

OUR CUSTOMERS: RIDERSHIP AND DEMAND

The foundation of the Long-Range Plan is to develop a thorough understanding of WSF customers, both today and in the future. As a result, the ridership and demand analyses included two key elements:

- Current ridership characteristics. A successful Long-Range Plan must take into account the needs of its customers and, given financial and operational constraints, tailor its services accordingly.
- Expected future demand. As this is a Plan that will establish a vision for ferry services in 2030, it is necessary to base this vision on a realistic forecast of future demand.

The need for better information about current and future ridership is heightened by the legislative requirements to identify, evaluate and recommend adaptive management practices that will increase the utilization of existing assets, implement demand management strategies, and minimize system costs.

5. CURRENT RIDERSHIP

One of the findings of the JTC's Ferry Finance Study was that WSF needed a better understanding of its customers. As a result, the Study recommended (and ESHB 2358 subsequently required) a comprehensive customer survey be conducted and the results integrated into the Long-Range Plan.

The Legislature assigned responsibility for the market survey to the WSTC. The WSTC's effort, completed in November 2008, took more than a year to complete and included the following research elements:

- Qualitative research. Focus groups representing riders on all routes were conducted in November and December 2007.
- On-board surveys. Two rounds of on-board surveys were conducted – the first in March 2008 and the second in July/August 2008. In total, 13,000 riders completed surveys.
- General market and infrequent rider survey. A telephone survey with more than 1,200 Puget Sound residents contacted randomly to discuss their ferry utilization.
- Freight customer survey. A qualitative research effort that engaged with decision makers at various regional freight companies.



- In depth on-line surveys. A subset of the on-board survey respondents was contacted for a follow-up detailed survey to test reactions and potential sensitivities to potential operational and pricing strategies.

WSF staff was involved throughout the survey effort and had opportunities to review and comment on the survey design, collection and analysis to ensure that there was close coordination between this and the planning work.

The survey will be updated every two years. Future surveys will focus on customer reactions to WSF changing operational and pricing policies, providing the customer input that is the keystone of adaptive management.

5.1 What Did We Learn from Recent Survey Efforts?

The WSTC survey was unusual in its depth and breadth as it sought to establish a comprehensive understanding of the characteristics of today's ridership base and provide input for the evaluation of alternative operational and pricing strategies being considered in the development of the Long-Range Plan. The survey provided extensive and detailed data that will support not only this effort, but inform ongoing management and operational decisions over the next several years. The key findings of the survey are summarized for the following areas of investigation:

Importance of ferry service. The survey found that residents throughout Puget Sound use the ferries and think they are an important service.

- The general market survey (telephone survey of Puget Sound residents) found that 91% of all residents in the region have ridden WSF at some point in the past
- 95% of Puget Sound residents, including East Sound (95%), West Sound (98%), and Island (100%) residents, responded that ferries are very important (70%) or somewhat important (25%). (General market Survey)

Characteristics of ferry riders. The survey collected information about the demographics and travel patterns of riders. The analysis considered the characteristics of overall ridership, defining riders as regular, infrequent/recreational and freight customers. The characteristics were also defined at a route-level analysis.

The following are some of the key findings which show, among other things, the significant differences that exist between customers on WSF routes:

- Regular ferry customers are somewhat older and more affluent than state residents overall or residents in ferry communities (west side of Puget Sound).
- The majority of regular ferry customers are employed (76%), while approximately 16% were retired, which is a smaller share than the overall share of retirees in ferry communities (25%). The rest are children or non-workers.
- Generally, recreational and infrequent riders are older and more affluent than regular riders and the characteristics of this customer group did not vary much according to the season.
- More than half (52%) of all infrequent riders identified in the telephone survey ride less than once per year.
- Among the infrequent riders surveyed as part of the on-board survey, the most frequently cited level of use was less than seven one-way rides per month.
- On average, WSF riders take 17 one-way trips per month, with 28% taking 25 or more one-way trips per month.
- The routes with large proportions of higher-frequency customers included Seattle-Bainbridge, Seattle-Bremerton, routes serving Vashon Island and Fauntleroy-Southworth. Not surprisingly, these routes also have the highest shares of commuters.
- 30% of riders say the primary purpose of their trip is commuting to work or school. The actual number of customers who say they are commuters remains largely the same between summer and winter, though the share is smaller in the summer.
- The other 70% consists of non-commute trips including: recreational (25%); personal/shopping (19%); social (16%); and other (10%).
- The routes with the highest proportion of recreational trips were Port Townsend-Keystone, Anacortes-San Juan Islands and the International routes.
- 40% of all riders always drive onto the ferry as a driver or passenger in a car.
- 11% of all riders always either walk or bike on the ferry. An additional 17% bike or walk on more often than they drive on.
- Frequency of walk-on use varies widely by route, with key factors in walk-on rates identified as trip purpose, the ability to use transit on either side, or their need for a vehicle at their destination.
- Routes with the highest shares of regular walk-ons were Seattle-Bremerton and Seattle-Bainbridge.



- Routes with the highest share of regular drive-on customers included Edmonds-Kingston, Mukilteo-Clinton, Port Townsend-Keystone and Anacortes-San Juan Islands.

Attitudes toward possible operational strategies. During the evaluation of operating strategies (discussed in Section 12), WSF had the opportunity to work with the survey team to assess attitudes about some of the strategies under consideration. In particular, the survey provided important information about possible vehicle reservations and transit enhancements.

- On the question of vehicle reservations, riders generally agreed that:
 - The system should be dynamic, offer real-time information about availability and be open on a first come, first served basis.
 - There should be policies that penalize no shows or those arriving late for a sailing
 - WSF should offer special options to frequent users, such as allowing multiple bookings at once.
- On the other hand, there were much more mixed views as to whether the system should:
 - Focus on tourism routes only.
 - Limit the number of spaces available for reservations
 - Charge a premium or extra fee for a reservation
 - Provide priority bookings for frequent users.
- For transit enhancements, there was wide support for improving the walk-on experience and other possible strategies to encourage greater walk-on utilization of the system.

Ability and/or willingness to change travel behavior. Given the need for WSF to consider opportunities to shift and manage its demand, perhaps the most important new information was related to customers' ability and/or willingness to change their travel behavior. The following are some of the key findings from this area of focus.

- Overall 60% of riders said that they typically have the flexibility to take an earlier or later sailing. Of these riders, approximately 8% of riders and 8% of vehicle drivers traveling in the peak said they could shift out of the peak.
- Approximately 38% of riders said that they have no flexibility to shift their travel.

- There was little variation in responses to the flexibility questions among the various routes in the system.
- The factors that affect vehicle drivers' ability to shift mode of travel to walk-on included: availability of transit on either side of the ferry trip and the total time of the trip.

Attitudes about fares. Given recent large fare increases and the continuing funding challenges facing WSF, it was important to develop a better understanding of customer attitudes regarding fares. The following are some of the key fare-related findings from the survey:

- More than half (56%) of riders believe that they are getting a good value for the fare they are paying, with 30% neutral and only 14% saying that ferries are a poor value.
- Change in ferry use is driven more by changes in life circumstances than by fare increases. Despite the fact that fares have risen steeply between 2000 and 2006, a relatively small percentage of people in the general market survey cited price as reason for reducing their ridership.
- While most riders do not like fare increases, most recognize that periodic fare increases are necessary.
- Generally, customers were more willing to consider increases to the passenger fare than to the vehicle fare. This may be a function of the fact that vehicle fares are already much higher than passenger fares.
- Vehicle drivers on the high recreational routes are the least sensitive to an overall vehicle fare increase.
- Among the commuter-oriented routes, Fauntleroy-Vashon riders reported more price sensitivity than other routes.
- The overall price sensitivity analysis suggested that non-discretionary trips were less price-sensitive than discretionary trips. The analysis suggested that fare increases of 45% for non-essential trips and 70% for essential trips would be revenue maximizing.
- Customers were generally much more supportive of pricing strategies designed as incentives for travel changes (discounts for walk-ons or small vehicles) and generally negative towards strategies designed as disincentives (such as congestion pricing approaches).

Attitudes toward quality of service. The final area of investigation focused on perceived value and quality of ferry services. The survey found that:



- The majority (68%) of ferry riders were satisfied with the services and 20% were dissatisfied. This represents a decrease from a WSF customer satisfaction survey in 2002 when 74% said they were satisfied with ferry services.
- On a route-level, the least satisfied customers were on the Vashon Island routes, while the most satisfied customers were on routes serving Seattle-Bainbridge, Edmonds-Kingston, Mukilteo-Clinton, Anacortes-Sidney and Anacortes-San Juan Islands.

How Have Findings Been Incorporated in Planning Efforts?

The adaptive management strategies proposed in the sections that follow recognize that many customers are flexible in the times they travel. Frequent user programs will be considered in conjunction with other strategies to help with any potentially negative impacts to commuters. Following are the major findings that influenced the planning efforts.

Our customer base is changing. Approximately one-third of WSF's customers travel for the purposes of work or school (i.e. make non-discretionary commute trips). This trend has also been observed in recent WSF's Origin-Destination Surveys (conducted in 1993, 1999, and 2006), which have shown a gradual decrease in peak period commute trips. While the share of riders that are commuters is falling, it is important to keep in mind that each commuter represents many individual trips over the course of a year. Any change that might reduce or increase the number of commuters could have a disproportionate impact on total number of trips.

Our customers are generally traveling less frequently and have some flexibility. A meaningful share (8%) of peak period vehicle travelers said they could shift to off-peak times, indicating that strategies geared toward time shift (like a reservation system) could be effective in reducing congestion during the peak.

There are opportunities to increase walk-on shares on commuter-oriented routes. Two of the routes with the highest shares of commuters (Edmonds-Kingston and Mukilteo-Clinton) also are among the routes with the highest shares of drive-on trips. This suggests an opportunity may exist to improve the mode shift on one of the more congested routes by attracting some of these regular users to walk-on, thus freeing up vehicle space to meet growth needs. To accomplish this however, will likely require some incentives and/or addressing the reasons why these customers want to drive on most of the time.

Fares are not the only factor affecting use of ferries. While higher fares have had an impact on ferry ridership in recent years, the general telephone survey (not just customers) found fares to be a small factor in why some customers are using the ferry less. Many respondents cited lifestyle changes, like changes in employment or location of residence, as the primary reason for riding ferries less. Also, a majority of customers believe that ferry services reflect a good value and are pleased with the services they are receiving.

6. DEMAND FORECASTS

The demand forecasting assumptions used in the 2006 Draft Plan have been updated for this planning effort. The updates have accomplished two key objectives: (1) Based on survey information and an increased understanding of the types of riders using the system, ridership forecasts have been refined, particularly with respect to recreational ridership; and (2) the two different modeling efforts (the revenue model and the planning model) have been reconciled.

For a complete discussion of the methodology used to forecast ridership, see Appendix D.

6.1 Updated Process for Demand Forecasting

One area of concern raised in the JTC's Ferry Finance Study was related to the method used to develop the ridership forecast, and there were two significant issues that needed to be addressed in this effort: (1) the disparity of the results from the different ferry forecast tools; and (2) the rate of ridership growth projected by the planning model, which seemed high given recent trends.

WSF maintains two different demand forecasting tools, one for budget development purposes (revenue model) and one for long-term planning (planning model). The revenue model was developed to focus on near term ridership and fare revenue expectations, and is used to support the budget process. In recent years the short-term model has been adjusted to extend budget forecasts from 6 years to 16 years. This model estimates annual ridership and revenue based on WSF's historic relationship between ridership and a number of trends in regional and state economic conditions. These forecasts are adjusted quarterly.

The planning model is designed to evaluate the potential peak period ridership for two future planning years – 2020 and 2030. This model structure allows WSF to synchronize with other regional and state



With base level of service annual demand for ridership is projected to increase:

- 1999—26.8 million
- 2006—23.8 million
- 2030—32.3 million

Vehicle demand is also projected to increase:

- 1999—11.4 million
- 2006—10.9 million
- 2030—14.1 million

transportation planning models and capture the effects of expected changes in both the total level and distribution of population and employment in ferry-served counties. The focus is on the expected ridership growth during the average afternoon peak travel period, as this is a key factor in evaluating system and service sizing issues. Demand in the peak is then applied to annual ridership estimates for the planning years and then further extended to fill in the intervening years.

In 2006, the longer-term forecasts from the revenue model produced results that were significantly lower than the forecasts produced by the planning model. This discrepancy led to concern that the 2006 Draft Plan was based on an unrealistically high level of ridership growth, leading to a service and investment program that was much higher than might ultimately be needed. As a result, ESHB 2358 required WSF to review both models and to either develop a reconciliation process to ensure that the results were much more consistent or to change to a single forecasting tool.

Given the importance of demand forecasts in long-range planning and the issues identified in the Ferry Financing Study, WSF established a Technical Advisory Team of subject matter experts, comprised of representatives from WSDOT, the JTC, and the PSRC. This team worked in close collaboration with the Ferries Forecasting Team of WSF experts to review the current methods, propose refinements, conduct the reconciliation of the revenue and planning models, and develop baseline forecasts. The forecasts used in the development of this plan are based on the outcome of this effort.

6.2 How much ridership is expected?

Ridership is expected to grow by 36% between 2006 and 2030 – with growth returning WSF to the level of ridership it had in 1999 by 2015, and then growing beyond that level.

There are two principal elements accounting for growth in ridership demand under this model. The first are the external factors, such as demographic growth, with many added residents commuting across Puget Sound for employment opportunities. The second are the internal WSF policy factors such as choices about fare prices and service levels, which can impact the level of customer demand.

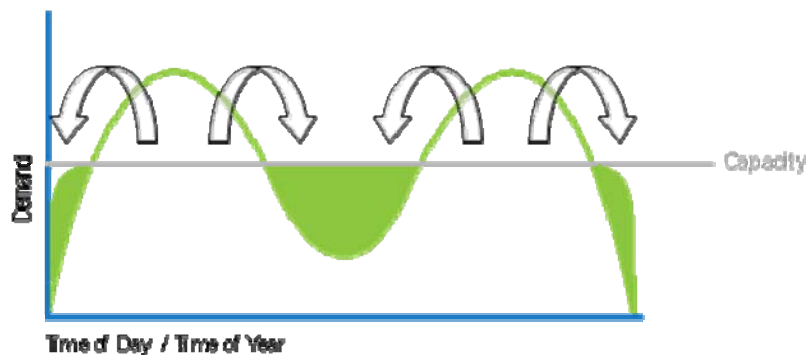
Accommodating Ridership Growth

It is important that WSF be able to achieve the level of ridership expected from the demand forecasts. This is critical both from a revenue and system utilization perspective to ensure that the State's investments in the system are serving as many people as possible.

ESHB 2358 requires WSF to both accommodate ridership growth and to “level peak period demand.” The variable to manage these two directives is when customers attempt to use the system. In other words, the projected ridership growth is relatively easy to accommodate if it occurs primarily on off-peak sailings.

Exhibit 4 provides an example of the ferry system’s demand patterns. Vehicle demand is currently greater than available capacity during certain times of day or in peak seasons. The ferry system’s challenge is to accommodate demand growth while shifting riders into time periods that have excess capacity. This is one of the key objectives of the adaptive management strategies discussed in the sections that follow.

**Exhibit 4
Shifting Peak Demand to Off Peak Capacity**



Space on WSF vehicle decks during commute periods remains the main constraint faced by WSF and is a key factor in reviewing pricing and operational strategies to level this peak demand.

In contrast, there are off-peak periods where demand is substantially less. As a result, the ferry system cannot focus planning efforts solely on the peak commute period. It must first attempt to spread excess peak period demand into off peak periods, especially since the survey suggests that a meaningful portion of vehicle riders have discretion with respect to when they can travel.

Ridership Projection by Travel Mode

Two travel mode choice trends cut across all ridership groups. The first is the proportion of walk-on passengers, and the vehicle capacity constraints on many of WSF’s routes. Systemwide (and assuming no changes in service levels or implementation of adaptive management strategies), the proportion of walk-on passengers is expected to remain relatively constant between 2006 and 2030, though there is more variation at the route level. Given vehicle capacity constraints, it will be important to focus on pricing and operational strategies that



encourage mode shift and affect the relative proportion of vehicle and walk-on passengers.

The second trend is a slight increase in the average occupancy of vehicles using WSF. Growth among in-vehicle passengers is greater than vehicle growth on all routes. This trend reflects capacity constraints that will make carpools, vanpools, and other high-occupancy vehicles more attractive over time.

Annual Ridership Projections

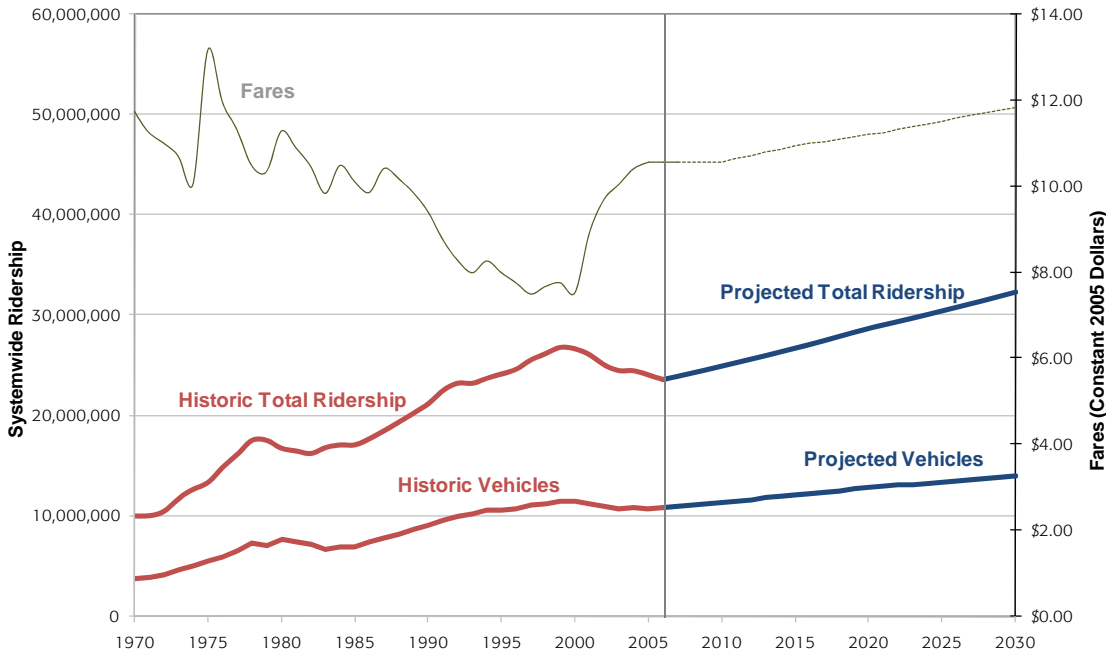
As shown in Exhibit 5, WSF projects that its rider base will increase from almost 24 million riders in FY 2006 to 32.3 million in FY 2030, with total vehicle trips increasing from 10.8 million in FY 2006 to 14.1 million in FY 2030.

Exhibit 5
Baseline Ridership Forecasts by Route

	Vehicles			Passengers			Total Riders		
	2006	2030	% Change	2006	2030	% Change	2006	2030	% Change
Pt. Defiance-Tahlequah	399,446	448,525	12%	289,148	285,371	-1%	688,594	733,896	7%
Southworth-Vashon	121,464	237,088	95%	151,060	162,610	8%	272,524	399,698	47%
Fauntleroy-Vashon	1,163,208	1,426,840	23%	893,350	917,596	3%	2,056,558	2,344,436	14%
Fauntleroy-Southworth	557,764	788,122	41%	421,557	837,881	99%	979,321	1,626,003	66%
Seattle-Bremerton	710,257	848,630	19%	1,627,882	1,818,785	12%	2,338,139	2,667,415	14%
Seattle-Bainbridge Island	2,119,631	2,909,767	37%	4,297,031	5,748,990	34%	6,416,662	8,658,757	35%
Edmonds-Kingston	2,263,226	2,770,247	22%	1,993,741	2,948,392	48%	4,256,967	5,718,639	34%
Mukilteo-Clinton	2,226,769	2,763,749	24%	1,839,832	3,175,106	73%	4,066,601	5,938,855	46%
Pt. Townsend-Keystone	369,949	649,367	76%	402,892	862,619	114%	772,841	1,511,986	96%
Anacortes-San Juans	753,986	1,002,687	33%	883,156	1,325,037	50%	1,637,142	2,327,724	42%
San Juans Inter-Island*	98,420	154,797	57%	0	0		98,420	154,797	57%
Sidney, B.C. (International)	36,559	55,504	52%	73,414	140,257	91%	109,973	195,761	78%
TOTAL	10,820,679	14,055,323	30%	12,873,063	18,222,644	42%	23,693,742	32,277,967	36%

To put these ridership projections into a historical context, Exhibit 6 shows actual ridership from 1970 to 2005 and projected ridership from 2006 to 2030. This chart demonstrates that the overall trend for ridership growth has been steady, but there have been periods of slow growth or decline mixed in with other periods of rapid growth.

**Exhibit 6
Historical and Projected Systemwide Ridership: Base Level of Service**



From a system planning perspective it is important to note that at this rate of growth it will take to the middle of the next decade (approximately 2015) for ridership to return to its previous peak level of 26.8 million (FY 1999). This allows WSF some time to implement operational and pricing strategies before overall ridership levels reach the previous peak levels.

What are planning and terminal implications?

WSF’s ability to accommodate the forecast growth levels is significantly affected by the available vessel capacity during the “normal peak periods” and the capacity of terminal facilities to process traffic during these periods. While demand for ferry services can vary widely by time-of-day, day-of-week, and season, for planning purposes it is useful to look at the “typical” peak conditions.

The implications of ferry demand growth on service and terminal planning is summarized in Exhibit 7, which presents the growth in traffic during peak periods. The table shows volumes moving through the departure and arrival terminals for the afternoon commute period



on the principal commuter routes and focuses on vehicles and walk-ons since these modes of access will have terminal implications. The number of in-vehicle passengers is not included in the table.

Exhibit 7
Principal Commuter Routes, Westbound, PM Ridership

	Vehicles				Walk-Ons			
	4-Hr Peak		Peak Hr		4-Hr Peak		Peak Hr	
	2006	2030	2006	2030	2006	2030	2006	2030
Departure Terminals								
Pt. Defiance	216	259	75	89	77	101	26	36
Vashon	45	98	13	37	14	24	7	8
Fauntleroy	899	1222	282	387	484	586	157	185
<i>To Vashon</i>	<i>536</i>	<i>630</i>			<i>272</i>	<i>166</i>		
<i>To Southworth</i>	<i>363</i>	<i>592</i>			<i>212</i>	<i>420</i>		
Colman Dock	1,603	2,102	600	785	3,739	4,742	1399	1771
<i>To Bainbridge</i>	<i>1,108</i>	<i>1,535</i>			<i>2,567</i>	<i>3,476</i>		
<i>To Bremerton</i>	<i>495</i>	<i>567</i>			<i>1,172</i>	<i>1,266</i>		
Edmonds	1,002	1,378	353	492	378	671	134	237
Mukilteo	974	1,155	281	340	487	908	138	264
Arrival Terminals								
Tahlequah	216	259	75	89	77	101	26	36
Vashon	581	728	196	240	286	190	99	63
Southworth	363	592	113	186	212	420	71	134
Bremerton	495	567	198	228	1172	1266	463	502
Bainbridge	1,108	1,535	433	604	2,567	3,476	1010	1368
Kingston	1,002	1,378	353	492	378	671	134	237
Clinton	974	1,155	281	340	487	908	138	264

The following are the significant demand forecast implications for service and terminal planning:

1. Vehicle trips through these principal commuter corridors are projected to increase by nearly 1,500 by 2030 or approximately 31% during the 4-hour period.
2. Walk-on trips on these routes are projected to increase by approximately 1,900, or approximately 36%.
3. Walk-on trips on the Edmonds-Kingston, Mukilteo-Clinton and Fauntleroy-Southworth routes are projected to increase substantially.
4. Approximately 34% of the new vehicle trips (about 500) during the peak period are expected to be on routes operating out of Colman Dock. These new trips are projected to be distributed with 86% destined for Bainbridge Island and 14% to Bremerton.
5. With the substantial walk-on growth at Bainbridge, the peak hour demand is estimated to be almost 1,400 walk-ons by 2030.

6.3 Implications of Demand Forecasts

It is important that WSF be able to achieve and accommodate the level of ridership expected from the demand forecasts. This is critical both from a revenue perspective and also from a system utilization perspective to ensure that the State's investments in the system are serving as many people as possible.

This section describes how changing demographics in ferry-served communities are expected to affect demand for ferry service. Population and employment are projected to increase by 2030, and those increases are projected to lead an accompanying growth in ridership.

WSF relies on the PSRC, encompassing King, Snohomish, Pierce, and Kitsap Counties' projections of population, employment, and traffic levels for the area covering the majority of its routes. The PSRC forecasts population growth and growth in non-farm employment through 2030 for the four counties in the Central Puget Sound Region.

The jobs-housing balance (ratio of local population and employment) in ferry-served counties will either improve or remain relatively stable, though Kitsap County's balance is projected to marginally worsen over time—population growth is expected to somewhat outpace its employment growth. This is an important indicator of future ferry demand as it suggests that Kitsap County will likely continue to be a “bedroom community”, with a significant portion of new residents expected to commute across Puget Sound to King County, which is expected to be home to more than 60% of new jobs.

For counties outside of the PSRC region, WSF relies on population projections from Washington's Office of Financial Management, which does projections to 2025. As with the PSRC projections, OFM forecasts substantial population growth in the coming years. In these counties, demand for WSF services is primarily related to demographic changes.

In San Juan County, all routes are affected by growth in population. In Island County, Mukilteo-Clinton is most affected by population growth, because a significant portion of its ridership is commuter-based. Port Townsend-Keystone, on the other hand, is a more tourism-oriented route. Therefore, population growth in Jefferson County is more likely to affect congestion on the Edmonds-Kingston route than the Port Townsend-Keystone route.



Other Demand Forecasting Considerations

The demand forecasts analyzed in this section are largely based upon population and employment projections for the region. There are a number of detailed demographic and economic factors that can affect ferry ridership, and it is impossible to predict these perfectly. Some of these factors include:

- Population – changes in ferry-dependent communities by age, income level, education level, size of household, etc.
- Employment – changes in the availability of jobs on both sides of the Sound, industries in which jobs are gained and lost and level of experience required for those jobs
- Prices – changes in the price of fuel or housing

The ferry system is making strides in understanding its customers better and refining ridership forecasts. Recreational ridership was one of the areas explored in more detail for this effort. The ridership projections used in this planning effort assume that recreational ridership will increase at the same rate as other ridership (i.e. based on population and employment trends), but using tourism spending, for example, as a proxy for recreational ridership could lead to higher growth in recreational ridership and therefore higher growth overall.

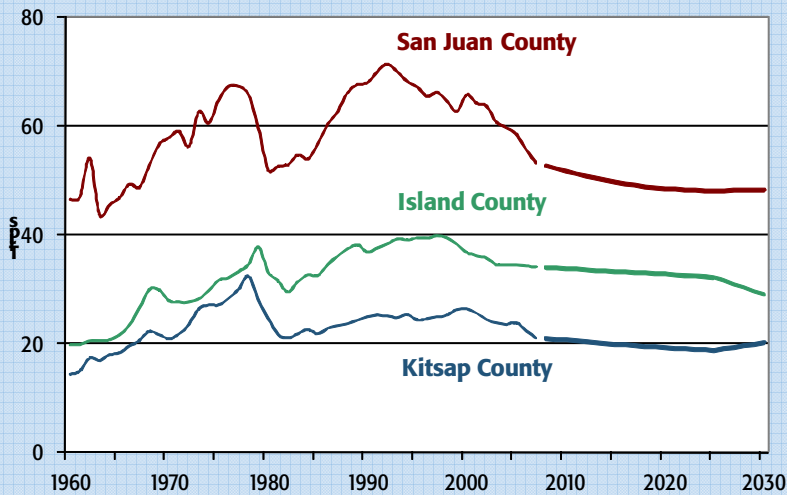
Ridership projections, by their nature, are imperfect. More detailed information will help, and the two-year survey updates will provide this. The ridership numbers are intended for long-term planning purposes with the full understanding that this plan will be updated every five years. Due to the long timelines required with large capital investments, this plan is intended to set a course for the system, but there will be ample opportunity to refine or change that course based on new information and changing circumstances.

How Does Ridership Growth Compare with Population Growth?

The graphs below compare population in the ferry-dependent communities with actual and projected ridership by looking at trips per capita. In most cases, per person ridership levels are expected to be consistent with, or lower than, historical experience.

This suggests that ridership growth is not keeping up with the increase in population in ferry-dependent counties. This is consistent with the finding from the survey that suggests that fewer WSF customers are regular commuters and it may presage other demographic trends which could influence how ferry demand might track with the future changes in population.

Vehicle Trips per Capita, Residents of Ferry-Dependent Counties



Total Trips per Capita, Residents of Ferry-Dependent Counties

