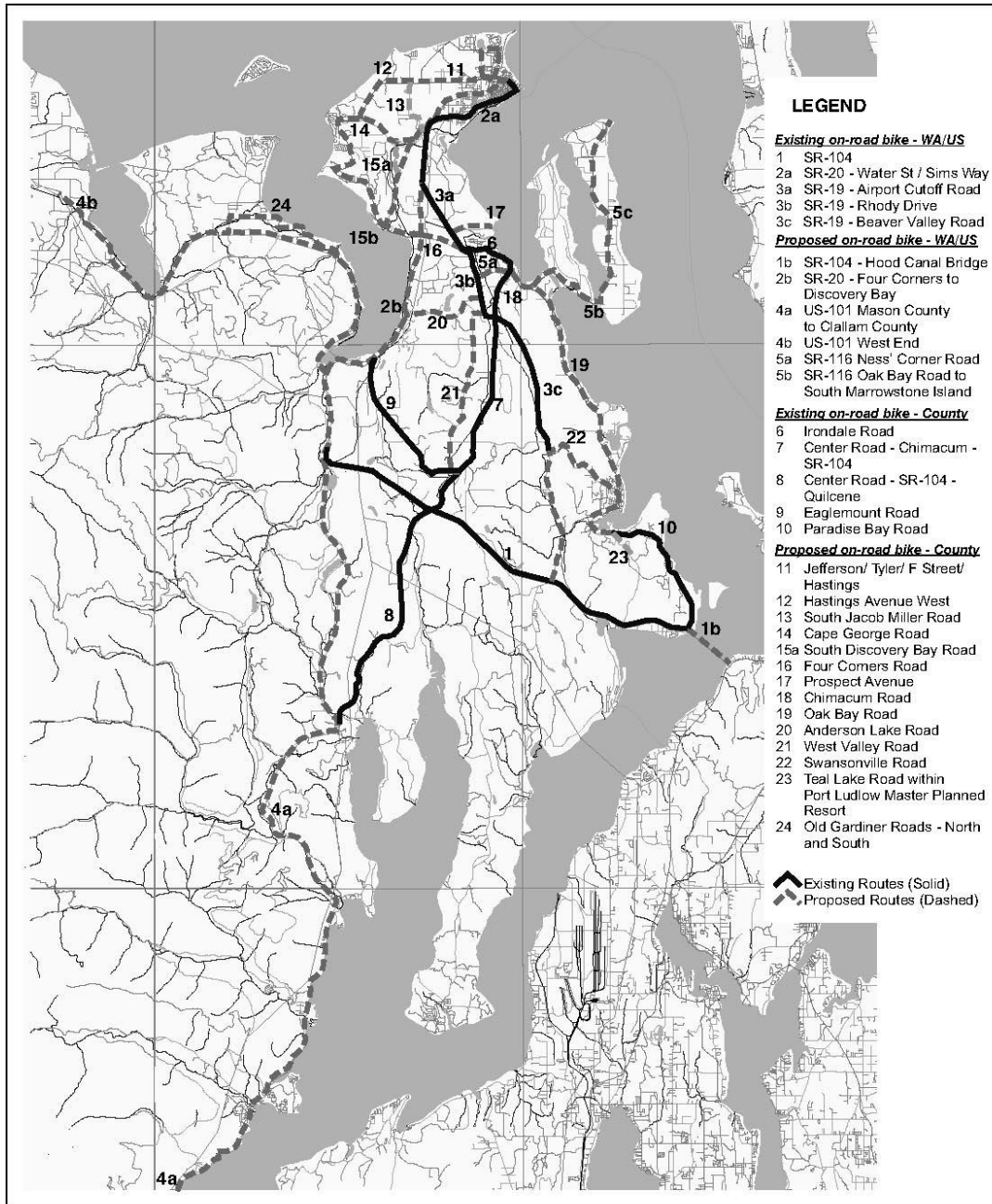


Figure 10-4
Jefferson County Non-Motorized and Recreational Trails Plan

EXHIBIT 1-11 Multi-Purpose Trails

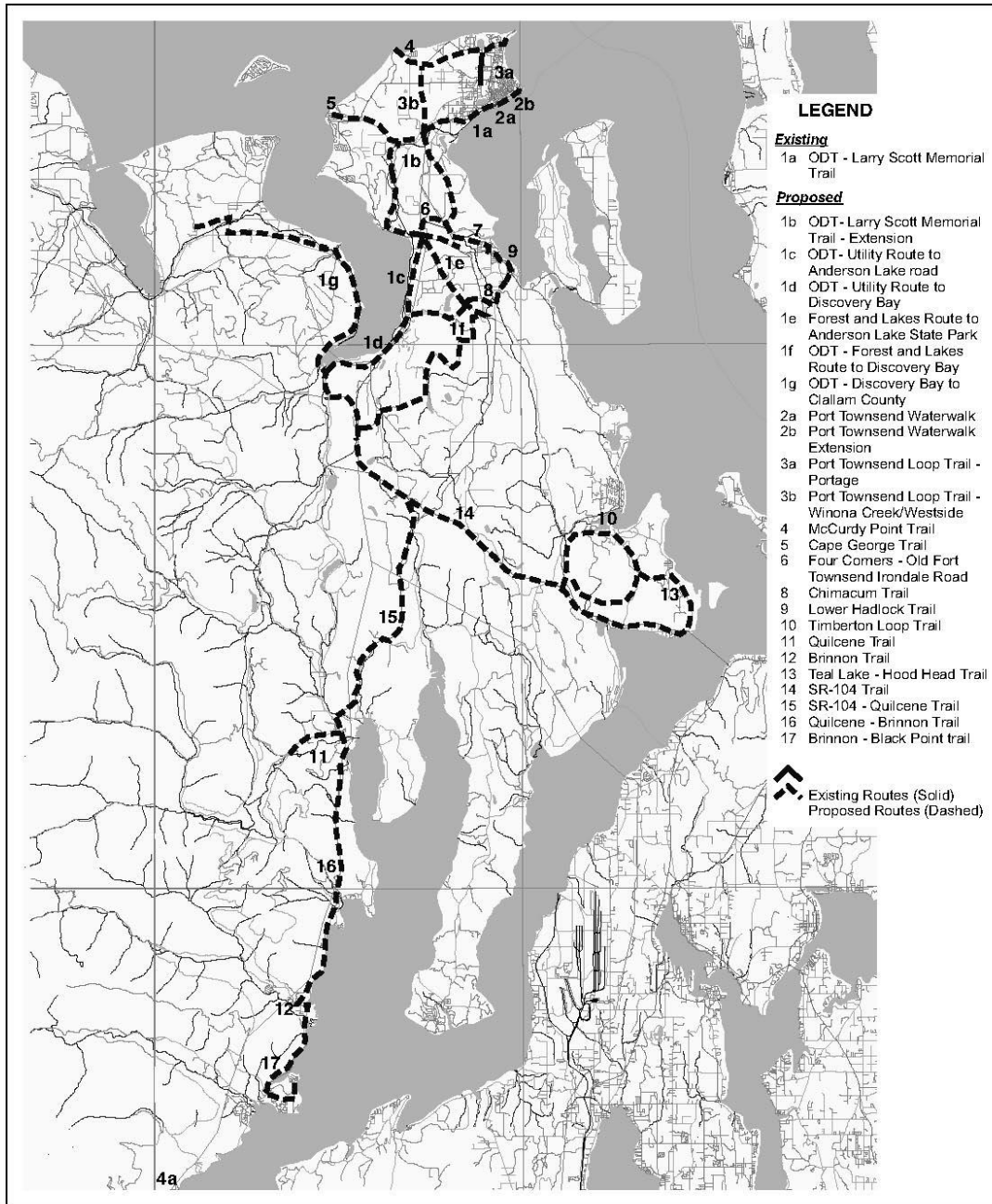


Figure 10-5
Jefferson County Non-Motorized and Recreational Trails Plan

Existing Roadway Deficiencies

Jefferson County has developed a systematic approach for evaluating deficiencies of transportation facilities (roadway segments, intersections, and bridges) and ranking them in the Six Year Transportation Improvement Program. The Road Project Priority Programming System is used to determine what structural, design, or other characteristics may need revision to improve the functioning of roadway facilities. The State of Washington Inventory of Bridges and Structures (SWIBS) is used by the County to evaluate bridges. The County also has two additional rating systems: the Gravel Road Priority Program that rates gravel roads for upgrading to chip seal and the Safety Priority Program that rates road safety projects. These two programs are funded through the TIP.

Road Project Priority Programming System

The Road Project Priority Programming System was developed in order to equitably balance the various needs of the transportation system: general capital and operational needs; safety needs; non-motorized needs; transportation planning needs; and others. The model contains three main steps. The first, needs identification and screening, identifies a list of potential improvements from a large number of sources. Projects identified are then screened for 1) feasibility, 2) whether they are maintenance projects rather than capital projects, or 3) inappropriateness because they conflict with existing County policy or they are not the best solution to the problem. Remaining projects are grouped according to the category of project (e.g., general transportation, non-motorized needs, safety needs, planning project, or other). The second step evaluates prospective projects using a technical evaluation and ranking. Twenty-four criteria have been developed (e.g., accident history, non-motorized needs, public request or complaints, Average Daily Traffic).

A point system ranging from 1 to 10 has been developed to reflect the degree of need, deficiency, or demand. The third step is to include the policy direction of the Board of County Commissioners that determines the weight to be applied to the criteria and how transportation revenue is to be split between categories. The end result is a ranking of road projects within the transportation system. This ranking provides direction for the allocation of funding available for improvement projects. These projects are then adopted in the annual update of the County's Six-year Transportation Improvement Program.

State of Washington Inventory of Bridges and Structures ~~(SWIBS)~~

The State of Washington Inventory of Bridges and Structures ~~(SWIBS)~~ utilized by the County enables all bridges in the State to be inventoried and rated for structural and operational deficiencies. The bridges can then be ranked much like roadway segments and intersections (as discussed in the preceding text). ~~SWIBS~~ The inventory meets the requirements of the Federal Highway Administration.

The methodology used to rate bridges ~~by SWIBS~~ consists of at least bi-annual inspections that include a rating of individual members of the bridge for conditions; a structural rating based on the

bridge design; and, for bridges over water, a scour evaluation. Functional operation is also considered in the evaluation.

Gravel Road Priority Program

This program uses factors such as functional classification, traffic volume, accident rating, and commercial/industrial use to prioritize the limited funds available for upgrading gravel roads to chip seal.

Safety Priority Program

This program uses an inventory of roadway and intersection characteristics, analysis of collision data, and a benefit/cost analysis to analyze and prioritize potential roadway safety projects.

1.3 LAND USE AND TRANSPORTATION PLANNING METHOD

Transportation planning is closely linked with land use. Traffic forecasts are built on the location and demand of traffic generators, which are controlled by the adopted land use designations. Analysis for this Transportation Element is consistent with the land use designations and policies of the Land Use and UGA Elements of the Jefferson County Comprehensive plan. The analysis of the established land use scenario and its impacts on transportation in the County is available in the Environmental Impact Statement prepared for the Comprehensive Plan and the Supplemental Environmental Impact Statement prepared for the Comprehensive Plan 1999 Amendments.

Jefferson County Comprehensive Plan

The Jefferson County Comprehensive Plan designates two Urban Growth Areas; Port Townsend and Irondale-Port Hadlock. This designation permits commercial, industrial, and residential development at an urban scale and density. The Irondale-Port Hadlock UGA Transportation Plan provides a complete examination regarding the transportation facilities necessary to support urban development in the UGA.

Port Ludlow has been designated as a Master Planned Resort. This designation permits urban-style development that is consistent with the MPR designation as well as urban level of service standards for transportation facilities.

Commercial areas in Quilcene and Brinnon are designated as Rural Village Centers. These established historic rural business centers will continue to serve as commercial and service centers serving their respective surrounding communities and rural neighborhoods, and are not to be regarded as future urban growth areas.

The type and intensity of future commercial growth within the Rural Village Centers will be regulated so as to allow for development that serves the needs of the surrounding rural area, including the expected needs of the projected future residential population.

The Land Use Element of the Comprehensive Plan requires that any future subdivision of rural residential land not exceed 1:5, 1:10, or 1:20 acre densities. The overall land use pattern intended for unincorporated Jefferson County outside of the Irondale-Port Hadlock UGA is rural in nature, with rural commercial activities focused in the Rural Village Centers.

It is recognized that the County has an excess of buildable lots needed for the growth projected for the County. A large number of these lots are located within the Irondale-Port Hadlock UGA, but are not projected to be served by a sanitary sewer system. Many of these lots located in rural areas are at densities greater than the densities specified in the Land Use Element. Since these lots are recognized as existing lots of record, they can be developed provided that they meet Health Department requirements. As these lots are developed in the future and additional traffic is generated, transportation system improvements, including non-motorized transportation facilities, may be necessary.

It is important to note, however, that transportation growth and needs anticipated for the County will remain unchanged with the addition of the Irondale-Port Hadlock UGA for the near-term. This is due to the continuing constraint placed on development in the residential areas of the UGA through lack of sewer facilities. Therefore, designation of the UGA will have little impact on population and transportation trends, until the sewer system is complete ~~(anticipated by 2011)~~. The UGA Transportation Plan analysis takes into account the introduction of the sewer system and the effect this will have within the UGA and surrounding area. An analysis of the build-out impacts (beyond the 20-year planning horizon) due to the Irondale-Port Hadlock UGA addition, are contained in the FSEIS for the proposed Comprehensive Plan 1999 Amendments.

Linking Land Use and Transportation

The link between the future land uses and the transportation system is the traffic forecasting process. The demand for transportation is considered to be a derived demand. That is, people do not travel specifically for the sake of traveling, but travel to perform other tasks that are in different locations. Travel is secondary and derived from the need to perform other tasks.

Land use designations and development regulations determine the locations and intensities of these activities. These variations in potential land use influence the travel demand. The travel forecasts conducted for this transportation analysis were based on the land use designations and policies discussed in the Land Use and UGA Elements. This forecasting procedure is described below.

Traffic Forecasts

Land use forecasts were used to estimate future traffic volumes for County roadways and intersections. The Quimper Peninsula Travel Demand Model was used to forecast traffic volumes for all roadways north of SR 104 and east of US 101, and relies on land use inputs of households and employment to generate vehicle trips within the County. In areas outside the travel demand model,

land use growth rates were used to forecast traffic volume growth. Land use control totals were developed for the County areas as shown in Exhibit 1-12. These forecasts are based on Resolution 38-15, which set population totals for the area. The land use for 2007 for households and employment were based on the 2007 Quimper Peninsula Travel Demand Model land use data sets. Future forecasts for households were based on the compounded annual growth rates from Resolution 38-15. The forecast for employment were factored from the household forecast based on job-to-housing ratios from Appendix C of the Quimper Peninsula Travel Demand Model Documentation (Transpo Group, 2008). Exhibit 1-12 below lists the resulting land use control totals for County areas.

EXHIBIT 1-12 Land Use Forecasts for County Areas

| Area | Household Units ¹ | | | | Employment Units ² | | | |
|------------------------|------------------------------|---------------|---------------|-------------------|-------------------------------|---------------|---------------|------------------|
| | 2007 | 2018 | 2038 | CAGR ³ | 2007 | 2018 | 2038 | J/H ⁴ |
| Port Townsend | 4,643 | 5,254 | 8,046 | 1.13 | 5,451 | 6,221 | 10,120 | 1.26 |
| North Peninsula | 1,270 | 1,361 | 1,775 | 0.63 | 649 | 699 | 1,358 | 0.55 |
| Mid-Peninsula | 1,692 | 1,813 | 2,292 | 0.63 | 927 | 994 | 1,681 | 0.55 |
| Port Hadlock UGA | 1,230 | 1,446 | 2,566 | 1.48 | 1,007 | 1,206 | 2,364 | 0.92 |
| South Peninsula | 1,644 | 1,762 | 2,225 | 0.63 | 229 | 294 | 418 | 0.55 |
| Port Ludlow MPR | 1,328 | 1,499 | 2,250 | 1.11 | 330 | 371 | 546 | 0.24 |
| Rural Jefferson County | 3,670 | 3,859 | 4,375 | 0.63 | 2,018 | 2,122 | 2,406 | 0.55 |
| Total | 15,477 | 16,994 | 23,528 | | 10,611 | 11,907 | 18,893 | |

Sources: Resolution 38-15; Jefferson County

¹ Household forecasts based on Compounded Annual Growth Rate from resolution 38-15

² Employment forecasts based on Compounded Annual Growth Rate from resolution 38-15, and job-to-housing ratio found in Quimper Peninsula Travel Demand Model Documentation (Transpo Group, 2008), Appendix C

³ Compounded Annual Growth Rate

⁴ Jobs-to-Housing Ratio

Traffic forecasts were based on the Quimper Peninsula Travel Demand Model as discussed above. The model uses land use units of households and employment to forecast traffic volumes on the transportation network. The model accounts for commuting trips between home and business, shopping and school trips, as well as other trips. These model volumes were post-processed according to industry standards for use in LOS analyses.

The traffic forecasts are shown in Exhibit 1-13 Existing and Forecast ADT and LOS. It depicts State Routes and selected County Road segments, adopted LOS standards, road capacity in Average Daily Traffic (ADT) at the adopted LOS standard, 2016 ADT, 2038 ADT, 2016 LOS, and 2038 LOS. Existing ADT and LOS for selected State Routes and County Roads are also depicted on Exhibit 1-14 Existing Traffic Volumes and Level of Service.

EXHIBIT 1-13 Existing and Forecast ADT and LOS

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|------------------------|-------------------|----------------------|---------------------|-----|------------------|----------|----------|----------|----------|
| Discovery Bay Gardiner | Highway 101 | Jefferson/Clallam CL | Old Gardiner Rd | D | 27,000 | 13,000 | C | 14,950 | C |
| | Highway 101 | Old Gardiner Rd | Store Rd | D | 27,000 | 13,000 | C | 14,950 | C |
| | Highway 101 | Store Rd | SR 20 | D | 27,000 | 9,100 | B | 13,750 | C |
| | Highway 101 | SR 20 | SR 104 | D | 27,000 | 2,600 | A | 4,000 | A |
| | SR 104 | Hwy 101 | Center Rd | D | 27,000 | 8,900 | B | 14,500 | C |
| | SR 20 | Hwy 101 | Eaglemont Rd | D | 16,000 | 5,200 | B | 5,950 | B |
| | SR 20 | Eaglemont Rd | Anderson Lake Rd | D | 17,000 | 5,200 | B | 6,900 | B |
| | SR 20 | Anderson Lake Rd | Four Corners Rd | D | 21,000 | 5,200 | A | 7,550 | B |
| | Gardiner Beach Rd | Clallam County Line | Old Gardiner | C | 16,000 | 200 | A | 250 | A |
| | Gardiner Beach Rd | Old Gardiner | SR 101 | C | 16,000 | 300 | A | 350 | A |
| | W. Uncas Rd | Hwy 101 | Hwy 101 | C | 17,000 | 100 | A | 100 | A |
| Leland/Quilcene | Highway 101 | SR 104 | Leland Valley Rd | D | 27,000 | 2,400 | A | 2,750 | A |
| | Highway 101 | Leland Valley Rd | Lords Lake Loop Rd | D | 27,000 | 2,400 | A | 2,750 | A |
| | Highway 101 | Lords Lake Loop Rd | Quilcene City Limit | D | 27,000 | 3,100 | A | 3,550 | A |
| | Highway 101 | Quilcene City Limit | Center Rd | D | 27,000 | 3,100 | A | 3,550 | A |
| | Highway 101 | Center Rd | Washington St | D | 27,000 | 5,500 | A | 6,300 | A |
| | Highway 101 | Washington St | Penny Creek Rd | D | 27,000 | 4,200 | A | 4,800 | A |
| | Highway 101 | Penny Creek Rd | Buckhorn Rd | D | 27,000 | 3,000 | A | 3,450 | A |
| | Center Rd | Hwy 101 | Dabob Rd S. End | C | 18,000 | 3,100 | A | 3,650 | A |
| | Center Rd | Dabob Rd S. End | SR 104 | C | 18,000 | 3,100 | A | 3,650 | A |

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|---------------|--------------------|-----------------|--------------------------|-----|------------------|----------|----------|----------|----------|
| | Dabob Rd | Dabob P.O. Rd | Center Rd | C | 17,000 | 500 | A | 600 | A |
| | E. Columbia St | Center Rd | Hwy 101 | C | 15,000 | 600 | A | 700 | A |
| | E. Quilcene Rd | Center Rd | Lindsey Hill Rd | C | 15,000 | 500 | A | 600 | A |
| | E. Quilcene Rd | Lindsey Hill Rd | McDonald Rd | C | 16,000 | 100 | A | 100 | A |
| | Leland Valley Rd | Hwy 101 | Leland Cut-off | C | 16,000 | 100 | A | 100 | A |
| | Leland Valley Rd | Leland Cut-off | Hwy 101 (south) | C | 16,000 | 100 | A | 100 | A |
| | Lindsey Hill Rd | E. Quilcene Rd | Lindsey Beach | C | 16,000 | 100 | A | 100 | A |
| | Linger Longer Rd | Hwy 101 | End | C | 16,000 | 600 | A | 700 | A |
| | Lords Lake Loop Rd | Hwy 101 | Lords Lake | C | 16,000 | 100 | A | 100 | A |
| | Lords Lake Loop Rd | Lords Lake | Snow Creek Rd | C | 16,000 | 200 | A | 250 | A |
| | Penny Creek Rd | Hwy 101 | National Forest Boundary | C | 16,000 | 100 | A | 100 | A |
| | Snow Creek Rd | Hwy 101 | National Forest Boundary | C | 17,000 | 200 | A | 250 | A |
| | Washington St | Hwy 101 | Hwy 101 | C | 16,000 | 300 | A | 350 | A |
| Brinnon | Highway 101 | Buckhorn Rd | Bee Mill Rd | D | 27,000 | 3,000 | A | 3,450 | A |
| | Highway 101 | Bee Mill Rd | Dosewallips Rd | D | 27,000 | 3,000 | A | 3,450 | A |
| | Highway 101 | Dosewallips Rd | Mt. Jupiter Rd | D | 27,000 | 3,100 | A | 3,550 | A |
| | Highway 101 | Mt. Jupiter Rd | Duckabush Rd | D | 27,000 | 2,500 | A | 2,850 | A |
| | Highway 101 | Duckabush Rd | Seamount Dr | D | 27,000 | 2,500 | A | 2,850 | A |
| | Highway 101 | Seamount Dr | Mason/Jefferson C.L. | D | 27,000 | 2,100 | A | 2,400 | A |
| | Bee Mill Rd | Hwy 101 | Point Whitney Rd | C | 16,000 | 300 | A | 350 | A |

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|---------------|-----------------------|-----------------------|--------------------------|-----|------------------|----------|----------|----------|----------|
| | Black Point Rd | Hwy 101 | Fulton Lake | C | 17,000 | 200 | A | 250 | A |
| | Dosewallips Rd | Hwy 101 | National Forest Boundary | C | 16,000 | 100 | A | 100 | A |
| | Duckabush Rd | Hwy 101 | National Forest Boundary | C | 17,000 | 300 | A | 350 | A |
| | Forest Dr | Hwy 101 | End | C | 15,000 | 100 | A | 100 | A |
| | Mt. Jupiter Rd | Hwy 101 | National Forest Boundary | C | 16,000 | 100 | A | 100 | A |
| | Point Whitney Rd | Bee Mill Rd | End | C | 17,000 | 100 | A | 100 | A |
| | Seamount Dr | Hwy 101 | Forest Service Rd | C | 15,000 | 100 | A | 100 | A |
| Tri-Area | SR 116/Ness Corner Rd | Rhody Rd | Irondale Rd | D | 21,000 | 6,000 | A | 8,500 | B |
| | SR 116/Oak Bay Rd | Irondale Rd | Flagler Rd | D | 21,000 | 6,000 | A | 8,500 | B |
| | SR 116/Flagler Rd | Oak Bay Rd | Indian Island Annex Rd | D | 16,000 | 2,600 | A | 2,900 | A |
| | SR 19/Airport Cut-off | SR 20 | Four Corners | D | 24,000 | 14,000 | C | 21,350 | E |
| | SR 19/Rhody Dr | Four Corners | SR 116/Ness Corner Rd | D | 21,000 | 13,000 | C | 18,850 | E |
| | SR 19/Rhody Dr | SR 116/Ness Corner Rd | Center Rd | D | 21,000 | 10,000 | C | 12,000 | C |
| | Anderson Lake Rd | SR 20 | Rhody Dr/SR 19 | C | 21,000 | 1,500 | A | 2,050 | A |
| | Cedar Ave | SR 116/Ness Corner Rd | Irondale Rd | D | 17,000 | 1,000 | A | 1,900 | A |

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|------------------------|------------------|-------------------------|------------------------|-----|------------------|----------|----------|----------|----------|
| | Chimacum Rd | Beaver Valley Rd/ SR 19 | Elkins Road | C | 17,000 | 5,000 | B | 7,600 | B |
| | Chimacum Rd | Elkins Road | Oak Bay Road | D | 21,000 | 5,000 | A | 8,050 | B |
| | E. Maude St | 5th Ave | 7th Ave | D | 16,000 | 300 | A | 450 | A |
| | Four Corners | SR 20 | Airport Cut-off/ SR 19 | C | 17,000 | 2,600 | A | 4,000 | A |
| Tri-Area (Continued) | Irondale Rd | Rhody Rd/SR 19 | Patison Street | D | 18,000 | 5,400 | B | 10,400 | C |
| | Irondale Rd | Patison St | SR 116/Ness Corner Rd | D | 17,000 | 5,100 | B | 10,500 | C |
| | Kala Point Rd | Prospect Rd | Kala Point Development | C | 17,000 | 2,000 | A | 2,750 | A |
| | Lower Hadlock Rd | Oak Bay Rd/ SR 116 | Water St | D | 16,000 | 500 | A | 900 | A |
| | Mason St | Cedar Ave | Thomas Dr | D | 18,000 | 900 | A | 1,950 | A |
| | Oak Bay Rd | Sentinal Firs Rd | Flagler Rd/SR 116 | C | 17,000 | 2,500 | A | 3,550 | A |
| | Patison St | S. 7th St | Irondale Rd | D | 17,000 | 800 | A | 900 | A |
| | Prospect Ave | Airport Cut-off/ SR 19 | Kala Point Dr | D | 21,000 | 2,700 | A | 3,750 | A |
| | S. 7th Ave | Thomas Dr | Patison St | D | 16,000 | 500 | A | 1,000 | A |
| | Thomas Dr | Mason St | S. 7th Ave | D | 16,000 | 600 | A | 1,250 | A |
| | 5th Ave | Irondale Rd | E. Maude St | D | 15,000 | 800 | A | 1,650 | A |
| | 7th Ave | Irondale Rd | W. Swaney St. | D | 16,000 | 900 | A | 1,700 | A |
| | 3rd St | Cedar Ave | Irondale Rd | D | 16,000 | 300 | A | 450 | A |
| Central/ Inland Valley | SR 104 | Center Rd | Beaver Valley Rd/SR 19 | D | 27,000 | 8,900 | B | 13,850 | C |

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|--------------------|-------------------------|-----------------------|------------------------|-----|------------------|----------|----------|----------|----------|
| | SR 19/ Beaver Valley Rd | Center Rd | Swanson ville Rd | D | 21,000 | 7,100 | B | 10,900 | C |
| | SR 19/ Beaver Valley Rd | Swanson ville Rd | Larson Lake Rd | D | 21,000 | 6,400 | B | 9,900 | C |
| | SR 19/ Beaver Valley Rd | Larson Lake Rd | Oak Bay Rd | D | 21,000 | 6,400 | B | 9,850 | B |
| | SR 19/ Beaver Valley Rd | Oak Bay Rd | SR 104 | D | 21,000 | 6,400 | B | 9,750 | B |
| | Center Rd | SR 104 | Eaglemo nt Rd | C | 18,000 | 2,600 | A | 3,550 | A |
| | Center Rd | Eaglemo nt Rd | Egg and I Rd | C | 18,000 | 2,600 | A | 3,550 | A |
| | Center Rd | Egg and I Rd | Beaver Valley Rd/SR 19 | C | 18,000 | 3,100 | A | 4,250 | A |
| | Eaglemo nt Rd | SR 20 | Center Rd | C | 17,000 | 600 | A | 800 | A |
| | Egg & I Rd | W. Valley Rd | Center Rd | C | 15,000 | 200 | A | 350 | A |
| | Egg & I Rd | Center Rd | Beaver Valley Rd/SR 19 | C | 15,000 | 400 | A | 550 | A |
| | Larson Lake Rd | Center Rd | Beaver Valley Rd/SR 19 | C | 16,000 | 300 | A | 400 | A |
| | Sandy Shore Rd | SR 104 | Larson Lake Rd | C | 15,000 | 100 | A | 150 | A |
| | W. Valley Rd | Eaglemo nt Rd | Rhody Dr/SR 19 | C | 21,000 | 500 | A | 750 | A |
| Quimper/ Glen Cove | SR 20 | Four Corners Rd | SR 19/Airport Cut-off | D | 21,000 | 5,200 | A | 6,600 | B |
| | SR 20 | SR 19/Airport Cut-off | Mill/Disc overy Rd | D | 24,000 | 18,000 | D | 26,700 | F |
| | Carrol Ave | Glen Cove Rd | S. 8th St | C | 10,000 | 300 | A | 400 | A |
| | Fredericks St | SR 20 | Otto St | C | 10,000 | 400 | A | 600 | A |
| | Glen Cove Rd | North Otto St | Carrol Ave | C | 10,000 | 300 | A | 400 | A |
| | Mill Rd | SR 20 | Paper Mill | C | 10,000 | 1,900 | A | 4,400 | B |

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|--------------------|--------------------|------------------------|------------------------|-----|------------------|----------|----------|----------|----------|
| | North Otto St | Fredericks St | Glen Cove Rd | C | 10,000 | 400 | A | 500 | A |
| | Otto St | Fredericks St | Seton Rd | C | 10,000 | 600 | A | 800 | A |
| | Seton Rd. | SR 20 | Otto St | C | 10,000 | 1,100 | A | 1,650 | A |
| | Thomas St | SR 20 | Paper Mill | C | 10,000 | 800 | A | 1,700 | A |
| | S. 8th St | Carrol Ave | Mill Rd | C | 10,000 | 300 | A | 400 | A |
| Quimper | Cape George Rd | Discovery Rd | Beckett Point Rd | C | 16,000 | 2,000 | A | 2,850 | A |
| | Cape George Rd | Beckett Point Rd | Hastings Ave W | C | 16,000 | 2,300 | A | 3,250 | A |
| | Cape George Rd | Hastings Ave W | Discovery Rd | C | 16,000 | 800 | A | 1,100 | A |
| | Cook Ave Extension | Hastings Ave W | City Limit | D | 16,000 | 1,100 | A | 3,500 | A |
| | Discovery Rd S | SR 20 | Cape George Rd (south) | C | 17,000 | 3,000 | A | 5,050 | B |
| | Discovery Rd S | Cape George Rd (south) | Cape George Rd (north) | C | 16,000 | 1,400 | A | 2,600 | A |
| | Discovery Rd S | Cape George Rd (north) | SR 20 | C | 17,000 | 2,700 | A | 4,000 | A |
| | Hastings Ave W | Cape George Rd | N Jacob Miller Rd | C | 16,000 | 1,600 | A | 2,100 | A |
| | Hastings Ave W | S. Jacob Miller Rd | City Limits | C | 15,000 | 2,500 | A | 3,850 | A |
| | Hastings Ave W | City Limits | F St | D | 15,000 | 2,500 | A | 5,150 | B |
| | S Jacob Miller Rd | Hastings Rd | SR 20 | C | 17,000 | 1,800 | A | 2,300 | A |
| Shine/Paradise Bay | SR 104 | Beaver Valley Rd/SR 19 | Teal Lake Rd | D | 27,000 | 15,000 | C | 23,350 | D |
| | SR 104 | Teal Lake Rd | Paradise Bay Rd | D | 27,000 | 15,000 | C | 23,350 | D |
| | SR 104 | Paradise Bay Rd | Kitsap/Jefferson C.L. | D | 27,000 | 18,000 | C | 27,700 | F |

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|---------------|-------------------|------------------------|-------------------|-----|------------------|----------|----------|----------|----------|
| | Andy Cooper Rd | Teal Lake Rd | Paradise Bay Rd | C | 16,000 | 100 | A | 100 | A |
| | Paradise Bay Rd | SR 104 | Andy Cooper Rd | C | 17,000 | 2,800 | A | 4,000 | A |
| | Paradise Bay Rd | Andy Cooper Rd | Watson Rd | C | 17,000 | 2,900 | A | 4,250 | A |
| | Shine Rd | SR 104 | Teal Lake Rd | C | 17,000 | 300 | A | 400 | A |
| | South Point Rd | SR 104 | Thorndyke Rd | C | 17,000 | 1,100 | A | 1,400 | A |
| | Teal Lake Rd | SR 104 | Andy Cooper Rd | C | 15,000 | 500 | A | 800 | A |
| | Thorndyke Rd | Milepost 2 | South Point Rd | C | 17,000 | 800 | A | 1,050 | A |
| Marrowstone | SR 116/Flagler Rd | Indian Island Annex Rd | Robbins Rd | C | 16,000 | 1,600 | A | 1,850 | A |
| | SR 116/Flagler Rd | Robbins Rd | Schwartz Rd | C | 16,000 | 1,100 | A | 1,250 | A |
| | SR 116/Flagler Rd | Schwartz Rd | Fort Gate Rd | C | 16,000 | 400 | A | 450 | A |
| | E. Beach Rd | SR 116/Flagler Rd | E. Marrowstone Rd | C | 17,000 | 200 | A | 250 | A |
| | E. Marrowstone Rd | Robbins Rd | E. Beach Park Dr | C | 16,000 | 300 | A | 350 | A |
| | Robbins Rd | Flagler Rd/ SR 116 | E. Marrowstone Rd | C | 17,000 | 400 | A | 450 | A |
| Coyle | Coyle Rd | Dabob P.O. Rd | Camp Discovery Rd | C | 16,000 | 400 | A | 450 | A |
| | Coyle Rd | Camp Discovery Rd | Thorndyke Rd | C | 16,000 | 400 | A | 450 | A |
| | Coyle Rd | Thorndyke Rd | Camp Harmony Rd | C | 16,000 | 500 | A | 600 | A |
| | Coyle Rd | Camp Harmony Rd | Hazel Point Rd | C | 17,000 | 400 | A | 450 | A |
| | Dabob Rd | Center Rd | Old Tarbo Rd | C | 17,000 | 500 | A | 600 | A |

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|-----------------------------|--------------------|------------------------------|------------------------------|-----|------------------|----------|----------|----------|----------|
| | Dabob Rd | Old Tarbo Rd | Dabob P.O. Rd | C | 15,000 | 300 | A | 350 | A |
| | Dabob P.O. Rd | Dabob Rd | Coyle | C | 15,000 | 600 | A | 700 | A |
| | Hazel Point Rd | Coyle Rd | Bay | C | 16,000 | 100 | A | 100 | A |
| | Thorndyke Rd | Coyle Rd | Milepost 2 | C | 17,000 | 800 | A | 900 | A |
| | Zelatched Point Rd | Coyle Rd | End | C | 16,000 | 100 | A | 100 | A |
| Port Ludlow/ N. Port Ludlow | Highland Dr | Teal Lake Rd | End | D | 17,000 | 800 | A | 1,200 | A |
| | Oak Bay Rd | Beaver Valley Rd/ SR 19 | Paradise Bay Road | D | 16,000 | 3,600 | A | 5,500 | B |
| | Oak Bay Rd | Paradise Bay Rd | Olympus Blvd | D | 17,000 | 3,600 | A | 5,050 | B |
| | Oak Bay Rd | Olympus Blvd | Olele Pt Rd | D | 17,000 | 3,600 | A | 4,700 | A |
| | Oak Bay Rd | Olele Pt Rd | Sentinal Firs Rd | D | 17,000 | 3,600 | A | 5,200 | B |
| | Osprey Ridge Rd | Walker Way | Oak Bay Rd | D | 17,000 | 1,100 | A | 1,550 | A |
| | Paradise Bay Rd | Watson Rd | Oak Bay Rd | D | 17,000 | 3,500 | A | 4,900 | A |
| | Pioneer Dr | Swanson ville Rd | Swanson ville Rd | D | 16,000 | 400 | A | 700 | A |
| | Swansonville Rd | Beaver Valley/ SR 19 | Oak Bay Rd | D | 16,000 | 600 | A | 1,000 | A |
| | Teal Lake Rd | Andy Cooper Rd | Paradise Bay Rd | D | 18,000 | 300 | A | 450 | A |
| | Walker Way | Oak Bay Rd | Osprey Ridge Rd | D | 17,000 | 800 | A | 1,150 | A |
| West End | Highway 101 | Jefferson /Grays Harbor C.L. | Clearwater Rd | D | 27,000 | 1,100 | A | 1,250 | A |
| | Highway 101 | Clearwater Rd | Jefferson /Grays Harbor C.L. | D | 27,000 | 1,100 | A | 1,250 | A |
| | Highway 101 | Jefferson /Grays Harbor C.L. | Lower Hoh Rd | D | 27,000 | 1,100 | A | 1,250 | A |

| Planning Area | Roadway | From | To | LOS | Roadway Capacity | 2016 ADT | 2016 LOS | 2038 ADT | 2038 LOS |
|---------------|----------------------|-----------------------|-------------------------|-----|------------------|----------|----------|----------|----------|
| | Highway 101 | Lower Hoh Rd | Oil City Rd | D | 27,000 | 1,300 | A | 1,500 | A |
| | Highway 101 | Oil City Rd | Upper Hoh Rd | D | 27,000 | 1,500 | A | 1,700 | A |
| | Highway 101 | Upper Hoh Rd | Jefferson /Clallam C.L. | D | 27,000 | 1,500 | A | 1,700 | A |
| | Clearwater Rd | Hwy 101 | End of county section | C | 16,000 | 100 | A | 100 | A |
| | Clearwater Rd | End of county section | Owl Creek Rd | C | 16,000 | 100 | A | 100 | A |
| | Clearwater Rd | Owl Creek Rd | Hwy 101 | C | 18,000 | 100 | A | 100 | A |
| | Lower Hoh Rd | Hwy 101 | Hoh Village | C | 16,000 | 200 | A | 250 | A |
| | Maple Creek Rd | Owl Creek Rd | End | C | 16,000 | 100 | A | 100 | A |
| | Oil City Rd | Hwy 101 | Goodman Mainline | C | 16,000 | 200 | A | 250 | A |
| | Oil City Rd | Goodman Mainline | National Park | C | 16,000 | 200 | A | 250 | A |
| | Owl Creek Rd | Clearwater Rd | Maple Creek Rd | C | 16,000 | 100 | A | 100 | A |
| | Queets River Rd | Hwy 101 | Salmon River Rd | C | 16,000 | 100 | A | 150 | A |
| | Queets River Rd | Salmon River Rd | End | C | 16,000 | 100 | A | 150 | A |
| | Quinault-S. Shore Rd | Grays Harbor Rd | National Park | C | 16,000 | 100 | A | 100 | A |
| | Upper Hoh Rd | Hwy 101 | Oscar Peterson Rd | C | 17,000 | 300 | A | 350 | A |
| | Upper Hoh Rd | Oscar Peterson Rd | Maple Creek Rd | C | 16,000 | 200 | A | 250 | A |
| | Upper Hoh Rd | Maple Creek Rd | National Park | C | 16,000 | 200 | A | 250 | A |

Source: Existing ADT Counts WSDOT and Jefferson County Traffic Counts from 2016, 2015 and 2014

Forecast 2038 ADT based on growth rates defined in Traffic Forecast Section Above

Roadway Capacity based on Exhibit 15-46 in HCM 2010, and estimates developed by Transpo Group.

Transportation Element Recommendations

Based on the policies of the Transportation Element and the Capital Facilities and Utilities Element, Jefferson County requires concurrency only for County-owned transportation facilities. Analysis of other transportation facilities is provided, but concurrency is not required.

Based on the level of service standards set forth in this Element and the projected impact of the land use designations and policies on the transportation system, this Transportation Element provides the following findings and recommendations:

Capacity Analysis

Motorized Transportation System - Vehicular

The capacity analysis and traffic forecasts indicate that at the planning horizon year of 2038, all County roads are expected to operate at or above the adopted level of service (LOS) standard. However, if any proposed development were to cause the level of service to significantly fall below adopted levels, the proponents of the development would be required to mitigate the deficiency prior to development approval.

A number of State Route segments will exceed their estimated capacity based on the level of service standards established by WSDOT and the PRTPPO, and the roadway LOS methodology adopted by the County. These LOS standards are based on roadway classification. For this analysis, the roadways within the UGA were assumed to be classified as urban (which increases the LOS standard from LOS C to LOS D). It should be noted that they are currently classified as rural under WSDOT standards. State highways that are forecast to not meet LOS standards within the planning period include:

- ▶ SR 104 (Paradise Bay Road to Jefferson/Kitsap County Line)
- ▶ SR 19 (SR 116 to SR 20)

The LOS analysis performed utilized a roadway capacity analysis that evaluated classified roadways throughout the County. Individual intersections were only analyzed within the County's Tri-Area UGA, and the results of the analysis are presented in the UGA Chapter of the Comprehensive Plan.

The Peninsula Regional Transportation Planning Organization utilized a similar methodology and process for evaluating traffic forecasts and levels of service. However, it differed from the County as it utilized directional PM peak hour roadway capacities instead of total daily volume capacities. The differences in LOS methodology resulted in the following additional state highway segments exceeding capacity:

- ▶ SR 104 (Eastbound direction from SR 19 to Paradise Bay Road)
- ▶ US 101 (Both directions from SR 104 to SR 20)
- ▶ SR 20 (Thomas Street to Kearney Street)

The state highway system is owned and maintained by WSDOT and serves regional and statewide travel needs. While several roadway segments of the state highway system through Jefferson County are expected to exceed adopted state LOS standards, further widening of the corridors to accommodate future demand would require significant investments in capital dollars, impact adjoining property owners, and would be beyond the financial capacity of Jefferson County. See prior discussion in the concurrency section on strategies for addressing needs along State Routes.

Motorized Transportation System - Transit, Airports, Ferry Service, and Freight Travel

JTA has identified in the Transit Development Plan 2017-2022 & 2016 Annual Report (JTA, August 2017) capital improvements that are needed to maintain current services (replacement of vehicles over defined time periods) or to improve facilities and communication tools. These are intended to maintain the current levels of transit service with regard to transit operations. More details on transit capacity analysis and changes to levels of service may be provided as JTA updates its Transit Comprehensive Plan.

Capacity-related projects for airports and port facilities are presented in the Port of Port Townsend's Capital Improvements Plan. Freight service is partially addressed in this Element through the evaluation of State Routes and County Roads. Air freight and port-related freight services are addressed by the Port of Port Townsend.

Capacity Analysis

Non-motorized Transportation System

As part of the Non-motorized Transportation Plan, a standard of providing 0.5 miles of multipurpose trail per 1,000 residents is established for Jefferson County. As of the 2010 Non-motorized Plan, there were 48.2 miles of multipurpose trail, and a 2010 population of 29,872, resulting in roughly 1.6 miles of trail per 1,000 residents.

In 2038, the forecast population is 39,221 and will result in approximately 1.2 miles of trail per 1,000 residents, still above the 0.5 miles per 1,000 residents required.

Non-Capacity Analysis

Motorized Transportation System - Vehicular

Detailed information regarding non-capacity-related motorized transportation system projects is contained in the Six-Year Transportation Improvement Program.

Non-motorized Transportation System

Detailed information regarding non-capacity-related non-motorized transportation and recreational trail projects can be found in the Non-Motorized Transportation and Recreational Trails Plan.

2 Urban Growth Area

2.1 EXISTING CONDITIONS

Functional Classification

The roadways and highways in the Irondale -Port Hadlock UGA have been identified according to functional classification. The functional classification system is based on a road's ability to provide either mobility or access to adjacent land. There are five road classes used to describe roads: principal arterials, minor arterials, major collectors, minor collectors, and local roads. These classes are further defined by specifying whether the road is part of an urban or rural roadway system. Exhibit 2-1 provides a brief description of the roadway functional classification system. Exhibit 2-1 is based on WSDOT publication, Guidelines for Amending Urban Boundaries, Functional Classifications and Federal Aid Systems.

As stated above, mobility is a key component in the functional classification system. When reviewing a regional road system, it is important to note that arterials provide the most mobility in the functional classification system. Arterials connect major destination points such as cities and communities.

Principal arterials and minor arterials are distinguished by the importance of the destination, and the priority given to mobility. Collectors serve as the link between arterials and local streets. They gather (or collect) traffic from the smallest streets (local access) and direct the traffic onto the arterial system. Local streets are those which provide direct access to property and consequently provide more limited mobility. For local streets, mobility is not considered as important as access to land uses.

Roadway spacing and design standards are directly related to the functional classification of the road. In addition, right -of -way width requirements, lane widths, design speed and other similar characteristics are all related to a roadway's functional classification. Exhibit 1-2 illustrates the updated functional classification of roadways in the UGA. It is noted that SR19 has been designated as a Highway of Statewide Significance (HSS) and the functional classification will change from a minor arterial to a principal arterial. This change reflects the highway's increasing importance for the region and as an HSS route that links SRI 04 to Port Townsend.

EXHIBIT 2-1 Roadway Functional Classification Descriptions

| Functional Class | Urban (5,000 population or more) | Rural |
|--------------------|---|--|
| Principal Arterial | Serves regional major activity areas. Carries all inter-urban and significant intra-urban auto and transit trips. | Carries statewide or interstate travel. Serves most urban areas with populations of at least 25,000. |

| Functional Class | Urban (5,000 population or more) | Rural |
|------------------|---|--|
| | Offers most mobility, least land access. Fully or partially controlled access. | Provides an integrated network. |
| Minor Arterial | Interconnects and augments principal arterials. Distributed travel to areas smaller than those associated with major arterials. Places more emphasis on land access than principal arterials. | Links cities, larger towns, and major activity areas (e.g. resorts). Forms integrated network of providing interregional and inter-county service. Spaced so that all developed areas are within reasonable distance of arterial highway. Provide for high travel speed with minimum interference to through movement. |
| Major Collector | Provides both land access and traffic circulation within residential area. Provides intra-community continuity but doesn't penetrate identifiable neighborhoods. Carries local bus routes. | Provides service to county seats and major towns. Links county seats and major towns with nearby cities and arterials. Serves the more important intra-county travel |
| Minor Collector | Collects traffic from local system and channels it to arterials. Provides both land access and traffic circulation within residential neighborhoods, commercial areas, and industrial areas. | Collects traffic from local roads. Provides for all developed areas to be near collector road. Provides service to smaller communities. Link locally important traffic generators with their rural hinterland. |
| Local | Provides direct access to abutting land and access to higher classified cities. Offers least mobility. Usually contains no bus routes. Through traffic deliberately discouraged. | Serves primarily to provide access to adjacent land. Provides service to travel over relatively short distances. |

Traffic Volumes and Level of Service

Exhibit 2-6 illustrates existing average daily traffic (ADT) volumes at several locations within the study area. The most heavily traveled roadways within the UGA include SR19, SR 116 and Irondale Road. Existing traffic volumes are about 14,000 vehicles per day (vpd) on SR 19, 6,000 vpd on SR 116 and 5,400 vpd on Irondale Road. As vehicle volumes fluctuate at various locations along a roadway, level of service analysis was performed at locations where the ADT volumes were the highest.

Level of Service (LOS) is a qualitative measure that combines the features of speed, safety, travel time, comfort, convenience and traffic interruptions. Creation of the Irondale-Port Hadlock UGA changes the UGA land use designation from rural to urban. One of the impacts of this change is a concurrent change in the level of service standard for roadways in the Urban Growth Area. See Exhibit 1-1 for roadway level of service definitions. The level of service standard in Jefferson County for rural roadways is LOS C, and in an urban area is LOS D. This difference reflects the understanding that higher volumes of traffic are expected in urban areas because of a concentration of economic activities and higher residential densities. These higher levels of congestion are considered acceptable during peak hours.

In 1998 the Washington State legislature passed House Bill 1487 that separated state highways into two categories: Highways of Statewide Significance (HSS) and Regionally Significant Highways (RS). This bill authorizes WSDOT to set level of service standards on Highways of Statewide Significance. SR 19 is designated as a HSS. The Level of Service standard for SR 19 is LOS D and is established by WSDOT.

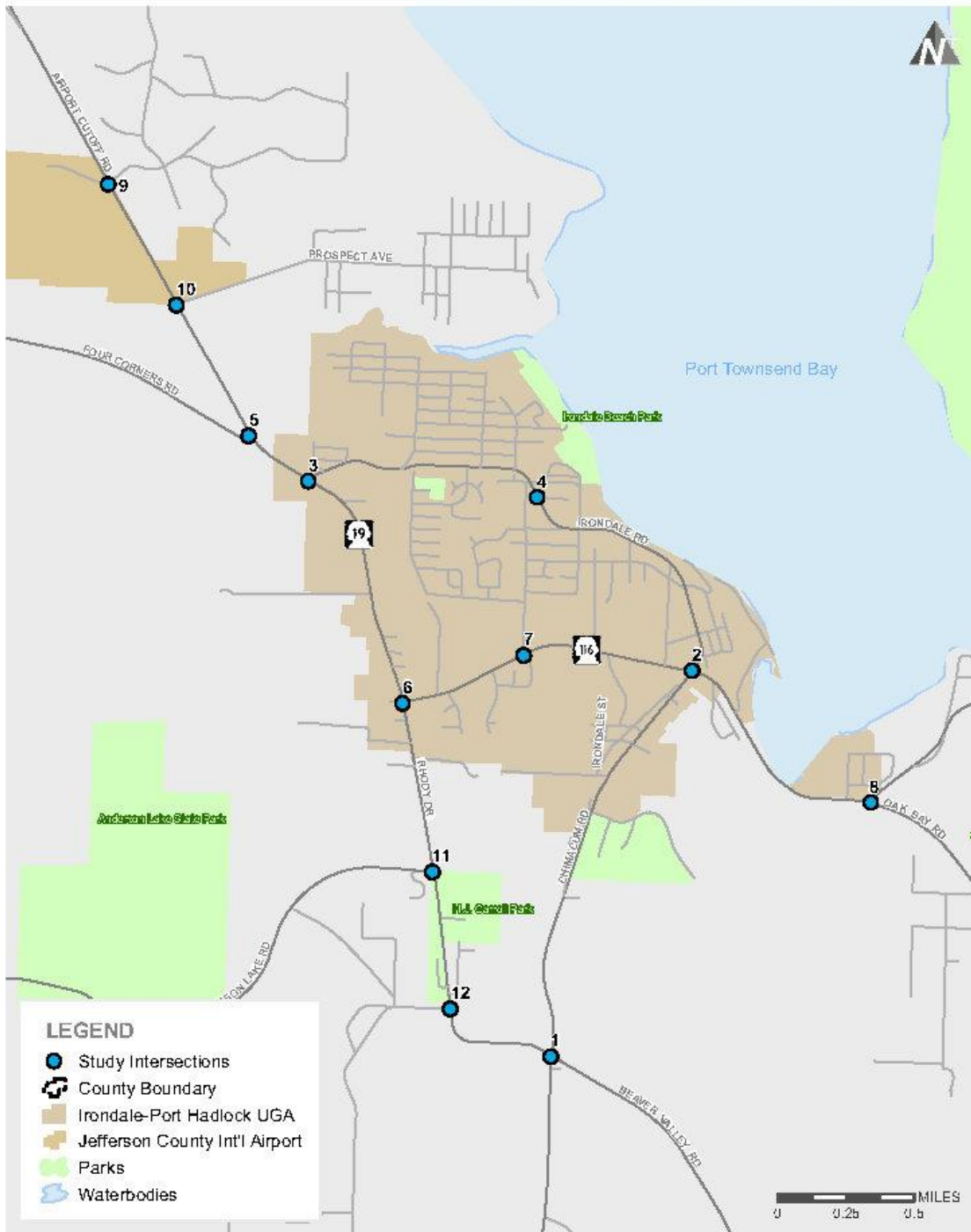
Existing roadway traffic volumes were measured by Jefferson County and obtained from WSDOT's annual traffic report. SR 19 currently operates at LOS C, an acceptable level for the Urban Growth Area. Outside of the UGA boundary, SR 19 continues to operate at LOS C or better. Exhibit 2-6 shows current Level of Service designations for roadways within the Irondale-Port Hadlock UGA.

In addition to roadway LOS, intersection LOS analysis was conducted for twelve intersections within and surrounding the Irondale-Port Hadlock UGA, as shown on Exhibit 2-2. In urban areas, sources of congestion and delay are typically first experienced at intersections because as volumes increase on State Routes or County roadways, it can be difficult to gain access to and from adjoining properties. Additionally, intersection control can degrade overall capacity of both State Routes and County roadways. As a result, a comprehensive evaluation of key intersections throughout the UGA was completed.

The intersection operations as a whole and individual turning movements can be described alphabetically with a LOS range of A through F. LOS A indicates free-flow traffic and LOS F indicates extreme congestion and long vehicle delays. LOS is measured in average control delay per vehicle and is reported for the intersection as a whole at signalized intersections and for the approach or turning movement that experiences the most delay at unsignalized intersections. Control delay is defined as the combination of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Existing LOS, delays, and volume-to-capacity (V/C) ratios were calculated at the study intersections based on methods contained in the Highway Capacity Manual 2010 (Transportation Research Board, 2010), or HCM 2010 methodology.

EXHIBIT 2-2 Study Intersections



Source: Transpo Group 2017

Planned Roadway Improvements

Jefferson County's Six -Year Transportation Improvement Program (TIP) for 2018 to 2023 includes a number of transportation non-motorized capital improvements in the UGA. The projects include:

- ▶ Improving Chimacum Road in the vicinity of the Rick Tollefson Trail to realign an intersection and make trail, sidewalk, and bike lane improvements from Church Lane to Redeemer Way.
- ▶ Extend Rick Tollefson Trail from Loperman Road to the Jefferson County Library and Chimacum Creek Primary School.
- ▶ Cedar Avenue and SR 116 pedestrian and bicycle improvements including installation of crosswalks, sidewalks, and bike lanes.
- ▶ Pedestrian and bicycle improvements from HJ Carroll Park to the Chimacum Road/SR 19 intersection.

WSDOT currently has no funded improvements for State Routes 19 or 116 through the UGA.

Current Deficiencies

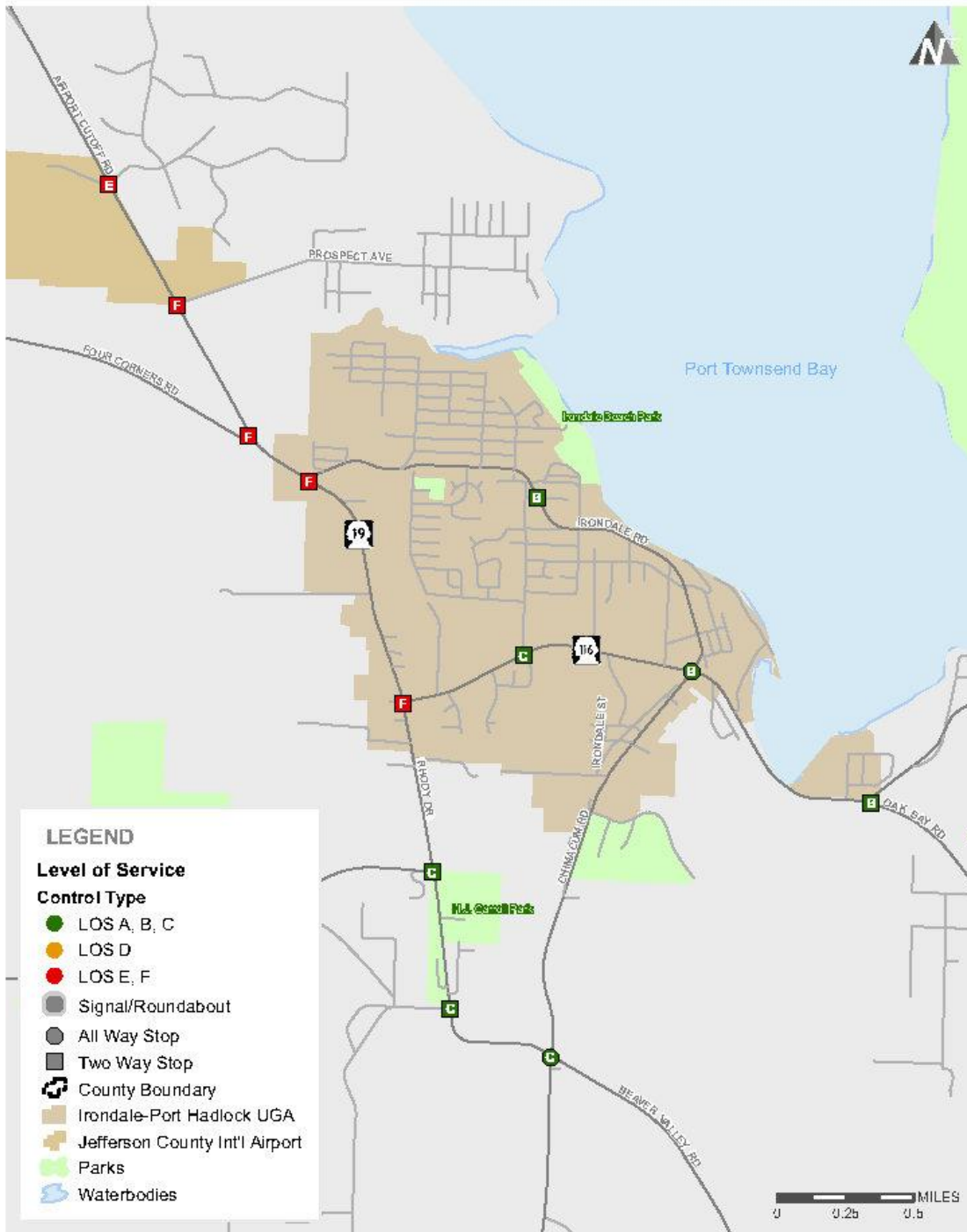
Existing intersection level of service results show that five of the twelve study intersections currently operate at LOS E and LOS F, as shown in Exhibit 2-5. Each of these five intersections are two-way stop-controlled. For two-way stop-controlled intersections, HCM 2010 methodology bases the LOS on the vehicle delay for the worst movement (generally vehicles making a left onto the major road when stopped on the minor road). While this methodology shows five intersections operating below standard, the vehicles traveling along the major approaches currently experience little to no delay. Exhibit 2-5 summarizes the existing intersection LOS for the twelve study intersections in and around the UGA.

Under GMA and SEPA, new development and growth would not be required to mitigate existing deficiencies. The County could require new development to mitigate conditions back to existing levels of service, if traffic conditions worsen due to development.

Under existing conditions and urban standards, there are no roadways currently operating below LOS Standards in the UGA road system. Roadway level of service was calculated using volume to capacity (v/c) ratios. Roadway capacities were calculated based on functional classification, as well as roadway characteristics that affect capacity such as roadway width, shoulder width, the presence of turn lanes and the presence of any traffic control. Exhibit 2-6 provides a summary of roadway LOS for all major roadways within the Irondale-Port Hadlock UGA area.

Deficiencies in intersection and roadway level of service mean increases in travel delays for County roadway users. Increased travel times can lead to increases in operating costs for local businesses and residents. Traffic congestion can also lead to more frequent vehicle idling that can impact air quality in the region.

EXHIBIT 2-3 Existing Intersection LOS



Source: Transpo Group 2017

Non-motorized Transportation

Jefferson County has worked to provide a network of non-motorized transportation facilities to enhance alternative modes to travel by automobile and for recreational purposes. On-road bicycle routes and lanes, wide shoulders, sidewalks and multipurpose trails that link destinations are common examples. The Jefferson County Non-motorized Transportation and Recreational Trails Plan contains a full and detailed list of County owned facilities. Additionally, the Non-motorized Transportation and Recreational Trails Plan found no capacity related deficiencies for the planning period based on the current level of service (LOS) standards adopted in the County's Comprehensive Plan. The Non-motorized Transportation and Recreational Trails Plan also contains a listing of non-capacity related potential projects and financing alternatives.

Transit

The Irondale-Port Hadlock UGA is served by the Jefferson Transit Authority that provides regular scheduled service to the UGA as well as Port Townsend, Port Ludlow and Poulsbo. Weekday service operates from 6:10 AM to 7:55 PM with Dial-a-Ride available for qualified individuals. Transit services and levels of service are further described in the County-wide section above.

2.2 TRANSPORTATION PROJECTIONS

Land Use Forecasts and Growth Rates

Land use forecasts were used to forecast future traffic volumes for UGA roadways and intersections. The Quimper Peninsula Travel Demand Model was used to forecast traffic volumes, and relies on land use inputs of households and employment to generate vehicle trips within the UGA. Land use control totals were developed for the UGA as shown in Exhibit 2-4. These forecasts are based on Resolution 38-15, which set population totals for the area. The land use for 2007 for households and employment were based on the 2007 Quimper Peninsula Travel Demand Model land use data sets. Future forecasts for households were based on the 1.48 compounded annual growth rate from Resolution 38-15. The forecast for employment were factored from the household forecast based on a 0.92 job-to-housing ratio from Appendix C of the Quimper Peninsula Travel Demand Model Documentation (Transpo Group, 2008). Exhibit 2-4 lists the resulting land use control totals for the UGA.

EXHIBIT 2-4 Land Use Forecasts for UGA

| Units | 2007 | 2018 | 2038 | CAGR |
|-------------------------|-------|-------|-------|-------|
| Population ¹ | 3,580 | 3,878 | 5,394 | 1.48% |
| Households ² | 1,230 | 1,446 | 2,566 | 1.48% |

| Units | 2007 | 2018 | 2038 | CAGR |
|-------------------------|-------|-------|-------|-------|
| Employment ³ | 1,007 | 1,206 | 2,364 | 1.48% |

Sources: Resolution 38-15; Jefferson County

1. Population forecasts from Resolution 38-15; Population shown for 2007 actually represents 2010 conditions.

2. Household forecasts based on CAGR from resolution 38-15

3. Employment forecasts based on CAGR from resolution 38-15, and a 0.92 job-to-housing ratio found in Quimper Peninsula Travel Demand Model Documentation (Transpo Group, 2008), Appendix C

Traffic Forecasts and Traffic Operations

Traffic forecasts were based on the Quimper Peninsula Travel Demand Model as discussed above. The model uses land use units of households and employment to forecast traffic volumes on the transportation network. The model accounts for commuting trips between home and business, shopping and school trips, as well as other trips. These model volumes were post-processed according to industry standards for use in traffic operations analysis. Exhibit 2-5 and Exhibit 2-6 show the traffic operations results based on established Jefferson County level of service thresholds.

EXHIBIT 2-5 Intersection Delay and Level of Service

| Intersection | Existing Control | Existing Delay (seconds) | LOS | Baseline 2038 Vehicle Delay | Baseline 2038 LOS | With Project Control | 2038 with Project Vehicle Delay | 2038 with Project LOS |
|---------------------------------------|------------------|--------------------------|-----|-----------------------------|-------------------|----------------------|---------------------------------|-----------------------|
| 1. Chimacum Rd & SR 19 | AWSC | 18.4 | C | 33.1 | D | RAB | 6.4 | A |
| 2. Chimacum Road & SR 116/ Oak Bay Rd | AWSC | 12.3 | B | 36.8 | E | RAB | 20.6 | C |
| 3. SR 19 & Irondale Road | TWSC | 161 | F | >200 | F | RAB | 34.1 | C |
| 4. Irondale Road & Montgomery Rd | TWSC | 13 | B | 20 | C | TWSC | 20 | C |
| 5. SR 19 & Four Corners Rd | TWSC | 52.5 | F | >200 | F | - | - | - |
| 6. SR 19 & SR 116 | TWSC | 166 | F | >200 | F | Signal | 43.4 | D |
| 7. SR 116 & Cedar Ave | TWSC | 18.6 | C | 58.3 | F | AWSC | 27 | D |
| 8. Oak Bay Rd & SR 116/Flagler Rd | TWSC | 12.7 | B | 15.8 | C | TWSC | 15.7 | C |
| 9. SR 19 & Airport Rd/Woodland Dr | TWSC | 41 | E | >200 | F | Signal | 8.2 | A |
| 10. SR 19 & Prospect Ave | TWSC | 113.7 | F | >200 | F | Signal | 18.1 | B |
| 11. SR 19 & Anderson Lake Rd | TWSC | 15 | C | 32.6 | D | TWSC | 30.3 | D |

| Intersection | Existing Control | Existing Delay (seconds) | LOS | Baseline 2038 Vehicle Delay | Baseline 2038 LOS | With Project Control | 2038 with Project Vehicle Delay | 2038 with Project LOS |
|----------------------------|------------------|--------------------------|-----|-----------------------------|-------------------|----------------------|---------------------------------|-----------------------|
| 12. SR 19 & West Valley Rd | TWSC | 15.8 | B | 29.8 | D | TWSC | 29.8 | D |

EXHIBIT 2-6 Road Segment Average Daily Trips and Level of Service

| Roadway | From | To | LOS Standard | Capacity | Existing ADT | Existing LOS | Forecast 2038 ADT | Forecast 2038 LOS |
|-----------------------|------------------------|------------------------|--------------|----------|--------------|--------------|-------------------|-------------------|
| SR 116/Ness Corner Rd | Rhody Rd | Irondale Rd | D | 21,000 | 6,000 | A | 8,500 | B |
| SR 116/Oak Bay Rd | Irondale Rd | Flagler Rd | D | 21,000 | 6,000 | A | 8,500 | B |
| SR 116/Flagler Rd | Oak Bay Rd | Indian Island Annex Rd | D | 16,000 | 2,600 | A | 2,900 | A |
| SR 19/Airport Cut-off | SR 20 | Four Corners | D | 24,000 | 14,000 | C | 21,350 | E |
| SR 19/Rhody Dr | Four Corners | SR 116/Ness Corner Rd | D | 21,000 | 13,000 | C | 18,850 | E |
| SR 19/Rhody Dr | SR 116/Ness Corner Rd | Center Rd | D | 21,000 | 10,000 | C | 12,000 | C |
| Anderson Lake Rd | SR 20 | Rhody Dr/SR 19 | C | 21,000 | 1,500 | A | 2,050 | A |
| Cedar Ave | SR 116/Ness Corner Rd | Irondale Rd | D | 17,000 | 1,000 | A | 1,900 | A |
| Chimacum Rd | Beaver Valley Rd/SR 19 | Elkins Road | C | 17,000 | 5,000 | B | 7,600 | B |
| Chimacum Rd | Elkins Road | Oak Bay Road | D | 21,000 | 5,000 | A | 8,050 | B |
| E. Maude St | 5th Ave | 7th Ave | D | 16,000 | 300 | A | 450 | A |
| Four Corners | SR 20 | Airport Cut-off/SR 19 | C | 17,000 | 2,600 | A | 4,000 | A |
| Irondale Rd | Rhody Rd/SR 19 | Patison Street | D | 18,000 | 5,400 | B | 10,400 | C |

| Roadway | From | To | LOS Standard | Capacity | Existing ADT | Existing LOS | Forecast 2038 ADT | Forecast 2038 LOS |
|------------------|-----------------------|------------------------|--------------|----------|--------------|--------------|-------------------|-------------------|
| Irondale Rd | Patison St. | SR 116/Ness Corner Rd | D | 17,000 | 5,100 | B | 10,500 | C |
| Kala Point Rd | Prospect Rd | Kala Point Development | C | 17,000 | 2,000 | A | 2,750 | A |
| Lower Hadlock Rd | Oak Bay Rd/SR 116 | Water St | D | 16,000 | 500 | A | 900 | A |
| Mason St | Cedar Ave | Thomas Dr | D | 18,000 | 900 | A | 1,950 | A |
| Oak Bay Rd | Sentinal Firs Rd | Flagler Rd/SR 116 | C | 17,000 | 2,500 | A | 3,550 | A |
| Patison St | S. 7th St | Irondale Rd | D | 17,000 | 800 | A | 900 | A |
| Prospect Ave | Airport Cut-off/SR 19 | Kala Point Dr | D | 21,000 | 2,700 | A | 3,750 | A |
| S. 7th Ave | Thomas Dr | Patison St | D | 16,000 | 500 | A | 1,000 | A |
| Thomas Dr | Mason St | S. 7th Ave | D | 16,000 | 600 | A | 1,250 | A |
| 5th Ave | Irondale Rd | E. Maude St | D | 15,000 | 800 | A | 1,650 | A |
| 7th Ave | Irondale Rd | W. Swaney St. | D | 16,000 | 900 | A | 1,700 | A |
| 3rd St | Cedar Ave | Irondale Rd | D | 16,000 | 300 | A | 450 | A |

Deficiencies

Under existing conditions, roadway capacity on SR 19, SR 116, and all roadways in the Irondale-Port Hadlock UGA are adequate. However, there are several unsignalized intersections along SR 19 in the Irondale, Port Hadlock and Chimacum areas that experience long delays as vehicles wait for gaps in traffic on SR 19. In order to accommodate the minor street delays while also maintaining mobility on SR 19, a minimum number of interruptions to traffic flow (traffic signals or roundabouts) should be pursued. The most appropriate way to avoid excessive traffic control is to minimize the number of locations of traffic access onto SR 19 as well as control turn movements onto SR 19. The intersection of SR 19 and SR 116 (Ness's Corner) currently experiences the greatest side-street delay, and is therefore the most immediate need for signalization or roundabout installation. If traffic control is installed, traffic could be redirected to this intersection by way of further road improvements to facilitate traffic circulation and mobility. The benefits of this would include the following:

- ▶ Limited access to SR19 would increase the mobility along SR19

- ▶ Minimize impacts of growth to the neighborhoods along Irondale Rd.
- ▶ Greater control of turn movements onto SR19
- ▶ Reduce existing delays on the minor leg of the intersection
- ▶ Provide safe, efficient route through the UGA for freight and other commercial traffic

Improved traffic control of the SR 19/SR 116 intersection would create sufficient gaps in traffic along SR 19 to allow safer, more comfortable turn movements onto SR 19. To reduce this delay, relieve congestion and enhance safety, this intersection should be signalized or have a roundabout installed as identified in the project list summarized in Exhibit 2-9.

Several intersections experience similar problems to those of the SR19 /SR 116 intersection, such as SR 19 and Irondale Road, SR 19 and Prospect Avenue, and SR 19 and Four Corners Road. Excessive minor leg delays should be reduced by improved traffic control at these intersections.

Based on projected volumes, intersection improvements as shown in Exhibit 2-9 will be required at the following intersections by 2038:

- ▶ Chimacum Road and SR 116
- ▶ SR 19 & Irondale Road
- ▶ SR 19 & 4 Corners Road
- ▶ SR 19 & SR 116
- ▶ SR 116 & Cedar Ave
- ▶ SR 19 & Woodland Dr
- ▶ SR 19 & Prospect Ave

As growth and development continues in the Irondale-Port Hadlock UGA as planned over the next twenty years, further improvements to the road system will be required to maintain adopted Level of Service standards. New development could be required to pay for these improvements through new construction, or pro-rata payments to defined improvements as discussed in the Transportation Facilities Assessment section. A TIA would be needed for new developments to distinguish between existing deficiencies (not growth funded) and deficiencies caused by the new development (growth funded). The forecast 2038 intersection operations, as well as the intersection operations after the installation of improved intersection traffic control are shown in Exhibit 2-7.

Chimacum Road and SR 116 Intersection (Inside UGA). The Port Hadlock intersection is currently an all way stop controlled intersection in the heart of the Port Hadlock commercial district. At current traffic volumes, this intersection functions well as a stop-controlled intersection. As volumes build toward projected 2038 levels, service at this intersection begins to break down and a traffic control upgrade will be required to handle the denser, urban conditions that are expected as growth occurs in the core Port Hadlock commercial district.

SR 19 and Irondale Rd (Inside UGA). The SR 19 and Irondale Rd intersection operates similarly to that of the intersection of SR 19 and SR 116. Possible widening of SR19 through the UGA to four lanes of

traffic would further increase the difficulty and danger of vehicles turning onto SR19. Signalization or roundabout installation at this intersection is required to handle the volumes on both legs.

Due to close proximity, it is possible that a signal at both SR 19/Irondale Rd and SR 19/Four- Corners Rd (just outside of the UGA) could place unfavorable restrictions on the mobility of SR 19. Signal Density on SR 19, as described in the Transportation Research Board's (TCB) Highway Capacity Manual (HCM), is borderline to recommended levels with two signals at these intersections. To minimize the number of stops along SR 19 and reduce financial costs, it is recommended that an alternate solution to signalization of both intersections be studied, as suggested in the Transportation Facilities Assessment, below.

SR 116 and Cedar Ave (Inside UGA). Development along SR 116 and in the Port Hadlock commercial district will increase the importance of SR 116 as a major collector of SR 19. Both legs of this intersection will experience increased volumes and an unacceptable level of service. It is desired and anticipated that SR 116 will continue to be the primary route to connect the Port Hadlock core and SR 19. Forecast 2038 volumes would require either an all-way stop controlled intersection, or the installation of a traffic signal or roundabout.

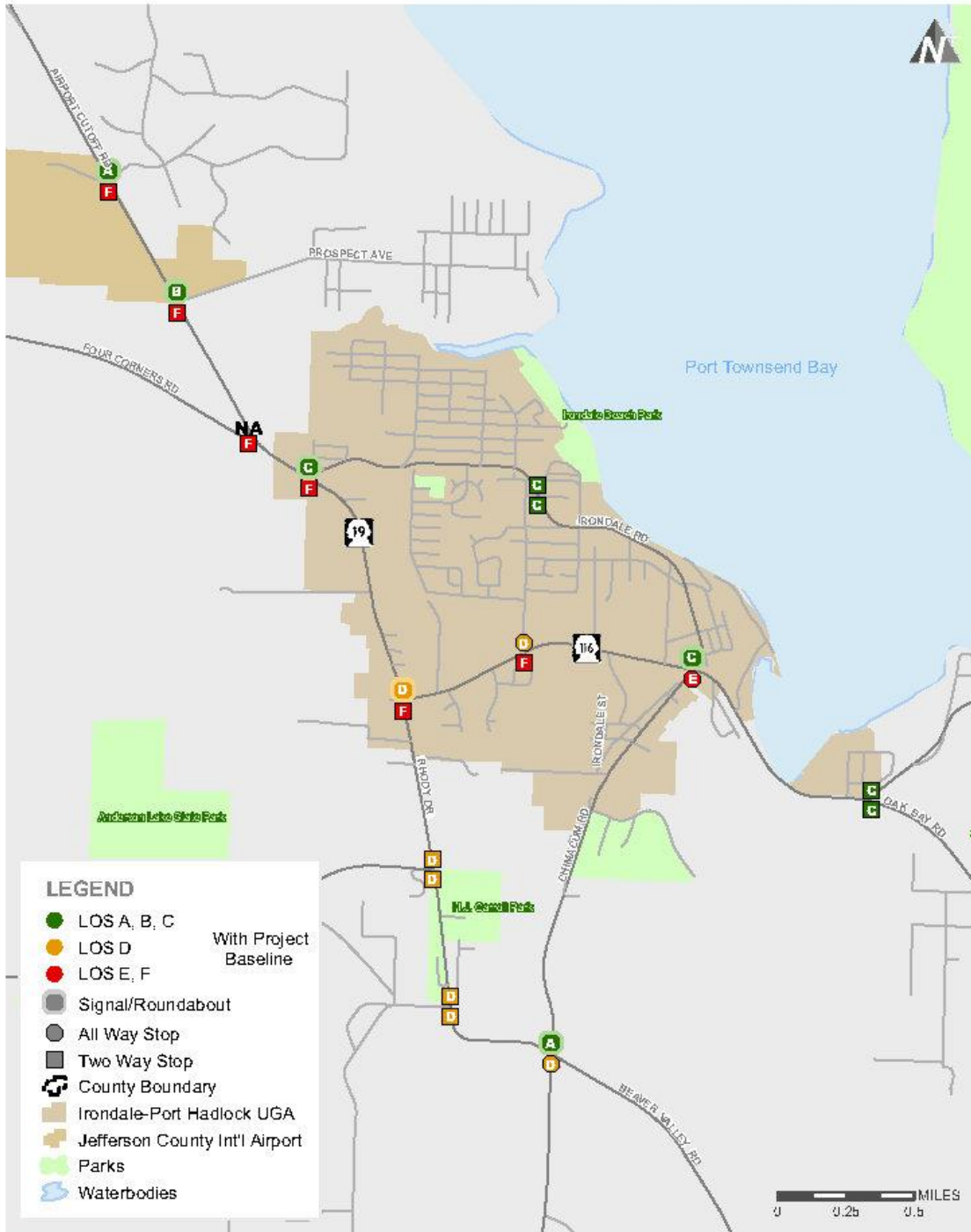
Chimacum Road and SR 19 Intersection (Outside UGA). Increasing volumes at this all way stop controlled intersection will require signalization or roundabout installation to maintain mobility on SR 19 and handle increasing volumes along Chimacum Road /Center Road due to growth and development expected in the Port Hadlock commercial core.

SR 19 and West Valley Rd (Outside UGA). Currently this intersection has both left and right turn lanes with adequate storage in each. However, this intersection is the principal access to Chimacum School and at peak times experiences long delays due to traffic to and from the school including numerous school buses. Undesirable delays and safety concerns may dictate improvements at this intersection.

SR 19 Roadway Level of Service capacity for SR 19 as a two-lane highway with turn lane median is a maximum of 20,000 ADT for LOS threshold "D ". The 2038 volumes for all segments within the UGA are projected to exceed capacity and result in the roadway operating at LOS E. Capacity improvements will have to be completed to increase the level of service of SR 19 to acceptable standards both inside and outside of the UGA. Typically, this involves the addition of travel lanes in each direction including illumination, stormwater mitigation, right-of-way acquisition, and wetland reparations. Access management improvements could improve the overall capacity, but would require improved intersections treatments at Irondale Road to the north and SR 116 to the south.

SR 116 Roadway Level of Service capacity for SR 116 as a two-lane highway is a maximum of 20,000 ADT for LOS threshold "D". The 2038 volumes for the segments within the UGA are not projected to exceed this threshold, and will operate at LOS B.

EXHIBIT 2-7 Forecast 2038 Baseline and With Project Intersection Operations



Source: Transpo Group 2017

Environmental Considerations

Human activity can have a major impact on vegetation, wildlife, and water resources. Land use policies seek to protect the environment, conserve our resources, and permit future development only in areas that can support it without significant adverse impact. Protecting the natural environment, including environmentally sensitive lands in developed areas of the UGA requires the following:

- ▶ Preserving ecological balance
- ▶ Maintaining or improving air and water quality
- ▶ Retaining open space in its natural state
- ▶ Protecting groundwater from pollution
- ▶ Providing public access to and setbacks from environmentally sensitive land

New developments within the Irondale-Port Hadlock UGA will be required to minimize and mitigate adverse environmental impacts. The UGA designation will have little impact on the transportation system. This is not to say that there will not be transportation issues or needs associated with growth in and adjacent to the UGA, only that designation as a UGA is not the overriding factor. The foremost effect the UGA will have on transportation will be when the availability of sewers to the commercial/industrial/multi-family zoned designated areas allows them to be developed more intensely and generate higher traffic volumes.

Transportation decisions are not, and should not be, exempt from environmental review. Impacts to the natural and built environment need to be taken into consideration before any major transportation improvement projects are made. Most transportation projects are subject to state and federal environmental regulations as well as any local environmental laws that apply. County road projects routinely follow NEPA/SEPA regulations unless they are specifically exempted.

2.3 CAPITAL FACILITIES

Concurrency

The concurrency requirement in the Growth Management Act (GMA) states that "...public facilities and services ... shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards." [GMA, Section 2, Planning Goals (12)] This means that public facilities and services must be in place to serve the proposed use at the level of service (LOS) set by the community. Some improvements may be completed in whole or in part, by new development within the UGA.

Under current State law and Jefferson' County Comprehensive Plan policies, highways owned by the State (State Routes) are not bound by the constraints of concurrency requirements. In these

instances, the timing and prioritization of improvements is ultimately that of the Washington State Department of Transportation. Typically, WSDOT coordinates with the local jurisdiction and regional transportation planning organization to maintain a balance between the free -flow movement of people and goods, and the needs of the local community.

Transportation Facilities Assessment

A list of long-term transportation improvement projects have been identified and evaluated to address the needs and issues identified in the LOS evaluation. The transportation projects that have been identified address the needs for motor vehicles and focus on improving mobility, safety, circulation, and access in the Irondale and Port Hadlock UGA. Many of the improvements also include facilities for non-motorized transportation, but specific non-motorized projects are identified in the County's adopted Non-motorized Transportation and Recreational Trails Plan.

Eventually the improvement projects will be incorporated into updates of the County six-year Transportation Improvement Program (TIP), the regional PRTPPO Plan, and the WSDOT State Highway System Plan.

The Quimper Peninsula travel demand model was used to evaluate improvement alternatives for the roadways and intersections in the Irondale and Port Hadlock UGA. Low-cost improvements were evaluated before more complex and expensive solutions were analyzed. Low-cost improvements included minor traffic control changes, signal timing or phasing changes, or the addition of turn pockets. More complex solutions included the addition of through lanes, changes in traffic control devices, or geometric reconstruction and/or realignment of intersections and roadways. Each improvement project was treated as an integral component of the transportation system, and the effects of each improvement project on adjacent roads and intersections were factored into the analysis.

Transportation Projects

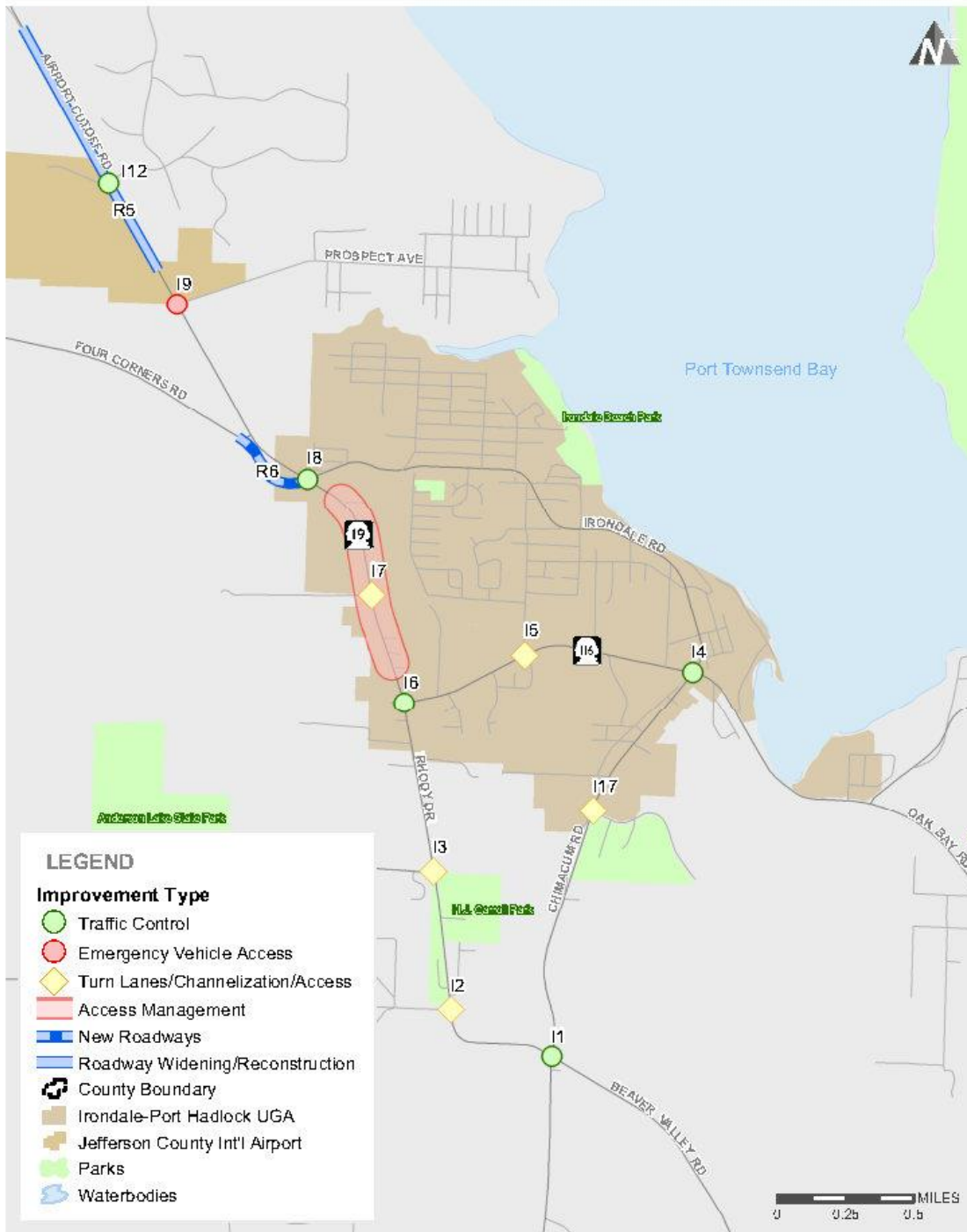
The transportation improvement projects have been sorted into three categories: intersection, roadway, and access management improvements. The projects are illustrated in Exhibit 2-8 and listed in Exhibit 2-9. Exhibit 2-9 lists each improvement project and includes a brief description of the project. The projects are based upon the detailed analysis completed as part of the Quimper Peninsula Transportation Study, which contains a more detailed description of each project and a brief justification summary.

Intersection Improvements - Intersection improvement projects include the construction of left-turn lanes, right-turn lanes, refuge/merge lanes, roundabouts, and traffic signals. Many of the future level of service deficiencies in the Irondale-Port Hadlock UGA are anticipated to be located at intersections. Most of the major intersections along SR 19 will require some form of traffic control improvement with the forecast traffic growth as left-turns to and from the highway will become more and more difficult, increasing delays, and reducing safety. Intersection improvements will need to be made at key intersections to compliment the access management improvements and circulation roads envisioned in the UGA.

Roadway Improvements - Roadway improvements include the construction of new roadways, extending and/or reconstructing existing roadways, adding truck climbing/passing lanes, and realigning roadways. Roadway reconstruction projects involve rehabilitating or improving the base, sub-base, and pavement surface of old or sub-standard roadways. Reconstruction might also include roadway widening to increase lane widths and/or add shoulders, or the addition of curb, gutter, sidewalk, street lights, and storm water facilities, where necessary. In the UGA, roadway improvements mostly compliment the identified intersection improvements, such as re-alignment of Four Corners Road to improve the intersection with Irondale Road. Other improvements include a passing/truck lane on SR 19 as additional industrial development around the Airport and in the region will contribute to a higher number of trucks in the future. The passing/truck lane allows slower vehicles to ascend at a slower rate while leaving a lane open for passenger vehicles to continue their journey unimpeded.

Access Management - Access management techniques are used to create an environment where less traffic flow interruptions occur to vehicles on the main line by regulating the location, frequency, and type of access that is granted along a corridor. Access management techniques on SR 19 will be important as development intensifies in the UGA. The section of SR 19 between SR 116 and Irondale Road, expected to fall below the LOS standards by 2038, is a good example where access management techniques should be considered. As growth occurs on SR 19, improved access will be needed to make development viable. Reducing the number of driveways and consolidating access points will be an important improvement strategy to address both safety and mobility, while also allowing for more redevelopment opportunities along the corridor. Intersections such as SR 19 and SR 116, SR 19 and Kennedy Road, and SR 19 and Irondale Road could be designed as key intersections from which access points to new local circulation roads and new development is provided.

EXHIBIT 2-8 UGA Transportation Capital Project Map



Source: Transpo Group 2017

EXHIBIT 2-9 UGA Transportation Capital Project List

| Map ID ¹ | Location | Needed to Resolve LOS Deficiency? | Limits | Description of Improvements |
|---------------------|-------------------------------|-----------------------------------|--------------|---|
| I1 | SR 19 & Center/Chimacum Rd | | Intersection | Construct a one-lane roundabout to improve traffic flow and safety, and serve as a gateway into the Port Hadlock UGA. |
| I2 | SR 19 & West Valley Rd | | Intersection | Construct a refuge/merge lane for motorists turning left off of West Valley Road to improve mobility, safety, and access. Would be combined with pedestrian crossing enhancements as part of the Rick Tollefson Trail and/or a Safe Routes to School project. |
| I3 | SR 19 & Anderson Lake Rd | | Intersection | Add a left-turn lane on Anderson Lake Road and a left-turn refuge/merge lane and northbound left-turn lane on SR 19 to improve mobility and safety. |
| I4 | SR 116 & Chimacum/Irondale Rd | Yes | Intersection | Construct a roundabout to eliminate the 4-way stop control which would improve mobility, safety, and serve as a gateway into the Port Hadlock UGA. |
| I5 | SR 116 & Cedar Ave | Yes | Intersection | Add a southbound left-turn lane to Cedar Avenue and an eastbound left-turn lane to SR 116 to improve mobility and safety. |
| I6 | SR 19 & SR 116 | Yes | Intersection | Install a traffic signal, or construct a one-lane roundabout, to improve traffic operations, mobility, safety, and provide an enhanced pedestrian crossing. |
| I7 | SR 19 & Kennedy Rd | Yes | Intersection | The intersection serves as a placeholder to identify the general area between SR 116 and Irondale Road where intersection improvements could be made to compliment access management treatments on SR 19, such as Project #A1. Further study may show that a location in the vicinity of Kennedy Road may be better suited to provide frontage road traffic control or an opportunity for u-turn movements to provide improved circulation and access to development along SR 19. |
| I8 | SR 19 & Irondale Rd | Yes | Intersection | Construct a two-lane roundabout to improve traffic operations and improve mobility and safety. A roundabout can serve as a gateway to the Port Hadlock UGA. Coordinate with the re-alignment of Four Corners Road (Project #R6). |

| Map ID ¹ | Location | Needed to Resolve LOS Deficiency? | Limits | Description of Improvements |
|---------------------|----------------------------------|-----------------------------------|--|---|
| I9 | SR 19 & Prospect Ave | Yes | Intersection | Install a traffic signal, or construct a roundabout, with emergency vehicle access signage and channelization improvements for the proposed fire station south of the airport. The intersection could serve as an alternate access point to a new local access street serving the Port property south of the airport on the west side of SR 19 while also improving safety and access to Prospect Avenue to the east. |
| I12 | SR 19 & Airport Rd | Yes | Intersection | Construct a traffic signal, or roundabout, with a dedicated northbound left-turn lane to improve traffic operations, mobility, and safety. Coordinate with possible widening of SR 19 to add a northbound passing lane |
| I17 | Chimacum Road & Elkins Road | No | Intersection | Reconstruct intersection to provide improved channelization on the west approach and center left-turn lanes along Chimacum Road to improve mobility, safety, and access. Includes pedestrian crossing enhancements as part of the Rick Tollefson Trail and gateway features to identify the entrance into the Port Hadlock UGA. |
| R5 | SR 19 | Yes | Prospect Ave to Theatre Rd | Construct a northbound truck climbing/passing lane on the ascent to SR 20 to improve mobility and safety. Combine with intersection improvement I12 to provide safe access into and out of Woodland Drive. |
| R6 | Four Corners Roadway Realignment | Yes | From the existing intersection with SR 19 to Irondale Rd | Realign the roadway by moving the intersection with SR 19 south to align with the intersection of Irondale Road.A1 |
| A1 | SR 19 | Yes | SR 116 to Irondale Rd | Access management, driveway consolidation, and circulation road improvements coordinated with improvements to facilitate turn movements or u-turns at or near the intersection of SR 19 with Kennedy Road. |

1. The Map ID of each project corresponds to the project ID as illustrated in Exhibit 2-8, and also corresponds to the project information contained in the *Quimper Peninsula Transportation Study*.

Addressing LOS Deficiencies

A total of 12 intersections were evaluated within or in the immediate proximity to the UGA. Of the 12 intersections, it was found that seven intersections operated at a LOS E or F during the PM peak hour. In addition, the roadway capacity analysis resulted in a segment of SR 19 north of its intersection with SR 116 to operate at LOS E by the year 2038.

The intersection improvements that are listed in Exhibit 2-9 are intended to reduce or eliminate the number of intersections that will operate poorly in the future by reducing average control delays, improving mobility and safety, and providing better access to properties expected to develop over the next 20 years. The roadway improvements will provide additional capacity to key segments of SR 19 that provide direct access to the UGA, thereby improving operating conditions and helping to relieve future congestion.

The travel demand model was used to test the transportation improvements. The effects of each improvement project on adjacent roads and intersections were factored into the analysis. Exhibit 2-5 contains a summary of intersection LOS for existing conditions, future baseline conditions, and future “With Projects” conditions for each study intersection. Two additional intersections have been added, including the intersection of SR 19 and Kennedy Road which is part of an access management strategy for SR 19 between SR 116 and Irondale Road, and the Chimacum Road and Elkins Road intersection which improves the pedestrian crossing as part of the extension of the Rick Tollefson Trail. A detailed summary of intersection LOS and channelization for each project is summarized in the Quimper Peninsula Transportation Study document.

While additional intersection improvements will reduce delay for side street traffic volumes and improve local access in the UGA, they are likely to increase travel times for regional highway users along the SR 19 corridor. The County and WSDOT will need to work closely within one another to consider the trade-offs between corridor mobility and local access needs when prioritizing and implementing the intersection improvements identified for the state highways.

Growth and development in the Irondale-Port Hadlock UGA will have some impacts to the transportation system. A significant portion of that impact will occur on SR 19. WSDOT has jurisdiction over this corridor. Continued and increased intergovernmental coordination between WSDOT and Jefferson County will become more important to coordinate transportation improvements within and adjacent to the Irondale-Port Hadlock UGA. The coordination will be necessary to accommodate future population growth and development while mitigating the resulting impacts and increased congestion from growth both within and outside the UGA.

Project Implementation Considerations

Implementation of the Transportation Element involves several strategies. One strategy includes coordinating with WSDOT and the PRTPO to build support and secure funding to complete the transportation improvement projects along the state highways, as conditions warrant. Another strategy includes the pursuit of grants and other regional or statewide funding, which will be especially critical in the implementation of state highway improvements within the UGA and completion of the non-motorized system. The County will also need to review its development review processes regularly to assure that the impacts of growth are mitigated and transportation improvements are completed concurrent with new development for County roadways. However, if improvements are unable to be funded on County roadways to meet adopted level of service (LOS) standards, then the County will need to reassess its LOS standards, land use plan, or funding sources. The annual Six-Year Transportation Improvement Program will allow the County to match shorter-term improvement project needs with land use activity and available funding.

2.4 CONCLUSION

The analysis shows that overall; impacts from the development of the UGA on the transportation system and potential transportation needs in the UGA and adjacent areas are manageable. While the UGA designation may impact transportation by increasing demand earlier than it would have otherwise occurred, many of the impacts would still be likely to occur without UGA development. The primary concern has been and continues to be the SR19 Corridor and how future adjacent land use will impact its ability to carry through-traffic.

While this analysis considers the overall growth of the UGA and is based on the land use assumptions provided and known at this time, further analysis of the transportation system should be undertaken as development takes place to determine project implementation and timing.

