

# TRANSPORTATION

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**PURPOSE:** The purpose of the Transportation Plan portion of Chapter 2, the Irondale-Port Hadlock Urban Growth Area (UGA) Element, is to amend and augment the Transportation and Capital Facilities chapters of the Jefferson County Comprehensive Plan. This portion of the UGA Element contains information and analysis relative to transportation both within and adjacent to the UGA. The UGA Transportation Plan considers the impacts to transportation due to UGA designation and forecasts the transportation needs and costs for a twenty-year planning period. The UGA Transportation Plan describes the service standards desired for the County's transportation system within an Urban Growth Area, projects the impact that the land use pattern contained in this Chapter will have on the transportation system, and identifies the improvements necessary to meet future demand. The Jefferson County Comprehensive Plan provides a framework of goals, policies, and strategies necessary to develop transportation facilities throughout the County. This portion of the UGA Plan further defines these goals and policies for development inside the boundaries of the Urban Growth Area at appropriate urban standards. The adopted Jefferson County Comprehensive Plan portions relating to transportation include the majority of policy needed to accommodate this UGA. This text is intended to be an amendment or supplement to the Comprehensive Plan, which should be referenced for additional goals, policies and strategies not specifically detailed in this document.

## INTRODUCTION

The Washington State Growth Management Act (GMA) was passed in 1990 to encourage planned, coordinated, growth for a more efficient use of the State's resources by reducing sprawl. One of the ways in which the GMA seeks to accomplish these goals is to require communities to adopt comprehensive growth plans that specify how new population growth will be accommodated. By law, these plans must address the following areas: transportation, capital facilities, utilities, land use, housing, and rural land. With respect to transportation and transportation infrastructure, the GMA requires the coordinated planning of regional transportation facilities and services. The GMA also mandates that new development cannot occur unless infrastructure is in place to accommodate the increased demand, or will be built concurrent with development.

In response to GMA requirements, the Tri-Area, an area encompassing the Chimacum, Irondale and Port Hadlock communities, underwent a transportation planning and forecasting study in 1999 known as the *Tri-Area/Glen Cove Special Study*. This study analyzed three land use alternatives over a twenty year period and evaluated the impact on Jefferson County's roadways. Building on the work that was completed for the *Special Study*, the goal of this effort is to produce a Transportation Plan that will serve as a guide for future transportation improvements that will aid in maintaining an adequate level of transportation services and facilities in the Irondale – Port Hadlock Urban Growth Area (UGA). This Transportation Plan includes the following:

- Updated functional classification of county roads
- Updated traffic volume forecasts
- Intersection level of service analysis
- Potential transportation improvements
- Environmental Considerations
- Transportation improvement cost estimates

Through this planning process, the intent is to recognize when and where deficiencies will occur and to provide solutions to capacity needs. Viable solutions may include additional travel lanes, passing and pull-out lanes, turn pockets and signalization of currently un-signalized intersections. The traffic forecasts used in this plan will provide for adequate urban levels of public facilities and services in the Irondale-Port Hadlock Urban Growth Area.

## **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. Table 1 provides a brief description of the roadway functional classification system. The table 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. Figure 1 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 SR104 to Port Townsend.

### ***Traffic Volumes and Level of Service***

Figure 2 illustrates existing average daily traffic (ADT) volumes at several locations within the study area. The most heavily traveled roadways within the UGA include SR19, SR116 and Irondale Road with existing traffic volumes peaking on SR19 at about 14,000 vehicles per day (vpd). A very small section of SR19 from Irondale Road to Four-Corners Road carries a peak of 16,898 vpd. This is due to higher than average Peak Hour volumes along this section of SR19. Given the relatively short period of time SR19 operates at this level and the short length of roadway that experiences this higher volume of traffic, the operational counts for the entire length of SR19 from Irondale Road to SR-20 were used in the level of service analysis of SR19 as this provides a more accurate picture of existing operating conditions along SR19.

**Table 1**  
**Roadway Functional Classification Descriptions**  
**Jefferson County**

<b>Functional Class</b>	<b>Urban (5,000 population or more)</b>	<b>Rural</b>
Principal Arterial	Serves regional major activity areas. Carries all inter-urban and significant intra-urban auto and transit trips. Offers most mobility, least land access. Fully or partially controlled access.	Carries statewide or interstate travel. Serves most urban areas with populations of at least 25,000. Provides an integrated network.
Minor Arterial	Interconnects and augments principal arterials. Distributes 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.

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 Table 2 for roadway level of service definitions. The level of service standard in Jefferson County for rural roadways is LOS C. The established level of service standard for Jefferson County roadways in an urban area is LOS D or better. This difference reflects the understanding that higher volumes of traffic are expected in urban areas because of a concentration of economic activities. 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. SR19 was recently designated as a HSS. The Level of Service standards for SR19 are now set by WSDOT. WSDOT will accomplish this goal through consultation with the Peninsula Regional Transportation Planning Organization (PRTPO) which in turn will consult with Jefferson County. It should be noted that LOS standards employed in this document for SR19 are consistent with PRTPO recommendations but have not been established by WSDOT and are for County planning purposes.

SR19 currently operates at LOS D, an acceptable level for the Urban Growth Area. Outside of the UGA boundary, SR19 continues to operate at LOS D. The PRTPO is currently looking to designate SR19 as a Tourist Corridor. Jefferson County participates in the organization's planning process and will follow the recommendations set forth by the PRTPO. The PRTPO has identified various roadways on the Olympic Peninsula as Tourist Corridors to address the issues created by fluctuations in traffic volumes during tourist seasons that cause some roadways to drop below the adopted County standard in rural areas. 2.2 million tourists visit the Port Townsend area every year with approximately 50% accessing the area by way of SR19. As established by the PRTPO, Tourist Corridors are allowed to operate at LOS D, similar to roadways in urban areas. Figure 3 shows current Level of Service designations for roadways within the Irondale-Port Hadlock UGA.

### ***Planned Roadway Improvements***

Jefferson County's Six-Year Transportation Improvement Program (TIP) for 2004 to 2009 plans non-capacity related improvements (channelization and pedestrian facilities) to the portion of Chimacum Road from M.P. 0.41 to 0.98 (vicinity of the Jefferson County shop southerly to the East Fork Chimacum Creek crossing). At this time, the Washington State Department of Transportation (WSDOT) has proposed only one signalization project for the State-owned facilities of SR19 and SR116 (Ness's Corner) from 2004 to 2009.

### ***Current Deficiencies***

Under existing conditions and urban standards, there are no current deficiencies in the UGA road system. Intersection and road segment Level of Service analysis was performed using the Transportation Research Board's Highway Capacity Software (HCS). This software uses such information as functional class, design hourly volume, free flow speed, road and shoulder widths and number of lanes to determine level of service designations. HCS provides an average LOS designation for the entire intersection, averaging the level of service of both the major and minor legs of the intersection. The minor leg of an intersection is defined as the intersecting roadway that is stop controlled, while the major leg is the roadway which is free flowing. It should be noted that although overall intersection analysis shows no current deficiencies, roadways that intersect SR19 develop long queues and vehicle delays that approach unacceptable levels. This is caused by relatively high volumes of traffic traveling along SR19 with few gaps to allow entering traffic from intersecting roadways.

### **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.

**Table 2  
Roadway Level of Service Definitions  
Jefferson County**

<b>LOS Category</b>	<b>Definition</b>
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.
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.
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.
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.
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.
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.

**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 6:45 AM to 7:10 PM with Dial-a-Ride available for qualified individuals. Transportation Policy TRP 2.3 in the Jefferson County Comprehensive Plan establishes a minimum level of service based on Annual Transit Revenue Service Hours (ATRSH). The level of service standard of 8400 ATRSH as established countywide by the County’s Comprehensive Plan will continue to be met for the planning period as Jefferson Transit continues to revise its service based on demand as appropriate. Additionally, Jefferson Transit has increased regularly scheduled service to the UGA within the last two

years, and will continue to revise service to the UGA as appropriate. Jefferson Transit also provides regular updates to its Operating and Capital improvement Plan.

## TRANSPORTATION PROJECTIONS

### *Population Forecasts and Growth Rates*

A range of population projections was presented by the Washington State Office of Financial Management (OFM) for GMA planning purposes. Forecasts to be used in Jefferson County must fall within the OFM's forecast range and the OFM's intermediate range forecast as endorsed by the Port Townsend City Council's Community Development & Land Use Committee and adopted by the County on August 25, 2003. This forecast proposes a 20-year population projection for the Irondale-Port Hadlock UGA of 2.76% compounded annually.

In addition to population growth, land development and intensification of land use creates additional impacts to the transportation system that exceed that of the projected growth rates in the area. At this time, a General Sewer Plan is under development to allow the County to provide sewer services to areas targeted for public, commercial, industrial and multi-family residential land uses in the core Port Hadlock commercial district as well as sections along SR19. Growth and development of the UGA commercial district is currently limited by the lack of this infrastructure. The introduction of a sewer system will increase land use densities and subsequently impact transportation facilities in and around the UGA. Assuming that the land within the UGA designated as commercial, industrial, and multi-family residential will be developed during a 20-year planning period, 2005 – 2024, the Jefferson County has developed projected rates of development in acres per year, as shown in the following Table 3.

**Table 3**  
**Projected Development Rates**

Commercial and Industrial Land	
<u>Time Period</u>	<u>Projected Development Rate (acres/year)</u>
2004	0.9
2005 – 2010	2.1
2011 – 2024	3.9

  

Multi-Family Residential	
<u>Time Period</u>	<u>Projected Development Rate (units/year)</u>
2005	28
2011 – 2024	66

Source: Jefferson County

This assumes that the availability of a sanitary sewer system will affect the rates of development. After the UGA designation is completed and prior to the development of a sewer system, urban commercial and industrial development will be permitted, but only by those developments that can be served by an on-site septic system. It is assumed that the sanitary sewer system will be available by 2011 to designated areas. Using these development rates, 12.6 acres of commercial and industrial land are estimated to be developed during the 2005-2010 planning period and 54.3 acres developed from 2011 to 2024. This

growth scenario includes a 15% market reduction factor to account for land that will be unavailable for development during this period.

### ***Trip Generation***

The impact of land development and intensification on the transportation system is determined through the use of trip generation. Average daily traffic (ADT) rates are based on averages published in the Institute of Transportation Engineer's (ITE) *Trip Generation 6<sup>th</sup> Edition*. Daily trip generation estimates for proposed land uses in the Irondale-Port Hadlock area were based primarily on the square footage of floor space created by the development and to a lesser extent total acreage of developed land. Average daily trip rates for multi-family residential housing are based on average trips per resident. When using trips per square footage, assumptions were made on the approximate dimensions of the building in question. Each study in *Trip Generation* records the gross floor area of each type of development and the average of these was used to determine an appropriate size. The Jefferson County Unified Development Code was also referred to as a functional standard from which to approximate acreage required for development including parking lots, driveways and setbacks on the specific sites of development. Table 4 summarizes the trip generation rates, site acreage and ADT created by development in the UGA for the 2005-2010 planning period.

**Table 4**  
**Average Daily Trip Rates for Various Land Uses**  
**(2005 – 2010)**

					<b>2005-2010</b>
<u>Land Use</u>	<u>code</u>		<u>Trip Rate</u>	<u>Site Acreage</u>	<u>ADT</u>
Multi-Family Residential	220	35 Residents	3.35/resident	1.6	117
Boat School	140	5.4 acres	38.88/acre	5.4	210
Credit Union	912	4,000 SF	265.2/1000 *	0.5	1061
Auto Sales	841	25,000 SF	37.5/1000 *	4.8	937
Building Supply	812	16,500 SF	39.7/1000 *	0.9	655
				<b>13.2</b>	<b>2980</b>
* Trip rates are per 1000 square feet gross floor area					

An estimated 2,980 additional daily trips will be created by the development of these sites. The distribution of the vehicle trips onto the roadway system was calculated by percentage characteristics of existing traffic conditions. The majority of trips were distributed along SR19, SR116, Irondale Rd, and Chimacum Rd, the key circulation routes throughout the area. Distribution percentages were estimated based on the location within the UGA and the type of land use planned for the site. Land available for development is generally situated along SR19 and SR116, in existing commercial districts. This trend continues through 2010 creating the additional traffic volumes seen primarily on the State Routes and Irondale Rd.

Traffic analysis for the fourteen year planning period from 2011 through 2024 was based on the assumption that the sewer system would be in place and the intensification of land use adjacent to the sewer system would continue at a higher rate than the 2005-2010 period. Given 54.3 acres of developable commercial and industrial land by the year 2024, it was assumed that the distribution of land use would be broken down into the following uses:

- 20% (11 acres) light industrial

- 80% (43 acres) commercial/retail

Furthermore, it was assumed that 80% of commercial and industrial development would be concentrated in the existing Port Hadlock commercial district with the remaining commercial and industrial development located throughout the SR19 corridor. Trip generation estimates were developed based on a weighted average of trip rates per gross floor area (GFA) for various, common types of commercial and retail developments. In addition to trip rates, average values of GFA for each type of development were taken from *Trip Generation 6<sup>th</sup> Edition*. These values were used to generate average trip rates per acre of developable land by using the assumption that gross floor area is roughly 21% of total land developed. The remainder is taken up by set backs, parking, driveways, landscaping etc. The 21% value was reached through analysis of existing buildings of similar type in areas comparable to the UGA. The average ratio of gross floor area to total lot area for developments in an urban area came to roughly 21%. This figure was confirmed through calculations involving averages published in *Trip Generation*. Table 5 indicates the types of anticipated development, trip rates and average gross floor area.

**Table 5  
Trip Generation Rates  
(2011 – 2024)**

**Weighted Average from Trip Generation for Commercial/Retail development**

<b>Anticipated Development</b>	<b>Trip Rates Per 1000' GFA</b>	<b>Average GFA</b>	
1. Quality Restaurant	89.95	9,000	
2. Medical/Dental	36.15	15,000	
3. Nursery	36.08	9,000	
4. Tire Store	24.87	5,000	
5. Mini-Warehouse	2.5	12,250	**
6. Super Market Expansion	111.51	20,000	
7. Hardware Store	51.29	20,000	
8. Fast Food Restaurant	496.12	3,000	
9. Convenience Market	845.6	3,000	
10. Bank	265.2	4,000	
<b>Weighted Averages</b>	<b>195.93</b>	<b>10,025</b>	<b>Sq. Ft.</b>

$10,025 / .21^* = 47,738 \text{ sf}$        $47,738 \text{ sf} / 43,560 \text{ sf} = 1.0959$        $195.93 / 1.0959 = 178.78 \text{ trips/acre}$

\* Gross Floor Area is roughly 21% of total land developed

\*\* value based on similar use in same area

To convert trips per gross floor area into trips per acre, it was assumed that gross floor area is roughly 21% of the total lot acreage developed. This value was calculated from published averages in ITE's *Trip Generation 6<sup>th</sup> Edition*.

Using the rate of 179 trips per acre for commercial/retail uses and the rate of 52 trips per acre for industrial uses (*Trip Generation 6<sup>th</sup> Edition*), ADT then was determined by multiplying the number of trips per acre by the developable land available. A total of 8,269 average daily vehicle trips are estimated to be generated by future commercial and industrial developments in the UGA and distributed onto the road system for the 14-year period. Using the assumption that 80% of this total will occur near the existing Port Hadlock commercial district, 6,615 ADT will be generated from commercial and light industrial development in this area. The remaining 20% of commercial and industrial development is assumed to occur throughout the SR19 corridor and create 1,654 ADT.

### ***Multi-Family Residential***

Multi-Family residential development will be permitted within the UGA prior to the development of the sewer system but is not expected to develop greatly due to the restraints of on-site septic service. After the assumed availability of the sewer system by 2011, multi-family residential development will proceed at approximately 66 dwelling units per year. This assumption is based on anticipated population growth and residential capacities described in the Irondale & Port Hadlock UGA Preliminary Buildout Analysis (Personius, 3/4/2004). Zoning within the UGA has been updated to reflect this development with the addition of nearly 80 acres of multi-family residential land. This development scenario produces approximately 911 dwelling units over the 2011-2024 period. Assuming an average of 2 persons per unit and 3.35 ADT per person, this creates 6104 trips. These trips typically begin near SR-116, Chimacum Rd, and the Port Hadlock Intersection. They are then distributed based on existing traffic patterns in the area.

The projected addition of this level of dense residential development will increase traffic and congestion in areas near these dense developments. It will result in a proportionally decreased population locating in the northern portion of the UGA and lower the traffic impacts in this area. The transportation model for 2004-2010 assumed a traffic growth rate matching population growth at 2.76%. This rate accounts for increases in vehicles on all roadways within the UGA and is a figure to which trip generation is added. From 2011-2024, given that a large percentage of the population is being accounted for through Multi-Family trip generation; it would be inaccurate to assume single-family traffic generation will continue to increase at 2.76%. During this time period, the traffic growth rate is adjusted to 2% annually with vehicle trips added to describe traffic growth resulting from multi-family residential development. This method more accurately predicts how traffic patterns will change in the UGA with the planned concentration of the population.

### ***Trip Distribution***

Distribution of ADT was accomplished through a method of applying percentages from existing turn movement counts. A total of 11,249 trips were assumed to be created through commercial and light industrial development. The concentration of population growth into the projected Multi-Family residential developments is accounted for through the 2.76% traffic growth rate assumed throughout the 2005-2024 period. To more accurately model this concentrated traffic, distribution of the 6,104 Multi-Family residential trips was concentrated in the areas immediately surrounding the expected development sites. Although these trips do not necessarily add to projected traffic levels on a region-wide basis, they significantly impact these areas and were modeled accordingly. The percentage of vehicles currently entering and exiting intersections was assumed to remain relatively constant through 2024. The only deviation from this process was to increase the percentage of traffic entering the Port Hadlock commercial district from SR19 along SR116. This was done to reflect the desire to route traffic to SR19 along SR116 and the assumption that multi-family residential developments will also be served primarily by SR116, putting a higher burden on this roadway and related intersections. Figure 2 displays existing ADT and 2010 and 2024 projected ADT (including trip generation) for impacted road segments. Tables 6 and 7 show vehicle delay and LOS designations for key intersections in and immediately surrounding the Irondale-Port Hadlock UGA, as well as road segment ADT and Level of Service designations. Five intersections situated outside of the UGA boundary have been included in this analysis due to the potential effect the UGA designation and growth of the surrounding area will have on the intersections. These intersections are:

- SR19/Chimacum Rd/Center Rd (Chimacum Intersection)
- SR19/Woodland Dr/Airport Rd

- SR19/Prospect Ave (Kala Point)
- SR19/Anderson Lake Rd
- SR19/West Valley Rd (Chimacum School Intersection)

**Table 6  
Intersection Delay and Level of Service**

INTERSECTION	EXISTING DELAY (seconds)	LOS	GROWTH RATE *	2010 VEHICLE DELAY	2010 LOS	2024 VEHICLE DELAY	2024 LOS
Chimacum	12	B	2.76%	19	C	177	F
Port Hadlock	12	B	2.76%	16	C	161	F
SR19&Irondale	14	B	2.76%	18	C	162	F
Irondale & Mont.	10	B	2.76%	11	B	19	C
SR19 & FourCorners	17	C	2.76%	26	D	206	F
SR19 & SR116	16	B	2.76%	30	D	634	F
SR116 & Cedar	14	B	2.76%	17	C	440	F
SR116 & OakBay	10	B	2.76%	11	B	15	B
SR19 & Woodland	14	B	2.76%	18	C	36	E
SR19 & Prospect	16	C	2.76%	19	C	60	F
SR19 & AndersonLk	18	C	2.76%	28	C	250	F
SR19 & WestValley	18	C	2.76%	33	D	397	F

\* The actual growth in traffic volumes is due to a base population growth rate of 2.76 percent per year and impacts to traffic from new development in the Hadlock central core area and along SR19. The 2011-2024 period assumes a rate of 2.00%.

**Table 7  
Road Segment ADT and Level of Service**

Road Segment	From	To	Existing		Growth Rate *	2010 Forecast		2024 Forecast	
			ADT	LOS		ADT	LOS	ADT	LOS
SR19	North of Irondale	SR20	14,000	D	2.76%	18,437	E	29,292	F
SR19	North of SR116	Irondale	12,470	D	2.76%	16,681	E	26,222	E
SR19	Center Road	SR116	9,878	D	2.76%	13,075	D	20,138	E
Irondale Road	SR19	Montgomery	4,248	C	2.76%	5,002	C	8,041	D
Irondale Road	Montgomery	Hadlock Intersection	4,276	C	2.76%	5,035	C	8,475	D
SR116	Irondale Rd	Oak Bay Rd	5,550	C	2.76%	6,476	C	11,717	D
SR116	SR19	Chimacum/Irondale Rd	6,300	C	2.76%	8,049	C	16,406	E
Cedar Ave	SR116	Montgomery	1,937	B	2.76%	2,281	B	5,533	C
Chimacum Rd	SR116	SR19	5,859	C	2.76%	6,899	C	9,161	D

\* The actual growth in traffic volumes is due to a base population growth rate of 2.76 percent per year and impacts to traffic from new development in the Hadlock central core area and along SR19. The 2011-2024 period assumes a rate of 2.00%.

## Deficiencies

Under existing conditions, mobility on SR19 is adequate. There are several unsignalized intersections accessing SR19 in the Irondale, Port Hadlock and Chimacum areas. At this time, these roadways typically experience moderate but acceptable delays as vehicles wait for gaps in traffic on SR19. As volumes build, these gaps in traffic will decrease, creating greater delay on the minor legs of intersections. Long vehicle queues will develop and safety may be compromised as vehicles do not have enough time to merge onto SR19. To maintain mobility on SR19, a minimum number of interruptions to traffic flow (traffic signals) should be pursued. The most appropriate way to avoid excessive signalization is to minimize the number of locations of traffic access onto SR19 as well as control turn movements onto SR19. The intersection of SR19 and SR116 (Ness's Corner) is the most obvious choice for signalization in the near future. If signalized, 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

It is likely that signalization of the SR19/SR116 intersection would create sufficient gaps in traffic along SR19 to allow safer, more comfortable turn movements onto SR19. Although this intersection will reportedly operate at LOS D by 2010, the minor leg control delay on SR116 approaches 62 seconds per vehicle and operates at LOS F. To reduce this delay, relieve congestion and enhance safety, this intersection should be signalized within the next six years.

Several intersections experience similar problems to those of the SR19/SR116 intersection. SR19 typically experiences acceptable flow while intersecting roadways begin to develop long delays as vehicles attempt to turn onto SR19. At intersections with lower turn movements such as SR19 and Woodland Dr, SR19 and Prospect Ave, SR19 and Anderson Lake Rd, minor leg delay and LOS deficiency can be alleviated through the addition of flared-right turn pockets that allow right-turning vehicles space to move around left-turning vehicles. While these intersections are located outside of the UGA, their operational status is dependent on the operational characteristics of SR19 inside of the UGA. As such, they are included in the transportation analysis for the UGA. Preliminary planning analysis of these improvements and the potential gaps created by signalization at SR19 and SR116 show slight increases in level of service through 2024.

If growth and development continues as planned over the next twenty years, further improvements to the road system will be required to maintain adopted Level of Service standards. Signalization of additional intersections will be required to handle significantly increased volumes projected to occur by 2024. In addition, capacity improvements will be required on SR19 and SR116 to handle expected higher volumes of traffic.

Based on projected volumes, signal improvements as shown in Table 8 will be required at the following intersections by 2024:

Inside the UGA:

- Hadlock Intersection
- SR19 and Irondale Rd
- SR116 and Cedar Ave

Outside the UGA:

Chimacum Intersection  
SR19 and West Valley Rd.

The suggested improvements discussed below are based solely on future Level of Service projections and engineering assumptions and judgment. It is assumed these improvements will not be required during the 2005-2010 planning period given estimated LOS projections. At this time, only estimates have been made as to the satisfaction of State recognized Signal Warrants. Satisfaction is based on the following warrants:

- Warrant 1 - Eight Hour Vehicular Volume
- Warrant 2 - Four Hour Vehicular Volume
- Warrant 6 - Coordinated Signal System
- Warrant 8 - Roadway Network

The Washington State Department of Transportation recognizes the above warrants as listed in the *Manual on Uniform Traffic Control Devices* (MUTCD), Chapter 4C. These locations should be monitored and an engineering study of traffic conditions at each location should be performed to determine when installation of a traffic control signal is justified. The timing of intersection improvements along SR19 must consider a balance between providing mobility along the arterial and accessibility from the intersecting roadways.

**Port Hadlock 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 extremely well as a stop-controlled intersection. As volumes build toward projected 2024 levels, service at this intersection begins to break down and signalization will be required to handle the denser, urban conditions that are expected as growth occurs in the core Port Hadlock commercial district.

**SR19 and Irondale Rd (Inside UGA).** Conditions at SR19 and Irondale Rd will become similar to that of the intersection of SR19 and SR116. 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 of this intersection will be required to handle increased volumes on both legs.

Due to close proximity, it is possible that a signal at both SR19/Irondale Rd and SR19/Four-Corners Rd (just outside of the UGA) could place unfavorable restrictions on the mobility of SR19. Signal Density on SR19, 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 SR19 and reduce financial costs, it is recommended that an alternate solution to signalization of both intersections be studied.

**SR116 and Cedar Ave (Inside UGA).** Development along SR116 and in the Port Hadlock commercial district will increase the importance of SR116 as a major collector of SR19. Both legs of this intersection will experience increased volumes and an unacceptable level of service. It is desired and anticipated that SR116 will continue to be the primary route to connect the Port Hadlock core and SR19. Signalization of this intersection will facilitate safety and access to and from SR116 and Cedar Ave. Prior to signalization the addition of right turn vehicle storage on the southbound leg of Cedar Ave should be considered. This improvement will likely increase the functional capacity of this intersection and maintain an acceptable, urban level of service until signal warrants are met.

**Chimacum Intersection (Outside UGA).** Increasing volumes at this all way stop controlled intersection will require signalization to maintain mobility on SR19 and handle increasing volumes along Chimacum Rd/Center Rd due to growth and development expected in the Port Hadlock commercial core.

**SR19 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 signalization of this intersection.

**SR19 Roadway Level of Service** capacity for SR19 as a two lane highway with turn lane median is a maximum of 14,300 ADT for LOS threshold “D”. Figure 2 shows that existing conditions approach this threshold. The projected 2024 volume of 29,292 ADT exceeds capacity and results in the roadway operating at LOS F. Capacity improvements will have to be completed to increase the level of service of SR19 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. Capacity (mobility) improvements for SR 19 are included in the Washington State Highway System Plan: 2003-2022, Appendix K, page 24.

**SR116 Roadway Level of Service** capacity for SR116 as a two lane highway is a maximum of 12,900 ADT for LOS threshold “D”. The projected 2024 volume of 16,337 ADT exceeds this threshold and results in the roadway operating at LOS E. Capacity improvements will have to be completed to increase the level of service of SR116 to acceptable standards. Typically this would involve widening the roadway through the addition of a two-way left turn lane, curb, gutter & sidewalk, illumination, stormwater mitigation, right-of-way acquisition, and wetland reparations.

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 SR19 and SR116. The Washington State Department of Transportation (WSDOT) has jurisdiction over these roads. 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 both within and outside the UGA.

## **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 should be encouraged to occur in a manner that will reduce or minimize and mitigate adverse environmental impacts. The UGA designation has little impact on the transportation system. This is not to say that there are not 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 densify and become more intense traffic generators. The analysis shows that a total of about 17,000 additional trips per day would be generated during the twenty-year planning period and distributed onto the road system.

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.

## **CAPITAL FACILITIES**

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. A program should be established to complete construction of these projects in the succeeding time period.

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.

Total transportation facility improvements for the complete 20-year planning period (2005-2024) are summarized in Table 8. These improvements are directly or indirectly associated with development and growth in the Irondale-Port Hadlock UGA. Jefferson County and the PRTPPO are currently applying to WSDOT to classify SR19 as a principal arterial. Changes in the functional classification of SR19 will likely qualify the roadway for more state and federal funding to bring the Highway of Statewide Significance (HSS) into compliance with standards. Transportation facility improvements for the six-year planning period, 2005-2010, are included in Table 8. This estimate includes the Chimacum Rd improvements proposed in the Jefferson County Six-Year Transportation Improvement Program (TIP). Proposed improvements to this roadway include:

- Intersection realignments and improvements
- .57 miles of reconstruction

Proposed funding sources for this project include \$500,000 in Rural Arterial Program (RAP) funds and \$217,000 in local funding.

The SR19/SR116 intersection (Ness's Corner) is a state owned facility which will likely be funded by a combination of State and local money. This intersection currently satisfies State warrants for signalization but is well down on the priority list of proposed projects to receive funding. Project funding options, including the application of local funding to this project, should be considered to insure this project is completed at an appropriate time. Proposed improvements include reconstruction and signalization of this intersection to urban standards.

Table 8 also shows transportation facility improvements associated with new development that should require completion or participation by adjacent property owners through private road construction or by reconstructing public roadways through the Road Improvement District Program (RID). Required improvements to transportation facilities should be specified as planning policies and zoning standards to assure completion. This will help disburse capital facility investments required by state and local agencies. All costs include an assumed annual inflation rate of 2.2%.

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**Table 8  
Transportation Improvements (2005 – 2024) – Regional and UGA Needs**

<b>Non-Capacity Projects 2005 – 2010</b>							
Route I.D.	Route Name	Description	From M.P.	To M.P.	2005-2010 Cost	Funding Source(s)	Funding Status
<u>Inside UGA</u>							
932507	Chimacum Rd.	County Shop to W. F. Chimacum Crk.	0.41	0.98	\$ 720,000	RAP / Local	Proposed
SR19/116	SR19 @ SR116	Signalization - Reconstruct to Urban Stds.	10.71	10.71	\$ 334,484	WSDOT/Local	Proposed
<b>Total Non-Capacity Projects 2005 – 2010</b>					<b>\$ 1,054,484</b>		
<b>Non-Capacity Projects 2011 – 2024</b>							
Route I.D.	Route Name	Description	From M.P.	To M.P.	2011-2024 Cost	Funding Source(s)	Funding Status
<u>Inside UGA</u>							
SR116	Port Hadlock Intersection	Signalization (2017-18)			\$ 434,297	WSDOT/Local	Unfunded
SR19	SR19 @ Irondale Rd.	Signalization (2018-19)			\$ 346,500	WSDOT/Local	Unfunded
SR116	SR116 @ Cedar Ave.	Signalization (2018-19)			\$ 346,500	WSDOT/Local	Unfunded
<u>Outside UGA</u>							
SR19	SR19 @ Prospect Ave.	Intersection Improvements (2011-13)			\$ 243,270	WSDOT/Local	Unfunded
SR19	SR19 @ Anderson Lk. Rd.	Intersection Improvements (2014-15)			\$ 254,091	WSDOT/Local	Unfunded
SR19	SR19 @ Woodland Dr.	Intersection Improvements (2014-15)			\$ 254,091	WSDOT/Local	Unfunded
SR19	SR19 @ West Valley Rd.	Signalization (2020-21)			\$ 361,914	WSDOT/Local	Unfunded
SR19	Chimacum Intersection	Signalization (2020-21)			\$ 445,160	WSDOT/Local	Unfunded
<b>Total Non-Capacity Projects 2011 – 2024</b>					<b>\$ 2,685,823</b>		
<b>Capacity Projects 2005 - 2024</b>							
Route I.D.	Route Name	Description	From M.P.	To M.P.	2005-2024 Cost	Funding Source(s)	Funding Status
<u>Inside UGA</u>							
SR19	SR19	Widen to Four Lanes (2020-22)	10.50	11.75	\$ 5,978,800	WSDOT	Unfunded
SR116	SR116	Widen to Three Lanes (TWLTL) (2020-22)	0.0	1.11	\$ 2,408,700	WSDOT	Unfunded
<u>Outside UGA</u>							
SR19	SR19	Widen to Four Lanes (2020-22)	9.00	10.50	\$ 7,174,600	WSDOT	Unfunded
SR19	SR19	Widen to Four Lanes (2020-22)	11.75	14.16	\$ 11,527,100	WSDOT	Unfunded
<b>Total Capacity Projects 2005 - 2024</b>					<b>\$ 27,089,200</b>		
<b>Private Developer Projects 2005 – 2024</b>							
Route I.D.	Route Name	Description	From M.P.	To M.P.	2005-2024 Cost	Funding Source(s)	Funding Status
<u>Inside UGA</u>							
932507	Chimacum Rd.	Reconstruction to Urban Stds.	0.41	0.64	\$ 138,600	Developer	Unfunded
SR116	SR116	Reconstruction to Urban Stds.	0.12	0.47	\$ 210,000	Developer	Unfunded
SR116	SR116	Reconstruction to Urban Stds.	.47	1.11	\$ 164,000	Developer	Unfunded
658909	D Street	Reconstruction to Urban Stds.	0.00	0.10	\$ 72,722	Developer	Unfunded
634509	Hunt Rd	Reconstruction to Urban Srds	0.00	0.20	\$ 115,000	Developer	Unfunded
933507	Irondale Rd	Reconstruction to Urban Stds.	1.56	1.79	\$ 284,545	Developer	Unfunded
<b>Total Private Developer Projects 2005 - 2024</b>					<b>\$ 984,867</b>		
<b>Total All Projects 2005 - 2024</b>					<b>\$ 31,814,374</b>		

## CONCLUSION

The analysis in this portion of Chapter 2 shows that overall transportation impacts to the transportation system and potential transportation needs, in the UGA and adjacent area, are manageable and that UGA designation may impact transportation by increasing the capacity demand earlier, but that the impacts are likely to occur without UGA designation. 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 when initial land use regulations are in place in order to determine impacts to individual neighborhoods within the UGA. Further analysis should look at various impacts to road segments based on zoning and land use in a more localized manner within the UGA. This could lead to changes in land use or to transportation standards or improvements to the transportation system (from those that this document recommends).

## GOALS AND POLICIES

Goals and policies are set forth in the Jefferson County Comprehensive Plan for all aspects of the transportation system. The overall goal of the transportation element is to “encourage efficient multimodal transportation systems that are based on regional priorities and coordinated with county and city comprehensive plans” (RCW 36.70A.020(3)). The Peninsula Region Transportation Planning Organization (PRTPO) also provides coordination of local jurisdiction goals and policies on a larger, regional, system-wide scale. Goals and policies set forth by the PRTPO’s Regional Transportation Plan (RTP) provide a framework on which to develop detailed goals and policies on a local level. The Jefferson County Comprehensive Plan and amendments (such as the Non-Motorized and recreational Trails Plan) contain Goals, Policies and Strategies relating to transportation for UGA’s, and should be referred to for further goals, policies and strategies applicable to transportation in the UGA.

The following are modifications and additions to the Goals, Policies and Strategies included in the currently adopted Jefferson County Comprehensive Plan, Transportation Element. The modifications to existing policy and strategies are underlined.

### HIGHWAYS AND ARTERIALS

#### POLICIES

**TRP 1.10 (New)** Encourage the use of roadway features that enhance urban qualities by applying urban standards as deemed appropriate in the Urban Growth Area.

### LAND DEVELOPMENT STANDARDS

#### POLICIES

**TRP 4.6 (Modified)** Require that subdivision and commercial project designs address the following issues:

- a. Cost effective transit and delivery of emergency services;
- b. Provisions for all transportation modes;
- c. Dedication of rights of way for existing and future transportation needs;

- d. Motorized and nonmotorized access;
- e. Sidewalks and bicycle pathways;
- f. Compatibility between motorized vehicles, pedestrians, bicyclists, and transit users
- g. Inclusion of transit friendly design elements
- h. Adequate parking for non-peak period; and
- i. Frontage improvements and roadway features to meet urban design standards within the Irondale-Port Hadlock UGA.

**TRP 4.10 (New)**

Jefferson County should not approve new development that would generate traffic that would decrease the Level of Service below the adopted Level of Service Standard for an intersection or roadway segment. When a new development would lower the Level of Service below the adopted Level of Service Standard, the development proponent should mitigate the impact by one of the following:

1. Construct improvements that restore the Level of Service to the adopted Level of Service Standard;
2. Contribute an impact fee that is a proportionate share of the cost of improvements related to the development;
3. Implement alternative measures such as Transportation Demand Management (TDM), project phasing, or other appropriate measures determined by the County that will avoid the impact.

## STRATEGIES

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**Action Items**

1. (Modified) Monitor traffic volumes and turn movements within UGA's on all arterials and major collector facilities and intersections.
2. (Modified) Develop access management techniques to regulate driveway access, including use of shared driveway access. Work with the Washington State Department of Transportation and property owners to develop appropriate access management measures that will minimize the impacts to SR 19 and SR 116 from new developments and redevelopments in the Irondale and Port Hadlock UGA.
37. (Modified) Include in ordinances a transportation concurrency management system that requires development proponents to mitigate the LOS deficiencies for Category A Public Facilities: Rural roads and roads within Urban Growth Areas.
38. (New) Develop standards that provide pedestrian facilities along one side of local access streets and both sides of collectors and arterials.
39. (New) Develop and implement a Truck Routing Plan to direct truck and heavy vehicle traffic away from residential neighborhoods.

40. (New) Develop a traffic circulation plan within and adjacent to Urban Growth Areas that considers the adjacent land use and potential development patterns to ensure that the proper transportation facilities are planned.

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