



Washington State Ferries

Washington State Department of Transportation Ferries Division Draft Long-Range Plan

December 2008



Washington State
Department of Transportation



About Washington State Ferries

Formed in 1951, WSF is the largest ferry transit system in the U.S.

WSF serves about 23 million passenger and vehicle trips per year;

Operates 10 ferry routes and runs nearly 500 sailings per day;

Provides service to eight Washington State counties and the Province of British Columbia;

Operates and maintains 20 terminals from Point Defiance to Sidney, B.C.; and

Provides priority loading for freight, bicycles, vanpools, and carpools.

**Washington State
Department of Transportation
Ferries Division
Draft Long-Range Plan: 2008-2030**

**Draft
Long-Range Plan**



**Washington State
Department of Transportation**
Ferries Division



December 2008



TAHLEQUAH
PT. DEFIANCE

Americans with Disabilities Act

Individuals requiring reasonable accommodation of any type, including preparation of this material in alternate formats, sign-language interpretation, and physical accessibility accommodations, may contact Joy Goldenberg at GoldenJ@wsdot.wa.gov or (206)515-3411. Persons with hearing impairments may access Washington State Telecommunications Relay Service (TTY) by dialing 7-1-1 and asking to be connected to (206)515-3913.

Title VI

The Washington State Dept. of Transportation (WSDOT) assures full compliance with Title VI of the Civil Rights Act of 1964 by prohibiting discrimination based on race, color, national origin and sex in the provision of benefits and services. For language interpretation services please contact Hadley Greene at (206)515-3913. It is necessary to speak limited English so that your request can be appropriately responded to. For information on WSDOT's Title VI Program, please contact the Title VI Coordinator at (360)705-7098.

EXECUTIVE SUMMARY

The Washington Department of Transportation Ferries Division (WSF) is releasing this Draft Long-Range Plan (Draft Plan) at a historic point in the state's marine transportation system. WSF carries more than 23 million riders annually and demand for ferry service is projected to increase as population in ferry-served communities grows. The system is constrained by tight financial resources, limited vehicle carrying capacities especially during peak periods, and aging vessels and terminals. This Draft Plan is based on 2007 legislation and will guide WSF future service and investment decisions through the year 2030.

In the 2007 legislative session, the Legislature passed Engrossed Substitute House Bill (ESHB) 2358 ("the Ferry Bill") and its biennial transportation budget that contained specific directives related to how WSF is currently providing services and how it should be planning to meet the needs of ferry communities served by marine transportation in the future.

The legislation specifically spelled out a series of planning requirements that aimed to address the long-term funding crisis for the ferry system. In particular the Legislature said WSF needed to:

- Reconnect with its customers to get better information about their travel
- Improve its forecasting approach to ensure its plans are based on the best projections of future needs
- Develop strategies to minimize costs
- Implement adaptive management practices to keep costs as low as possible while continuously improving the quality and timeliness of services.
- Consider operational and pricing strategies that would improve asset utilization and reduce costs
- Re-establish the vehicle level-of-service standard to better fit with current policy and funding realities

1.1 Purpose

The goal of this Draft Long-Range Plan is to assess the needs of ferry customers and develop a service and capital program that is responsive to those needs, while providing policy makers with the right information to develop a long-term solution that addresses WSF's financial sustainability.



A number of the specific tasks called out in ESHB 2358 require WSF to take a fresh look at how ferry services may be delivered in order to support current and future customers, while recognizing the significant financial challenges facing the ferry system.

Given the current economic conditions, the scale of the funding needs that the State is facing, in addition to the continuing financial demands of the ferry system, it is unclear if the State can realistically keep up with the challenges. It is therefore necessary to consider the implications of a future where the State takes a different role in funding the ferry system.

The Draft Plan is designed to provide the necessary information to support a dialogue and timely resolution of three key strategic issues:

1. Operational strategies, particularly the proposed free, vehicle reservation system;
2. A fleet procurement plan, with timing and sizing of vessels; and,
3. An adequate and sustainable source of long-term capital funding

As a result of these challenges, this Draft Plan puts forward two options for consideration:

1. Plan A. This option assumes that the State will continue in its current role as owner, operator, and principal funder of ferry services in the Puget Sound region. Current level of service remains with operational strategies implemented over time and several new vessels coming online. This plan contains a significant budget shortfall that will require new revenues.
2. Plan B. This option recognizes that the State may not be able to provide new revenues to meet the evolving needs of all ferry customers and communities, and looks at marine transportation very differently. It proposes an alternative where the State takes responsibility for the core marine highway system and a locally-funded entity or entities would take responsibility for a new marine transit system. This option assumes operational strategies would be implemented over time. It also contains a budget shortfall, but it is significantly smaller than Plan A.

1.2 Challenges

While the foremost challenge facing WSF is the lack of a predictable and sustainable source of capital funding, there are several critical challenges that the Draft Long Range Plan must address.

Long-Term Funding. Much has changed since the last Long-Range Plan for WSF was adopted in 1999; most profoundly the voter approval of I-695 and the corresponding budget cuts, which

substantially reduced dedicated funding for the ferry system. For the last ten years, the Legislature has filled the funding gap created by the I-695 budget cuts by allocating transportation funds to WSF that would have otherwise supported the highway system. In light of the continuing needs of the state highway system, diverting funds from it to support the marine highways is not a sustainable long-term funding approach.

Role of Fares in Long-Term Funding. One of the impacts of the lost funding has been a significant increase in fares over a relatively short period of time. Since 2000, fares have increased between 37% and 122%. WSF's operation is 70 percent supported by fares (2007 fiscal year), compared to 60 percent in fiscal year 2000.

Aging Asset Base. WSF's fleet is among the oldest of any major ferry operator, with four vessels recently retired on an emergency basis and eight additional vessels to be retired over this planning horizon. Also, many of the current terminal facilities were built in the 1940's and 1950's and have had few improvements beyond basic maintenance and preservation since they were built. WSF is facing a significant recapitalization effort in the next 20 years related to aging vessels and facilities.

Long Lead Times for Capital Investments. A long-range capital plan is necessary because decisions about ferry service have long-term implications. There are significant lead times required to build new vessels or improve terminals, so WSF must anticipate the future need for such improvements today.

Vehicle Capacity Limitations during the Peak. The ferry system's greatest capacity constraint and the origin of the pressure for additional services and larger facilities is vehicle capacity during peak periods. There is little capacity to support vehicle growth in these time periods, especially in the summer, when a recreational traffic surge causes even greater capacity challenges.

Growth, Ridership Demand, and Service Needs. Although WSF carries more than 23 million riders annually, ridership is down almost 11% since its peak in 1999. While there is population growth expected in many of the communities served by WSF, it is not clear precisely how this will translate into increased demand for ferry services. Ridership has declined from 2000 to 2006 throughout the system despite population growth in counties served by WSF ranging from 14% in Island County to 4% in Kitsap County during the same period of time. There are policy choices regarding the type of service that should be provided to balance customer convenience, community needs, and effective use of assets.



1.3 Customers

ESHB 2358 directed the Washington State Transportation Commission to conduct a comprehensive survey of ferry customers to help inform level-of-service, operational, pricing, planning, and investment decisions. The legislation requires the survey to be updated every two years. The initial survey, conducted in 2008, included on-board surveys of 13,000 customers, focus groups, and a general market phone survey of 1,200 Puget Sound residents and identified several important findings that have helped shape this plan.

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)

Our ridership base is changing. Today, we have less commuters and more discretionary trips as a percentage of total ridership. Approximately one-third of WSF 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' Origin-Destination Surveys (conducted in 1993, 1999, and 2006), which have shown a gradual decrease in the peak period commute.

Our riders travel less frequently and have more flexibility than was expected. The average vehicle customer makes 16 one-way trips per month. For about half of the customer base, frequency of use has not changed over time. Thirty-three percent of the customers surveyed said they have been riding ferries more frequently (15% said they have been riding significantly more). With respect to flexibility, 9% 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.

Fares are not the only factor affecting use of ferries. While the survey confirmed WSF's fare sensitivity estimates (a 10% fare increase would result in a 4% drop in riders), the general telephone survey (not just current customers) found fares to be a small factor in why some persons are using WSF less. Also, a majority of customers in the on-board surveys believe that ferry

services reflect a good value and are pleased with the services they are receiving.

1.4 Changing Our Business

Steps have been taken to reduce ferry system costs without jeopardizing safe, reliable and efficient service. Administrative staff reductions, fuel conservation measures, and reduced expenses throughout the system have resulted in cost savings. These reductions are part of an ongoing cost containment process designed for continuous improvement in the cost effectiveness of ferry services.

WSF must also adopt operational and pricing strategies to maximize the use of its existing assets and provide the most cost effective service, while responding and adapting to the changing characteristics of its customer base.

This approach will change how customers interact with the ferry system and allow WSF to provide the best service at the lowest possible cost. Following this approach, both of the plan options are built on the following key strategies that are designed to either spread vehicle demand to non-peak periods and/or increase walk-on use:

- **Reservation System.** The most important operational strategy recommended in the Draft Plan is the deployment of a reservation system. A free, well-designed reservation system would allow WSF to operate with the smallest possible terminal facilities while maintaining a high level-of-service. The system would be tailored to specific route-level demand and market conditions.
- **Transit Enhancements.** WSF has the ability to accommodate significant growth in ridership with existing facilities if more customers elected to travel as walk-ons. The single biggest impediment to walking on is the lack of sufficient transit supportive facilities and services. This plan proposes a mix of WSF investments in its own facilities and identifies local transit service needs to maximize the potential walk-on ridership in the future.
- **Pricing Strategies.** The Plan makes three significant pricing strategy proposals. The first two are focused on demand management: (1) not charging an extra fee for reservations; and (2) increasing passenger fares at half the rate of vehicle fares. The third is targeted to mitigating fuel price risk and proposes (3) implementing a fuel surcharge mechanism that will automatically adjust fares for spikes in fuel prices.



1.5 The Plan

The Draft Plan presents two possible visions for the future of the WSF system. The first is a continuation of the state role as principal owner and operator of the marine transportation system in the Puget Sound region and maintains the current service level. The second is a multi-jurisdictional approach to delivering marine transportation services, with a smaller state ferry system providing the marine highway, which would be augmented by a locally-owned and operated system(s) of passenger-only ferry (POF) services, supplementing the core state system. Exhibit ES-1 presents the key elements of each plan option.

Exhibit ES-1 Summary of Plan Options

Plan A	Plan B
<p>Service Program <i>Maintain service at existing levels except:</i> Restore 2-boat service at Pt Townsend-Keystone (22 weeks) Strategically slow vessels to optimize fuel consumption Marginal capacity increases due to new vessel procurements on: Anacortes-San Juan Islands Mukilteo-Clinton Seattle-Bremerton Fauntleroy-Vashon-Southworth Point Defiance-Tahlequah</p> <p><i>Implement operational and pricing strategies</i> Reservation system for vehicles at no extra fee Transit enhancements to promote walk-ons Increase passenger fares at half the rate of vehicle fares</p> <p>Capital Program Preserve and maintain existing terminals and vessels Purchase 10 new vessels to replace retired and retiring vessels Invest in a new reservation system Make transit supportive investments at selected terminals Invest in selected terminals to maintain service frequency/reliability</p> <p>Locally Provided Ferry Services <i>King County Ferry District</i> Vashon POF continues</p>	<p>Service Program <i>State System, same as Plan A except:</i> Close Anacortes-Sidney in September 2009 Reduced San Juan Domestic service when Sidney boat removed Keep Port Townsend-Keystone at one boat year-round Downsize Point Defiance-Tahlequah (Hiyu) ('09-11) Reduce Bremerton to one boat year-round ('11-'13) Eliminate night service on Bremerton and Edmonds ('11-'13) Reduce Vashon-Southworth-Fauntleroy to two boats ('11-'13) Eliminate Mukilteo extra summer weekend service (starting 2013)</p> <p>Capital Program <i>State System, same as Plan A except:</i> Purchase 5 new vessels (5 fewer) Eliminate terminal improvements targeting loading and unloading</p> <p>Locally Provided Ferry Services <i>King County Ferry District</i> Increase Vashon POF to 2 or 3 vessel service</p> <p><i>Kitsap County provider</i> Seattle-Bremerton POF -- 2 or 3 vessel service Seattle-Southworth POF -- 2 or 3 vessel service Seattle-Kingston POF -- 2 or 3 vessel service</p>

In developing Plan B, the objective was to reduce the ferry system to the core highway system that preserved all of the domestic routes. Plan B also continues the operational and pricing strategies outlined in Plan A. The primary change is a state funded marine highway system and locally funded marine transit system, which reduces the size of the WSF fleet and service levels on a number of routes.

Vessel procurements are a key element of the capital program necessary to support either Plan option. Under Plan A, there would be a need for 10 new vessels plus a significant reinvestment in an

existing vessel to extend its life beyond its current retirement date. Under Plan B, the vessel procurements are significantly reduced, with a total of five new vessels acquired. Exhibit ES-2 presents the vessel procurement schedules for each Plan option.

The smaller fleet necessary to support Plan B is the primary factor in the cost differences between the two options, as this leads to lower vessel preservation needs (both because of a smaller fleet and due to early retirements), fewer vessel deployments, and lower operating costs. Beyond the difference in number of vessels, Plan B also replaces a Super Class vessel (144-car capacity) with a small vessel (between 40 and 50 vehicles in size).

In both Plan options, the Hyak (144-car vessel) would be refurbished, for approximately \$20 million, which will extend its life until 2032.

Exhibit ES-2 Vessel Procurement Plan

Year	Vessel	Notes
PLAN A		
2010	Island Home #1	Replace a Steel Electric (Port Townsend)
2011	Island Home #2	Replace a Steel Electric (Port Townsend)
2011	Hyak reinvestment	Invest in the Hyak to extend life 20 years
2012	Island Home #3	Replace the Rhododendron (go to Point Defiance)
2013	144-car vessel #1	Replace the Evergreen State
2015	144-car vessel #2	Restore standby/reserve capacity; Hyak moved to standby
2017	144-car vessel #3	Replace the Tillikum
2019	144-car vessel #4	Replace the Klahowya
2021	144-car vessel #5	Replace the Elwha
2023	144-car vessel #6	Replace the Kaleetan
2025	144-car vessel #7	Replace the Yakima
PLAN B		
2010	Island Home #1	Replace a Steel Electric (Port Townsend)
2011	Hyak reinvestment	Invest in the Hyak to extend life 20 years
2021	Small Vessel #1	Replace the Elwha
2023	Small Vessel #2	Replace the Hiyu
2025	144-car vessel #1	Replace the Kaleetan
2027	144-car vessel #2	Replace the Yakima



1.6 Costs and Funding Needs

As presented in Exhibit ES-3, both Plan options would need additional funding to balance the capital program. However, the funding gap over the 22-year in the Plan B option (\$1.3B) is less than 40% of the gap for Plan A (\$3.5B), both figures in year-of-expenditure (YOE) dollars. This is entirely a function of the size of the ferry system under each plan option, in particular the smaller fleet needs of Plan B.

Exhibit ES-3
Funding Implications of Draft Plan Options
(YOE\$ in millions)

	Plan A Yr)	Plan B Yr)
CAPITAL		
Terminals	\$1,932	\$1,845
Vessels	\$3,430	\$2,064
Miscellaneous Uses	\$544	\$544
Existing Debt Service	\$212	\$212
Total capital needs	\$6,118	\$4,665
Dedicated capital funds	\$829	\$829
Administrative Transfers	\$1,126	\$1,126
Federal Funds	\$347	\$347
Bond Proceeds	\$241	\$241
Net Funding Capital Program	(\$3,575)	(\$2,121)
OPERATING		
Operating revenues	\$5,638	\$5,243
Operating expenses	\$6,466	\$5,421
Net operating income/(subsidy)	(\$828)	(\$178)
Average farebox recovery rate	87%	97%
Dedicated operating taxes	\$809	\$809
Administrative Transfers	\$88	\$88
Estimated Subsidy Available	\$897	\$897
Net operating surplus/(deficit)	\$68	\$719
Total Funding Needs for 2030 Ferry Plan	(\$3,506)	(\$1,403)

Plan A. Plan A would result in a net funding gap of \$3.5B in the capital program, while the operating program is largely balanced with operating expenses equal to or less than fare revenues plus dedicated taxes for operations in most biennia.

- Ridership growth and fare increases result in an average farebox recovery rate of 87%.
- Base fare assumptions assume current legislative average annual increases of 2.5%. Fuel surcharges are set to cover

the increased costs of fuel associated with variances on fuel prices beyond the long-term average cost of fuel.

- Funding assumes that WSF will receive the \$88 million in administrative transfers over the next three biennia (per the 2008 Legislative 16-Year Plan).

The Plan A capital program is estimated to total \$6.1 billion (in year of expenditure dollars) over the 22-Year Long-Range Plan horizon. These investments would include:

- Vessel preservation needs of \$1.5 billion
- Vessel construction of \$1.8 billion (10 new vessels)
- Vessel improvements of \$93 million
- Terminal preservation needs of \$1.4 billion
- Terminal improvements of \$520 million
- Other (debt service, management & support, emergency repairs) \$750 million

To fund the capital needs of Plan A will require \$3.5 billion more than current assumed funding (or approximately \$327 million per biennium over 22 year planning horizon). Revenues include assumed transfers from the Motor Vehicle or Multimodal Accounts in the legislative 16-Year Plan (continued through 2031).

Plan B. Plan B would result in a net funding gap of \$2.1B in the capital program, while the operating program would produce a net surplus in tax revenues of approximately \$719 million. If the excess operating taxes are transferred to support capital, the net funding gap for Plan B is estimated to be \$1.4B.

The operating costs for Plan B are estimated to be \$5.4 billion 22-Year Long-Range Plan horizon. Plan B operating revenues are estimated to be \$5.2 billion over the same period, leaving only \$178 million to be funded from the dedicated operating subsidy.

- Projected ridership growth and fare increases result in an average farebox recovery rate of 97%, with the same fare assumptions as in Plan A.
- With dedicated tax subsidies of almost \$900 million over 22 years, there would be an estimated tax subsidy surplus in the operating account of approximately \$719 million, which would be available to support capital needs.

The capital program proposed for Plan B is estimated to total \$4.7 billion over the 22-Year Long-Range Plan horizon. Most of the savings in the capital program can be traced to the smaller fleet, which results in fewer new vessel procurements and lower fleet



preservation costs. To fund the capital needs of the Draft Plan will require \$2.12 billion more than current assumed capital funding, which includes:

- Assumptions about transfers consistent with those in Plan A.
- The capital funding gap is weighted with several vessel procurements in the final six years of the plan. As a result, the 16-year funding gap is only \$1.1 billion or almost half of the full 22-year gap.
- Looking at only the 16-year Legislative planning horizon, the overall funding gap is half as much at approximately \$600 million, or \$37.5 million per biennium.

Plan B still shows a capital funding gap, even after the significant reductions in service and capital investments discussed above. To close this gap would require additional revenues, higher fares or additional service and investment reductions or some combination of thereof. It is important to note, that further service reductions that might make a meaningful impact on the funding gap would likely require closing some domestic routes.

NEXT STEPS

The next step for the Draft Plan is to gather public feedback through a series of public hearings (10 meetings during early January 2009). WSF will consider all feedback when developing a Final Plan, which is scheduled to be presented to the Legislature January 31, 2009 for consideration and possible action during the upcoming legislative session.

How to provide comment on the draft long-range plan:

- Attend a public hearing. Schedule online at www.wsdot.wa.gov/ferries/planning/ESHB2358.htm#HearingDates
- Email wsfplanning@wsdot.wa.gov
- Write Washington State Ferries, Attn. Joy Goldenberg, 2901 3rd Ave., Seattle, WA 98121.

BACKGROUND	1
1. Introduction	1
1.1 WSDOT Ferries Division (Washington State Ferries/WSF)	1
1.2 Purpose of the Long-Range Plan	3
2. Policy Framework	6
2.1 Washington Transportation Plan	6
2.2 ESHB 2358 The “Ferry Bill”	7
2.3 What factors must WSF consider in developing this Plan?	9
3. Financial Sustainability	12
3.1 Historical Context	13
3.2 Funding for WSF Post I-695	14
3.3 What is WSF Doing to Keep Costs Down?	15
4. Planning Process	18
4.1 Technical and Policy Review Teams	18
4.2 Public Outreach and Stakeholder Involvement	19
OUR CUSTOMERS: RIDERSHIP AND DEMAND	21
5. Current Ridership	21
5.1 What Did We Learn from Recent Survey Efforts?	22
6. Demand Forecasts	27
6.1 Updated Process for Demand Forecasting	27
6.2 How much ridership is expected?	28
6.3 Implications of Demand Forecasts	33
CUSTOMER SERVICE: LEVEL OF SERVICE STANDARDS	37
7. Current Standards	37
7.1 Current Standards	37
7.2 Need to Re-establish Vehicle LOS Standards	38
8. Changing the Vehicle LOS Measure	39
8.1 Changing the Vehicle LOS Measure	39
8.2 A Framework for Setting LOS Standards	40
9. LOS Implementation Issues	47
OPERATIONS: ADAPTIVE MANAGEMENT STRATEGIES	49
10. Transit Enhancements	50
11. Vehicle Reservations	52

12. Other operational Strategies	55
12.1 Fuel Saving Strategies	55
12.2 Other Operating Strategies	57
13. Pricing	58
13.1 Pricing and a Reservation System	59
13.2 Fuel Surcharge	59
13.3 Differential Vehicle and Passenger Pricing	60
13.4 Other Pricing Strategies	61
DRAFT LONG-RANGE PLAN	65
14. Plan A	66
14.1 Operating Program	66
14.2 Capital Program Needs	69
14.3 Funding Implications	77
15. Plan B	81
15.1 Operating Program	82
15.2 Capital Program	84
15.3 Funding Implications	86
NEXT STEPS	89

Technical Appendices

A	Summary of Legislative Requirements
B	Terminal Design Standards
C	List of Participants
D	Ridership Forecasting Technical Report
E	Operating Strategies Evaluation
F	Proposed Transit Enhancements by Terminal
G	Reservation System Details by Route
H	Pricing Strategies Evaluation
I	Environmental Considerations
J	One-Point Toll Collection Technical Memorandum

BACKGROUND

1. INTRODUCTION

This Draft Long-Range Plan (Draft Plan) is intended to guide WSDOT Ferries Division (WSF) future service and investment decisions through the year 2030. Developed with extensive input from the public as well as stakeholder groups, the Plan outlines service options and corresponding funding plans that will allow WSF to provide sustainable ferry service in the Puget Sound area. This is a Draft Plan for public review and comment (see side note). The Plan comes in two pieces:

- The document you are reading is a Draft Long-Range Plan that presents key findings and the draft action plan.
- Technical Appendices present additional detailed backup for the Draft Plan and supporting information.

The WSF Draft Long-Range Plan responds to specific legislative direction, and when complete will become a part of the Washington State Transportation Plan (WTP). The WTP is required by state and federal law and forms the basis for setting the state transportation system's investment priorities.

This Draft Long-Range Plan is organized into the following major sections:

1. Background
2. Our Customers: Ridership and Demand
3. Customer Service: Level of Service Standards
4. Operations: Adaptive Management Strategies
5. Draft Long-Range Plan
6. Environmental Considerations
7. Next Steps

1.1 WSDOT Ferries Division (Washington State Ferries/WSF)

Since its creation in 1951, WSF has become the largest ferry system in the nation. Over 23 million people currently ride on WSF annually. WSF operates 22 vessels and 20 ferry terminals throughout Puget Sound, from Point Defiance in the south to Sidney, B.C. in the north (see Exhibit 1). Commuters, employers, students, commercial shippers, and tourists all count on WSF for safe, reliable transportation across the Puget Sound.

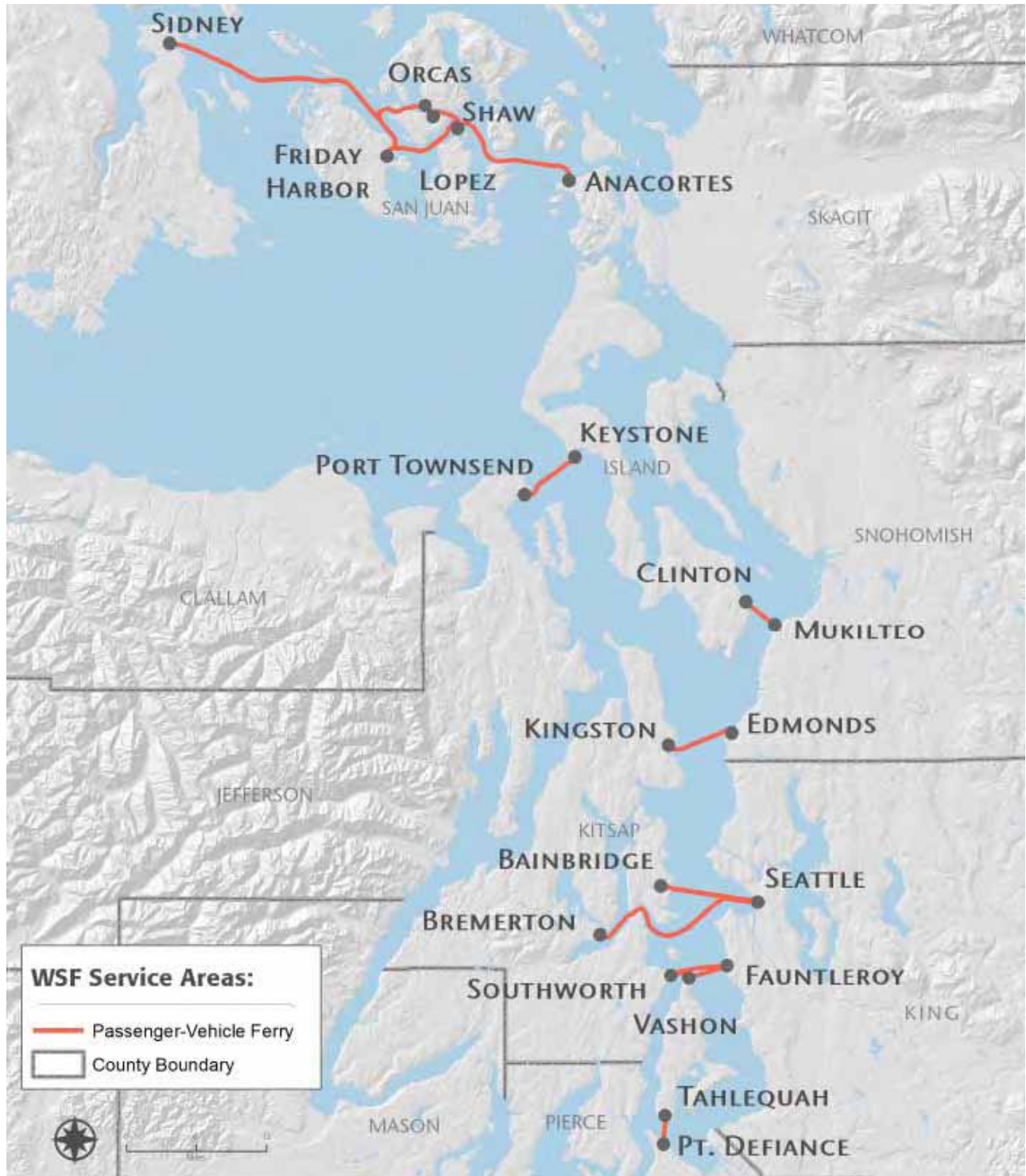
Is this the Final Plan?

No, this is the Draft version of the WSF 2030 Long-Range Plan. It was released for public comment on December 19, 2008. A final version of this Plan will be presented to the Legislature on January 31, 2009, following a public comment period that will include a series of public hearings.

Information on meeting times and locations as well as summary materials can be found online at <http://www.wsdot.wa.gov/ferries/planning/ESHB2358.htm> or by calling 206-515-3411.



Exhibit 1
Ferry System Service Area and Routes



As part of the Washington State Department of Transportation (WSDOT), WSF serves two primary transportation functions.

Marine highway. WSF is an essential part of the highway network in Western Washington. Its 200 miles of marine highway provide links between urban areas on the east side of Puget Sound, growing communities on the Kitsap Peninsula, and more rural destinations on the Olympic Peninsula and the San Juan Islands. For communities on Vashon Island and the San Juan Islands, WSF is the only link to the mainland for personal and commercial vehicles.

That commercial vehicle connection is essential; Vashon and San Juan Island communities depend on ferries to transport goods—including basic supplies and local products—to and from the wider market. WSF makes special efforts to support commercial traffic.

Transit service provider. Ferries are also high-capacity people movers. WSF is the second largest transit system in Washington State, behind King County Metro. Ferry terminals connect passengers to many modes of transportation besides personal driving, including pedestrian, bicycle, vanpool, bus, trolley, and commuter rail.

1.2 Purpose of the Long-Range Plan

WSF is releasing this Draft Long-Range Plan at an historic point in Washington's marine transportation. The culmination of new legislative direction, new leadership, and new information about ferry system customers provides a unique opportunity to set an entirely new direction for the ferry system.

The goal of this Draft Long-Range Plan is to assess the needs of ferry customers and develop a service and capital program that is responsive to those needs, while providing policy makers with the right information to develop a long-term solution that addresses WSF's financial sustainability.

To meet this goal, the Draft Plan must respond to the legislative direction and identify service adjustments and demand management strategies that allow WSF to respond to growth in demand while ensuring that the State's assets are utilized to their fullest.

In the 2007 legislative session, the Legislature passed Engrossed Substitute House Bill (ESHB) 2358 and its biennial transportation budget, which contained specific policy and operational directives related to how WSF is currently providing service and how it should be planning to meet the needs of ferry communities in the future.



A number of the specific tasks called out in ESHB 2358 required WSF to take a fresh look at how ferry services might be delivered in order to support current and future customers, while recognizing the State's significant financial challenges.

Given the current economic conditions and the scale of the funding needs that the State is facing in the highway program, in addition to the continuing ferry needs, it became clear that it would also be necessary to consider the implications of a future where state funding could not realistically keep up with the needs of the ferry system.

As a result of these challenges, this Draft Plan puts forward two different visions of a future for WSF for consideration:

1. Plan A. This option assumes that the State will continue in its current role as owner, operator, and principal funder of ferry services in the Puget Sound region. Current level of service remains with operational strategies implemented over time and several new vessels coming online. This plan contains a significant budget shortfall that will require new revenues.
2. Plan B. This option recognizes that the State may not be able to provide new revenues to meet the evolving needs of all ferry customers and communities, and looks at marine transportation very differently. It proposes an alternative where the State takes responsibility for the core marine highway system and a locally-funded entity or entities would take responsibility for a new marine transit system. This option assumes operational strategies would be implemented over time. It also contains a budget shortfall, but it is significantly smaller than Plan A.

Both of these options provide a framework for decision-making around service and capital investments. The Draft Plan must address the critical challenges facing WSF.

Long-term Funding. Much has changed since the last Long-Range Plan for WSF was completed in 1999; most profoundly the voter approval of I-695 and the subsequent legislative implementation of the I-695 budget cuts, which substantially reduced dedicated funding for the ferry system. For the last 10 years, the Legislature has filled the funding gap created by the I-695 budget cuts by allocating transportation funds that would have otherwise supported the highway system to WSF. In light of the continuing needs of the state highway system, borrowing from that the highway system to support WSF is not a sustainable long-term funding approach.

Role of Fares in Long-term Funding. One of the impacts of the lost funding has been a significant increase in fares over a relatively short period of time. Since 2000, fares have increased between 37% and 122%. WSF's operation is 70 percent supported by fares (2007 fiscal year), compared to 60 percent in fiscal year 2000.

Aging Asset Base. WSF's fleet is among the oldest of any major ferry operator, with four vessels retired on an emergency basis in 2007. Eight more vessels are to be retired over this planning horizon. In addition, many of the current terminal facilities were built in the 1940's and 1950's and have had few improvements beyond basic maintenance and preservation. WSF is facing a significant recapitalization effort in the next 20 years related to aging vessels and facilities.

Long Lead Times for Capital Investments. A long-range capital plan is necessary because decisions about ferry service have long-term implications. There are significant lead times required to build new vessels or improve terminals, so WSF must anticipate the future need for such improvements today. Once built, WSF capital assets are long lasting, with vessels having an anticipated lifespan of 60 years.

Growth, Ridership Demand, and Service Needs. Although WSF serves over 23 million riders annually, ridership is down over 11% since its peak in 1999. While there is population growth expected in many of the communities served by WSF, it is not clear precisely how this will translate into increased demand for ferry service. Ridership has declined from 2000 to 2006 throughout the system, despite population growth in counties serviced by WSF ranging from 14% growth in Island County to 4% in Kitsap County during the same period of time. By 2030 total demand is projected to increase by 36% over 2006 ridership, which was that last full year of regular service before the disruptions caused by the emergency retirements of the Steel-Electric Class vessels. Over this same period vehicle demand is expected to increase 30% overall.

The Washington State Ferries Financing Study

The 2006 Legislature requested the Joint Transportation Committee (JTC) to study the ferry system's finances in order to facilitate policy discussions and decision-making.

The resulting study included 23 recommendations, many of which were incorporated into ESHB 2358.



A full copy of the report is available online at:
<http://www1.leg.wa.gov/documents/LTC/jtc/Ferries/Ferry%20Finance%20Study%20Final%20Report%20January%202007.pdf>



2. POLICY FRAMEWORK

ESHB 2358 Requirements

For a complete list of legislative requirements included in ESHB 2358, the biennial transportation budgets, and other recent legislation, please see Appendix A.

Organizationally, WSF is a Division of WSDOT, which is a cabinet agency reporting to the Governor. The Governor is ultimately responsible for setting the policy and operational goals for the organization and holding WSF accountable for meeting these goals. In addition to the Governor's office, ferry service and investment decisions are guided by the following:

- The State Legislature passes laws about ferry service, sets the biennial budget for ferry operations and maintenance, and appropriates funds for WSF's capital needs. The Legislature's Joint Transportation Committee (JTC) reviews and researches transportation programs and issues to better inform state and local government policymakers.
- The Washington State Transportation Commission (WSTC) provides a public forum for transportation policy development. It reviews and evaluates how the entire transportation system works across the state, and issues the state's 20-year Transportation Plan. As the State Tolling Authority, the WSTC sets tolls for state highways and bridges, and fares for WSF. Its seven members are citizens appointed by the Governor.
- The Washington State Department of Transportation integrates ferry service with other parts of the highway system and has many other transportation responsibilities in the Puget Sound region and around the state.

2.1 Washington Transportation Plan

The WSF Long-Range Plan will become a part of the WTP, a blueprint for transportation programs and investments in Washington. State and federal law require that the WTP be updated regularly. The current WTP was adopted by the Transportation Commission in 2006 and covers the period 2007-2030. The WSF portion of the plan has not been updated since 1999.

The WTP addresses every mode of the state's transportation system. WSF's Draft Plan is guided by the same goals which federal and state law prescribe for the WTP, including safety, congestion relief, asset preservation, system efficiency, environmental protection, and consistency with land use plans.

2.2 ESHB 2358 The “Ferry Bill”

Passed by the 2007 Legislature, Engrossed Substitute House Bill (ESHB) 2358, the “Ferry Bill,” fundamentally changes the policy direction guiding long-range planning efforts for the ferry system. The Legislature found that the state did not have good information about ferry customers and directed WSF to pursue adaptive management practices in its operating and capital programs. Adaptive management is a process for continually improving management policies and practices by learning from the outcomes of operational programs and adapting them to improve customer service. The Legislature directed WSF to pursue adaptive management practices in order to keep costs as low as possible while continuously improving the quality and timeliness of service.

ESHB 2358 and associated budget provisions specifically spelled out a list of tasks and a timeline that were designed to begin to address the questions raised in the 2006 Ferry Financing Study (see sidebar), and to develop an information base that could support the ultimate question of how to address the long-term funding needs of the ferry system. Specifically, ESHB 2358 and transportation budget provisions are designed to:

- Provide new and improved information: Examples of improved information requirements include a customer survey; credible ridership forecasting; a review of WSF’s Life Cycle Cost Model (LCCM), which is used to determine capital preservation requirements; JTC Ferry Policy Working Group reviews of WSF’s capital and operating costs; and pre-design study requirements for terminal improvement and preservation projects.
- Develop strategies to minimize costs or increase revenues: WSF was directed to consider operational strategies and pricing policy changes; undertake a study of potential terminal co-developments with private sector partners; and to evaluate the cost-effectiveness of one-way toll collection.

With respect to pricing policy, the Legislature provided specific direction to evaluate options for using pricing as part of an adaptive management approach to help regulate demand while maintaining an awareness of the impact of fares on communities and users. ESHB 2358 requires that “the department shall annually review fares and pricing policies applicable to the operation of [WSF]...the department shall develop fare and pricing policy proposals that must:

- Recognize that each travel shed is unique, and might not have the same farebox recovery rate and the same pricing policies;



- Use data from the current customer survey conducted by the WSTC;
- Develop with input from affected ferry users by public meetings and hearings and by review with affected ferry advisory committees, in addition to the market survey;
- Generate the amount of revenue required by the biennial transportation budget;
- Consider the impacts on users, capacity, and local communities; and
- Keep the fare structure as simple as possible.

While developing fare and pricing policy proposals, WSF must consider the following:

- Options for using pricing to level vehicle peak demand; and
- Options for using pricing to increase off-peak ridership.

The other significant change in pricing policy direction is that the language in the new legislation places a greater emphasis on the desirable outcomes of changes in fare rules. This change provides substantial flexibility to WSTC and WSF to focus on pricing options that might support “adaptive management practices in its operating and capital programs so as to keep the costs of the Washington state ferries system as low as possible while continuously improving the quality and timeliness of service.” (ESHB 2358)

Other Related Studies

ESHB 2358 identifies specific topics for study and requires new levels of cooperation and collaboration among the Legislature (through the JTC), the WSTC, and WSF. Through ESHB 2358 and the State’s 2007 Transportation Budget, the Legislature has identified a number of additional studies to be undertaken, all of which have informed this plan:

- Customer Survey. ESHB 2358 required the WSTC to conduct a study of ferry customers that includes information on recreational, walk-on, vehicle, and freight customers and their reactions to possible operational strategies and pricing policies; allows opportunity for Ferry Advisory Committee¹ input; and is updated every two years

¹ RCW 47.60.310 established Ferry Advisory Committees to be appointed by county legislative authorities in counties serviced by WSF, except for Vashon Island where a community council appoints the members.

- Long-term Funding. The 2007 Transportation Budget included a proviso requiring the WSTC to conduct a long-term funding alternatives study that would make recommendations for how to address the gap between dedicated ferry revenues and operating and capital needs (section 206(2)).
- Vessel Study. The 2007 Transportation Budget requires the JTC to make recommendations regarding the most efficient timing and sizing of future vessel acquisitions beyond those currently authorized by the Legislature.

In addition to these ESHB 2358 efforts, another planning study that has been underway concurrently with this effort, the Puget Sound Regional Council's (PSRC) Passenger-only Study, will have implications on the potential future for WSF.

- PSRC Passenger-only Ferry Study. In 2006, the PSRC Policy Board determined that there was a need for regional coordination around the issue of the long-term role for passenger-only ferry services in the Central Puget Sound region. The State Legislature had recently directed WSF to abandon its passenger-only program and discontinue passenger-only service on the Vashon-Seattle route. According to the PSRC, "the study will provide the technical basis to strengthen Destination 2030 policies, programs, projects, and criteria by improving:
 - Coordination of state, regional, and local ferry system investments
 - Integration of ferry operations with transit, roadway, and non-motorized improvements
 - Guidance for ferry-oriented development and land use near ferry terminals
 - Planning to address local land use and transportation impacts in ferry terminal communities
 - The technical capabilities in the area of ferry system demand forecasting, and travel demand modeling and analysis, that will aid in prioritization of projects and programs."

The study is slated for completion in early 2009, with additional work expected to integrate the study results into the regional transportation plan update (Destination 2040).

2.3 What factors must WSF consider in developing this Plan?

In developing these Draft Plan options, WSF must also consider other factors and guidelines for the future of the ferry system. Not all of this



guidance takes the form of law or mandate, and frequently it reflects multiple, often-conflicting priorities that WSF must take seriously and endeavor to balance as it plans to meet demand in the future. Guidelines for ferry service include the following:

WSF should charge prices that are reasonable. The WSTC sets policies that establish WSF's fare structure. In addition to fiscal and environmental considerations and the directions provided in ESHB 2358, the WSTC may, but is not required to, consider the "desirability of reasonable rates for persons using the ferry system to commute daily to work and (for) other frequent users who live in ferry-dependent communities."

WSF should act responsibly with regard to the natural environment. WSF has been an active partner in efforts to protect the natural environment, recently as host of a pilot study of alternative fuels, and on an everyday basis in its efforts to encourage transit use and vehicle sharing. This is in keeping with the Legislature and the WSTC's charge to "conserve nonrenewable natural resources including land and energy (RCW 47.01.071)."

In developing the Draft Long-Range Plan, WSF assessed any capital project or service changes under consideration to ensure there are no "fatal flaws" from an environmental perspective. Environmental impacts of specific capital facility projects are evaluated during the project's design development stage when WSF conducts a detailed environmental review as part of the State Environmental Protection Act (SEPA) or National Environmental Protection Act (NEPA).

WSF should plan with an awareness of financial constraints. The ferry system operates in a financially constrained environment. WSF lost a significant share of its dedicated capital and operating funding in 2000 and must share resources with the highway program to balance its budget.

WSF should respect the land use and growth management plans of local governments, while staying mindful of its primary mission and its role as a state agency. WSF serves local communities, which have a strong interest in planning for and managing their own growth and development. State law is clear on the need for WSF to cooperate with local planning processes. To this end, WSF makes long-range demand projections based on the regional growth forecasts that result from a cooperative process among local jurisdictions.

WSF's role in growth management is a responsive one. Local and regional planning organizations make policy decisions to shape growth: the resulting pattern of future trips is a consideration in ferry service planning. This balance of interests is reflected in state law:

“Although [WSDOT] shall consult with local governments when setting level of service standards, the department retains authority to make final decisions... [The] department shall consider the necessary balance between providing for the free inter-jurisdictional movement of people and goods and the needs of local communities using these facilities” (RCW 47.06.140).

WSF should plan facility improvements and service to facilitate connections with other modes of transportation. State law refers to the WTP as “a statewide multimodal transportation plan” (RCW 47.06) and specifies that each modal plan should emphasize “the improvement and integration of all transportation modes to create a seamless intermodal transportation system for people and goods” (RCW 47.06.040).

WSF should consult with the public as it develops ferry plans or policy changes. State law (RCW 47.60.330) requires that ferry users be consulted before major service or fare changes through public hearings, surveys, and standing Ferry Advisory Committees. WSF also consults with ferry terminal neighbors and other interested parties before changes are implemented.



3. FINANCIAL SUSTAINABILITY

When voters approved I-695 in November 1999 and the Legislature codified the MVET tax reductions during the 2000 legislative session, WSF lost approximately 20% of its operating support and approximately 75% of its dedicated capital funds.

In immediate response, WSF enacted a series of staff and service cuts that when combined with spending operating reserves allowed the system to survive through June 30, 2001. During the 2000 session, the Legislature provided a \$20 million transfer from the General Fund that allowed for fewer service cuts than originally proposed.

To address the long-term funding needs of the ferry system, the Legislature and Governor undertook two major efforts prior to the enactment of ESHB 2358. In 2000, the Legislature established a Joint Legislative Task Force on Ferries (JTFF). The Task Force was charged with addressing the following key issues:

- Establishing appropriate levels of operating cost recovery (farebox recovery target).
- Exploring opportunities for cost and service reductions.
- Evaluating the feasibility of privatization and public-private partnerships.
- Assessing short-term and long-term capital funding needs of the system.

The Legislative Task Force report was approved by the Task Force members on January 15, 2001 and it contained nine major recommendations, which focused primarily on opportunities to reduce costs and improve the financial performance of the operating program. The most widely discussed recommendation was for WSF to increase the farebox recovery rate from 60% to 80% over six years.

At the same time as the JTFF effort, the Governor's Blue Ribbon Commission on Transportation (BRCT), which was tasked to review the entire structure of the state's transportation system, released their recommendations. The recommendations included a confirmation of the JTFF recommendations, plus a long-term goal of reaching 90% farebox recovery.

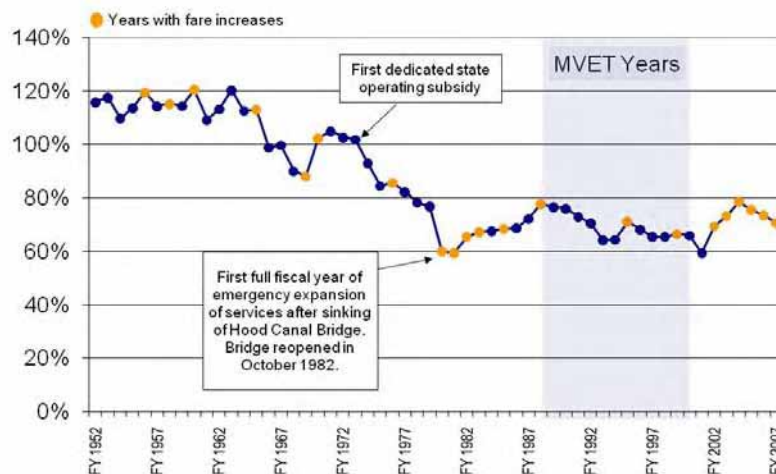
Neither the JTFF nor BRCT recommendations addressed specifically how to replace the lost MVET funding. With respect to funding, both efforts largely focused on using the fare policy to begin to stabilize the operating funding situation but suggested that the Legislature needed to develop a long-term funding solution for WSF.

3.1 Historical Context

While the farebox recovery recommendations from both the JTFF and the BRCT were controversial in ferry-served communities, it is worth putting these recovery targets into a historical perspective.

In the years prior to the loss of MVET funding, the Transportation Commission had been working from a general operating principle that fares should be adjusted to maintain a minimum 60% farebox recovery target (i.e. operating revenues must recover 60% of operating costs, with the balance coming from state tax sources). As presented in Exhibit 2, however, the distribution of responsibility for funding operations between the users and taxpayers was not always a 60/40 proposition.

**Exhibit 2
Farebox Recovery Rates over WSF History**



The portion of the cost of operations funded from fare revenues has shifted from more than 100% to the 60% level during the MVET years. The transition from over 100% to 60% cost recovery represented a gradual but steady decline that benefited ferry users.

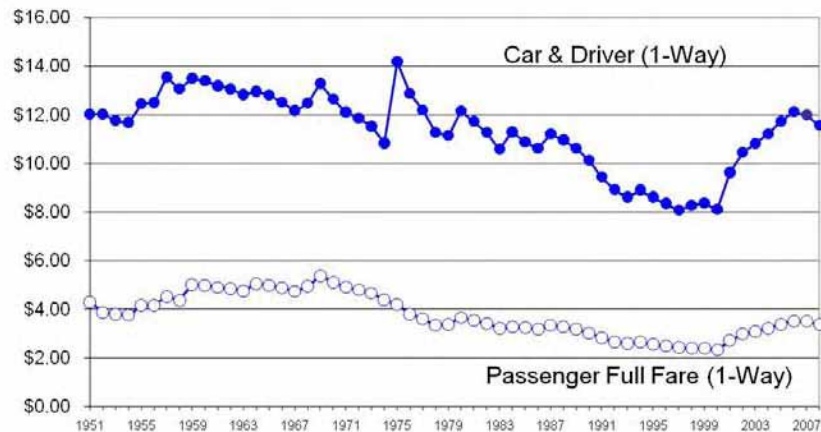
To improve the farebox recovery rates, it was necessary to implement substantial increases in customer fares. In fact, since the loss of MVET, fares have increased between 37% and 122% depending on the route. These large fare increases did push the recovery rate close to 80% in fiscal year 2004, but since then, cost increases (primarily rapid increases in fuel prices) and relatively modest fare increases have pushed the recovery rate back down closer to 70%.

Another useful historical comparison is to see how these significant recent fare increases have changed the price of ferry services in relation to previous years. Exhibit 3 shows that the fare increases



have brought the cost of ferry services back up to a level that is more in-line with historical levels. In fact, prior to the loss of MVET prices were at their lowest levels in history, when adjusted for inflation.

Exhibit 3
Historical Fares Adjusted for Inflation (\$2008)



3.2 Funding for WSF Post I-695

Since the loss of MVET funding in the middle of the 1999-2001 Biennium, the Legislature has been subsidizing the funding gap with transfers from general transportation resources, primarily the Motor Vehicle Account and the Multimodal Account. The funds in these accounts are subject to appropriation every two years and are allocated based on funding priorities among all of WSDOT and other transportation agencies. WSF shares these limited resources with the highway system.

Over the course of the last nine years, WSF has received a total of \$300 million in general transportation funding to backfill operations. These transfers have been necessary despite the large increases in fare revenues during this period. In fact, the cumulative impact of the fare increases is estimated to have raised approximately \$130 million during this same period.

As discussed earlier, the magnitude of the necessary transfers of general highway funding to WSF has been significantly influenced by the higher cost of fuel during this period.

On the capital side, the transfers from available transportation discretionary funds have varied from biennium to biennium. In total, more than \$350 million has been appropriated from these general transportation funds to replace lost MVET funds. During this period,

WSF has been the recipient of some project-specific funding from both the Nickel Gas Tax Package and the Transportation Partnership funding package (\$0.09 gas tax increase).

3.3 What is WSF Doing to Keep Costs Down?

Given the funding challenges facing WSF, steps have been taken to reduce costs as much as possible without jeopardizing safe, reliable and efficient service. The focus on managing costs has included three significant efforts: (1) cost containment strategies designed to reduce operating and capital costs immediately; (2) updating the Life Cycle Cost Models to ensure that preservation funding is optimized; and (3) reviewing and revising terminal design standards to ensure future terminal improvements are appropriately sized.

Cost Containment

WSF has undergone a thorough review of its current operating practices and staffing levels. This effort has resulted in administrative staff reductions, fuel conservation measures, and cutting expenses for non-urgent items. Together, these measures have identified and implemented cost savings as follows:

- Staff reductions: \$1.5 million (25 budgeted positions)
- Fuel conservation: \$3.7 million
- Reductions in other operating costs: \$2.2 million
- Reduction in consultant costs: \$37 million

Updated Life Cycle Cost Model

As directed by the ESHB 2358, WSF continues its efforts to update its Vessel Preservation Life Cycle Cost Model (LCCM). Work completed to date includes a review and update of the vital systems' cost factors and replacement intervals. Currently, a review of the existing inspection process is being done to support the requirement that all assets in the LCCM be inspected and the LCCM updated to reflect actual asset condition every three years. The outcome of this review is to provide recommendations:

- Improving methods of condition assessments by using best industry practices
- Concerning methodology and resources needed to compile inspection data for analysis and conversion into useful management information
- Making economic analyses such as Least Life Cost Analysis that support vessel preservation investment decisions

Life Cycle Cost Model

Maintenance assumptions used in this analysis have been developed using the following Life Cycle Cost Model (LCCM) guidance in recent legislation:

ESHB 2358

WSF must maintain a Life Cycle Cost Model that (section 10):

- Is used in developing preservation funding requests.
- Uses available industry standards or department-adopted standards when standard life cycles are not available.
- Is updated when inspections are made to reflect asset condition.
- Does not include systems that aren't replaced on a standard life cycle or that are not yet built.
- Is updated at least every three years.

SSB 6932

The Life Cycle Cost Model will (section 4):

- Be used in estimating future terminal and vessel needs.
- Be the basis for developing the budget request for terminal and vessel preservation funding.

2007 Transportation Budget

- WSF to update LCCM no later than August 1, 2007 (section 225 (8)(c)).
- JTC to review updated LCCM (section 205 (1)(b)(ii)).
- JLARC to ensure LCCM complies with requirements in bill (section 108 (2))



The goal of these efforts is to ensure that vessel preservation funding is invested wisely for the best return in terms of vessel material condition, by replacing systems only when their condition requires it. When funding is limited, the highest priority needs of vital systems are preserved within their life cycles, and the high cost, non-vital systems such as passenger deck renovations and topside painting, are deferred.

The terminal Life Cycle Cost Model underwent an extensive update in 2007, which focused on bringing all of the condition ratings up to date and reassessing when assets would need to be replaced. This effort resulted in a net savings of \$106 million over the legislative 16-year financial plan.

Terminal Design Standards

Terminal design standards were reviewed and updated to ensure that terminal facility planning is consistent with the direction in ESHB 2358 and that facilities were being appropriately sized. These revised standards were used in the development of conceptual-level terminal improvement needs identified in this plan.

Terminal Design Standards are based on the following assumptions:

- Operational strategies will be implemented where appropriate
- Improvements in the efficiencies of loading and off-loading will be made where possible
- Major alternatives will be evaluated using a business case evaluation.

Terminal design standards are divided into the following elements:

Vehicle Holding Sizing: The holding space required within the paid area is based on the largest vessel capacity of the route. There needs to be enough holding space in the paid area for one sailing worth of vehicles plus standby vehicles. HOV/preferential loading vehicles have separate holding spaces based on the utilization at each terminal.

Terminal Program: Each terminal has specific spaces that are required in order to safely and efficiently operate a ferry terminal. These spaces have been identified in terms of function, size and location.

Terminal Building Sizing: The terminal building is divided into two separate functions, the public waiting area and the staff areas. The public waiting area is sized based on the type of route (commuter, summer travel & tourist, mix). The difference in these types of routes is how long a customer is waiting; commuters typically arrive very close to the scheduled departure times vs. tourists who

may arrive several hours before the scheduled departure time. More space is needed to accommodate customers that are waiting longer. The staff areas are determined using the State Department of General Administration's standards for type of employees and space they require.

Customer information: Information Technology System (ITS) equipment will be installed at critical travel decision points regarding reservations/capacity information and proposed alternative routes. The current WSDOT standards for highway information technology will be used.

Business case: The business case process is an objective, repeatable, quantitative approach to alternatives analysis. It is intended to determine the lowest life cycle cost solution for a given problem. Alternatives are identified and evaluated in terms of costs associated with each alternative. Costs include capital and operating as well as risks and benefits to the customer. See Appendix B for a more detailed discussion of terminal design standards.

How has the financial outlook influenced the development of the Draft Plan?

The current and future financial challenges have had a profound impact on the approach to this planning effort. It has forced WSF to take a completely fresh look at both what it is doing and how it is doing it. This plan proposes some significant changes in how WSF does business and how customers will interact with the system in the future, while maintaining its commitments to providing the best possible service throughout the system given funding constraints.



4. PLANNING PROCESS

4.1 Technical and Policy Review Teams

The process for developing this plan was designed to meet the participation requirements that were included in ESHB 2358 and to ensure that the best available internal and external technical resources were brought to bear on the analytical needs of the project. Toward this end, the plan development effort included four distinct groups:

- Technical work teams. Technical work teams organized around subject matter expertise, including: demand forecasting; terminal design standards; operating strategies; pricing strategies; and finance. These teams were comprised primarily of WSF staff and augmented with consultant support where appropriate. Given the importance of the demand forecasting effort, an expert review panel was also integrated into that work element.
- JTC Staff Group. ESHB 2358 called for a high degree of review and participation among the key participants in the study efforts. To ensure effective communication and collaboration, the JTC Staff Group was formed and met bi-weekly since the summer of 2007. The Staff Group was comprised of representatives from the Governor's Office, House and Senate Transportation Committees, the JTC, WSDOT, WSF, the Office of Financial Management and the WSTC.
- Transportation Commission Ferries Subcommittee. There was a particular need for coordination between WSF and the Transportation Commission, given the Transportation Commission's role in fare setting and shared responsibility to make pricing and operational strategy recommendations to the Legislature. As a result, a three-member Subcommittee of the State Transportation Commission met monthly with WSF project leadership team on policy and technical issues.
- Joint Transportation Committee Ferry Policy Group. ESHB 2358 created a policy oversight committee comprised of members of the Senate and House Transportation Committees and the Governor's Office. This group met on a bi-monthly basis for progress briefings and to provide feedback on the work products as they were developed.

The work of these groups and the participation of stakeholders was critical to the development of this Draft Long Range plan, and WSF appreciates the time and effort of everybody involved. For a complete list of participants, please see Appendix C.

4.2 Public Outreach and Stakeholder Involvement

As part of the long-range planning process WSF has consulted with ferry customers, planning organizations, agency stakeholders and the general public. The following groups and resources have provided input into the planning process, and encouraged stakeholders and the public to submit ideas and stay current on the planning process.

Local Agency Review Team. The Local Agency Review Team is a consultative body comprised of individuals from agencies and organizations with a vested local interest in the ferry system and convened for the purpose of advising WSF on technical and policy issues associated with the development of a revised Draft Long-Range Plan. The Local Agency Review Team has been designed to keep WSF's agency partners informed about technical and policy work and help WSF understand the local community, and agency needs.

Public Ferry Advisory Committees. WSF meets with the chairs of the Ferry Advisory Committees quarterly to provide an update on the development of the Long-Range Plan, solicit feedback, and consult on upcoming public meetings in ferry-served communities.

Public Meetings and Workshops. Twenty-six public meetings were held in ferry-served communities in 2008. These meetings, held in the spring, summer, and fall, were to solicit input from the public as WSF was developing the foundational concepts for the Long-Range Plan. Ten additional public hearings are planned for January 2009 to gather input on the Draft Plan. See the sidebar on page 18 for a comprehensive list of 2008 public meetings.

Briefings to Community Groups, Local Leadership, and Regional Planning Organizations. WSF staff attended over 60 meetings regarding the Long-Range Plan, not including the public meetings and workshops mentioned above. These meetings were requested by community groups, city and county councils, and regional planning organizations.

Web Page. WSF maintains a web page connecting the public to the latest information on the Draft Plan. Users can download materials and public comment summaries from all 26 of the public meetings held so far, including a video feed of the presentation used during the fall. The web page makes it easy to submit public comments and get in touch with WSF staff. It also connects the public to related web pages, including the WSTC and JTC sites. The webpage address is: www.wsdot.wa.gov/ferries/planning/ESHB2358

2008 Public Meetings to Date:

- Mar. 24, Bainbridge
- Mar. 25, Kingston
- Mar. 26, Southworth
- Mar. 27, Coupeville
- Mar. 31, Bremerton
- Apr. 1, Anacortes
- Apr. 2, Friday Harbor
- Apr. 3, Vashon
- Jun. 17, Whidbey Island
- Jun. 18, Port Townsend
- Jun. 19, Anacortes
- Jun. 23, Bainbridge
- Jun. 24, Kingston
- Jun. 25, Vashon
- Jun. 26, San Juan Islands
- Jun. 30, Bremerton
- Jul. 1, Southworth
- Sept. 24, Bremerton
- Sept. 25, Edmonds
- Oct. 2, Bainbridge
- Oct. 6, San Juan Islands
- Oct. 7, Keystone
- Oct. 13, Vashon
- Oct. 14, Mukilteo
- Oct. 15, Anacortes
- Oct. 16, Southworth



Email List Serve. WSF maintains an email list serve of those who have expressed specific interest in learning more about the long-range planning efforts. This includes a quarterly e-mail from Assistant Secretary for Ferries regarding progress on the plan, and a weekly update from him that addresses current ferry issues, including updates on the draft planning process.

Next Steps. A thirty-day comment period follows the release of this Draft Plan. During this period, WSF will host ten public hearings in the communities it serves, and will continue to communicate through the methods outlined above.

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, Fautleroy-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.

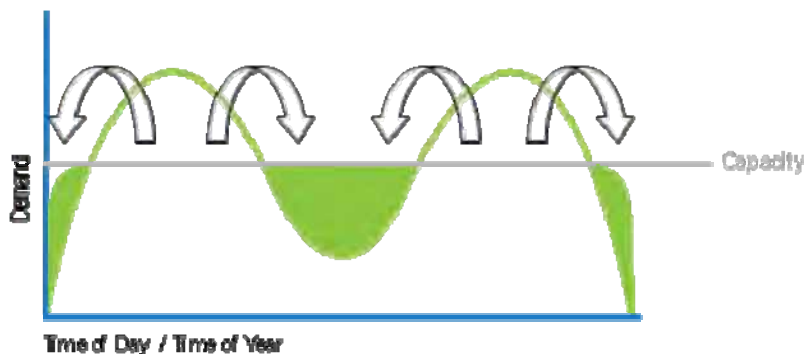
Accommodating Ridership Growth

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

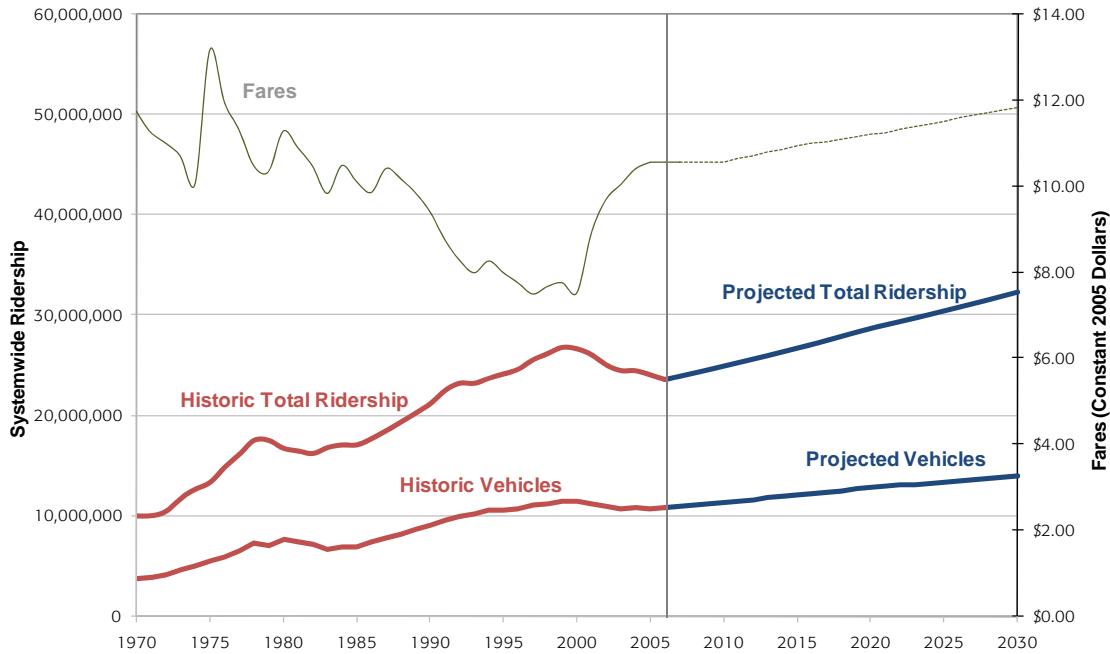
As shown in Exhibit 5, WSF projects that its rider base will increase from almost 24 million riders in FY 2006 to 32.3 million in FY 2030, with total vehicle trips increasing from 10.8 million in FY 2006 to 14.1 million in FY 2030.

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.

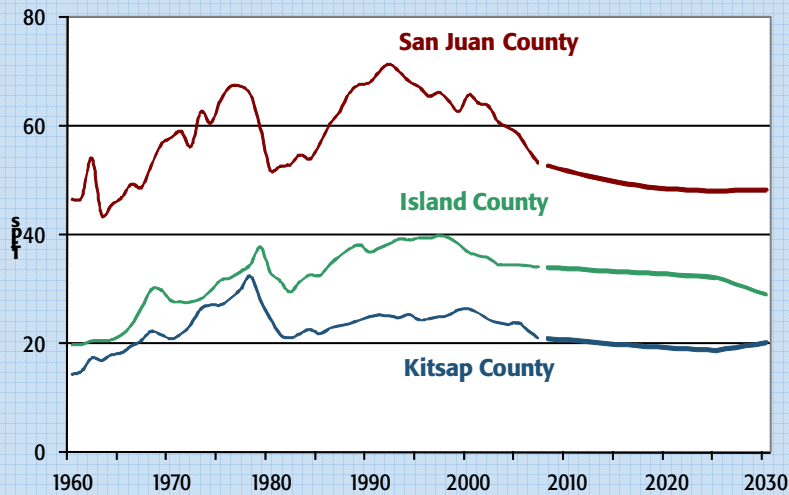
Ridership projections, by their nature, are imperfect. More detailed information will help, and the two-year survey updates will provide this. The ridership numbers are intended for long-term planning purposes with the full understanding that this plan will be updated every five years. Due to the long 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?

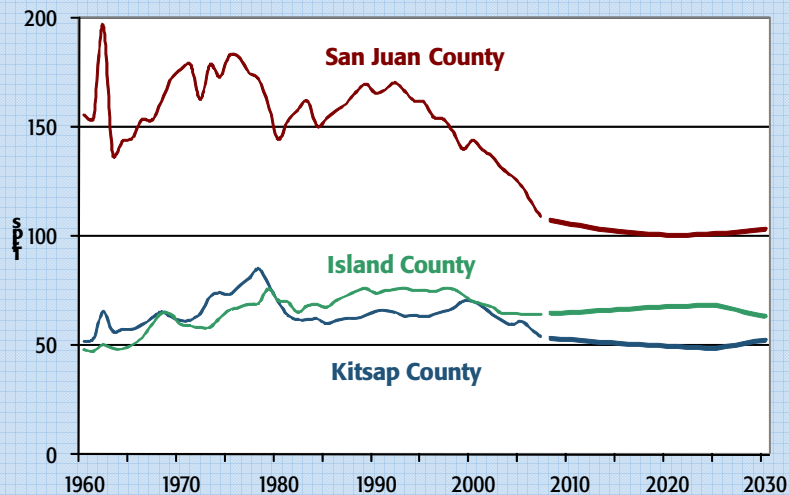
The graphs below compare population in the ferry-dependent communities with actual and projected ridership by looking at trips per capita. In most cases, per person ridership levels are expected to be consistent with, or lower than, historical experience.

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





CUSTOMER SERVICE: LEVEL OF SERVICE STANDARDS

This section describes the current level of service (LOS) standards and explains why the vehicle LOS needs to be re-established (both in terms of the measure used and the actual standards). It details a new vehicle LOS measure that is substantially different from the current measure in that it no longer focuses on the 4-hour peak period.

The revised LOS measure proposed in this Plan is a daily percent of sailings at vehicle capacity. This measure focuses on asset utilization and will help inform strategic investment decisions. This is an important change as it moves the ferry system planning away from thinking primarily about peaks and more about how to best fit the service to the overall demand and to think about filling up the space outside the peaks.

LOS standards are an important indicator of the service customers are receiving as well as how utilized the system is. Given these considerations, this section proposes preliminary standards at the route-level for August, May and January. It also outlines the process for reviewing and refining these proposed standards with affected local and regional planning agencies (cities, counties, RTPO's, etc.) before final adoption by WSDOT.

7. CURRENT STANDARDS

7.1 Current Standards

In 1994, the Washington State Transportation Commission adopted level-of-service (LOS) standards for WSF. These congestion standards were developed as part of a larger effort among local governments and modal transportation agencies to respond to requirements of Washington's Growth Management Act, with the understanding that plans for future growth would be closely tied to maintaining LOS standards.

To quantify LOS, WSF chose to measure congestion delay, expressed as the number of vessels that sail before a vehicle can board. WSF measured the average delay over the course of the busiest time of day (3 PM to 7 PM) on an average weekday and deemed this measurement "boat-wait."

For vehicles, the boat-wait standards were set to 1-boat-wait for most routes. On those routes, WSF would meet its LOS standard if the



What are the LOS current standards?

Non-motorized and High Occupancy Vehicles (HOV)

- Accommodate all pedestrians, bicyclists and registered HOVs on each sailing (0 boat-wait)

Freight and Goods Movement

- Westbound weekday traffic on Seattle-Bremerton and Edmonds-Kingston between 5 AM and 2 PM – 0 boat-wait
- Eastbound weekday traffic on Seattle-Bremerton and Edmonds-Kingston between 9 AM to 3 PM – 0 boat-wait
- San Juan Island 0 boat-wait for pre-registered commercial vehicles

General Traffic

All Routes (ex. San Juan Islands)

Avg. Boat-wait, Westbound Weekday PM Peak, 3–7 PM

- Port Townsend-Keystone – 1 boat-wait
- Mukilteo-Clinton – 2 boat-wait
- Edmonds-Kingston – 1 boat-wait
- Seattle-Bainbridge – 2 boat-wait
- Seattle-Bremerton – 1 boat-wait
- Fauntleroy-Vashon-Southworth – 1 boat-wait
- Point Defiance-Tahlequah – 1 boat-wait

average vehicle arriving for sailings between 3 PM and 7 PM saw no more than one vessel sail before it was able to board. Seattle-Bainbridge was given a 2-boat-wait standard in order to equalize its overall average trip time with Seattle-Bremerton. Mukilteo-Clinton also was given a 2-boat-wait standard because of its exceptionally short headways.

For passengers, the boat-wait standards were set to 0-boat-wait for all routes, meaning no walk-on passengers during the afternoon peak period should ever be denied entry to their first available sailing due to capacity constraints.

The service and travel patterns in the San Juan Islands do not lend themselves to the same definition of peak congestion. These routes do not serve a commuter market and, because of route length, headways are naturally longer, making a 4-hour analysis impractical and boat-wait measurement not applicable. As a result, daily and seasonal capacities are tracked for the San Juan Island routes and service growth is designed to keep up with traffic growth.

7.2 Need to Re-establish Vehicle LOS Standards

There are a few key reasons why LOS standards need to be re-established:

- Vehicle boat-wait depends on headway (the time between sailings), but adding another vessel to a route means a reduced headway. For example, doubling the number of boats operating on a route would cut the headway in half. It would also change the meaning of boat-wait on that route since waiting for the next sailing would involve only half the time, making the same service standard harder to achieve. An unchanged number of boat-waits would belie the fact that the customer experience had dramatically improved; a 30-minute wait is preferable to a 60-minute wait, even if the boat-wait is the same in both cases. Therefore, boat-wait is not a consistent measure of the customer experience, nor can it be compared across routes.
- Boat-wait as currently defined is only a peak period measure. For routes that have large fluctuations in travel patterns, a boat-wait measure might imply that the route is highly congested and additional service may be required even if vessels are substantially empty during other times of the day.
- A boat-wait measure is not a meaningful indicator of level of service provided to the ferry customer when combined with other strategies included in this plan, like a reservation system.

In addition to these issues, ESHB 2358 has called for the ferry system to re-establish level of service standards. The following section discusses the proposed measures and standards in detail.

8. CHANGING THE VEHICLE LOS MEASURE

8.1 Changing the Vehicle LOS Measure

Any revised measure should capture the customer experience and describe how well WSF is utilizing its assets. This could inform both when additional strategies might be needed (to improve the customer experience) and when additional service might be needed (only if existing assets are being used efficiently).

Recommended New Measure

Percent of total sailings filled to capacity in May, August, and January is the suggested measure to be used when re-establishing LOS. A version of this measure is currently being used in the San Juan Islands (though it uses total monthly sailings for March and August), and it has the following advantages:

- Greater systemwide consistency. San Juan Islands and other routes will use the same measures.
- Simplification. Standards are focusing only on vehicle LOS, as this is where capacity is most limited.
- Works with a reservation system. A reservation system is a key operational strategy evaluated in the Long-Range Plan, and it would render minutes of wait or volume to capacity ratios useless because there is no good way to measure the virtual queue that underlies these measures. A percent of sailings full measure is still relevant and may indicate times when people would like to get reservations and are not able to.
- Description of customer experience. Whether or not a customer can board his/her desired sailing is captured by this measure and is one indicator of that customer's experience.
- Identifies asset utilization. Because this measure is not solely focused on the peak, it is a better indicator of asset utilization than a standard based on wait times during the peak periods.
- Identifies peak congestion. A percent of sailings full measure will be able to identify routes where peak sailings are full, even if the rest of the day's sailings are significantly under-utilized.



8.2 A Framework for Setting LOS Standards

Previous planning efforts assumed that LOS standards defined when service needed to be added. While LOS standards should be a factor in service addition decisions, they can only be one factor given funding constraints and other options available to the ferry system (like the implementation of pricing and operational strategies).

Exhibit 8 Future Service Addition Decisions

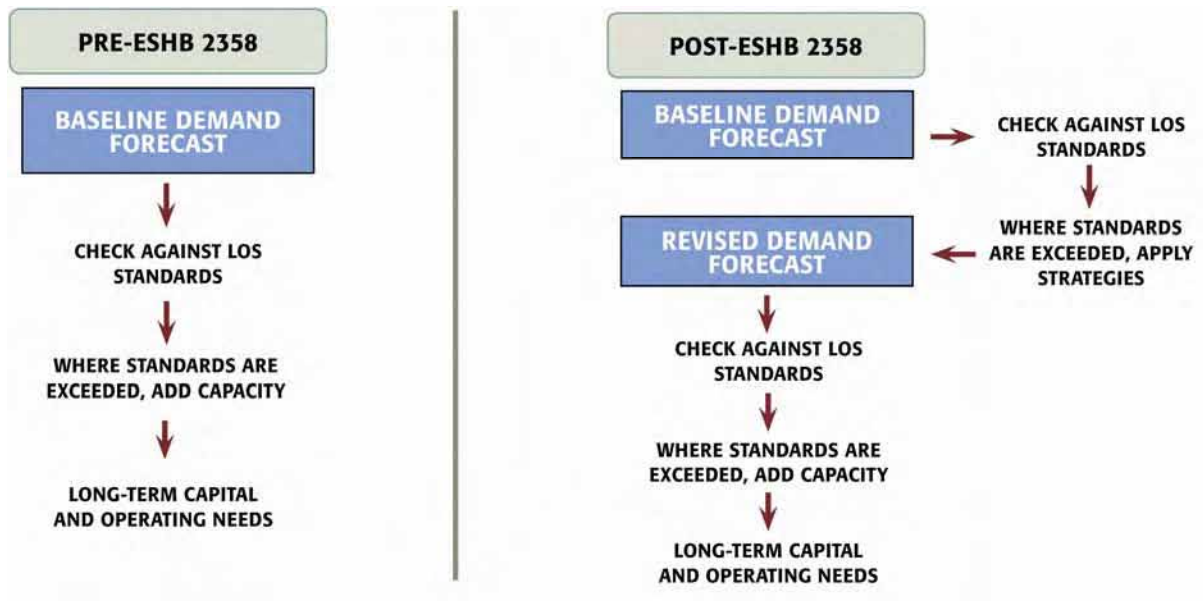


Exhibit 8 illustrates how WSF's existing LOS standards have been used in previous planning efforts and proposes a different way to incorporate LOS standards into planning efforts that is more consistent with the intent of recent legislation.

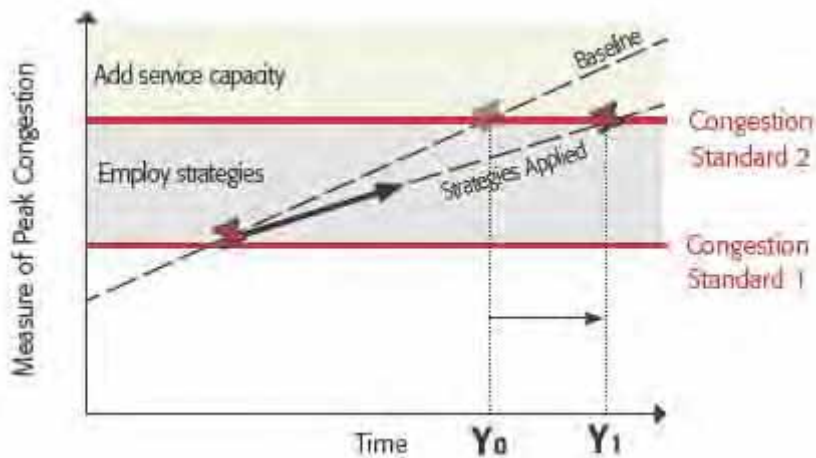
Under this paradigm, two standards are needed, one to indicate when additional pricing and operational strategies might be needed, and one to indicate when additional service might be needed. The first standard should not be viewed as a minimum criterion to be achieved before adaptive management strategies are deployed (i.e. strategies that have systemwide benefits should be considered no matter what a route's performance against its LOS standard is). Rather, it should be an indicator of when WSF might consider more targeted, route-specific strategies to alleviate congestion and spread demand to sailings where capacity exists.

Similarly, the second standard should not automatically be a trigger for additional investment. It should be used as an indicator that

identifies when existing assets are being used most effectively and WSF might begin considering additional investment.

Exhibit 9 shows how the notion of two standards might be advantageous to the ferry system. By identifying the need for targeted adaptive management strategies on a route, WSF has the opportunity to gradually employ such strategies, minimizing potentially negative impacts to customers while forestalling the need for additional investment.

**Exhibit 9
Congestion Standards**



How Should the Standards be Set for Each Route

The following examples illustrate what a percent of sailings full measure means with respect to congestion and asset utilization and how the measure might change in response to changing conditions on or between routes.

Commuter Routes: Seattle-Bremerton

Seattle-Bremerton is primarily a commuter route that experiences substantially more traffic during daily commute times. On an average weekday, there are 14 westbound departures, 4 of which (29%) fall in the 3:00-7:00PM afternoon peak window.

Exhibit 10 shows actual volume-to-capacity ratios – the percentage of vehicle space (capacity) on a vessel that is taken up by paying vehicles (volume) – for Seattle-Bremerton in May 2006. During the weekday afternoon peak, over 80% of the vehicle deck space is filled, as opposed to other times during the day when less than 40% of the vehicle deck space is filled, on average.



Exhibit 10 Seattle-Bremerton Daily Volume-to-Capacity Ratios

Seattle - Bremerton Westbound								
May 2006 Actual Volume to Capacity Ratios								
	SAT	SUN	MON	TUES	WED	THURS	FRI	Average
Morning (Until 10:59 AM)	0.41	0.28	0.36	0.34	0.36	0.39	0.61	0.39
Midday (11:00 - 2:59 PM)	0.57	0.58	0.37	0.40	0.39	0.48	0.53	0.47
Afternoon Peak (3:00 PM - 6:59 PM)	0.57	0.52	0.83	0.84	0.81	0.81	0.89	0.75
Evening (7:00 PM and After)	0.26	0.31	0.13	0.20	0.20	0.41	0.35	0.26
Average	0.43	0.40	0.43	0.45	0.45	0.55	0.60	0.47

Exhibit 11, in comparison, shows the percent of sailings with vehicle decks that were filled to capacity. On average, one boat of the four westbound peak departures fills to capacity. During the week, 7% of westbound sailings fill to capacity.

Unlike volume-to-capacity (v/c), percent of sailings full provides some insight into the customer experience. The average weekly v/c of 0.47 would suggest that there is no congestion issue at all, whereas 7% of sailings filled indicates that while there generally is not a congestion issue, a small portion of vehicles cannot board their preferred sailing.

In total, the pattern shown in Exhibit 11 suggests that there is still room on Bremerton vessels to accommodate more vehicles. With respect to maximizing asset utilization, these exhibits suggest that while WSF may be able to shift some demand to off-peak time periods, it is unlikely that the Seattle-Bremerton route will ever be able to achieve 100% of sailings filled given the nature of the route and the low vehicle volumes on off-peak sailings.

The Bremerton example is unique in that excess vehicle capacity is expected to be filled in part by customers who can shift from Bainbridge or Kingston, especially if a reservation system is in place to facilitate this shift. The proposed LOS measure of percent of sailings full will indicate to what extent this substitution is occurring.

Exhibit 11 Seattle-Bremerton Actual Daily Percent of Sailings Filled

Seattle - Bremerton Westbound								
May 2006 Actual Percent of Sailings Filled								
	SAT	SUN	MON	TUES	WED	THURS	FRI	Average
Morning (Until 10:59 AM)	-	-	-	-	-	-	25%	4%
Midday (11:00 - 2:59 PM)	-	-	-	-	-	-	-	0%
Afternoon Peak (3:00 PM - 6:59 PM)	-	-	25%	25%	25%	-	75%	21%
Evening (7:00 PM and After)	-	-	-	-	-	-	-	0%
Average	0%	0%	7%	7%	7%	0%	29%	7%

Recreational Routes: Port Townsend-Keystone

Port Townsend-Keystone has a ridership pattern that is much different than that of Seattle-Bremerton. The larger volume of recreational riders on this route leads to a trip distribution that is less concentrated in the peak and more evenly spread throughout the day.

Exhibit 12 shows daily v/c ratios for Port Townsend-Keystone. With a couple of exceptions, weekday ridership is evenly spread, and more congestion exists on the weekends.

**Exhibit 12
Port Townsend-Keystone Daily Volume-to-Capacity Ratios**

Port Townsend - Keystone Westbound								
May 2006 Actual Volume to Capacity Ratios								
	SAT	SUN	MON	TUES	WED	THURS	FRI	Average
Morning (Until 10:59 AM)	0.68	0.52	0.90	0.83	0.65	0.73	0.68	0.71
Midday (11:00 - 2:59 PM)	0.97	1.01	0.43	0.34	0.42	0.43	0.61	0.60
Afternoon Peak (3:00 PM - 6:59 PM)	1.08	0.79	0.48	0.43	0.47	0.47	0.57	0.61
Evening (7:00 PM and After)	0.53	0.45	0.36	0.39	0.48	0.28	0.49	0.43
Average	0.87	0.81	0.54	0.48	0.50	0.51	0.60	0.59

For comparison purposes, Exhibit 13 shows percent of sailings filled. While the average of 14% is relatively low, the pattern below shows significant congestion on the weekends, with 100% of sailings overloaded during certain time periods.

Together, these exhibits show a pattern that indicates Port Townsend-Keystone should be able to achieve a higher percent of sailings full than Seattle-Bremerton, particularly with implementation of a reservation system. Because ridership is more spread out during the day, as ridership grows all sailings can achieve greater utilization, not just those in and around the peak.

**Exhibit 13
Port Townsend-Keystone Actual Daily Percent of Sailings Filled**

Port Townsend - Keystone Westbound								
May 2006 Actual Percent of Sailings Filled								
	SAT	SUN	MON	TUES	WED	THURS	FRI	Average
Morning (Until 10:59 AM)	-	-	33%	33%	-	-	-	10%
Midday (11:00 - 2:59 PM)	67%	100%	-	-	-	-	-	24%
Afternoon Peak (3:00 PM - 6:59 PM)	100%	33%	-	-	-	-	-	19%
Evening (7:00 PM and After)	-	-	-	-	-	-	-	0%
Average	50%	50%	7%	7%	0%	0%	0%	14%

To further illustrate the difference between patterns on commuter and recreational routes, take the example of a typical Friday in May. Both Port Townsend-Keystone and Seattle-Bremerton have a daily v/c of 0.6 on Friday (i.e. on average, 60% of the vehicle deck space is filled). Because ridership is more spread out during the day on Port



Townsend-Keystone, 0% of the sailings are filled to capacity. By contrast, 29% of Bremerton's sailings are filled to capacity.

Choosing LOS Standards by Route

To determine where LOS standards might be appropriately set, an analysis was undertaken using 2006 actual ridership data adjusted to reflect the 2030 demand forecasts. The following table shows projected percent of sailings full (of vehicles) by route, assuming no additional services are added, no strategies are employed, and prices are not raised above inflationary levels.

**Exhibit 14
Estimated Percent Sailings Full by Route**

Route	2006 Westbound Weekly Averages			2030 Expected Westbound Weekly Averages		
	January	May	August	January	May	August
Pt. Defiance - Tahlequah	0%	0%	1%	1%	0%	1%
Pt. Townsend - Keystone	12%	14%	37%	89%	84%	97%
Mukilteo - Clinton	22%	32%	39%	30%	51%	62%
Fauntleroy - Vashon	15%	19%	10%	50%	41%	54%
Fauntleroy - Southworth	29%	24%	24%	46%	45%	47%
Seattle - Bremerton	4%	7%	12%	8%	15%	21%
Edmonds - Kingston	6%	22%	32%	34%	58%	82%
Seattle - Bainbridge	15%	29%	36%	39%	61%	67%
Anacortes - San Juan Islands	10%	31%	36%	24%	48%	45%
Anacortes - Sidney	N/A	0%	7%	N/A	0%	100%

With respect to asset utilization, the analysis of ridership patterns on commuter and recreational routes would indicate that recreational routes might expect to be able to achieve a higher percent of sailings filled due to customer flexibility in travel times. The projections for Seattle-Bremerton and Port Townsend-Keystone shown in Exhibit 14 above illustrate this notion.

With respect to the customer experience, once a large portion of sailings are filled it indicates congestion and overloaded sailings, especially if the portion of sailings filled represents more than just the typical peak.

Proposed Standards by Route

The proposed LOS Standards will ultimately need to reflect the strategies and investments prescribed in the plan. Based on the 2030 LOS expectations detailed above (which assume today’s baseline service levels and sailing schedules), the following proposed standards are being put forth for further review and comment.

**Exhibit 15
Proposed LOS Standards by Route**

Route	Level 1 Standards (Consider Targeted Strategies to Spread Demand and Improve Customer Experience)			Level 2 Standards (Assets are Being Used Efficiently, Consider Additional Investment)		
	January	May	August	January	May	August
	Pt. Defiance - Tahlequah	25%	25%	30%	50%	50%
Pt. Townsend - Keystone	25%	30%	35%	75%	75%	85%
Mukilteo - Clinton	25%	25%	30%	65%	65%	75%
Fauntleroy - Vashon	25%	25%	30%	50%	50%	60%
Fauntleroy - Southworth	25%	25%	30%	50%	50%	60%
Seattle - Bremerton	25%	25%	30%	50%	50%	60%
Edmonds - Kingston	25%	25%	30%	65%	65%	75%
Seattle - Bainbridge	25%	25%	30%	65%	65%	75%
Anacortes - San Juan Islands	25%	30%	35%	65%	75%	85%
Anacortes - Sidney	N/A	50%	50%	N/A	100%	100%

Exhibit 15 above proposes two levels of LOS standards by route and season. In general, standards are higher in the summer months to reflect additional recreational ridership on all routes and standards are higher on recreational routes to reflect an increased feasibility of spreading ridership to under-utilized sailings.

The following specific considerations have also been incorporated:

Level 1 Standards

- The 25% standard reflects a situation in which all peak sailings are filled to capacity, but other sailings are not, indicating opportunities to spread demand through adaptive management strategies
- Anacortes-San Juan Islands and Port Townsend-Keystone have standards that increase to 30% in May and 35% in August to reflect greater seasonality in recreational ridership
- All other routes have a 30% standard in August to reflect some increased seasonal ridership
- Anacortes-Sidney currently has only two departures per day, suggesting a 50% level 1 standard



Level 2 Standards

- Routes with very pronounced peak trends have standards at 50% in January and May, reflecting a situation in which all peak sailings are filled and demand has been spread to fill half of the sailings in time blocks surrounding the peak (essentially doubling the length of the peak period)
- Although the actual and projected performance against the proposed standard for Bremerton is much lower than other routes, Bremerton has proposed standards consistent with other commuter routes under the assumption that a reservation system will help to shift excess demand from Bainbridge and Kingston to Bremerton
- Routes with very pronounced peak trends have standards at 60% in August to reflect additional seasonal ridership
- Routes that have a mix of peak and commuter traffic have standards at 65% in January and May (75% in August) to reflect an increased ability to spread demand throughout the day (due to more time flexibility amongst customers)
- Port Townsend-Keystone has January and May standards at 75% (85% in August) to maximize utilization amongst a customer base that has the greatest time flexibility
- Anacortes-San Juan Islands standards reflect seasonality amongst recreational riders but have been adjusted downwards from Port Townsend-Keystone due to a unique sailing schedule that accommodates several destinations (i.e. a 50% standard could indicate that sailings to Orcas are 100% full while sailings to Friday Harbor have additional capacity, for example).

While these LOS standards may seem high, indicating degradation in service, it is important to consider them in conjunction with a reservation system (discussed in more detail in following sections) and other adaptive management strategies. Furthermore, they reflect the financial situation of WSF, and help ensure that assets are fully utilized before significant capital investments are considered.

9. LOS IMPLEMENTATION ISSUES

The proposed LOS standards will be reviewed and possibly refined based on work with locally affected jurisdictions after the completion of the final Long-Range Plan. WSF would have preferred to go through this process before the final plan is finished, but it was not possible given several factors affecting the timing of the work.

In particular, it was necessary to consider the LOS implications of potential operational and pricing strategies on the potential design of a new standard. Also, the last time that WSF adopted a revised LOS standard for a route (Mukilteo-Clinton) in 1996, the process of working with the local jurisdiction took more than a year.

There are two factors that largely mitigate concerns with the approach to finalizing LOS standards after the final Long-Range Plan has been completed.

1. The revised approach to LOS standards makes the standard just one of several factors that will influence possible service changes. As a result, the LOS standards no longer have as direct an impact on the proposed service levels in the Long-Range Plan.
2. For all jurisdictions, except Whidbey Island, the ferry LOS standards do not have an impact on local growth management concurrency plans. In the case of Whidbey Island, WSF will work closely with the County to establish an LOS standard that fits with local land use and transportation planning goals.





OPERATIONS: ADAPTIVE MANAGEMENT STRATEGIES

WSF conducted a comprehensive review of options and best practices to improve operating efficiencies, in response to the question of how the ferry system can operate more efficiently, and considering legislative direction around operating strategies. It considered the experience of transportation industry professionals and included an extensive national and international best practices review.

Through these avenues a wide range of strategies was identified, and over 90 discrete operational strategies were ultimately considered for inclusion in this Draft Plan (see Appendix E for detailed discussion of all operating strategies). This section focuses on those strategies with the greatest potential to benefit the ferry system.

The Cost of Forgoing Adaptive Management Strategies

In addition to screening criteria that included maximizing demand management benefits, minimizing negative impacts to customers and communities, and increasing operating efficiencies, the adaptive management strategies were evaluated in terms of what it might cost the system to not make investments in these strategies. As many of the strategies have initial capital costs associated with them (and several have operating impacts as well), one might assume that a “do nothing” scenario is the least costly option. This is not the case. Without strategies to encourage mode shift and manage growing vehicle volume at terminals, the ferry system would likely find itself in a position where it needs to expand its terminals (and expand its capital program) or allow service degradation and vehicle queuing that translates into significant costs for local communities.

A package of well-coordinated operating strategies designed to address the specific situations faced by each ferry terminal is a key component to the Long-Range Plan. In many cases it eliminates the need for additional terminal investments or even reduces the existing terminal capital program. Furthermore, it reduces and postpones the demand pressure for additional investment in new vessels.

The strategies identified as having the greatest impact on demand management and operating efficiency objectives, in

Legislative direction on operating strategies

WSF must develop, and the Commission must review, operational strategies that (section 5):

- Use data from a current user survey.
- Recognize each travel shed is unique.
- Are consistent with the vehicle level of service standards.
- Use a life cycle cost analysis to find the best balance between capital and operating investments.
- Use methods of collecting fares that maximize efficiency and achieve revenue control.
- Are re-evaluated periodically, at least before a new capital plan is developed.
- Consider the following:
 - Options for leveling vehicle peak demand and increasing off-peak ridership.
 - Feasibility of reservation systems.
 - Ways to shift vehicle traffic to other modes.
 - Dock operation and queuing efficiencies.
 - Costs/benefits of remote holding versus over-water.
 - Methods of reorganizing holding areas to maximize space available for customer vehicles.
 - Schedule modifications.
 - Efficiencies in exit queuing and metering.
 - Interoperability with other transportation services.



addition to being cost effective relative to alternatives, are described in further detail below.

10. TRANSIT ENHANCEMENTS

In addition to other local benefits they might provide with respect to commute trip reduction and improved traffic flow, the transit enhancements options included in this plan are chosen to maximize a customer's ability to shift mode of transportation, thus postponing the need to add additional vessels to the system and mitigating expected service degradation.

The costs to WSF of transit enhancement strategies must therefore be considered in this context. Given that some costs would likely be borne by local transit agencies, a targeted package of transit enhancements is expected to be less costly than the service degradation or earlier vessel acquisition need that would occur under a "do nothing" scenario. A full cost-benefit analysis will be conducted as part of the pre-design requirement around substantial investments in transit enhancements on the part of WSF.

Exhibit 16 Summary of Transit Enhancements

Transit Service	Facility Needs	Non-motorized Facilities
<ul style="list-style-type: none"> • Downtown Seattle shuttle • Better park & ride connectors • More frequent service during peak • More night and midday service • New routes and better connections • Better timing with vessel arrivals and departures • Hold buses until boat arrives 	<ul style="list-style-type: none"> • Covered walkways • Sheltered bus stops • Improved pedestrian crossings • Preferential access for buses • More park & ride locations away from the terminal • Improved wayfinding through terminal 	<ul style="list-style-type: none"> • Covered and secure bike storage at terminal • Car sharing locations at ferry terminals • Trails and dedicated pedestrian and bike paths to connect with terminals

Furthermore, the WSTC customer survey corroborates the notion that transit enhancements are likely to have a significant mode shift impact. Particularly on commuter routes, a large portion of ferry customers identified inadequate transit connections and other transit related issues as a significant driver of mode choices. This would indicate that strategies related to improving transit in and around

terminals could be quite effective in achieving mode shift objectives and would be valued by customers. Survey results showed that three factors clearly dominated the drive-on versus walk-on decision-making:

- The availability of transit or another alternative such as transit from a park-and-ride lot or parking at the ferry to get from their home to the ferry
- The amount of time the trip takes walking-on versus driving-on
- The availability of transit or a second car to get to their final destination

Options for increasing transit availability are included as part of the proposed transit enhancements. Exhibit 16 summarizes these options, some which will require coordination with highways, other regions, and local transit agencies. Appendix F includes a complete list of proposed transit enhancements by terminal.

Coordination with Local Transit Agencies

To effectively implement a package of transit enhancements most likely to result in mode shift behaviors, WSF will need to coordinate closely with local transit agencies. It is expected some of the costs for improvements would be borne by WSF, while local transit organizations would need to provide other improvements. This does not assume any contracting of local services by WSF, rather an increased level of coordination and targeted investments by WSF and transit providers.

WSF will continue to work closely with these agencies to improve transit services at terminals and coordinate scheduling where possible.

Public Private Partnerships Opportunities at Terminals

The Washington State Department of Transportation Office of Public Private Partnerships (PPP) has, at the request of the Legislature, conducted a study to identify any opportunities for public-private development at WSF terminals. This study will be submitted to the Legislature during the 2009 session.

The study has identified three terminals with potential market opportunities – Seattle, Bainbridge and Edmonds.

This Draft Plan does not incorporate any findings from the PPP's study. If there are opportunities that emerge which warrant further review, WSF will work with Office of PPP to determine how these might be integrated with the transportation needs of the system, for the benefit of WSF and its customers.



11. VEHICLE RESERVATIONS

A vehicle reservation system is the primary demand management strategy included in this Plan. Under the current system of vehicle capacity allocation on ferry vessels, automobiles queue within and around the terminals, waiting until there is adequate vehicle capacity on a vessel. This is an extremely inefficient system that has high costs in terms of lost time, unpredictability for riders, customer frustrations, negative community impacts, and the costs associated with building larger terminals.

At many terminals during periods of high demand, the capacity of the terminal vehicle holding is reached and traffic begins to overflow. When the holding areas overflow, the traffic and congestion impacts are frequently severe on streets and highways surrounding the terminals' streets, and effects are felt by the neighborhoods in the terminal area. In most cities and towns served by WSF, local and county governments see this traffic impact as untenable. While most understand ferry traffic is an overall benefit to the community, when waiting ferry traffic clogs the streets, increases air pollution, and stanches commerce, it is no longer seen as beneficial and is largely deemed as detrimental.

There are a number of secondary impacts that also result from this situation, including customer inconvenience in terms of lost time, energy use, lack of predictability, frustration, and an inability to be spontaneous in one's travel. The system also experiences higher operating costs for traffic control and often the acquisition, construction, and maintenance of auxiliary holding areas to accommodate these peak conditions.

Historically, the solution to this problem has been to consider construction of larger vehicle holding facilities so that even on the highest peak days, vehicles do not back up onto local streets.

There are three primary ways to address how peak traffic is accommodated:

- **Facility Approach.** Build larger terminals to hold all demand, including more extensive use of auxiliary and/or remote holding to store vehicles during overload situation. Could require two or more boat loads of storage.
- **Service Approach.** Add more ferry service, so arriving demand seldom outstrips the capacity of the terminal. In other words, adding a third boat to a route will increase the frequency of service and throughput capacity, which in turn will reduce the likelihood that there will be significant overloads.

- **Operational Approach.** Use other methods, such as a reservation system, to move the overflow into a virtual queue and smooth out the arrival rate. Since there is a balance of arrival vehicles and space on departing sailings, there will be minimal vehicle storage requirements.

The first two options require significant capital investments for terminal expansion and vessel acquisition and maintenance. In the facility options, there are significant investments in large facilities, which if located over water can be very difficult to permit. In the case of the service approach, the costs could include the acquisition of a new vessel to add to the route, which conservatively might cost \$100 million, plus the annual cost to maintain and operate the service.

Historically, WSF has focused on a facility approach. For example, during the 1990's WSF was pursuing a multimodal terminal strategy that would have provided a significant increase in the holding capacity at a number of terminals. The total cost of this program was approximately \$1 billion.

More recently, given the significant reduction in WSF's dedicated capital program, a much less ambitious program of improvements have been identified that would address vehicle queuing outside the terminal, primarily with remote holding facilities. Even this approach, which is designed to mitigate terminal traffic impacts at a low cost, is estimated to cost approximately \$290 million.

In contrast, a reservation system would have much more modest acquisition and operating costs. Terminal updates and system investments required to implement a reservation system are estimated to be approximately \$45 million (\$30 million for terminal modifications systemwide and \$15 million for the reservation system and back office equipment, software and systems, including design and contingencies). This investment effectively solves the terminal congestion problem, and in comparison to the other options, is much less costly.

Doing nothing about terminal congestion would allow terminal traffic to back up further into local communities, but this would only increase the problems cited above, and would transfer the cost of terminal congestion to local communities.

When compared to the other alternatives (\$290 million to as much as \$1 billion), and considering its effectiveness with respect to demand management and benefits to communities around the ferry terminals, a \$45 million investment in a reservation system is a very cost-effective option.

Reservations Allow for Much Smaller Terminals

A major benefit of a reservation system for vehicles is that WSF can operate a high quality service with the smallest possible terminal facilities, while providing predictability for customers and mitigating most of the queuing impacts around terminals.

The ability to operate with smaller terminals also has a significant cost benefit for WSF, as it would be much more expensive to address some of these issues through terminal investments alone.

For example, even a "low cost" approach that emphasized remote holding facilities would cost approximately \$290 million, compared to an investment in a reservation system of \$45 million.



Systemwide Elements of a Reservation System

While implementation details and schedules would likely vary from route to route based upon the unique ridership and operating characteristics of the individual routes and terminals, there are some attributes that would need to be applied systemwide for the system to be an effective demand management tool:

- In order to provide space for emergency vehicles and to implement the preference programs noted below, no sailing would be 100% reserved
 - The amount of space reserved will vary by route and sailing time
- Through targeted programs and the timing of available space being released for reservations, preference would be given in the following order:
 - Vanpools and carpools (on designated sailings, there would be a preset amount of space for these vehicles)
 - Commuters and frequent users (on designated sailings)
 - Local residents
 - Commercial traffic
 - All other trips
- There would be no additional reservation fee, but pre-payment of the fare (at least in part) would be required
- Implementation of the system would occur gradually
 - Routes would be phased in one or two at a time
 - As a reservation system is implemented on a route, the number of sailings subject to reservations would initially be low and gradually increased.

Key Implementation Issues of a Reservation System

Initial WSTC survey results found that customers typically did not view a reservation system favorably. This might be because the survey question assumed a fee for reservations, a notion that has since been eliminated from potential reservation system proposals. Customers also noted that a reservation system must be dynamic and interactive, showing people how much space is still available, and frequent users should be able to book multiple sailings. These considerations and the issues raised below have been incorporated into the reservation system proposal included in the draft plan:

- What happens if a user misses the reservation?
- What happens if the ferry system misses a reserved sailing?

- Would policies be different for residents, frequent users, or tourists?
- How would a reservation system differ by route?
- How can the ferry system ensure a reservation system will work?
- How do customers deal with the loss of spontaneity?

For more route-specific details on how implementation of a reservation system for WSF, please see Appendix G.

12. OTHER OPERATIONAL STRATEGIES

12.1 Fuel Saving Strategies

Fuel costs comprise a significant portion of WSF's operating costs, and to the extent that operating strategies will result in a reduction in fuel consumption, they will be considered. The JTC Vessel Study evaluated strategies to conserve fuel consumption.

WSF has also identified a number of things it can do to conserve fuel and reduce operating costs, and it has already acted on many of them.



Exhibit 17 details the fuel conservation strategies that WSF has already identified

Exhibit 17 Fuel Conservation Initiatives

Vessel Class	Fuel Saving Initiative	Predicted Savings	Status
Vessel Specific Strategies			
Jumbo Mark II	Upgrade voltage regulators to run vessels on two engines, without using a third during landings	181,300 gal/year for 3 ferries	In preliminary design phase (vessels already running on 2 engines except during landings)
Jumbo Mark I	Control system upgrade to run vessels on 3 engines instead of 4	142,000 gal/year for 2 ferries	Install on both vessels in 2009
Super Class	Upgrade engines and associated systems to enable running on 2 engines instead of 4	387,000 gal/year for 3 ferries	Install on Kaleetan in late 2009, Yakima in 2010 if funded
Issaquah Class	Change heating system from diesel to steam	30,000 gal/year per vessel	Install on Issaquah in early 2009, other vessels to follow
Systemwide Strategies			
	Develop alternate tie-up method for vessels, allowing a reduction in shaft speed (or shut down of shafts) while docked	145,000 gal/year per vessel	Investigating alternatives for prototype installation
	Slow vessels down 0.5 to 1.0 knots (see "Boat Speed" below)	Up to 2.5% savings for 0.5 knot reduction and 5% for 1.0 knot reduction	WSF will strategically implement vessel speed reductions during non-peak periods in the Winter 2009 schedule

Boat Speed

The travel speed of vessels is a major factor affecting fuel consumption. As travel speeds increase, so does fuel consumption. Following this logic, it may be beneficial to reduce the speed of boats, especially during off-peak times. The Long-Range Plan incorporates speed reduction strategies which will vary on a route-by-route basis, as appropriate. These reductions will likely be focused on off-peak seasons and times, to reduce operating costs while minimizing negative impacts to customers.

12.2 Other Operating Strategies

Future Role of Passenger-only Ferries

As per the legislative direction provided during the 2006 legislative session, the Draft Plan assumes that WSF will not provide passenger-only ferry (POF) service. Where local providers view POF service as a way to improve service or fill potential gaps, it is expected that locally funded POF service will be evaluated and pursued. This is described in more detail in the Long-Range Plan, Plan B option (Section 15).

WSF and Passenger-Only Ferries

WSF provided POF service between Vashon and downtown Seattle between 1990 and 2008, when in July 2008 King County took over the service. In recent years the future of POF service in the region has been the subject of extensive policy activity and debate:

- In 2000, the Joint Legislative Task Force on Ferry Funding recommended that WSF not add any new POF routes and that the Legislature remove barriers to privately-operated POF services.
- In 2003, Kitsap Transit entered into agreements with two private ferry operators to provide POF service to Kitsap County, with service beginning in 2004.
- In 2005, WSF responded to the Legislature's request for a 10-year POF strategy, proposing an expanded "triangle" POF service between Seattle, Southworth, and Vashon as the best short-term solution for future growth.
- In 2005, the Legislature commissioned a Passenger-Only Ferry Task Force to determine the future of POF. The Task Force's report was inconclusive, and the Legislature re-visited the issue in 2006.

Bills passed by the 2006 Legislature directed WSF to maintain the Seattle-Vashon POF service until either King or Kitsap County creates a ferry district and assumes responsibility for the service. The Legislature also directed WSF to sell the Snohomish and Chinook passenger-only ferries and deposit the proceeds into a Passenger Ferry Account, which in the future will be used for operating or capital grants to POF systems.



13. PRICING

Legislative direction on pricing strategies

- Recognize that each travel shed is unique, and might not have the same farebox recovery rate and the same pricing policies
- Use data from the current market survey conducted by the WSTC
- Be developed with input from affected ferry users by public hearing and by review with affected ferry advisory committees, in addition to the market survey
- Generate the amount of revenue required by the biennial transportation budget
- Consider impacts on users, capacity, and local communities
- Keep the fare schedules as simple as possible
- Consider options for using pricing to level vehicle peak demand
- Consider options for using pricing to increase off-peak ridership

Within the context of this Draft Long-Range Plan, there are two key objectives associated with pricing strategies: (1) to generate sufficient revenue to meet the requirements of the biennial transportation budget, and (2) to help meet the demand management goals of ESHB 2358.

Revenue Requirements

The biennial transportation budget sets a revenue target for the ferry system. To meet this target, general fare increases above the 2.5% annual inflationary increases might need to be enacted.

General Fare Increases and Elasticity Effects

WSF ridership and fare history has shown that demand for ferry service is sensitive to fares, and for this reason, general fare increases can also have demand management benefits. As prices increase in real terms, total ferry system riders are likely to decrease. Similarly, if prices decrease, demand for services will increase. These changes in ridership relative to changes in prices are referred to as elasticity effects. It is important to note that price is only one factor impacting ridership, and not always the most important one.

To assess changes in ridership resulting from general fare changes, this analysis relies on the ferry system's revenue model, constructed using a long history of short-term demand responses to actual fare increases. Where possible, elasticity coefficients and mode shift information from the WSTC customer survey was also incorporated.

A more detailed discussion of ferry system elasticity effects is included in Appendix D.

Transportation Demand Management

In addition to meeting revenue goals, fare policy will need to incorporate demand management strategies. The demand leveling called for by ESHB 2358 will be accomplished primarily through the extensive use of a reservation system, and the following analysis details options and incentives WSF can use in conjunction with a reservation system to illicit mode shifts and other desirable behavior.

WSDOT Survey Inputs and Effectiveness Analysis

Where possible, the WSTC customer survey was used to assess the effectiveness of potential pricing strategies. The survey identified customers' willingness and ability to shift travel times and mode as well as their price sensitivity. The conjoint analysis, a survey module designed to analyze customers' mode shift decisions as they relate to price, was used to develop elasticity coefficients for subcategories of

customers. The onboard survey results and conjoint analysis form the basis of the analysis that follows on the effectiveness of specific pricing strategies.

13.1 Pricing and a Reservation System

As proposed, there will be no additional fees associated with the reservation system. Though the WSTC survey showed that a significant portion of customers would be willing to pay for a reservation that guarantees their spot on a vessel (and thus validated the value inherent in such a system), there will be no charge. There were two primary reasons for this decision:

The reservation system is the primary adaptive management strategy being proposed in this plan. In order to ensure broad acceptance of this strategy and minimize negative impacts to customers, there will be no additional fees. In addition, not charging a reservation fee will prevent people from queuing at the terminal for standby space in order to prevent paying extra.

13.2 Fuel Surcharge

Fuel is a large and growing portion of the ferry system's operating costs. The volatile cost of fuel adds uncertainty to WSF's operating expenses, and in recent years has led to decreasing farebox recovery rates. For WSF to have self-sustaining operations, the risk associated with fluctuating fuel costs needs to be mitigated.

To mitigate this fuel risk, WSF could implement a fuel surcharge that would automatically adjust fares to reflect increases in fuel prices above a pre-determined base fuel price. Under this program, a customer's total fare would be subject to automatic increases in periods of rapid fuel price escalation, effectively passing on this direct operating expense to those benefiting from the service.

A key analytical question involves how to determine the current base fuel price from which future fuel surcharges would be pegged. For the purposes of this Draft Plan it is assumed that the base price of fuel be set at a price equal to the average fuel costs as defined by the inflation-adjusted average cost of diesel from 1952 to 2008 (\$2.15 per gallon), the time period over which the State has owned and operated the ferry system.

As shown in Exhibit 18 below, with a few notable exceptions, the average per gallon price of diesel fuel has been relatively stable over the period in question. As a result, setting the base price to the long-term inflation-adjusted price of fuel would incorporate the "typical" level of fuel costs experienced by WSF.

Implementation of Tariff Changes

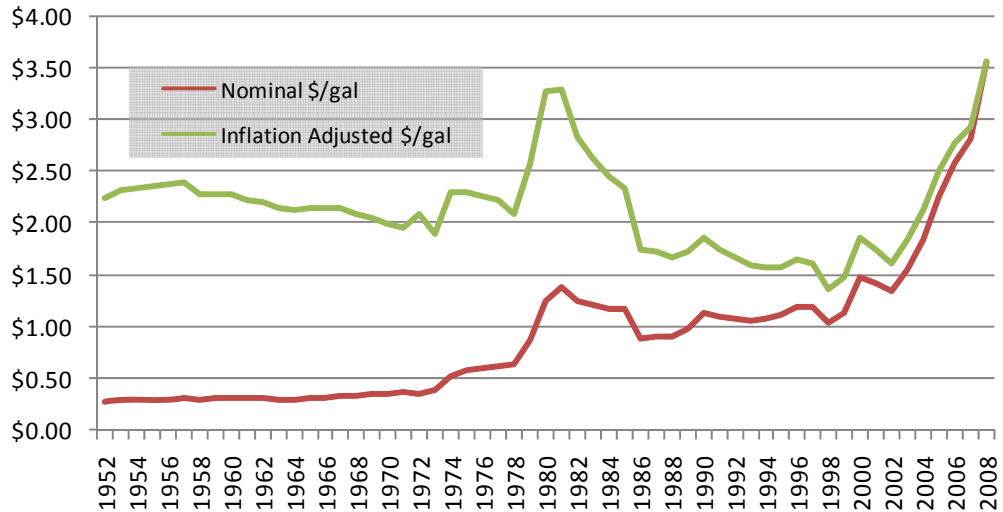
Any changes in existing ferry fares are subject to WAC revisions policies.

Public outreach is an important part of fare updates and will be undertaken before any fare changes can occur.



To the extent that the actual current cost of diesel would differ substantially (20% or more perhaps) from this long-term average, a fuel surcharge would need to be introduced.

Exhibit 18
Historic Fuel Prices (1952-2008)



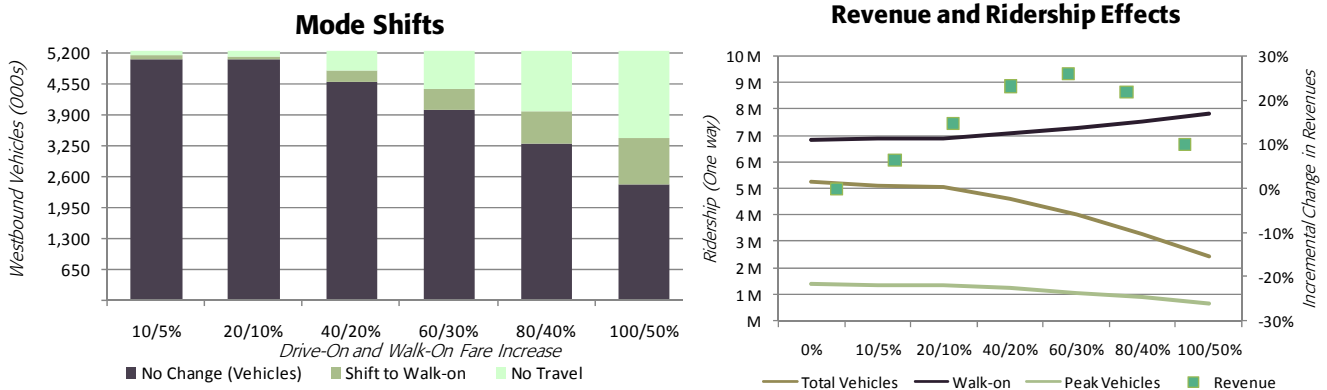
Source: Energy Information Administration, 2008.

13.3 Differential Vehicle and Passenger Pricing

Differential vehicle and passenger pricing refers to how specific fare categories will be increased to achieve the annual fare increase required to meet Transportation Budget revenue requirements. Increasing passenger fares at a slower rate than vehicle fares allows the differential between the two fare categories to grow more rapidly, creating a stronger pricing incentive for mode shift.

Based on the fare sensitivity and mode shift findings from the WSTC survey, Exhibit 19 shows the expected outcome of such a strategy. It is important to note that the fare increases (expressed as percentage increase over base fare) represent the total expected inflation-adjusted increase over the 22-year planning horizon. Any fare increases will be implemented gradually and with public input.

Exhibit 19
Estimated Effects of Differential Vehicle and Passenger Fare Increases



As shown above, this strategy has a couple of key advantages. First of all, an increasing differential between vehicle and passenger fares does, in fact, cause vehicles to mode shift, and secondly, the strategy is revenue positive (although less so at high ends of the scale). It is important to note that these price increases are intended to occur over the 22-year planning horizon.

Taking, for example, a scenario where vehicle fares increase by 10% while passenger fares increase by 5%, the ferry system might expect 70,000 annual vehicle trips to switch to walk-on, while losing over 100,000 vehicle trips altogether. The incremental effect is a decrease in vehicle trips and an increase in passenger trips (because the shift from vehicles is greater than the passengers leaving the system due to price increases), with a small decrease in total riders. Revenue effects are positive, and under this scenario, are expected to provide about a 6% annual increase.

It should be noted that this analysis is using short term elasticity effects from the WSTC customer survey, and there is much greater uncertainty about these effects in the long run.

13.4 Other Pricing Strategies

In addition to the key strategies outlined above, a number of other strategies were considered as part of this effort. While the ferry system does not intend to implement these strategies immediately, it does intend to re-visit these ideas regularly.

In the near term, the strategies discussed above will be the system’s primary area of focus. Depending upon actual experience with a reservation system and some of the other strategies, the ferry system



may need to implement other adaptive management strategies. A complete list and analysis of other pricing strategies considered can be found in Appendix H.

The two strategies discussed below have been brought forward because they have demand management benefits and are narrowly targeted strategies that together could be revenue neutral while providing benefits to local customers. As such, they are likely to be considered for implementation prior to other ideas.

Seasonal Surcharge

WSF's fare structure currently contains a seasonal surcharge component. From the months of May to October, the cash fare is increased on all routes by 25% and on Anacortes-San Juan Islands routes by 35%. Because customers who use the frequent user and multi-ride fare purchase options are exempt from this surcharge, it has the effect of targeting recreational users.

Actual ridership trends show a seasonal peak that is not evenly spread between May and October. July and August represent the "peak of peak" with much higher proportions of cash-paying recreational users. As vehicle capacity constraints are significantly worse during these months, WSF should consider adding a third level to its seasonal pricing structure that allows for a higher surcharge during July and August.

Because this surcharge would target just a small portion of riders (discretionary trips in July and August), revenue impacts are also small, though there would be some demand management benefits. Assuming a July/August cash fare surcharge of an additional 10%, WSF might expect to increase total annual revenues by approximately 1% (based upon elasticity assumptions from the WSF revenue model). With respect to ridership effects, this same scenario would have the effect of decreasing July/August vehicle ridership by 0.5-1.0%, depending upon the route. Routes with more summertime tourist traffic, like Anacortes and Port Townsend, would see larger effects.

Small Car Discounts

WSF already charges vehicles based on their size, and a small car discount would be a special incentive to encourage people that must drive-on to take smaller cars, allowing more vehicles to fit on deck. It has the advantage of increasing vessel carrying capacity by reducing average vehicle size and providing a lower cost vehicle option that still offers a demand management benefit to the system.

As with the July/August summer surcharge, a small car discount would target a very small portion of total riders. Depending how the

discount is set and what size vehicle would qualify, it could attract some new riders to the system, but would likely draw most of its participants from the pool of standard vehicles. The net revenue effects would therefore be negative but probably on a very small order of magnitude (1-2% systemwide assuming the size cut-off is quite restrictive).

A policy decision exists around the definition of a “small car.” Most newer vehicles classified as “subcompact” have a length at or just over thirteen feet, though some very small commuter cars that are popular in Europe and Asia are being successfully introduced to the US market. A “small car” would likely be defined as a vehicle less than 12-14 feet in length.

Non-Resident Pricing

Another strategy that may have some demand management benefits and takes a different approach to fare equity, is a non-resident pricing program. Per initial research undertaken by the Office of the Attorney General, such a program might be feasible as long as “non-resident” is defined as out-of-state.

It is uncertain the ridership or revenue impact such a policy might have, and Ferries will continue to evaluate this option for potential future implementation.

Pricing Strategies for Future Consideration

Once WSF has fully implemented the proposed reservation system and the effects on demand management are understood, it may be necessary or beneficial to consider some of the other pricing strategies which were shown to be effective in leveling demand, but would likely have had more significant impacts on customers. These could include:

- Congestion pricing. The pricing strategy with the greatest potential to shift travel behavior is congestion pricing. If reservations alone are not sufficient to shift demand then it may be necessary to evaluate a reservations plus variable congestion pricing approach.
- Vehicle frequent-user policies. The current frequent user policies are assumed to continue for the purposes of this plan. A result of this assumption is that a significant number of vehicle trips are paying the same price regardless of when they travel. To achieve its demand management goals it may become necessary to revisit this policy and vary frequent-user fares based on congestion pricing principles.
- Progressive pricing for larger vehicles. The concept underlying the small vehicle discount would also apply to the possibility of charging proportionally more for larger vehicles as



well, in order to accommodate more total vehicles (especially during peak periods)

- Variable pricing among routes within a travel shed. If travel patterns are not sufficiently rebalanced through reservations alone, it may be desirable to consider a pricing mechanism to encourage the use of underutilized routes where customers have a choice (i.e. Bremerton versus Bainbridge or Point Defiance-Tahlequah versus Vashon-Fauntleroy).

DRAFT LONG-RANGE PLAN

The goal of this plan is to identify a package of service improvements, demand management strategies, LOS standards, and funding requirements that is responsive to the legislative direction included in ESHB 2358, and allows the ferry system to maximize the efficiency of existing assets while meeting the needs of local customers and communities.

There are multiple ways to build a plan, each of which includes a different set of tradeoffs with respect to who assumes system costs and how those costs are borne. For example, the ferry system could choose to do nothing other than maintain existing assets and services while allowing degradation in LOS. Conversely, the system could choose to maintain existing LOS standards while adding new services to meet growing demand, which comes at a high cost.

ESHB 2358 calls for the analysis of operational and pricing strategies to manage demand. The ferry system could focus on these strategies as a means of reducing vehicle demand so that LOS standards are maintained without the need for much additional service, which comes at a high price to the customer.

Given the current economic conditions and the scale of the funding needs that the state is facing in the highway program, in addition to the continuing ferry needs, it is unclear if the state can realistically keep up with the needs of the ferry system. It is therefore necessary to consider the implications of a future where the state takes a different role in funding the ferry system.

As a result of these challenges, the Draft Plan presents two possible visions for the future of the WSF system for consideration:

- Plan A. This option assumes that the state will continue in its current role as owner, operator, and principal funder of ferry services in the Puget Sound region. It maintains current service levels.
- Plan B. This option presents an alternative where the state takes responsibility for a core marine highway system, which is a smaller and a locally-funded entity or entities would take responsibility for a new marine transit system.

The balance of this section discusses these Plan options by presenting the key elements of the respective operating and capital programs and the overall funding implications for each.



14. PLAN A

The Plan A option starts with the assumption that WSF will continue to own and operate the current system and will build a program that meets the legislative intent of ESHB 2358, while considering the funding realities facing not only WSF, but the overall state transportation system.

14.1 Operating Program

The package of operating and pricing strategies will improve the overall effectiveness of ferry services and increase the utilization on many routes. In fact, the proposed reservation system will be such a fundamental change in how customers will make use of ferry services, that it is very difficult to estimate the actual ridership response. As a result of this, and the overall funding challenge facing WSF at this time, Plan A proposes no service expansions. There will be minor capacity improvements related to the vessel procurement program.

Proposed 2030 Service Details

The proposed 2030 vessel deployment plan is shown in Exhibit 20.

Exhibit 20
Summary of Proposed Fleet Deployment for Plan A

Proposed Fleet Deployment Plan: Plan A				
Route	# of Vessels	Fall, Winter, Spring	Shoulder	Summer
Bainbridge	2	2 Jumbo		
Bremerton	2	2 Large		1 Large 1 Jumbo
Clinton	2	1 Large 1 Medium		2 Large
Kingston	2	2 Jumbo		
Point Defiance	1	1 Small		
Port Townsend	1 or 2	1 Small	2 Small	
San Juans & Sidney	3 or 4	2 Large 1 Med. (Sidney ex. Winter)		3 Large 1 Med
Interisland	1	1 Sm. (winter)	1 Mid-Size	
F-V-S Triangle	3	3 Medium		
Total Deployed		17	18	19

Vessel class	Vehicle capacity
Jumbo	188-202
Large	144
Medium	124
Mid-Size	87-90
Small	34-64

Seattle-Bainbridge

- Two 202-car Jumbo Mark II vessels year round

Seattle-Bremerton

- With the completion of the third new 144-car vessel in 2017, this route's assignment is two 144-car vessels in the fall/winter/spring; one 144-car and one 188-car for the 14-week summer.

Mukilteo-Clinton

- Two 144-car vessels in summer, one 144-car and one 124-car in the fall/winter/spring. The first new 144 car vessel would be assigned to the route summers only starting in 2013. The second 144-car vessel would be assigned to the route year-round starting in 2015.

Edmonds-Kingston

- One 202-car Jumbo Mark II and one 188-car Jumbo Mark I year-round

Fauntleroy-Vashon-Southworth

- The current triangle service configuration would continue Vashon-Fauntleroy-Southworth.
- Three 124-car vessels would provide service on the route. One 124-car vessel currently serves the route with two 87-car Evergreen Class vessels. The Evergreen Class vessels would be retired in 2015 and 2017 and replaced on the route with 124-car vessels.

Point Defiance-Tahlequah

- This route would be served by a 64-car Island Home Class vessel on a 16 hour/day schedule, replacing the 48-car Rhododendron by 2012.

Port Townsend-Keystone

- Under this proposal, one 64-car Island Home Class vessel would be assigned to the route year round by mid-2010. A second 64-car Island Home vessel would be assigned to the route for eight hours/day in the shoulder and summer schedule periods starting in 2011.

San Juan Islands and International

Winter. Currently there is no Sidney service during the winter. Under this proposal, the San Juan Islands would be served by two 144-car vessels, one 124-car vessel, and a 64-car Island Home as the interisland boat. As with the existing winter schedule, the interisland vessel would not operate on weekends,

Potential Future Service Additions

Plan A adds modest amounts of vehicle carrying capacity to the WSF system by replacing some retiring vessels with ones that are slightly larger.

After transit enhancements, reservations, and pricing strategies are in place, WSF should re-examine their effectiveness in managing vehicle demand.

If traffic grows faster than anticipated and there is a need to add service to routes, potential improvements are:

- Adding a fourth small vessel to operate between Vashon and Southworth. This would allow the three large vessels on the Fauntleroy/Vashon/Southworth route to operate in more direct service to and from Fauntleroy, and increase the overall capacity of the route.
- Add service hours to one of the Anacortes/San Juan Islands vessels during the summer schedule to allow an additional mid afternoon sailing and a late evening sailing.
- Add service hours to one of the Port Townsend/Keystone vessels in the summer months.
- Add service hours to the Seattle/Bremerton route to close some of the gaps in the mid-day and late evening schedule.



and one of the 144-car vessels would be crewed nine hours per day Monday through Thursday.

Spring and Fall. Sidney service would be provided for one round trip per day with the 124-car vessel Chelan. Anacortes to San Juan Islands service would be provided by two 144-car vessels for 16 hours/day and with the 124-car vessel when it is not engaged in Sidney service. The 90-car Sealth would provide interisland service and is available to make one round trip to Anacortes on weekends to assist with peak weekend traffic. This vessel assignment would be implemented with the construction of the first 144-car vessel in 2013.

Summer. Two round trips to Sidney with the 124-car Chelan, three 144-car vessels would be assigned to the route from Anacortes to the San Juan Islands.

Interisland. The interisland vessel provides necessary connections between the four ferry-served San Juan Islands. By utilizing one vessel to provide interisland service, the other vessels on the route are able to be scheduled in more efficient ways to move traffic between the San Juan Islands and the Anacortes/Skagit County mainland. For instance, a mainland vessel can make up to five round trips in a 16-hour operating day if it does not have to operate on the interisland circuit; making interisland stops would reduce its overall throughput to three round trips in a 16-hour operating day.

As there is a considerable amount of truck traffic on the interisland route, and there are multiple destinations so traffic either has to turn around on the vessel or back on, it is important that the interisland vessel has a relatively unobstructed vehicle deck. For future projected winter service volumes, an Island Home class 64-car vessel should be adequate for the service. For the Spring, Summer, and Fall, however, the 90-car Sealth is proposed as an interisland vessel for several reasons:

- Unobstructed car deck for turning large interisland vehicles around instead of backing on
- Flexibility to use on Anacortes based route on weekends when interisland traffic is lower; potentially to address recreational travel sensitivity tests which indicate the possibility for higher growth rates during those time periods. This is more crucial during the shoulders and summer periods and would allow additional capacity without the addition of service hours or an additional vessel.
- Sealth would be maintained during 12-week winter schedule; also flexibility for it to relieve Island Home #3 on the Tahlequah route and the 124-car vessel on the San Juan domestic route.

- Island Home #2 from the Port Townsend route used as interisland vessel during the winter 12-week period.
- Island Home #2 would be maintained and relieves Island Home #1 during the late fall and early spring weeks.

14.2 Capital Program Needs

While the operating program is largely unchanged over the planning horizon, there are significant capital needs in both its vessel and terminal programs.

Vessel Program

WSF faces a significant fleet recapitalization requirement over the next 22 years. The fleet is among the oldest of any major ferry operator with an average vessel age of more than 34 years. The needs are significant over the next 22 years, as WSF will continue to invest in the ongoing preservation of its aging fleet as well as invest in a significant new vessel construction program to replace retiring vessels. The elements of the vessel program include:

1. Preservation
2. Improvements
3. Procurement of new vessels

Vessels Preservation. Vessel preservation needs are developed using the LCCM which identifies when assets are expected to be replaced, based on current condition ratings and an expected useful life. Plan A would:

- Fully fund the preservation needs for all assets related to the structural integrity of the vessels. This includes steel preservation, propulsion, major mechanical and electrical systems, and related communication systems. The total preservation need for these assets in the Plan A is \$504.7 million (\$'08).
- Fund preservation items that are not directly related to the structural integrity of the vessel based on actual condition ratings and strategically defer or re-scope to optimize funding needs. These preservation items include topside paint, passenger and crew spaces, and security, and total \$432.9 million (\$'08).
- To the extent possible, limit investments for vessels nearing retirement.

Vessel Procurement. The most significant capital funding need over the next 22 years is related to new vessel acquisitions to support the upcoming retirements of several aging vessels in the fleet. The proposed procurement program, summarized in Exhibit 21, includes the following elements:



- In the near term acquire three Island Home Class vessels estimated to cost a total of approximately \$226.5 million (\$'08).
- Invest approximately \$20 million in the Hyak to extend its life 20 years.
- A major vessel construction program would begin in 2012 to construct seven 144's to be delivered between 2013 and 2025. Total cost of this program is estimated to be \$991 million (\$'08).
- Throughout the 22-Year Plan the vessel procurement program will maintain a de-crewed vessel to serve as standby. The de-crewed vessel is maintained and preserved, such that it will be available for emergency backup service.

The plan proposes constructing three small 64-car vessels of the Island Home design (the contract to build the first one has been awarded) to serve routes with traffic needs and physical constraints that require a vessel of that size. These three vessels would serve the Port Townsend/Keystone route, the Point Defiance/Tahlequah route, and during the winter months, the San Juan Interisland route. As there is an immediate need to restore full service on the Port Townsend/Keystone route and retire the current vessel on the Point Defiance/Tahlequah route, these vessels should be constructed first.

Subsequent to that, it is proposed that seven larger, more universally applicable vessels be constructed to replace WSF's aging fleet. The 144-car size vessel is felt to be the most applicable on WSF routes and is the same size or larger than the vessels the new vessels would be replacing. They are also the most efficient in terms of operating costs per vehicle space, with an operating profile similar to the current Issaquah Class vessels, which are among the most efficient ships in the fleet.

This approach also provides some marginal increase in capacity on several routes in the system, and restores the system's capability of having a stand by vessel so that service can be maintained in the event of an unforeseen vessel breakdown.

The timing of construction is one new vessel approximately every two years, to allow slow and steady vessel construction opportunities for shipyards and the ability to take advantage of economies of scale in building multiples of the same vessel. This approach presents several benefits:

- A steady / constant shipbuilding rate - enables shipyards to invest in capital improvements to increase efficiency and productivity, thus lowering vessel construction costs. Doing so avoids the cost of developing a new construction capability within the Puget Sound shipbuilding sector multiple times.

- Doing so will also allow shipyards to enter into long term collective bargaining agreements with their employees further guaranteeing the development of the new construction skillset for the work force. This will enable reduced production costs through improved production efficiency.

Exhibit 21 Vessel Procurement

Year	Vessel	Notes
2010	Island Home #1	Replace a Steel Electric (Port Townsend)
2011	Island Home #2	Replace a Steel Electric (Port Townsend)
2011	Hyak reinvestment	Invest in the Hyak to extend life 20 years
2012	Island Home #3	Replace the Rhododendron (go to Point Defiance)
2013	144-car vessel #1	Replace the Evergreen State
2015	144-car vessel #2	Restore standby/reserve capacity; Hyak moved to standby
2017	144-car vessel #3	Replace the Tillikum
2019	144-car vessel #4	Replace the Klahowya
2021	144-car vessel #5	Replace the Elwha
2023	144-car vessel #6	Replace the Kaleetan
2025	144-car vessel #7	Replace the Yakima

This procurement schedule is different than the one that has been put forward previously and that had been the basis of the 2008 Legislative Financial Plan. The procurement program was developed in response to several changes in conditions, including:

1. Financial and funding challenges in the next biennial budget
2. Updated cost information from the recent Island Home and Steilacoom II bids
3. Preliminary findings and recommendations from the JTC Vessel Acquisition Sizing and Timing report

The revised program also better reflects the current and expected needs of the system, assuming a continuation of current services.

Vessel Improvements. Plan A includes approximately \$65 million over 22 years to address future vessel improvement needs. These include investments in the following three areas:

- Fuel conservation. There are approximately \$10 million in vessel investments designed to support the fuel conservation program in the 2009-11 biennium. No further investments are assumed.
- Regulatory-related improvements. This is a biennial allowance of \$2.5 million to address issues raised by regulatory compliance agencies, such as the Coast Guard or the EPA.



- Targeted improvements. This is an allowance of approximately \$2 million per biennium to address the kind of vessel investments which cannot be foreseen. An example of this type of investment is the fuel conservation investments in the 2009-11 Biennium.

Terminal Program

Terminal Preservation. The preservation projects for terminals focus on identifying the needs of continuing to operate the current service level and to maintain, preserve, and replace existing capital assets. As with vessels, terminal preservation needs are developed using a LCCM, which has been updated for current facility condition ratings and to reflect current costs of asset replacement.

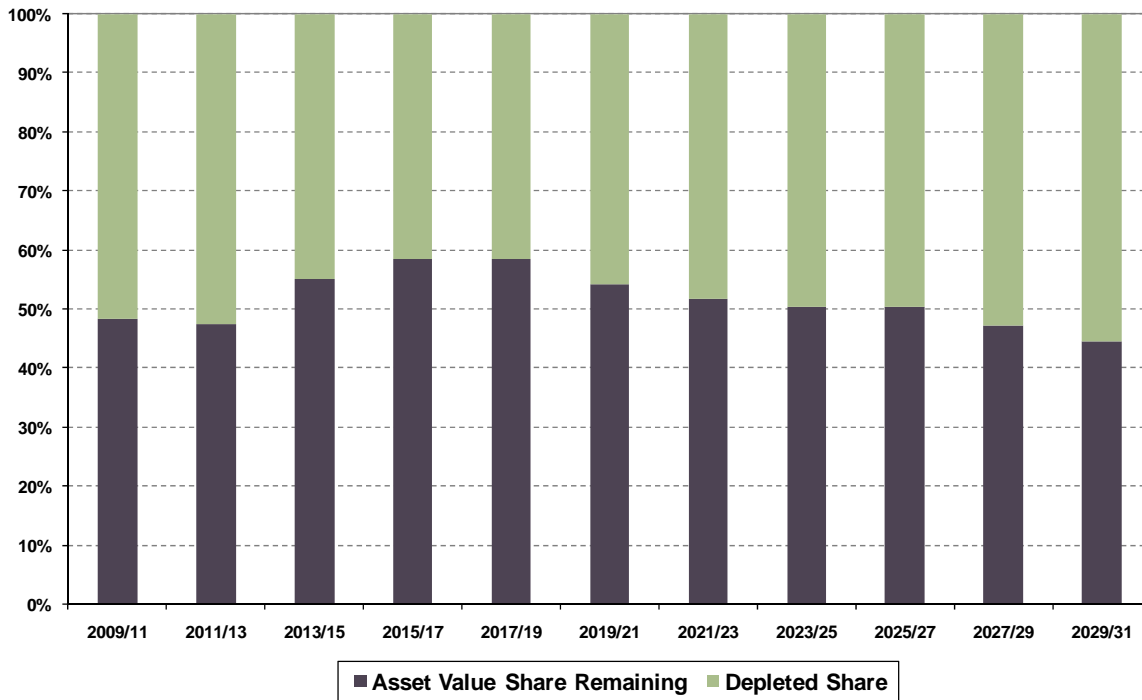
Exhibit 22 provides a brief summary of the key preservation activities at each facility:

**Exhibit 22
Terminal Preservation Summary (\$ '08 millions)**

Terminal	Slip Preservation	Trestle	Wingwalls & Dolphins	Buildings & OHL	Other	Total
Point Defiance	\$1.1	\$5.2	\$10.6	\$0.9	\$0.6	\$18.4
Tahlequah	\$1.1	\$6.2	\$5.1	\$0.4	\$1.2	\$14.0
Fauntleroy	\$1.9	\$48.9	\$7.1	\$1.7	\$2.2	\$61.7
Southworth	\$1.0	\$7.3	\$7.9	\$2.5	\$2.2	\$20.9
Vashon	\$2.3	\$40.5	\$18.5	\$5.2	\$1.0	\$67.4
Seattle	\$31.0	\$148.6	\$20.4	\$87.9	\$2.6	\$290.5
Bremerton	\$9.6	\$0.0	\$18.2	\$3.4	\$1.7	\$32.9
Bainbridge	\$4.1	\$0.0	\$14.1	\$13.6	\$2.1	\$33.9
Edmonds	\$0.0	\$8.0	\$1.5	\$0.0	\$2.2	\$11.7
Kingston	\$7.7	\$1.0	\$28.3	\$1.4	\$1.6	\$39.9
Clinton	\$2.0	\$0.0	\$13.0	\$2.4	\$2.8	\$20.2
Mukilteo	\$2.5	\$0.0	\$6.1	\$0.0	\$0.0	\$8.6
Keystone	\$9.9	\$0.0	\$8.5	\$0.0	\$1.9	\$20.4
Port Townsend	\$22.0	\$0.0	\$8.3	\$0.3	\$2.8	\$33.5
Anacortes	\$7.7	\$13.3	\$11.1	\$39.7	\$11.3	\$83.1
Friday Harbor	\$1.5	\$11.4	\$7.9	\$1.9	\$3.4	\$26.1
Orcas Island	\$4.6	\$6.3	\$7.3	\$1.0	\$2.8	\$22.1
Lopez Island	\$11.7	\$2.2	\$8.4	\$0.0	\$2.4	\$24.8
Shaw	\$1.3	\$3.2	\$3.8	\$0.1	\$0.5	\$8.9
Eagle Harbor	\$3.8	\$13.6	\$34.4	\$15.7	\$3.0	\$70.6
Total	\$126.9	\$315.7	\$240.6	\$178.2	\$48.1	\$909.6

As shown in Exhibit 23, the result of this level of preservation investment is that the average remaining value of the terminal asset base will fluctuate between approximately 40% and 59% throughout the planning horizon.

**Exhibit 23
Asset Value Remaining per Biennium (All Terminals)**



Terminal Improvements. The terminal improvement program proposes \$363 million in Plan A and reflects the following major elements, as shown in Exhibit 24:

- Addition of ferry-funded transit enhancements to improve transit connectivity and passenger comfort at WSF terminals.
- Addition of reservation system modifications to support the proposed reservation program.
- Improvements to maintain service and schedule reliability, such as adding overhead loading at some terminals and improving traffic circulation elsewhere to minimize terminal dwell time.
- Major terminal investments are proposed for three terminals; Anacortes, Mukilteo, and Edmonds.
- Other improvements including utility investments and drainage improvements.



**Exhibit 24
Summary of Proposed Terminal Improvement Costs
(\$'08 in Millions)**

	Transit-Related	Improve Dwell Time	Major Terminal	Reservation System			Total
				Transponder Lanes	ITS Equipment	Other	
Point Defiance	-	\$ 2.0	-	-	\$ 0.7	\$ 1.3	\$ 4.0
Tahlequah	-	\$ 2.4	-	-	\$ 0.7	\$ 1.2	\$ 4.4
Fauntleroy	-	\$ 36.4	-	\$ 1.6	\$ 0.8	\$ 0.7	\$ 39.4
Southworth	-	-	-	\$ 1.6	\$ 0.7	\$ 1.6	\$ 3.8
Vashon	-	-	-	-	\$ 0.6	\$ 7.0	\$ 7.6
Seattle	-	-	-	\$ 1.6	\$ 2.9	\$ 11.7	\$ 16.2
Bremerton	-	-	-	\$ 1.6	\$ 0.8	\$ 1.6	\$ 3.9
Bainbridge	\$ 22.4	-	-	\$ 1.6	\$ 0.9	\$ 16.2	\$ 41.1
Edmonds	-	-	\$ 26.1	\$ 1.6	\$ 1.2	\$ 1.2	\$ 30.0
Kingston	\$ 1.4	-	-	\$ 1.6	\$ 0.3	\$ 2.0	\$ 5.2
Clinton	\$ 9.3	\$ 20.7	-	\$ 1.6	\$ 1.3	\$ 3.1	\$ 36.0
Mukilteo	-	-	\$ 108.4	\$ 1.6	\$ 0.7	\$ 1.0	\$ 111.7
Keystone	-	\$ 2.2	-	-	\$ 0.6	\$ 1.2	\$ 4.0
Port Townsend	-	\$ 7.3	-	-	\$ 0.6	\$ 1.8	\$ 9.7
Anacortes	-	-	\$ 26.1	-	\$ 0.7	\$ 9.6	\$ 36.5
Friday Harbor	-	\$ 0.2	-	-	\$ 0.8	\$ 1.2	\$ 2.2
Orcas Island	-	-	-	-	\$ 0.8	\$ 0.9	\$ 1.7
Lopez Island	-	-	-	-	\$ 0.8	\$ 1.4	\$ 2.2
Shaw	-	-	-	-	-	\$ 0.8	\$ 0.8
Eagle Harbor	-	-	-	-	-	\$ 3.2	\$ 3.2
Total	\$ 33.1	\$ 71.1	\$ 160.6	\$ 14.0	\$ 15.9	\$ 68.7	\$ 363.4

The terminal improvements listed above represent a substantial capital investment in the ferry system. It is important to note that all of the projects listed above that are expected to cost more than \$5 million will be required to go through a formal pre-design process that will include a thorough cost-benefit analysis and identify the risks associated with the project before construction funding is appropriated.

The following is a brief summary of the major elements of the Terminal Improvement Program.

Transit-Related Improvements

Transit-related improvements include things like improved terminal access for pedestrians and transit vehicles (Exhibit 25 includes a complete list by terminal), which are necessary to accommodate increasing volumes of walk-on customers. These improvements are expected to cost \$33.1 million, with the majority of that cost incurred at the Bainbridge Island Terminal.

To the extent that these improvements can encourage mode shift, it reduces strain on the vehicle deck and forestalls the need to invest in additional vessels, which in addition to the significant capital expense, are also the largest source of fixed operating expense (maintenance and engine room labor).

Targeted transit enhancements that enable and encourage customers to shift modes away from single occupancy vehicles (SOV) are another key component of operating strategies. From existing resources, WSF intends to implement targeted improvements like designated Zipcar spaces at select terminals that don't require major capital investments.

Exhibit 25 includes a list of the specific proposed transit enhancements by terminal that would be funded through the ferry system's capital program. In addition to these investments, further enhancements, requiring coordination with WSDOT and local transit agencies, are necessary for full mode shift benefits. These could include: better coordinated schedules, the provision of real time information on transit departures and new/expanded transit services to better connect ferry customers with their destinations on both sides of the water.

Exhibit 25 Proposed Transit Enhancements Funded by WSF

Terminal	Transit Enhancement	Expected Capital Cost Borne by WSF
Bainbridge	Direct route from OHL to transit center	\$9,360,000
	Improve parking lot for pickup/dropoff	\$3,580,000
	Improve merge for exiting buses	\$5,360,000
	Improved intersection at Winslow Way for bikes and peds	\$4,060,000
Kingston	Relocate tollbooth for improved transit access	\$1,380,000
Clinton	Walkway for park n ride	\$9,310,000
		\$33,050,000

In addition to the transit enhancements WSF intends to fund, there are a number of enhancements WSF is requesting local transit agencies to undertake. Appendix F includes a complete listing by terminal of these projects.

Reservation System

A reservation system is the key adaptive management strategy included in this plan, moving vehicle queues away from the terminals and better distributing traffic. Its main terminal capital components include transponder lanes and ITS equipment at each of the



terminals. This equipment allows for fast processing of reservations and real time information available to customers.

The total capital costs of a reservation system are estimated to be \$42 million, with system costs accounting for \$12 million and terminal-related capital costs estimated at approximately \$30 million. The terminal costs include about \$16 million for ITS Equipment required at each of the terminals as well as \$14 million for transponder lanes, which assumes one lane per terminal for all terminals where the survey indicates there is a large base of repeat users. Terminals that would not have transponder lanes are those with a largely recreational ridership and/or very small numbers of riders, including: Anacortes, the San Juan Islands, Port Townsend, Keystone, Point Defiance and Tahlequah.

As discussed in Section 11 a reservation system helps to move customers with time flexibility out of the peak to better distribute demand and increase asset utilization without requiring investment in additional vessels. Because a reservation system effectively moves physical queues out of the terminal, it significantly reduces the need for costly terminal expansion and reduces queuing impacts for communities. The transponder lanes are a key component of the system because they allow people to move through the system quickly, avoiding the need for more operating staff, shortening the lead-time that must be allowed for arrivals, and providing more customer convenience.

Major Terminal Projects

Plan A includes three major terminal improvement projects. These are designed to address specific operational and facility challenges.

- Mukilteo. The Mukilteo terminal is proposed for relocation to the tank farm site just east of the current terminal. This proposal would address a number of issues that cannot be adequately addressed at the current site, including providing overhead loading, increasing holding, and removing the traffic conflicts at the existing site. The \$108 million cost will be partially offset by \$72 million of avoided preservation needs at the current facility, making the net cost of the new facility \$36 million.
- Edmonds. This Plan assumes that the Edmonds terminal will remain in its current location and that an allowance of \$26 million is included to provide multimodal connections.
- Anacortes. This proposal for Anacortes is to implement the current design for a replacement building and the associated terminal reconfiguration to improve circulation. The building replacement is necessary as a preservation matter, though the

new building will be larger and better suited to the longer wait-times that are typical at this facility, especially in the summer.

Improvements Targeting Dwell Time

This plan option proposes a number of improvements designed to maintain or improve dwell time in the terminal. These improvements would allow the ferry system to minimize terminal time and maximize throughput capacity during peak periods in order to maintain schedule reliability on routes. The type of improvements include things like overhead loading for passengers or other modifications that improve traffic flow and move customers through the terminals more quickly.

The most significant dwell time improvements are the overhead loading projects proposed for Clinton and Fauntleroy, which continue to load passengers over the auto transfer span and are among the busiest routes in the system. These improvements will also provide passenger comfort and safety benefits that will also support the transit enhancement and mode shift goals.

14.3 Funding Implications

The proposed package of services and investments will result in a significant unfunded gap of approximately \$3.5 billion, or approximately \$325 million per biennium. This is not a surprise given the reduction in dedicated tax funding for ferries. While the gap is not a surprise, the magnitude of the gap is noteworthy and reflects a significant recapitalization effort related to ageing assets, particularly with vessels. Another noteworthy point is that the funding shortfalls are almost exclusively in the capital program.

To address this need, there are only two sources of potential funding to fill the gap:

1. Reallocation or a higher share of current resources. As discussed previously, Ferries has been getting a share of general highway funds to backfill for the lost MVET since 2000. The capital funding outlook already assumes the 2008 Legislative Financial Plan level of continuing highway support, so this would likely mean higher shares of these funds or a new allocation of some other existing state, regional or local fund source.
2. New revenues. The other possible source is from new revenues, either at the state, regional or local level. This generally means new or higher taxes.

The question of where additional funding might come from is the subject of the WSTC's Ferry Funding Study, which has been a



parallel effort to the development of this plan. The WSTC is charged with identifying and recommending an approach to restoring the Ferries Division to a financially sustainable condition. The Commission will be basing its funding recommendations on the needs identified in this plan.

Operating Outlook. Providing the service level in Plan A is estimated to cost approximately \$6.5 billion over the 22-Year Long-Range Plan planning horizon. Total revenues are also estimated to be approximately \$6.5 billion, with \$5.6 billion coming from operations and the rest from dedicated tax support and a small amount from transfers from other highway funds.

Exhibit 26 Operating Funding Outlook (YOE\$ millions)

	Yr)	16-Year
Operating Revenue:		
Farebox Revenue	\$5,516	\$3,572
Miscellaneous Revenue (Concessions, etc)	\$122	\$80
Total Revenue from Operations	\$5,638	\$3,652
Operating Program:		
Vessel Costs	\$4,364	\$2,922
Terminal Costs	\$1,036	\$684
Management & Support Costs	\$1,066	\$704
Total operating program	\$6,466	\$4,310
<i>Operating revenue as % of Ferries Division cost</i>	87%	85%
Net operating income/(subsidy required)	(\$828)	(\$658)
Dedicated Ferry Taxes (Operating Account)	\$809	\$561
Administrative Transfers (Operating Account)	\$88	\$88
Estimated Subsidy Available	\$897	\$649
Net operating surplus/(deficit)	\$68	(\$9)
<i>Average per biennium</i>	\$6	(\$1)

- Ridership growth and fare increases result in an average farebox recovery rate of 87%.
- Base fare assumptions assume the revenue equivalent of the current legislative annual increases of 2.5%. Since passenger fares are proposed to grow at half the rate of vehicle fare, vehicle fares would need to grow an average of 2.8%, while passenger fares would grow at 1.4% per year to generate the same level of revenue.
- Fuel surcharges are set to cover the increased costs of fuel associated with variances in fuel costs beyond the long-term average cost of fuel (\$2.15/gallon). Based on the November 2008 forecast of fuel prices, the result the fuel surcharge is that

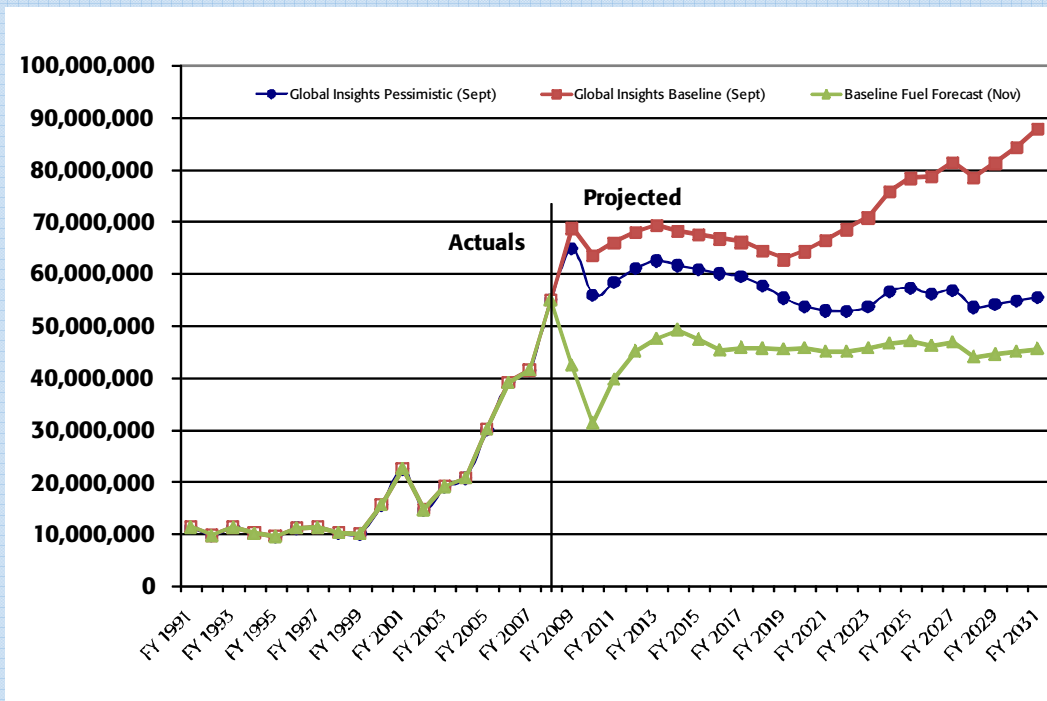
average annual fares would be increased to 3.1%, or an additional 0.6% increase over the base assumed average fare increase.

- The funding analysis assumes that WSF will continue to receive the \$88 million in support from other transportation funds over the next three biennia (per the 2008 Legislative 16-Year Plan). Following that period, no additional support is anticipated from the motor vehicle fund.

There would be considerable risk in the assumed growth in fuel prices. The costs in Exhibit 26 are based on Global Insights November 2008 baseline forecast for the 22-Year Long-Range Plan. Using this forecast decreases total fuel cost estimates by \$634 million from the September forecast. The proposed fuel surcharge would significantly eliminate the budget risk of fuel cost variability by shifting this risk to the customer who would face higher fares in the event of significantly higher fuel costs

Fuel Price Risk

The implementation of a fare charge to recover 100% of budgeted fuel costs is designed to negate any fuel price impacts to the operating funding gap. If fuel prices projections were to become higher, the fuel charge would adjust to recover the higher total fuel cost. Because of this higher fuel charge, total fare prices would also increase. To illustrate the challenge, the chart below compares historic fuel costs with projected fuel costs assuming different recent fuel forecasts



There is also considerable risk in the assumed growth in ridership. The interlocking reasons for the declines in ridership from 2000 through 2006 (fare increases, increased telecommuting, rising gasoline prices, economic conditions, etc.) are not well understood.

- The baseline ridership forecast assumes an approximately 36% increase in ridership by 2030 (over 2006 ridership levels).
- If baseline ridership is lower, then demand pressure to improve services will be reduced. Also, lower ridership would mean lower fare revenues, which would increase the operating funding gap.

Capital Outlook. The capital program proposed for Plan A is estimated to total \$6.1 billion over the 22-Year Long-Range Plan horizon. To fund the capital needs of the Draft Plan will require \$3.6 billion more than current assumed funding, which includes:

- Transfers from the Motor Vehicle and Multimodal Accounts in the 16-Year Plan (continued through 2031).
- Bond proceeds as per the 2008 Legislative Financial Plan.
- Since the operating program is balanced, the capital needs represent the total funding gap over the next 22 years for Plan A.

Exhibit 27 Capital Funding Outlook (YOE\$ millions)

	LRP (22-Yr)	16-Year
USES OF FUNDS		
Terminals Preservation	\$1,412	\$1,001
Vessel Preservation	\$1,543	\$990
New Vessel Construction	\$1,793	\$1,517
Terminal & Vessel Improvements	\$613	\$525
Existing Debt Service	\$212	\$212
Miscellaneous Uses	\$544	\$366
Total core capital program	\$6,118	\$4,612
SOURCES OF FUNDS		
Dedicated tax distributions to Ferries	\$829	\$685
Administrative Transfers	\$1,126	\$736
Federal Funds	\$347	\$259
Bond Proceeds	\$241	\$241
Total Sources	\$2,543	\$1,921
Net Funding Balance/(Shortfall)	(\$3,575)	(\$2,690)
<i>Average per biennium</i>	(\$325)	(\$336)

Note: Capital costs are escalated to year-of-expenditure dollars based on an escalator equal to double the forecast Implicit Price Deflator (average approximately 3.9% per year).

15. PLAN B

The goal of Plan B is to develop a service and investment plan that would support a core marine highway system in order to minimize the capital funding needs of the system. Plan B would require a very different approach to ferry service, with the state providing and maintaining the core marine highway system and coordinating with local agencies for provision of marine transit.

Since the funding problem is essentially a capital funding challenge, the key question is how large of a capital plan can WSF maintain, preserve, and replace over time, given a particular capital funding level. Considering the current condition of the asset base and looking at the magnitude of Ferries future capital needs that are concentrated in vessel preservation and procurement of new replacement vessels, it is clear that to significantly reduce capital expenditures over the next 22 years will require shrinking the size of the fleet.

However, shrinking the fleet would necessitate real service cuts, as vessels will need to be pulled from service. Since WSF is a part of the state highway system, scaling back service is not a simple matter of reducing until the costs fit within a budget.

Therefore, to meet the goal of this plan option, it was necessary to develop criteria to determine just where and how to cut services in a way that would be consistent with preserving a core highway system. To accomplish this, Plan B was developed by starting with Plan A and then strategically eliminating elements in order to reduce capital funding requirements. Factors that were used to identify what would be eliminated include:

- Continue serving all current domestic destinations
- Consider opportunities for synergy with the PSRC recommended passenger-only routes, other locally-provided transit services, and/or other state transportation investments in highway capacity
- Reduce services in corridors where there are alternatives for ferry customers, preferably other ferry alternatives
- Financial performance of a route
- Capital funding needs of terminals

Local Passenger-Only Services

One of the criteria used in choosing how to reduce state ferry service was the potential availability of local passenger-only ferry (POF) service. There has been a strong interest in POF services in the Central Puget Sound region for more than 20 years. The latest major POF planning effort was undertaken in this year by the Puget Sound



Regional Council, when they funded a regional PSRC passenger-only ferry study. This study confirmed that the most promising cross-sound candidate routes are:

- Seattle-Southworth
- Seattle-Kingston
- Seattle-Bremerton

The PSRC is still completing this effort, but there is an expectation that in early 2009, the full Board will act on the recommendations of the study and state that the region has a strong policy interest in passenger-only services and that it should be a key element of the Destination 2040 regional transportation plan update.

Combining a possibly renewed interest in new POF routes with the Seattle-Vashon service that King County recently took over from WSF, there is the potential for a significant marine transit expansion in the Central and South service areas. One might even envision a scenario where a robust POF service on these routes in concert with the remaining WSF passenger-auto vessel service might be a preferred overall package of ferry options for foot passengers.

Local counties already have the funding and governance structure in place with the recently enacted ferry district legislation. This is the mechanism by which King County has been able to step in and take over the Seattle-Vashon service, once the Legislature determined that WSF should not be in the POF business.

In fact, the scenario presented in Plan B is not unlike the circumstances around which the Vashon POF was transitioned over to King County, albeit on a much larger scale.

15.1 Operating Program

The Plan B operating program starts with the current service levels and would make the following changes:

2009-2011 Biennium. During the next biennial budget period, reduce services as follows:

- Terminate the Anacortes-Sidney route in September 2009.
 - San Juan Islands (Winter/Spring/Fall) – Two supers on the mainland runs and Sealth on the Interisland.
 - San Juan Islands (Shoulder/Summer) – Above service with an additional super on mainland runs.
- Downsize the Point Defiance-Tahlequah route by substituting the Hiyu and retiring the Rhododendron.
- Keep Port Townsend-Keystone a 1-boat operation.

2011-2013 Biennium. During the second biennium of the plan, reduce services as follows:

- Reduce Bremerton to only 1 boat.
- Eliminate night service on Bremerton and Edmonds routes.
- Reduce service in Triangle to two medium vessels (2 medium vessels between Fauntleroy and Vashon, sharing with Southworth with a two-boat schedule.

2013-2030 Biennia. Subsequent service changes are tied to vessel replacements. With construction of two small vessels in 2021 and 2023:

- The Sealth would be replaced on the interisland route in the fall/winter/spring months and reassigned to the Fauntleroy route.
- The Kitsap would return to the Bremerton route and replace a super class vessel, allowing the Elwha to be retired.

The net effect of these changes is a reduction in total service hours of approximately 17%, but with the exception of the International route all current routes in the system maintain ferry services. The big savings from these service cuts come in two parts: (1) the service can be provided with a fleet of 17 vessels (5 fewer than under Plan A); and (2) generally the routes that have been cut are also relatively poor financial performers or the proposed service reductions are during low productivity periods.



Exhibit 28 Summary of Proposed Fleet Deployment for Plan B

Route	# of Vessels	Proposed Fleet Deployment Plan: Plan B		
		Fall, Winter, Spring	Shoulder	Summer
Bainbridge	2	2 Jumbo		
Bremerton	1	1 Medium		1 Jumbo
Clinton	2	2 Medium		
Kingston	2	2 Jumbo		
Point Defiance	1	1 Small		
Port Townsend	1	1 Small		
San Juan Islands	2 or 3	2 Large	3 Large	
Interisland	1	1 Small		1 Mid-Size
F-V-S Triangle	2	1 Medium		2 Medium
		1 Mid-Size		
Total Deployed		14	14	15

Vessel class	Vehicle capacity
Jumbo	188-202
Large	144
Medium	124
Mid-Size	87-90
Small	34-64

15.2 Capital Program

The capital program needs in Plan B have been significantly reduced. The following are the key assumptions about the Plan B capital needs.

Vessel Program

Vessels Preservation. The Plan B vessel preservation program is based on the same preservation standards as those used to develop the Plan A program. However, preservation needs are reduced from Plan A based on the following changes:

- Early retirements for several vessels results in a net reduction in preservation needs.
- By not replacing several retiring vessels, there are no new preservation investments needed for these vessels.

Vessel Procurement. The most significant capital savings in Plan B come from a reduced vessel procurement program. Instead of a 10-vessel procurement, Plan B would require a 5-vessel procurement plan. The proposed procurement program, summarized in Exhibit 29, includes the following elements:

- In the near term acquire only one Island Home Class vessel estimated to cost a total of approximately \$84 million (\$'08).

- Invest approximately \$20 million in the Hyak to extend its life 20 years.
- In the 2019-2021 timeframe acquire two small vessels, the first to replace the retiring Elwha and the second to retire and replace the Hiyu.
- The 144-car vessel program is reduced from seven vessels to just two and would not start until 2022 Total cost of this program is estimated to be \$ million (\$'08).

Exhibit 29 Vessel Procurement Plan for Plan B

Year	Vessel	Notes
2010	Island Home #1	Replace a Steel Electric (Port Townsend)
2011	Hyak reinvestment	Invest in the Hyak to extend life 20 years
2021	Small Vessel #1	Replace the Elwha
2023	Small Vessel #2	Replace the Hiyu
2025	144-car vessel #1	Replace the Kaleetan
2027	144-car vessel #2	Replace the Yakima

Vessel Improvements. To be conservative, Plan B includes the same \$65 million over 22 years to address future vessel improvement needs.

Terminal Program

Terminal Preservation. Since WSF will continue to provide services to all of its current terminal facilities, there are not expected to be any savings to the terminal preservation program. Thus, Plan B is estimated to have the same \$909 million ('08\$) preservation needs.

Terminal Improvements. The terminal improvement program for Plan B does propose some reductions from the \$296 million list of projects in Plan A. The following are the key terminal improvement facility assumptions:

- No change to the transit enhancement and reservation investments. With a smaller system, it will be even more important to be able to offer a high quality service and to support demand management objectives.
- No changes from Plan A to the major terminal projects at Mukilteo, Edmonds, and Anacortes.
- Dwell time improvements are eliminated, saving approximately \$70 million.



15.3 Funding Implications

The reductions of service and fleet have a significant impact on the overall funding needs of the system.

Operating Outlook. As shown in Exhibit 30, the operating costs for Plan B are estimated to be \$5.4 billion over the 22-Year Long-Range Plan horizon. Plan B operating revenues are estimated to be \$5.2 billion over the same period, leaving only \$178 million to be funded from the dedicated operating subsidy. With dedicated tax subsidies of almost \$900 million, there is an estimated cumulative tax subsidy surplus in the operating account of approximately \$719 million at the end of the planning period available to transfer to capital needs.

Exhibit 30
Operating Funding Outlook (YOE\$ in millions)

	LRP (22-Yr)	16-Year
Operating Revenue:		
Farebox Revenue	\$5,122	\$3,329
Miscellaneous Revenue (Concessions, etc)	\$122	\$80
Total Revenue from Operations	\$5,243	\$3,409
Operating Program:		
Vessel Costs	\$3,614	\$2,450
Terminal Costs	\$933	\$619
Management & Support Costs	\$874	\$584
Total operating program	\$5,421	\$3,654
Operating revenue as % of Ferries Division cost	97%	93%
Net operating income/(subsidy required)	(\$178)	(\$245)
Dedicated Ferry Taxes (Operating Account)	\$809	\$561
Administrative Transfers (Operating Account)	\$88	\$88
Estimated Subsidy Available	\$897	\$649
Net operating surplus/(deficit)	\$719	\$404
<i>Average per biennium</i>	\$65	\$51

- Ridership growth and fare increases result in an average farebox recovery rate of 97%.
- As with Plan A, the fare increases are assumed to match current legislative financial plan assumption of average annual increases of 2.5%. In addition, fuel surcharges are set to cover the increased costs of fuel associated with variances on fuel prices beyond the long-term average cost of fuel.
- The funding analysis assumes that WSF will continue to receive the \$88 million in support from other transportation funds over the next three biennia (per the 2008 Legislative 16-Year Plan).

Following that period, no additional support is anticipated from the motor vehicle fund.

- Relative to Plan A, operating costs have been reduced by approximately 18%, while operating revenues have been reduced by approximately 7%. As a result, with the same fare policy as Plan A, Plan B is almost fully supported by operating revenues.
- The high farebox recovery rate results in a net surplus from operations of \$719 million, allowing for some transfers of dedicated operating taxes to help fund the capital program.

Capital Outlook. The capital program proposed for Plan B is estimated to total \$4.7 billion over the 22-Year Long-Range Plan horizon. To fund the capital needs of the Draft Plan will require \$2.12 billion more than current assumed capital funding, which includes:

- Transfers from the Motor Vehicle and Multimodal Accounts in the 16-Year Plan (continued through 2031).
- Bond proceeds as per the 2008 Legislative Financial Plan.
- The capital funding gap is somewhat back loaded with several vessel procurements in the final six years of the plan. As a result, the 16-year funding gap is only \$1.1 billion or almost half of the full 22 year gap.

If the potential transfers of operating tax subsidies that are available from the operating account surplus are included, the overall net funding gap for Plan B is approximately \$1.4 billion. By looking at only the first 16 years, the overall funding gap is half as much at approximately \$743 million.



Exhibit 31
Capital Funding Outlook (YOE\$ millions)

	LRP (22-Yr)	16-Year
USES OF FUNDS		
Terminals Preservation	\$1,412	\$1,001
Vessel Preservation	\$1,223	\$820
New Vessel Construction	\$748	\$231
Terminal & Vessel Improvements	\$526	\$437
Existing Debt Service	\$212	\$212
Miscellaneous Uses	\$544	\$366
Total core capital program	\$4,665	\$3,068
SOURCES OF FUNDS		
Dedicated tax distributions to Ferri	\$829	\$685
Administrative Transfers	\$1,126	\$736
Federal Funds	\$347	\$259
Bond Proceeds	\$241	\$241
Total Sources	\$2,543	\$1,921
Net Funding Balance/(Shortfall)	(\$2,121)	(\$1,147)
<i>Average per biennium</i>	(\$193)	(\$143)

Plan B still shows a capital funding gap, even after the significant reductions in service and capital investments discussed above. To close this gap will require additional revenues, higher fares or additional service and investment reductions or some combination of thereof. It is important to note, that further service reductions that might make a meaningful impact on the funding gap will require closing some domestic routes.

Environmental Considerations

An analysis of the potential plan-level environmental impacts from implementation of the long range plan was conducted and is documented in Appendix I.

For the analysis, the study area was defined as within the WSF system in the Puget Sound, which includes the 19 terminal locations and service communities of Kitsap, King, Island, Pierce, Skagit and San Juan Counties.

The Environmental Evaluation addresses the following topics:

- Why a planning level environmental review was conducted,
- The role of planning-level environmental review in the planning development process,
- The natural conditions or cultural elements that might be affected by long range plan implementation,
- The potential environmental issues and solutions associated with options in the plan,
- The anticipated environmental impacts and mitigation associated with projects identified in the Ferries' capital plan,
- The outreach process in developing the plan

NEXT STEPS

WSF has developed a Draft Plan that addresses the current service needs and the expected growth in the years to come while remaining flexible in case that growth does not develop. Per the direction from the Legislature, Plan A attempts to balance competing interests, carefully considers a variety of tradeoffs, and proposes operational and pricing strategies.

The Draft Plan also puts forward an alternative approach to reflect the possibility that the level of ongoing state funding would not be sufficient to address the funding requirements of Plan A. In this alternative, Plan B, WSF would focus on a core highway system which could be funded at current planned state funding levels and would work with regional partners to develop a complimentary passenger-only system that would be funded at the regional level.

The next step for the Draft Plan is to go through a public comment period to solicit feedback from stakeholders, customers and other affected and interested parties. The public comment period will feature 10 public hearings in early January 2009, throughout the service area. WSF will consider all feedback when developing a Final Plan, for submittal to the Legislature by end of January 2009.

