



Washington State Ferries

# Washington State Department of Transportation Ferries Division Final Long-Range Plan

June 30, 2009



**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.

SIDNEY

ORCAS

SHAW

FRIDAY  
HARBOR

LOPEZ

ANACORTES

**Washington State  
Department of Transportation  
Ferries Division  
Final Long-Range Plan:  
2009-2030**

**Final  
Long-Range Plan**



**Washington State  
Department of Transportation**  
Ferries Division



June 30, 2009

CLINTON

MUKILTEO

INGSTON

EDMONDS

INBRIDGE

SEATTLE

ON

HWORTH

FAUNTLEROY

VASHON

TAHLEQUAH

PT. DEFIANCE



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## EXECUTIVE SUMMARY

The Washington State Department of Transportation Ferries Division (WSF) is the largest ferry system in the nation. Nearly 23 million customers annually rely on WSF's 22 vessels and 20 ferry terminals for safe, reliable transportation across Puget Sound. WSF serves two vital transportation functions: as a marine highway and as a transit service provider. WSF is an essential part of the highway network of Western Washington. It serves as the only public transportation link to the mainland for Vashon Island and the San Juan Islands, and it is the second largest transit system in Washington State.

WSF is releasing this Final Long-Range Final Plan (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 a positive direction for the ferry system. While challenges remain, particularly the identification of a stable source of capital funding, this plan sets forth a vision for the future of the ferry system that will enable it to maintain its current routes and service levels, improve its operation, and make essential vessel and terminal investments.

### 1.1 Purpose

The goal of this Plan is to provide information about the needs of ferry customers, establish new operational and pricing strategies to meet those needs, and identify vessel and terminal operations and capital requirements. The Plan horizon covers 22 years, 2009-2030 (fiscal years 2010-2031), to meet federal planning requirements and to be consistent with regional efforts. The first 16 years of this Plan correspond to the legislature's 16-year financial planning period. This Plan is based on: 2007 legislative direction; a draft plan developed and presented for public review and comment in December 2008; a revised plan in January 2009 that incorporated the public comments, and an extensive review by the Governor's Office and the Legislature leading up to and during the 2009 session.

While the December 2008 and January 2009 draft and revised plans presented two scenarios for the future of the ferry system, this Final Long-Range Plan presents a single package of service improvements and investments.



## 1.2 The Final Plan

The Final Plan presents a vision for the future of the WSF system. Consistent with legislative direction, it maintains current levels of service with limited improvements (as new vessels are acquired to replace retiring vessels) and the State's role as principal owner and operator of the marine transportation system. Exhibit ES-1 presents the key elements of the plan. This plan presents a realistic service and capital investment strategy that seeks to balance service goals and long-term funding requirements.

### Exhibit ES-1 Summary of Plan Elements by Route

Route	Service Plan	Major Terminal Projects
Seattle - Bainbridge	No Change	Starting in 2011: Seattle terminal rebuild
Seattle - Bremerton	2014: Vessel upsize ( <i>fall, winter, spring only</i> ) 2029: Vessel upsize ( <i>summer only</i> )	
Edmonds - Kingston	No Change	2029: Edmonds terminal multimodal improvements
Fauntleroy - Vashon - Southworth	2014: Vessel upsize 2027: Vessel upsize	No major terminal projects proposed
Point Defiance - Tahlequah	2012: Vessel upsize	No major terminal projects proposed
Mukilteo - Clinton	2014: Vessel upsize 2027: Vessel upsize	2017: Proposed Mukilteo terminal relocation
Port Townsend - Keystone	2010: Vessel upsize 2011: Second vessel added ( <i>peak season only</i> )	No major terminal projects proposed
Anacortes - San Juan Islands	2014: Vessel upsize	2011: Proposed Anacortes terminal replacement
Anacortes - Sidney	2014: Vessel upsize ( <i>summer only</i> )	
San Juan Islands Interisland	2009: Vessel downsize ( <i>winter only</i> )	No major terminal projects proposed

## 1.3 Changing Our Business

Steps have been taken to reduce WSF's 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.

Ridership is expected to grow by 37% between 2006 and 2030 – 13% growth would return WSF to the historical high level of ridership it had in 1999, with the additional forecasted growth bringing ridership levels above what the system has previously seen. Vehicle capacity during peak periods is WSF's greatest constraint and the origin of the



pressure for additional services and larger facilities. There is little capacity to support vehicle growth in peak periods, especially in the summer, when a recreational traffic surge causes even greater capacity challenges. In addition to these peak period capacity constraints, WSF is also challenged by under-utilization of its vehicle capacity during non-commute periods and the off-season.

Adopting operational and pricing strategies will allow WSF to provide the best service at the lowest possible cost, minimize fare increases, and fill under-used non-peak capacity. The Plan is built on the following key strategies that are designed to either spread vehicle demand to non-peak periods and/or increase walk-on use:

- **Vehicle Reservation System.** The most important operational strategy included in the Final Plan is the deployment of a vehicle reservation system. A 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. The 2009 legislature authorized funding to further study the potential implementation of a vehicle reservation system, with a report due to the legislature for consideration during the 2010 session
- **Transit Enhancements.** WSF would have 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. To address this issue, WSF requested funding for a number of transit enhancements at terminals, but the 2009 legislature deferred capital investments in transit supportive facilities outside of the 16-year plan financial period (or until it is clear that local transit service is available and that walk-on ridership is increasing).
- **Pricing Strategies.** The Plan makes two significant pricing strategy proposals. One is focused on demand management by not charging an extra fee for reservations to encourage customer use of the system. The second is targeted at mitigating fuel price risk and proposes implementing a fuel surcharge mechanism that will automatically adjust fares up and down for fluctuations in fuel prices. The 2009 legislature directed WSF to report on how a fuel surcharge would be implemented before it is adopted as a pricing strategy.
- **Marketing.** The 2009 legislature provided funding for a new marketing program for WSF to increase non-peak ridership. The legislature required that WSF present a marketing plan to the



legislature in the 2010 session that must be approved before moving forward on any marketing efforts.

#### 1.4 Fleet Procurement Plan

Vessel procurements are a key element of the capital program necessary to ensure stable and reliable service. WSF's fleet is one of the oldest of any major ferry system, with four vessels recently retired on an emergency basis and eight additional vessels to be retired by 2030. As a result of the emergency vessel retirement, service on the Port Townsend-Keystone route has been provided by a leased vessel since 2008 and has been reduced from its normal two boat shoulder and summer season service to one boat service.

This Plan calls for 10 new vessels by 2030, two for the Port Townsend- Keystone route and eight to replace older vessels as they come due for retirement. In addition the Plan anticipates a major refurbishment of the Hyak (144-car vessel) to extend its life until 2032. Exhibit ES-2 below shows the vessel procurement plan in detail.

#### Exhibit ES-2 Vessel Procurement Plan

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)
<i>Procurement # 1 (144's)</i>		
2014	144-car vessel #1	Replace the Evergreen State
2014	144-car vessel #2	Restore standby/reserve capacity; 87-car vessel moved to standby
<i>Procurement # 2 (144's)</i>		
2027	144-car vessel #3	Replace the Tillikum
2028	144-car vessel #4	Replace the Klahowya
2028	144-car vessel #5	Replace the Elwha
2029	144-car vessel #6	Replace the Kaleetan
2029	144-car vessel #7	Replace the Yakima



## 1.5 Costs and Funding Needs

**Exhibit ES-3**  
**Funding Implications of the Final Long Range Plan**  
**(YOE\$ in millions)**

	LRP (22-Yr)	16-Year
<b>CAPITAL</b>		
<i>2009-11 Cash Carry-Forward</i>	<b>\$2</b>	<b>\$2</b>
Terminals	\$1,096	\$784
Vessels	\$3,255	\$1,268
Miscellaneous Uses	\$336	\$230
Existing Debt Service	\$212	\$212
<b>Total capital needs</b>	<b>\$4,899</b>	<b>\$2,494</b>
Dedicated capital funds	\$711	\$575
Administrative Transfers	\$450	\$450
Local Funds & Deposit Earnings	\$15	\$15
Federal Funds	\$340	\$252
Bond Proceeds	\$245	\$245
<b>Net Funding Capital Program</b>	<b>(\$3,136)</b>	<b>(\$954)</b>
<b>OPERATING</b>		
<i>2009-11 Cash Carry-Forward</i>	<b>(4)</b>	<b>(4)</b>
Operating revenues	\$5,078	\$3,301
Operating expenses	\$6,399	\$4,255
<b>Net operating income/(subsidy)</b>	<b>(\$1,325)</b>	<b>(\$958)</b>
<b>Average farebox recovery rate</b>	<b>78%</b>	<b>76%</b>
Dedicated operating taxes	\$782	\$542
Administrative Transfers	\$57	\$54
<b>Estimated Subsidy Available</b>	<b>\$840</b>	<b>\$595</b>
<b>Net operating surplus/(deficit)</b>	<b>(\$486)</b>	<b>(\$363)</b>
<b>Total Funding Needs</b>	<b>(\$3,621)</b>	<b>(\$1,317)</b>
Fuel Surcharge Revenues	\$297	\$229
<b>Total Funding Needs (w/ Fuel Surcharge)</b>	<b>(\$3,325)</b>	<b>(\$1,088)</b>

**Note:** Operating revenues, dedicated tax revenues (capital & operating), and fuel costs are based on June 2009 Transportation Economic & Revenue Forecast. Legislative Plan was adopted using March forecast.

**Note:** The 16-Year vessel capital expenditures include \$13.6 million of additional costs attributable to new vessel design for five new 144-car vessels.

**Note:** Fuel Surcharge would be implemented only if Legislature approves the fuel surcharge plan

**Note:** Parenthetical values represent program shortfalls; positive values represent program surpluses

Capital Costs. Exhibit ES-3 above shows the estimated costs and funding needs associated with the Long Range Plan. The Plan's capital program is estimated to total \$4.9 billion (in year of expenditure dollars) through 2030.

- Vessels - \$3.3 billion: Two-thirds of the capital costs are for investments in WSF's fleet, including \$1.9 billion for 10 new vessels, \$1.3 billion to preserve vessels, and \$84 million for vessel improvements to meet evolving regulatory and environmental requirements.



- Terminals - \$1.1 billion: 22% of the total capital costs are for investments in terminals, including \$985 million to preserve terminals and \$111 million for improvements to terminals.
- Other - \$548 million: The remaining 12% of the capital program is for debt service on bonds previously issued to finance WSF's capital expenditures (\$212 million) and emergency repair allowances/management and support (\$ 336 million).

Capital Revenues. The Plan projects available capital revenues of \$1.8 billion from dedicated gas tax revenues (\$711 million), discretionary transfers from the motor vehicle fund made by the legislature (\$411 million), federal funds (\$340 million), bond proceeds (\$245 million), and miscellaneous funds (\$15 million). The gap in capital funding is \$3.1 billion or 63% of the anticipated capital requirement. Revenues are based on June 2009 forecasts.

Operations Costs. The Plan projects operations costs of \$5.1 billion through 2030. Seventy-two percent of operations costs are for vessel operations, 17% for terminal operations and 11% for management and support. Fuel costs are based on June 2009 forecasts.

Farebox and Other Operations Revenues. WSF receives the majority of its operations funding from fares, which are projected to recover 78% of all operations costs through 2030 assuming annual fare increases of 2.5% and a 37% increase in ridership. Fuel surcharges, if approved by the legislature, are anticipated to generate an additional \$297 million, which would bring the total farebox recovery rate to 82%. Operating revenues are based on June 2009 forecasts.

The WSF operations program receives a dedicated portion of the fuel tax, which is expected to generate \$782 million through 2030 or 12% of operations costs. The operating program assumes that WSF will receive \$46.4 million in support from other transportation funds over the next two biennia (per 2009 Legislative session).

The gap in operations funding, assuming approval of the fuel surcharge, is \$189 million or 3% of the anticipated operations funding required.

## 1.6 Public Involvement in Plan Development

In early January, WSF conducted a total of ten public hearings to present the Draft Long-Range Plan. The Draft Plan was developed with extensive public input at 26 public meetings and workshops in ferry-served communities in 2008. The January public hearings were

well attended with over 1,300 individuals that signed in and nearly 400 who chose to testify.

In addition to the public testimony at the official public hearings, WSF collected feedback through emails, letters, and news accounts. In total, WSF received more than 800 comments on the Draft Long-Range Plan between December 19, 2008 and January 26, 2009. All public comment along with a revised plan was submitted to the Legislature on January 31, 2009.

## 1.7 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. It 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 responded that ferries are very important (70%) or somewhat important (25%). Respondents included East Sound (95%), West Sound (98%), and Island (100%) residents (General Market Survey).

Our ridership base is changing. Today, we have fewer 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), although during peak periods, over half of the system's riders are commuters. This reduction in commute trips 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

### Public Hearing Comments

The comments at the public hearings on the Draft Long Range Plan touched on a broad range of subjects, and the following key themes emerged:

- WSF should be treated as part of the state highway system
- Economic impacts of service changes should be considered
- The Draft Plan had not adequately addressed ridership growth
- The Draft Plan raised concerns about a vehicle reservation system
- More information was needed on what WSF is already doing to reduce costs
- WSF should consider building vessels out of state if it would save money
- Scenario B (the reduced service scenario) included an unfunded state mandate for local government to provide passenger-only service



### Challenges Ahead

**Aging Asset Base.** WSF is facing a significant recapitalization effort in the next 20 years. WSF's fleet is among the oldest of any major ferry operator. Furthermore, many of the 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.

**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 vessels or improve terminals, so WSF must anticipate the future need for such projects today.

**Vehicle Capacity Limitations.** Vehicle capacity during peak periods is WSF's greatest constraint and the origin of the pressure for additional services and larger facilities. 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.** While forecasts indicate ridership will increase 37% over the 22-year planning period, ridership is down 13% since its peak in 1999. Population growth is expected in many of the communities served by WSF, but it is not clear how this will translate into increased demand for ferry services.

more frequently (15% said they have been riding significantly more). With respect to flexibility, 8% of peak period vehicle travelers said they could shift to off-peak times, indicating that strategies geared toward time shift (like a vehicle reservation system) could be effective in reducing congestion during the peak.

Fares are only one factor affecting use of ferries. In 1999, WSF lost a significant source of funding when the Motor Vehicle Excise Tax (MVET) was repealed. 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%. 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.

## 1.8 Long-Term Funding

The foremost challenge facing WSF is the anticipated lack of capital funding, with existing resources anticipated to provide only 37% of the needed capital funding. This will require careful consideration of WSF's capital expenditures and continuous efforts to reduce capital costs by delivering projects in the most cost-effective manner. However, costs savings alone will not close the gap in WSF's capital funding. A stable source of capital funding, to replace the MVET funding lost in 1999, is needed.

During the 2007 Legislative session, the Washington State Transportation Commission (WSTC) was directed to conduct a study to identify and evaluate long-term funding alternatives for WSF. The WSTC delivered its report on March 2, 2009. The Governor and the Legislature have not yet acted on these recommendations. The legislative Joint Transportation Committee is conducting a comprehensive analysis of mid-term and long-term funding mechanisms as part of its 2009 work plan, which includes a review of all state transportation funding needs, including those identified for WSF.

<b>BACKGROUND AND CONTEXT</b>	<b>1</b>
1. Introduction	1
1.1 WSDOT Ferries Division (Washington State Ferries/WSF)	2
1.2 Purpose of the Long-Range Plan	4
2. Policy Framework	6
2.1 Washington Transportation Plan	7
2.2 ESHB 2358 The “Ferry Bill”	7
2.3 What factors did WSF consider in developing this Plan?	10
3. Financial Sustainability	12
3.1 Historical Context	13
3.2 Funding for WSF Post MVET Repeal	14
3.3 What is WSF Doing to Keep Costs Down?	15
<b>PUBLIC AND STAKEHOLDER INVOLVEMENT</b>	<b>19</b>
4. Planning Process	19
4.1 Technical and Policy Review Teams	19
4.2 Public Outreach and Stakeholder Involvement	20
5. Draft Plan Outreach	21
5.1 Public Involvement	21
5.2 Key Themes	22
5.3 Summary of Changes to Draft Plan	26
<b>OUR CUSTOMERS: RIDERSHIP AND DEMAND</b>	<b>29</b>
6. Current Ridership	29
6.1 What Did We Learn from Recent Survey Efforts?	30
7. Demand Forecasts	35
7.1 Updated Process for Demand Forecasting	35
7.2 How much ridership is expected?	36
7.3 Implications of Demand Forecasts	41
<b>CUSTOMER SERVICE: LEVEL OF SERVICE STANDARDS</b>	<b>45</b>
8. Current Standards	45
8.1 Current Standards	45
8.2 Need to Re-establish Vehicle LOS Standards	46
9. Changing the Vehicle LOS Measure	47
9.1 Changing the Vehicle LOS Measure	47
9.2 A Framework for Setting LOS Standards	48
10. LOS Implementation Issues	55
<b>OPERATIONS: ADAPTIVE MANAGEMENT STRATEGIES</b>	<b>57</b>
11. Transit Enhancements	59
12. Vehicle Reservations	61
13. Other operational Strategies	68

13.1	Fuel Saving Strategies	68
13.2	Other Strategies	70
<b>14.</b>	<b>Pricing</b>	<b>72</b>
14.1	Pricing and a Vehicle Reservation System	73
14.2	Fuel Surcharge	73
14.3	Other Pricing Strategies	74
	<b>SERVICE PLAN AND INVESTMENT NEEDS</b>	<b>79</b>
<b>15.</b>	<b>Legislative Plan Commitment</b>	<b>80</b>
15.1	Operating Program	80
15.2	Capital Program	87
<b>16.</b>	<b>Additional Long-term Ferry Needs</b>	<b>95</b>
16.1	Terminal Improvements	96
	<b>LONG-RANGE PLAN IMPLEMENTATION</b>	<b>99</b>
<b>17.</b>	<b>Long-term Funding Implications</b>	<b>99</b>
17.1	Operating Program	99
17.2	Capital Program	101
17.3	Long-Term Funding Outlook	102
<b>18.</b>	<b>Other Issues and Risks</b>	<b>104</b>
18.1	Environmental Considerations and Regulatory Risks	104
18.2	Ridership and Demand Risk	109
18.3	Cost and Inflation Risk	110
18.4	Fleet Age and Service Reliability	112
18.5	LOS Standards	112

#### Technical Appendices

<b>A</b>	<b>Summary of Legislative Requirements</b>
<b>B</b>	<b>Terminal Design Standards</b>
<b>C</b>	<b>List of Participants</b>
<b>D</b>	<b>Public Comments on Draft Plan</b>
<b>E</b>	<b>Agency and Stakeholder Comments on Draft Plan</b>
<b>F</b>	<b>Ridership Forecasting Technical Report</b>
<b>G</b>	<b>Annualization Factors for Ridership Analysis</b>
<b>H</b>	<b>Operating Strategies Evaluation</b>
<b>I</b>	<b>Joint WSF/WSTC Recommendations on Adaptive Management Strategies</b>
<b>J</b>	<b>Proposed Transit Enhancements by Terminal</b>
<b>K</b>	<b>Pricing Strategies Evaluation</b>
<b>L</b>	<b>One-Point Toll Collection Technical Memorandum</b>
<b>M</b>	<b>Scenario A and Scenario B</b>
<b>N</b>	<b>Proposed Vessel Assignments</b>
<b>O</b>	<b>Sources and Uses</b>
<b>P</b>	<b>Environmental Considerations</b>



# BACKGROUND AND CONTEXT

## 1. INTRODUCTION

The Long-Range Plan (Plan) is intended to guide WSDOT Ferries Division (WSF) future service and investment decisions through fiscal year (FY) 2031. Developed with extensive input from the public as well as stakeholder groups, the Plan outlines a service plan and corresponding funding plan that will allow WSF to provide sustainable ferry service in the Puget Sound area. This is the Final Plan, and has incorporated feedback from the public review and comment on the December 19, 2008 Draft Plan as well as legislative direction given on the January 31, 2009 Revised Draft Plan (see sidebar).

This Final Plan is a long-term vision for ferries, and displays for communities and the Legislature goals and strategies that seek to balance achievable service goals and funding requirements. The Plan comes in two pieces:

- The document you are reading is a Final Long-Range Plan that presents key findings, recommended strategies, anticipated services, investments, and corresponding funding needs.
- Technical Appendices present additional detailed backup for the Final Plan, and supporting information.

The WSF Long-Range Plan responds to specific legislative direction, and 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 Final Long-Range Plan is organized into the following major sections:

1. Background and Context
2. Stakeholder and Public Involvement
3. Our Customers: Ridership and Demand
4. Customer Service: Level of Service Standards
5. Operations: Adaptive Management Strategies
6. Service Plan and Investment Needs
7. Long-Range Plan Implementation

### Is this the Final Plan?

This is the Final Long-Range Plan. An initial Draft Plan was released for public comment on December 19, 2008. The Revised Draft Plan was released on January 31, 2009, and included changes based on public feedback on the initial Draft.

This Final Plan was developed after the 2009 legislative session, and incorporates the policy direction on the significant choices presented in the Revised Draft Plan.

Information regarding the legislative process as well as additional summary materials can be found online at <http://www.wsdot.wa.gov/ferries/planning/ESHB2358.htm> or by calling 206-515-3411.





## 1.1 WSDOT Ferries Division (Washington State Ferries/WSF)

Since its creation in 1951, WSF has become the largest ferry system in the nation. Nearly 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.

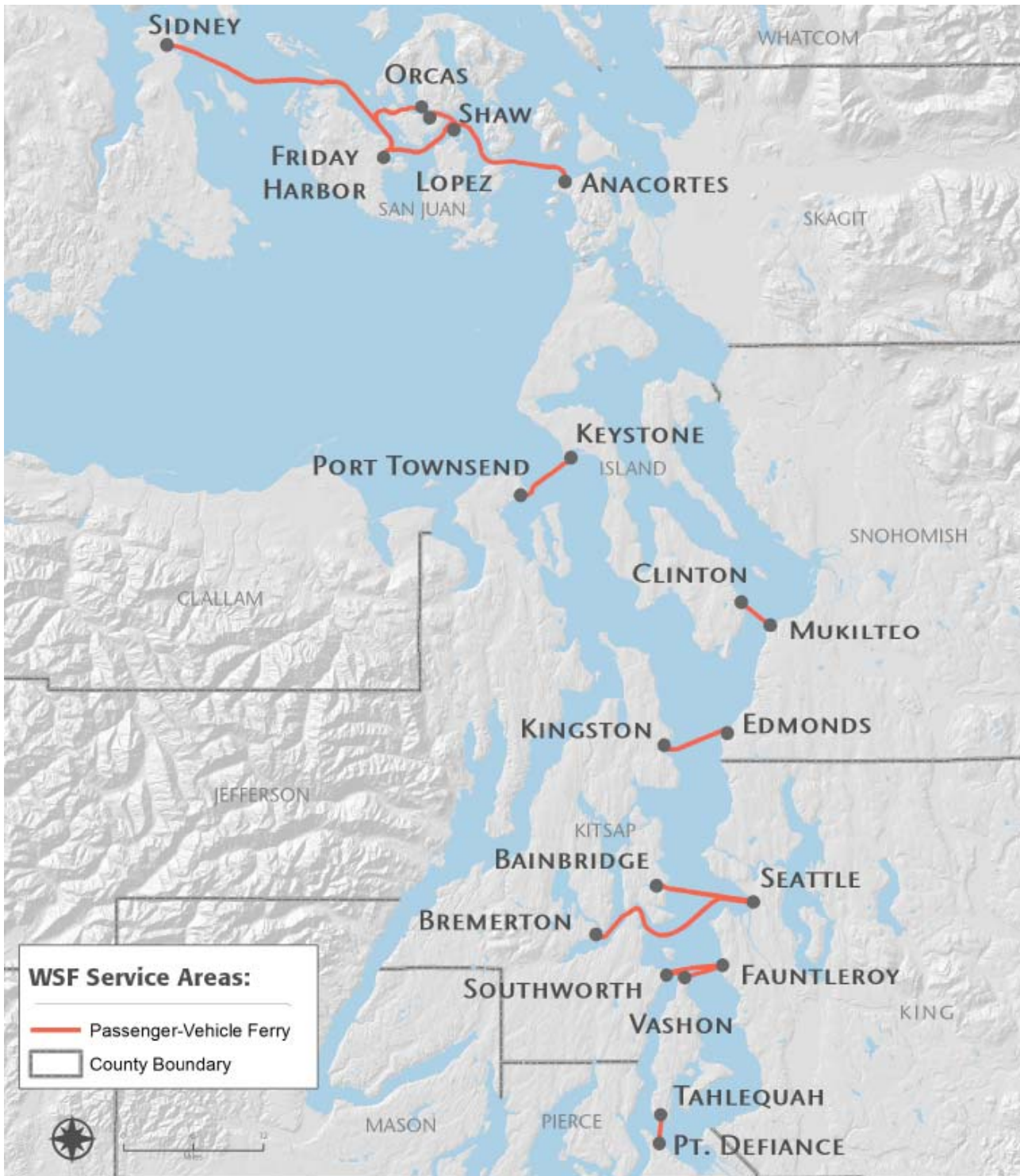
As part of the Washington State Department of Transportation (WSDOT), WSF serves two primary transportation functions.

**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 as the only means 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.

Exhibit 1  
Ferry System Service Area and Routes



## 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>

## 1.2 Purpose of the Long-Range Plan

WSF is releasing the 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 a positive direction for the ferry system.

The goal of this Long-Range Plan is to provide information about the long-term needs of ferry customers, possible service and capital programs, and an analysis of future funding needs, so a long-term solution can be developed that addresses WFS's financial sustainability.

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

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 WFS 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 WFS 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 constraints.

Given the economic conditions prior to and during the 2009 legislative session, and the scale of the funding needs that the State was facing in the highway program, in addition to the continuing ferry needs, it was 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, the Revised Draft Plan put forward two different visions of a future for WFS for consideration. These scenarios represented the realistic bookends of a range of service and capital investments that sought to balance service goals and long-term funding requirements.

1. Scenario A. This option assumed that current levels of service remained constant with modest improvements, operational strategies were implemented over time, and several new vessels came online. This plan scenario described WFS's view of the

most that could have reasonably been expected, given the financial constraints on State transportation programs.

2. Scenario B. This option recognized that the State may not be able to provide sufficient new revenues to meet the evolving needs of all ferry customers and communities, and looked at a reduced marine highway system. Scenario B assumed WSF would continue some key connections, and that local governments would be engaged in a dialogue about mitigating negative impacts of reduced WSF. Scenario B also contained a budget shortfall.

These scenarios described a range of possible futures for the State ferry system. They provided the 2009 State Legislature with a framework for decision-making about service and capital investments, and long-term funding needs.

This Final Plan is based on legislative direction from the 2009 session, and includes recommendations and strategies that are similar to those included in Scenario A with some modification. This Final Plan attempts to address the critical challenges facing WSF, including those described below:

**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, 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 landside highway system. Given the unfunded needs in the landside highway capital program, this is unsustainable. Therefore, the ferry system lacks sufficient revenue to sustain its current level of service.

**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 65 percent supported by fares (2008 fiscal year), compared to approximately 60 percent farebox recovery in fiscal year 2001.

**Aging Asset Base.** WSF's fleet is among the oldest of any major ferry operator, with four vessels retired in 2007. Eight more vessels are to be retired over this 22-year 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 nearly 23 million riders annually, ridership is down over 13% since its peak in 1999. While there is population growth expected in many of the communities served by WSF, it is not clear 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 4% growth in Kitsap County to 14% in Island County during the same period of time. By 2030, total demand is projected to increase by 37% over 2006 ridership, which was the last full year of regular service before the disruptions caused by the retirements of the Steel-Electric Class vessels. Over this same period, vehicle demand is expected to increase by 30% overall.

## 2. POLICY FRAMEWORK

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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 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.
- 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 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.



## 2.1 Washington Transportation Plan

The WSF Long-Range Plan will become a part of the Washington Transportation Plan (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 Long-Range Plan is guided by the same goals that federal and state law prescribe for the WTP, including safety, congestion relief, asset preservation, system efficiency, environmental protection, and consistency with land use plans.

### 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.

## 2.2 ESHB 2358 The "Ferry Bill"

Passed by the 2007 Legislature, Engrossed Substitute House Bill (ESHB) 2358, the "Ferry Bill," fundamentally changed 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 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, page 6), and to develop an information base that could support the ultimate question of how to address the long-term funding needs of WSF. Specifically, ESHB 2358 and transportation budget provisions are designed to:

- Provide new and improved information. Examples of improved information requirements include a customer survey; updated 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;
- Be developed 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 reduce 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 Joint Transportation Committee), 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 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 Committee<sup>1</sup> input; and is updated every two years.
- **Long-term Funding.** The 2007 Transportation Budget included a proviso requiring 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)). This study was published in February 2009 and includes recommendations around increased state taxes to fund the capital program and increased fares to fund the operating program.
- **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.

The above-mentioned ESHB 2358 studies supported policy makers during the 2009 legislative session, and informed the legislative guidance that has been conveyed for this Final Plan.

In addition to these ESHB 2358 efforts, another planning study that was underway concurrently with this effort, the Puget Sound Regional Council's (PSRC) Passenger-only Ferry 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:

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<sup>1</sup> 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.



- 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 was completed in early 2009, with additional work expected to integrate the study results into the regional transportation plan update (Destination 2040).

## 2.3 What factors did WSF consider in developing this Plan?

In developing these Final Plan recommendations, WSF also considered other factors and guidelines for the future of the ferry system. Not all of this guidance took the form of law or mandate, and it frequently reflected multiple, often conflicting, priorities that WSF must 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 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 landside highway program to balance its budget.

WSF should respect the land use and growth management plans of local governments, while being mindful of its primary mission and its role as a state agency. WSF serves local communities that 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

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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 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 approximately 60% to 80% over six years. While this recommendation was a key factor in fare policy decisions in 2001-2004, it was never codified in statute.

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. As with the JTFF farebox recovery recommendation, the goal was not codified in statute.

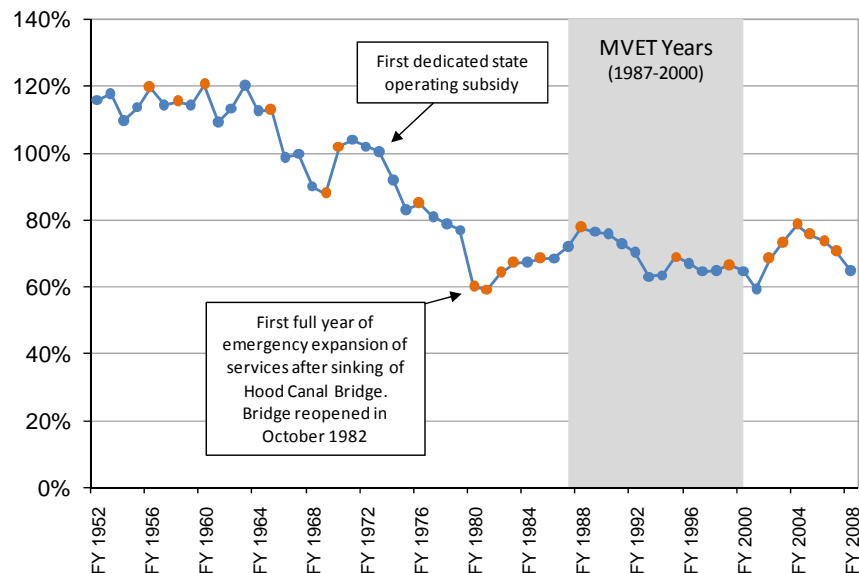
Neither the JTFF nor BRCT recommendations specifically addressed how to replace the lost MVET funding. With respect to funding, both efforts largely focused on using the fare policy to begin to stabilize the operating funding situation but suggested that the Legislature needed to develop a long-term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



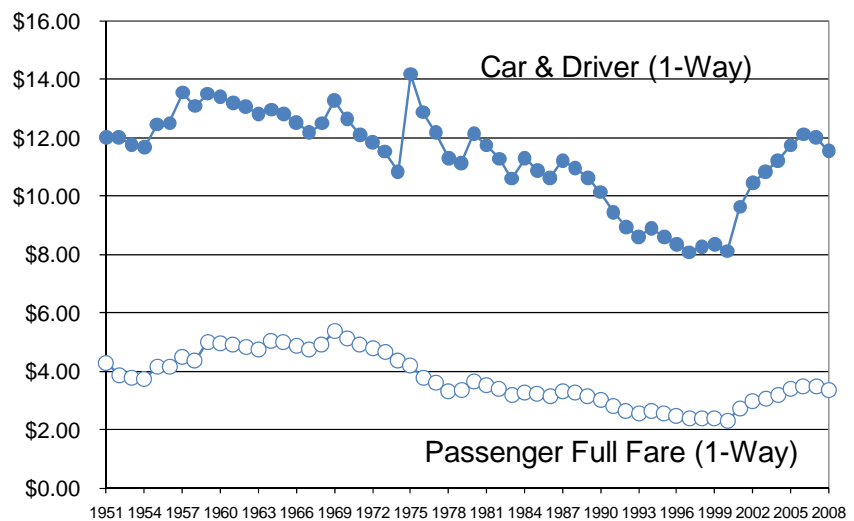
The portion of the cost of operations funded from fare revenues has shifted from more than 100%, to the 60% level during the MVET years (1987-2000). The transition from over 100% to 60% cost recovery represented a gradual but steady decline that benefited ferry users.



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%, varying by 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, fare 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 MVET Repeal

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 landside 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 carefully reviewed its operating practices and staffing levels. Savings have been achieved by leaving non-essential vacancies open, reducing technology upgrades, decreasing consultant costs, cutting administrative staff, and making across the board cuts in every department. All spending has stopped for goods and services that are not essential to the business. WSF has reduced fuel consumption by investing in boat modifications, with expected savings of 843,000 gallons of fuel in the 2007-2009 biennium. Maintenance that can prudently be deferred has been eliminated from the budget.

Some examples of recent cost saving measures include the following:

- Staff reductions: \$1.5 million (25 budgeted positions)
- Fuel conservation: \$3.7 million





### 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)).

- Reductions in other operating costs: \$2.2 million
- Reduction in consultant costs: \$25 million

Cost containment is an ongoing process, and WSF will continue to look for ways to maximize the service delivered with the money it has. In part this will be achieved by looking throughout the year for ways to reduce spending. Future plans for reducing costs include:

- A much more detailed budget process in future budget cycles. In the 2009-11 biennium we have targeted a 12% reduction in fuel consumption
- Exploring methods of hedging WSF exposure to fuel prices
- Development of an injury reduction plan, pursuant to direction from the 2009 Legislature
- Updating the life cycle cost model for the fleet
- Ensuring capital staffing levels are consistent with delivery of the capital program

### 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 Lowest Life Cost Analysis that support vessel preservation investment decisions

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 reduction 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 vehicle reservations/capacity information and proposed alternative

### Asset Management System

While the preservation costs have been estimated using the life cycle cost approach as per legislative direction, WSF is moving to implement a more robust asset management system to improve its ability to effectively manage its preservation programs.

A budget proviso in the 2007-09 budget required WSF to "research an asset management system to improve Washington state ferries' management of capital assets and the department's ability to estimate future preservation needs."

The report was presented to the legislature during the 2008 session. WSF is now requesting funding to design and implement the system.



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 Final Plan?**

The current and future financial challenges have had a profound impact on the approach to this planning effort. It 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.

The public feedback on the Draft Plan was that service and vessels should have higher priority than improvements to terminals, and that has been reflected in the revised terminal budgets, where a number of projects initially included in Scenario A have been eliminated.

# PUBLIC AND STAKEHOLDER INVOLVEMENT

## 4. PLANNING PROCESS

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### 4.1 Technical and Policy Review Teams

The process for developing this Plan was designed to meet the participation requirements 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 were organized around subject matter expertise, including: travel 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 beginning in 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 the 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 the WSF project leadership team on policy and technical issues.
- **JTC 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.



### 2008 Public Meetings:

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

### 2009 Draft Plan Public Hearings

Jan 5, Port Townsend  
 Jan 6, Whidbey Island  
 Jan 7, Vashon Island  
 Jan 8, Bremerton  
 Jan 12, Southworth  
 Jan 13, Bainbridge  
 Jan 14, Kingston  
 Jan 15, San Juan Islands  
 Jan 15, Anacortes  
 Jan 21, Fauntleroy

The work of these groups and the participation of stakeholders was critical to the development of this Long-Range Plan, and WSF appreciates the time and effort of everyone 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 consulted with ferry customers, planning organizations, agency stakeholders, and the general public. The following groups and resources 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 Long-Range Plan. The Local Agency Review Team's role included keeping WSF's agency partners informed about technical and policy work, and helping WSF understand the local community and agency needs.
- **Public Ferry Advisory Committees.** WSF met 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 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 were conducted in January 2009 to gather input on the Draft Plan. See the sidebar for a comprehensive list of 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 maintained a web page connecting the public to the latest information on the Plan. Users could download materials and public comment summaries from all of the public



meetings, including a video feed of the presentation used during the fall. The web page made it easy to submit public comments and get in touch with WSF staff. It also connected the public to related web pages, including the WSTC and JTC sites.

The webpage address is:

[www.wsdot.wa.gov/ferries/planning/ESHB2358](http://www.wsdot.wa.gov/ferries/planning/ESHB2358)

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

## 5. DRAFT PLAN OUTREACH

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The Draft Long-Range Plan (Draft Plan) was released for public review and comment on Friday, December 19, 2008 that was to close on Wednesday, January 21, 2009. Given the overwhelming response to the Draft Plan, the public comment period was extended through Monday, January 26, 2009 to ensure that all interested parties had an opportunity to participate. This section summarizes the following:

- Outreach approach, process, and public hearings
- Major themes heard during public comment period
- Changes to Revised Plan Scenarios (A and B)

### 5.1 Public Involvement

The Draft Long-Range Plan was developed with extensive public input at 26 public meetings and workshops in ferry-served communities between March 2008 and October 2008. The focus of the meetings was on the requirements of ESHB 2358 and the building blocks of the Plan, including ridership demand, level-of-service standards, pricing and operational strategies and baseline funding challenges.

WSF conducted a total of ten public hearings between January 5 – 21, 2009, to present the Draft Plan and to listen to public testimony. The public hearings were well attended, with over 1,300 individuals that signed in, and nearly 400 that chose to testify. Please see Appendix D for a verbatim transcript of each hearing.

In addition to the public testimony at the official public hearings, WSF collected feedback through emails, letters, and news accounts. In total, WSF received more than 800 comments on the 2008 Draft Long-Range Plan between December 19, 2008 and January 26,





2009. Please see Appendix E for copies of the emails and letters submitted by affected jurisdictions and other stakeholders.

## 5.2 Key Themes

As indicated above, WSF reviewed hundreds of comments and listened to public testimony from the ten public hearings. The comments touched on a range of subjects. The comments heard most frequently at each of the ten hearings and in reading through the written submissions were grouped into themes. The following key themes emerged:

- WSF should be treated as part of the state highway system
- Economic impacts should be considered
- The Draft Plan had not adequately addressed ridership growth
- The Draft Plan raised concerns about a vehicle reservations system
- More information was needed on what WSF is doing to reduce costs
- WSF should consider building vessels out of state if it saves money
- Scenario B included an unfunded state mandate for locals to provide passenger-only service

WSF considered all of the themes surfaced during public outreach and where appropriate has revised the Plan to reflect public input.

### **WSF Should Be Treated as Part of the State Highway System**

A major theme that was heard at all of the public hearings was that the ferry system is a part of the state highway system and, as such, should be a fully-funded state responsibility. Among the comments heard during the public hearings was that the State was funding other “mega projects,” such as the Viaduct or SR 520, but not ferries.

A variation on this theme addressed fares: that ferry customers are already paying twice – once in the form of state gas taxes and a second time when they pay their fare – and that this is not equitable since most of the rest of the highway users do not pay tolls. As a result, the State should fund ferries without looking to local taxes or additional fares to address the funding challenges.

Discussion. WSF is a division of the Washington State Department of Transportation (WSDOT). Under state law, all ferry routes are designated as extensions of State Highway Routes and WSF is

funded in part through gas tax collections which are constitutionally-restricted to highway purposes.

The State cannot fully fund the “mega projects” mentioned above from current state resources. All of these projects are partially funded by non-state resources.

WSF is an expensive part of the highway system. The operating costs are much higher, since the State must provide labor and fuel to operate the vessels and terminals. The capital costs are also higher, mostly due to the large, ongoing preservation capital needs of the system. For example, over the next 20 years WSF needs to replace approximately half of its fleet.

Since the 1970s, ferry tolls have been used exclusively to defray a portion of the operating costs of the ferry system. Fare revenue does not fund the capital needs of the system. However, there were two instances in recent years where some of the gas tax revenues from the operating account were transferred, including immediately after the MVET repeal when \$67 million of the operating reserve was transferred from operations to capital.

### **Economic Impacts of the Plan Should Be Considered**

There were many comments that touched on the idea that the proposed service reductions in Scenario B (and to a lesser extent the lack of service improvements in Scenario A) would have had negative economic impacts on ferry-served communities. For some, the focus was on the economic impacts that ferry communities have already experienced as a result of higher fares. For others, the goal was to better understand and present the case for why ferries are a vital contributor to the economic well-being of the Puget Sound region and the State. Perhaps the greatest concern raised was related to the potential damaging effects of a reduction in accessibility for ferry communities and businesses, such as home and property values, particularly in communities with few or no other options.

A number of comments suggested that the Plan should have addressed this issue directly and that decisions about the future of the ferry system cannot be made without a thorough understanding of the economic impacts of the potential changes in service and investments.

Discussion. We understand the concerns outlined above. An economic impact analysis was outside the scope of the legislative direction contained in ESHB 2358. However, economic issues were considered as part of the evaluation of pricing and operational strategies, though not in detail and only as part of the broader evaluation of customer and community impacts.



This is particularly difficult because avoiding the impacts of a service cut would require dedicating more tax revenue to ferries, since there is not enough dedicated funding to maintain current service levels. If these funds were to come from existing resources, then the impacts would need to account for the negative impacts of not spending that money on other state projects. This issue was given consideration by the State Legislature, whose recommendations helped form the Final Long-Range Plan.

### **Growth Was Not Accommodated In the Plan**

Some comments suggested that, even in Scenario A, the Long-Range Plan did not propose a solution that addressed the growth expected in the next 22 years. There was anxiety expressed in many of the communities about the ferry system's inability to meet future, potential growth without having a more robust expansion of capacity.

Discussion. While the current plan does propose fewer capacity improvements than previous plans, the smaller capacity improvements are combined with a significant shift in how WSF is going to do business.

Growth will be accommodated through small capacity improvements and adaptive management strategies. The approach to addressing future growth in Scenario A included a combination of a modest capacity increase over time (related to replacing old vessels with newer and larger vessels), and a focus on operational strategies designed to better fit the demand with available capacity.

A key strategy in this regard is the proposed vehicle reservation system. The primary objective of the reservation system is to better utilize existing assets, which will allow WSF to meet growing demands without growing capacity in a proportionate way.

This approach to meeting growth is not unique to WSF. Throughout the transportation system, there has been a significant shift away from building capacity to a policy of managing demand. In both the United States and throughout the world, there is a greater focus on managing transportation demand either through improved transit or other high capacity systems (HOV lanes) or through congestion pricing (or increasing parking costs or reducing parking availability) to reduce demand during peak periods.

### **Concern About a Vehicle Reservation System**

While there was support for a vehicle reservation system from some, there were also concerns expressed from others. Many of the concerns were related to how such a system might actually operate and how it would require customers to plan their trips in advance. There were some who thought that a vehicle reservation system

would make terminal congestion worse and not better. Others felt that a vehicle reservation system was a costly extravagance when basic ferry services were under threat due to funding challenges. Others commented that reservations were not required on the landside highway system, such as crossing SR 520.

Discussion. The proposed vehicle reservation system is the primary demand management tool proposed in the Plan. A vehicle reservation system will have a significant impact on WSF's ability to better align demand with available supply of auto capacity on ferries. WSF has gained valuable experience with vehicle reservations on two of its existing routes. WSF also looks to learn from other domestic and international ferry systems, most of which have reservations systems in place. In addition, the cost of implementing a reservation system is much lower than the investment needed to provide additional holding capacity where vehicles queue outside of terminals.

There has been additional information added to the vehicle reservation section of the Plan to address the specific operational concerns raised during the public comment period.

For more information on this topic, please refer to page 61.

### **More Information Was Needed About What WSF Is Already Doing To Reduce Costs**

Given that much of the focus of the Draft Long-Range Plan was on the long-term funding needs of the system, it was not surprising that there were many comments and questions about how WSF was spending the money it already has. In particular, there was concern that the focus was too much on needing new revenues and not enough on cutting costs.

Discussion. In response, we included a more detailed discussion of cost containment, and cost management has been added to the adaptive management chapter to better explain what WSF is doing in this important area.

For more information on this topic, please refer to page 15.

### **Consider Building Vessels Out of State If It Saves Money**

Another theme expressed at several meetings was the suggestion for the State to consider building vessels outside of Washington to help alleviate some of the funding challenges facing the ferry system. In some cases, there were specific references to the recent bids for new WSF vessels that came in over the state estimate. Many also commented on the need to include ferries in the federal stimulus package.



Discussion. The Plan did not address this issue as it is a state policy issue. The issue is a complicated one that involves both cost and benefit implications for the State.

Federal maritime law requires that WSF use U.S. flagged vessels for service between United States ports, which means these vessels would still need to be built in the United States. There is an option to use a foreign flagged vessel on direct service to Sidney from Anacortes. The 2009 legislature directed WSF to pursue purchasing a foreign flagged vessel for that route.

### **Passenger-Only in Scenario B was an Unfunded State Mandate**

Customers and local elected officials in several communities affected by the potential service reductions described in Scenario B were concerned that identifying the potential for locally-funded passenger-only services to mitigate the impacts amounted to an unfunded state mandate.

Discussion. Under Scenario B, there was a description of how, in the event that services needed to be reduced as a result of a smaller available fleet, there were potential passenger-only routes that might be poised to provide services that could mitigate some of the impacts of these reductions. Scenario B was not premised on the availability of these services, but clearly customers would be better served if these services were available. Under that Scenario, WSF would have engaged local governments in a dialogue about how the reduced WSF service could have best been mitigated.

## 5.3 Summary of Changes to Draft Plan

The Revised Draft Long-Range Plan was modified based on the feedback from the public outreach in two distinct ways. The first type of changes were revisions to the Plan text to improve understanding of key plan elements by adding additional details, and to clarify areas where there might have been confusion. Some of these were mentioned earlier in the discussion of general themes from the outreach effort.

The other category of changes that were made included several revisions to the Plan Scenarios designed to address some of the concerns and comments heard.

Exhibit 4 summarizes the specific changes that were made to the Plan Scenarios between the Draft and Revised Draft versions of the Plan, in response to public feedback. A summary description is included below.

## Exhibit 4 Changes to Draft Plan Options

Changes to Scenario A since Draft Plan	Changes to Scenario B since Draft Plan
<p><b>Operating Program</b> Break-up Fauntleroy triangle by adding the Hiyu: Run 2-boats Fauntleroy-Vashon Run 1-boat Vashon-Southworth Run 1-boat Fauntleroy-Southworth Add reservation operating costs (\$500K/yr)</p> <p><b>Capital Program</b> Remove dock widening at Fauntleroy Eliminate exit lane straightening at Port Townsend Add a replacement vessel to procurement plan to replace Hiyu (2027) Add a new tie-up slip at Southworth to support service expansion</p>	<p><b>Operating Program</b> Reinstate the Bremerton night service that would have been cut ('11-'13) Add reservation operating costs (\$500K/yr)</p> <p><b>Capital Program</b> Eliminated several terminal projects, including: Point Defiance Tollbooth improvements Point Defiance increased holding Port Townsend relocate tollbooths New exit lane to Tahlequah Clinton walkway connection to park &amp; ride Minor reduction to Bainbridge transit improvements</p>

### Modifications to Scenario A to address Public Input

WSF concurred that the draft Scenario A did not adequately address the growth and operational issues associated with the Fauntleroy-Vashon-Southworth route. The revised proposal added a fourth, small vessel to the route, operating as a shuttle between Vashon and Southworth. This allowed the other three vessels on the route to operate in direct service between Fauntleroy and Vashon and between Fauntleroy and Southworth, better utilizing the capacity on those vessels and increasing overall efficiency on the route. It also increased capacity for Southworth, which is one of the areas slated for high growth.

Based on comments heard at the Fauntleroy public hearing and comments received by the City of Seattle, the concept of expanding the Fauntleroy dock (as proposed in the Draft Scenario A) was not viewed as feasible. As a result, the project was removed from the Revised Draft Plan, and WSF will investigate all possible roadway and right-of-way options, if expanded vehicle holding is needed.

### Modifications to Scenario B

Night/evening service on weekdays for the Seattle/Bremerton route was reinstated. The importance of evening and night service for major military employers such as Puget Sound Naval Shipyard and swing/night shift workers in Seattle led to the restoration of service in those time periods.







## 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 establishes 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.

### 6. CURRENT RIDERSHIP

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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 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.

## 6.1 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 Plan. The survey provided extensive and detailed data that supported not only this effort, but will 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 responded that ferries are very important (70%) or somewhat important (25%). Respondents include East Sound (95%), West Sound (98%), and Island (100%) residents (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 average 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 subsequent sections), 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 vehicle 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 9% of riders and 8% of vehicle drivers traveling in the peak said they could shift out of the peak. An 8% shift in vehicle trips would have a significant impact on peak congestion and average wait times.
- 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 14% saying that ferries are a poor value.
- Change in ferry use is driven more by changes in life circumstances than by fare increases. Despite the fact that fares have risen steeply between 2000 and 2006, a relatively small percentage of people in the General Market Survey cited price as reason for reducing their ridership.
- While most riders do not like fare increases, most recognize that periodic fare increases are necessary.
- Generally, customers were more willing to consider increases to the passenger fare than to the vehicle fare. This may be a function of the fact that vehicle fares are already much higher than passenger fares.
- Vehicle drivers on the high recreational routes are the least sensitive to an overall vehicle fare increase.
- Among the commuter-oriented routes, Fauntleroy-Vashon riders reported more price sensitivity than other routes.
- The overall price sensitivity analysis suggested that non-discretionary trips were less price-sensitive than discretionary trips. The analysis suggested that fare increases of 45% for non-essential trips and 70% for essential trips would be revenue maximizing.
- Customers were generally much more supportive of pricing strategies designed as incentives for travel changes (discounts for walk-ons or small vehicles) and generally negative towards strategies designed as disincentives (such as congestion pricing approaches).





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

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

### **How Have Findings Been Incorporated in Planning Efforts?**

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

Our customer base is changing. Approximately one-third of WSF's customers travel for the purposes of work or school (i.e. make non-discretionary commute trips). This trend has also been observed in recent WSF 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 vehicle 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 Market Survey 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.

## 7. DEMAND FORECASTS

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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 F.

### 7.1 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.



**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

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 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.

## 7.2 How much ridership is expected?

Ridership is expected to grow by 37% between 2006 and 2030 – 13% growth would return WSF to the historical high level of ridership it had in 1999, with the additional forecasted growth bringing ridership levels above what the system has previously seen. Since ridership levels have declined sharply since 2000, it is important to also consider the growth expectations in relation to the previous peak ridership level. Comparing 2030 ridership expectations with the previous peak level of ridership in 1999, the overall increase in ridership over the previous peak level is approximately 20%.

There are two principal elements accounting for growth in ridership demand under this model. The first is external factors, such as demographic growth, with many added residents commuting across Puget Sound for employment opportunities. The second is internal

WSF policy factors such as choices about fare prices and service levels, which can impact the level of customer demand.

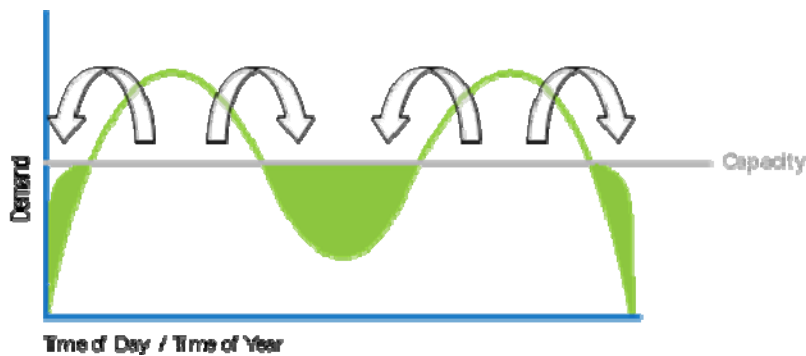
### Accommodating Ridership Growth

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 the time of the day 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 5 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 5  
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, WSF 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 6, 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. Ridership numbers in Exhibit 6 are based on 2030 projections for the daily 4-hour peak period, which have been annualized using the current relationship between daily 4-hour peak projections and total annual ridership. Please see Appendix G for more details on ridership analysis and annualization factors.

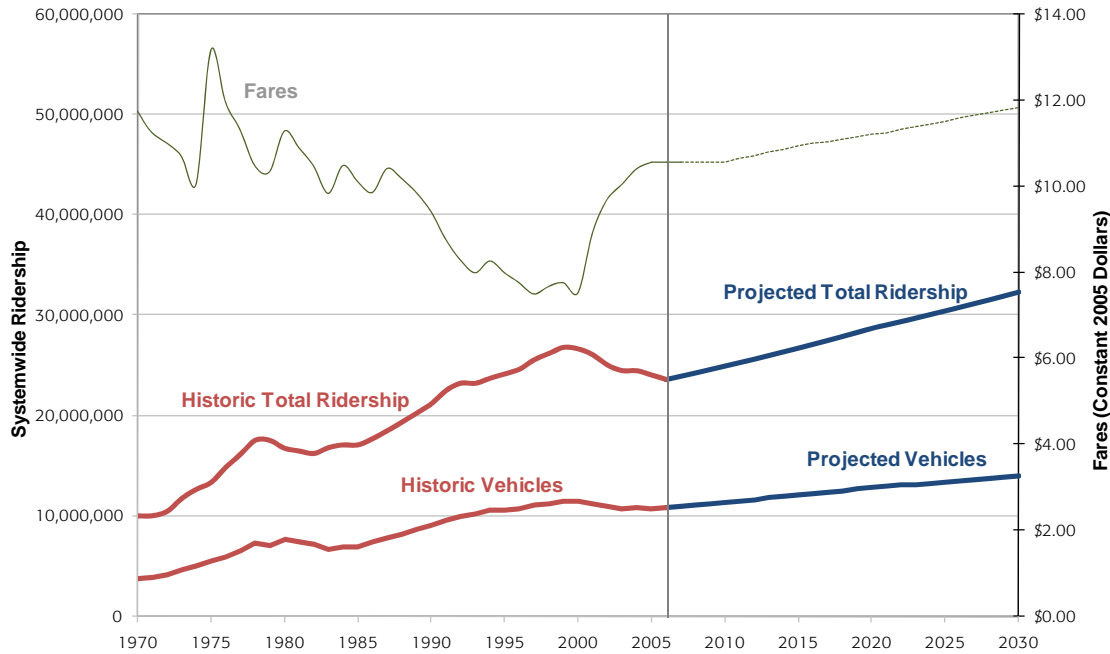
Exhibit 6  
Annual Baseline Ridership Forecasts by Route

	Vehicles			Passengers			Total Riders		
	2006	2030	% Change	2006	2030	% Change	2006	2030	% Change
<b>Pt. Defiance-Tahlequah</b>	399,000	449,000	12%	289,000	285,000	-1%	689,000	734,000	7%
<b>Southworth-Vashon</b>	121,000	237,000	95%	151,000	163,000	8%	273,000	400,000	47%
<b>Fauntleroy-Vashon</b>	1,163,000	1,427,000	23%	893,000	918,000	3%	2,057,000	2,344,000	14%
<b>Fauntleroy-Southworth</b>	558,000	788,000	41%	422,000	838,000	99%	979,000	1,626,000	66%
<b>Seattle-Bremerton</b>	710,000	849,000	19%	1,628,000	1,819,000	12%	2,338,000	2,667,000	14%
<b>Seattle-Bainbridge Island</b>	2,120,000	2,910,000	37%	4,297,000	5,749,000	34%	6,417,000	8,659,000	35%
<b>Edmonds-Kingston</b>	2,263,000	2,770,000	22%	1,994,000	2,948,000	48%	4,257,000	5,719,000	34%
<b>Mukilteo-Clinton</b>	2,227,000	2,764,000	24%	1,840,000	3,175,000	73%	4,067,000	5,939,000	46%
<b>Pt. Townsend-Keystone</b>	370,000	649,000	76%	403,000	863,000	114%	773,000	1,512,000	96%
<b>Anacortes-San Juans</b>	754,000	1,003,000	33%	883,000	1,325,000	50%	1,637,000	2,328,000	42%
<b>San Juans Inter-Island*</b>	98,000	155,000	57%	-	-	-	98,000	155,000	57%
<b>Sidney, B.C. (International)</b>	37,000	56,000	52%	73,000	140,000	91%	110,000	196,000	78%
<b>TOTAL</b>	<b>10,821,000</b>	<b>14,055,000</b>	<b>30%</b>	<b>12,873,000</b>	<b>18,223,000</b>	<b>42%</b>	<b>23,694,000</b>	<b>32,278,000</b>	<b>36%</b>

Note: Because there is no charge for passengers on San Juan Islands Inter-Island routes, passenger ridership figures are not included.

To put these ridership projections into a historical context, Exhibit 7 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 7**  
**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 until 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 8, 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 8 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
<b>Departure Terminals</b>								
<b>Pt. Defiance</b>	216	259	75	89	77	101	26	36
<b>Vashon</b>	45	98	13	37	14	24	7	8
<b>Fauntleroy</b>	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>		
<b>Colman Dock</b>	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>		
<b>Edmonds</b>	1,002	1,378	353	492	378	671	134	237
<b>Mukilteo</b>	974	1,155	281	340	487	908	138	264
<b>Arrival Terminals</b>								
<b>Tahlequah</b>	216	259	75	89	77	101	26	36
<b>Vashon</b>	581	728	196	240	286	190	99	63
<b>Southworth</b>	363	592	113	186	212	420	71	134
<b>Bremerton</b>	495	567	198	228	1172	1266	463	502
<b>Bainbridge</b>	1,108	1,535	433	604	2,567	3,476	1010	1368
<b>Kingston</b>	1,002	1,378	353	492	378	671	134	237
<b>Clinton</b>	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.

### 7.3 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. Also as a public transportation provider, WSF's primary mission is to cost effectively meet the needs of its customers and ferry communities.

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 decrease 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 the Washington State Office of Financial Management (OFM), 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 accurately. 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.

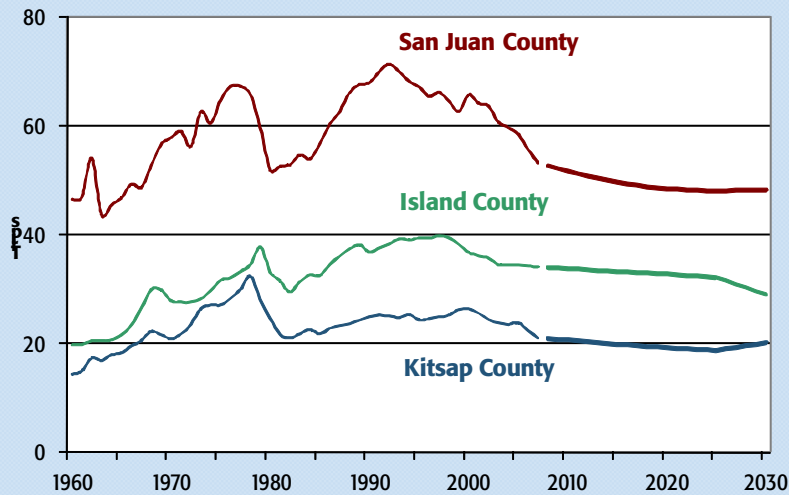
Ridership projections, by their nature, are imperfect. More detailed information will help, and the bi-annual survey updates will provide this information. The ridership numbers are intended for long-term planning purposes with the full understanding that this Plan will be updated every five years. Due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

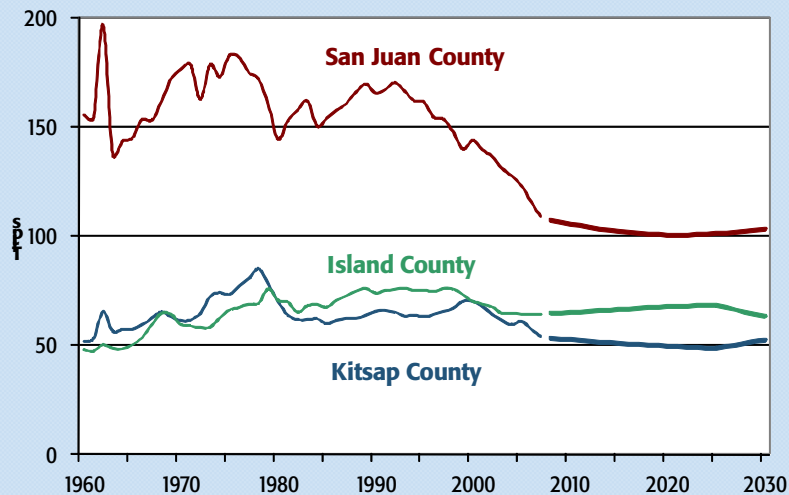
The graphs below compare population in the ferry-dependent communities with actual and projected ridership by looking at trips per capita. In most cases, per person ridership levels are expected to be consistent with, or lower than, historical experience.

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 predict 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 ferry system planning away from thinking primarily about peaks and more about how to best fit the service to the overall demand and 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.

### 8. CURRENT STANDARDS

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#### 8.1 Current Standards

In 1994, the Washington State Transportation Commission adopted 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.

## 8.2 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 vehicle 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.

## 9. CHANGING THE VEHICLE LOS MEASURE

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### 9.1 Changing the Vehicle LOS Measure

Any revised measure should capture the customer experience and describe how well WSF is utilizing its assets. A key factor in proposing a new LOS measure is to incorporate the concept of demand management and the introduction of operational and pricing strategies explicitly into the level-of-service discussion. This could inform both when additional strategies might be needed (to improve the customer experience or seek to improve asset utilization) 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 vehicle reservation system. As discussed later in this report, a vehicle reservation system is a key operational strategy evaluated in the Long-Range Plan. A reservation system 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 vehicle 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.

## 9.2 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 9 Future Service Addition Decisions

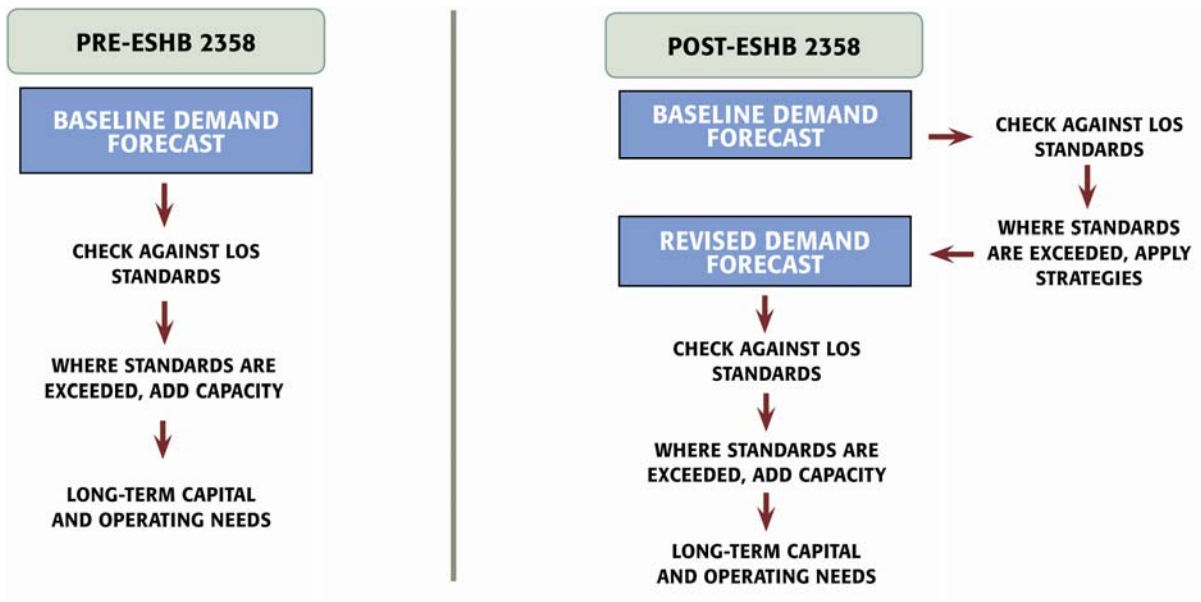


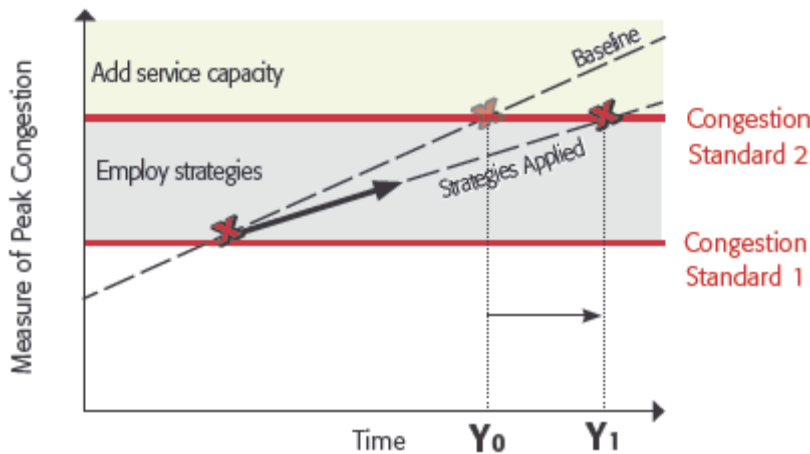
Exhibit 9 illustrates how WSF's existing LOS standards have been used in previous planning efforts and proposes a different way to incorporate LOS standards into planning efforts that is more consistent with the intent of recent legislation.

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 10 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 10  
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 11 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 11 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	<b>0.39</b>
Midday (11:00 - 2:59 PM)	0.57	0.58	0.37	0.40	0.39	0.48	0.53	<b>0.47</b>
Afternoon Peak (3:00 PM - 6:59 PM)	0.57	0.52	0.83	0.84	0.81	0.81	0.89	<b>0.75</b>
Evening (7:00 PM and After)	0.26	0.31	0.13	0.20	0.20	0.41	0.35	<b>0.26</b>
<b>Average</b>	<b>0.43</b>	<b>0.40</b>	<b>0.43</b>	<b>0.45</b>	<b>0.45</b>	<b>0.55</b>	<b>0.60</b>	<b>0.47</b>

Exhibit 12, 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 12 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 vehicle 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 12 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%	<b>4%</b>
Midday (11:00 - 2:59 PM)	-	-	-	-	-	-	-	<b>0%</b>
Afternoon Peak (3:00 PM - 6:59 PM)	-	-	25%	25%	25%	-	75%	<b>21%</b>
Evening (7:00 PM and After)	-	-	-	-	-	-	-	<b>0%</b>
<b>Average</b>	<b>0%</b>	<b>0%</b>	<b>7%</b>	<b>7%</b>	<b>7%</b>	<b>0%</b>	<b>29%</b>	<b>7%</b>

*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 13 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 13  
Port Townsend-Keystone Daily Volume-to-Capacity Ratios**

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

For comparison purposes, Exhibit 14 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 vehicle 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 14  
Port Townsend-Keystone Actual Daily Percent of Sailings Filled**

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

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 15  
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 15 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 16  
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 16 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. 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 vehicle 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 among 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 vehicle 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.

## 10. LOS IMPLEMENTATION ISSUES

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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.

There are two factors that largely mitigate concerns with the approach to finalizing LOS standards:

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 taking into consideration legislative direction around operating strategies. It considered the experience of transportation industry professionals and included an extensive national and international best practices review.

There are two ways to address expected increases in peak demand. One way is to build larger boats and terminals, which is problematic both from a capital funding perspective and also due to landside constraints, permitting issues, and community concerns. The other way to deal with it is to try to spread peak vehicle ridership and make better use of existing vessel and terminal capacity.

Through these avenues, a wide range of strategies was identified, and over 90 discrete operational strategies were ultimately considered for inclusion in this Plan (see Appendix H for detailed discussion of all operating strategies). These strategies can be grouped into the following nine categories:

- **Vehicle Reservation Systems.** Strategies pertaining to the implementation of a system that allows customers to buy a vehicle fare for a specific sailing in advance.
- **Transit Enhancements.** Strategies encouraging the use of public transit systems and thereby increasing mode shift. They include things like improved connections, transit access at terminals, expanded park-and-ride capacity, improved schedule coordination, real time connections information, and sheltered transit facilities at terminals.
- **Non-motorized Enhancements.** Strategies to improve ease with which customers can walk-on or ride bicycles in lieu of driving on, including improved pedestrian and bike connections and facilities.
- **Optimized Fare Collection Techniques.** Strategies to reduce ticketing time and therefore queue lengths outside the tollbooth. They include options like optimizing the electronic fare system, fully automating the system, providing transponder only lanes, expanding

### 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.





fare card coordination and marketing, limiting payment forms accepted, and round-trip ticketing.

- **Enhanced User Information.** Strategies to encourage mode and time shift through better information and trip planning tools. They include, for example: automated route planning; real-time queuing, departure transit, and wait information; improved wayfinding for bicycles, pedestrians, and parking; and real-time parking capacity information.
- **Scheduling.** Strategies to better accommodate vehicle demand through sailing schedule adjustments like extending schedules with the existing fleet type or more frequent sailings on smaller vessels. (Note: the ongoing JTC Vessel Study will explore the costs and benefits of these options in more detail).
- **Traffic and Dock Space Management.** Strategies to reduce queuing outside of the holding area and lessen negative community impacts, including traffic management, metered exit queuing, minimized employee parking at terminals, reorganized flow and lane usage, and relocation of non-essential functions from immediate holding area.
- **Promotion and Marketing of Non-SOV Modes.** Strategies to encourage mode shift by providing incentives for increased use of HOV options. They include options such as partnering with Transportation Management Associations, expanding carpool definition and HOV priority, creating incentives for car-sharing pods at terminals, subsidizing taxi or rental car services, ongoing marketing and promotion of non-SOV modes of ferry access.
- **Parking and Holding.** Strategies to increase parking supply and efficiency, thus encouraging mode shift. Options include a parking reservation system, shared parking, decentralized holding, and increased parking capacity at terminals.

The WSTC, in collaboration with WSF, submitted to the Legislature recommendations for all of the operating and pricing strategies the ferry system should be pursuing, as appropriate, in the future. The complete joint recommendations on operating and pricing strategies can be found in Appendix I. While all of these strategies are recognized as having benefits to the ferry system, this section focuses on those strategies with the greatest potential benefits, upon which the Final Plan has been built.

### **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 also evaluated in terms of what it would cost the system to not implement 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 need 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 are cost effective relative to alternatives and described in further detail below.

### 11. TRANSIT ENHANCEMENTS

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In addition to other local benefits transit enhancements might provide with respect to commute trip reduction and improved traffic flow, the options included in this Plan are chosen to maximize a customer’s ability to shift mode of transportation. This will postpone the need to add additional vessels to the system and mitigate 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.

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 17 Summary of Transit Enhancements**

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

Exhibit 17 above summarizes these options, some of which will require coordination with highways, other regions, and local transit agencies. Appendix J 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 that 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.

Without the support of local transit agencies, there are still mode shift benefits to the improvements WSF can provide on its own, and those will be pursued. However, mode shift outcomes are expected to be highest with full support from local transit partners.

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

## 12. VEHICLE RESERVATIONS

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A vehicle reservation system is the primary demand management strategy included in this Plan. Under the current system, 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, and negative community impacts. Building larger holding areas would only partially improve the system, and would require significant capital investments and would increase operating costs.

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, and effects are felt by the neighborhoods and businesses 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 reduces 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, and frustration. 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.



### 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 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 \$280 million, compared to an investment in a reservation system of \$18 million.

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

- **Facility Approach.** Build larger terminals to hold all vehicles, including more extensive use of auxiliary and/or remote holding to accommodate vehicles during overload situation. This 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 vehicle reservation system, to move the overflow into a virtual queue and smooth out the arrival rate. Since there is a better 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 increase maintenance and other operating costs. 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, plus the annual cost to maintain and operate the service, or additional docking slips.

Historically, WSF has focused on a facility approach. For example, during the 1990s, 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 estimated at approximately \$1 billion in year of expenditure dollars.

More recently, given the significant reduction in WSF’s dedicated capital funding, a much less ambitious program of improvements has been identified that would address vehicle queuing outside terminals, primarily with remote holding facilities. This approach, which is designed to mitigate terminal traffic impacts at a low cost, is estimated to cost approximately \$280 million in capital costs.

In contrast, a vehicle reservation system would have much more modest acquisition and operating costs. Terminal updates and system capital investments required to implement a vehicle reservation system are estimated to be approximately \$18 million (\$11.5 million for terminal modifications systemwide, and \$6.5 million for the reservation system and back office equipment, software and systems, including design and contingencies). In addition, a vehicle reservation system is expected to require \$1 million per biennium in

operating costs (operating costs will be more fully evaluated as part of the pre-design report.). This investment effectively mitigates 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 continue to transfer the cost of terminal congestion to local communities.

When compared to the other alternatives (\$280 million to as much as \$1 billion), and considering its effectiveness with respect to demand management and benefits to communities around the ferry terminals, an \$18 million initial investment in a vehicle reservation system is a very cost-effective option. However, many ferry customers have concerns about how a reservation system would work for them. Because of this, WSF will take a route-by-route approach in order to determine the feasibility of a reservation system. Before a new reservation system is implemented, a pre-design report will be presented to the Legislature. The Legislature will decide whether there is sufficient merit to the system, and must approve it if the system is to go forward.

### Reservation Systems In Use Elsewhere

Most large ferry systems around the world have reservation systems, and their methods and experiences have created a knowledge base that will help WSF implement its own system. Many of the ferry systems using reservations are similar in size to WSF, and have a mix of commuter and tourism ridership as well. Several ferry systems in North America as well as the rest of the world were contacted to see how they administer reservations and the policy issues they addressed.

WSF studied these operations when evaluating the feasibility of the system proposed for this Revised Draft Plan. The ferry systems of interest were:

- BC Ferries (Western Canada) – BC Ferries operates in geographical proximity to WSF's service area.
- iDO (Istanbul, Turkey) – iDO's reservation system is robust, real-time, and largely web-based.
- Wightlink (Isle of Wight, Great Britain) – Wightlink has some commuter-based ridership, similar to many of WSF's routes. Their reservation system is deployed broadly throughout their routes.
- Steamship Authority (Martha's Vineyard, Nantucket, Massachusetts) – an island based service similar to the San Juan Islands route serving local residents and seasonal tourists.





- Scandlines (Germany) – a variety of services including shorter commuter based routes and longer multiple hour crossings that are more oriented towards tourism and freight.
- Delaware River Bridge Authority (Cape May to Lewes, linking Delaware to New Jersey) – primarily recreational route with some commercial traffic.
- Bay Ferries (Nova Scotia) – access for island residents and tourist traveling from Prince Edward Island.
- Black Ball (Port Angeles to Victoria, B.C.) – primarily tourist and commercial traffic across the US/Canada border.

A summary of what was learned follows:

- The reasons the reservation systems were developed include customer convenience, more efficient management of traffic, and the elimination of traffic queues in communities where there are ferry terminals.
- The length of time reservations have been in place ranges from several decades for the more established systems to as little as five years. The systems with the longest history of reservations have updated their reservation system several times.
- The amount of space reserved varies by ferry system and routes within systems. Some sailings are reserved 100%, other systems have sailings with as low as 15% reserved.
- Customers make reservations on-line, by phone or, in some cases, in person. The percentage of on-line versus phone varies by system, but as a rule the newer systems have a higher percentage of on-line reservations than systems that have been in place for several decades.
- As they approach the terminal, there are a variety of ways the different ferry systems check people in – ranging from manually checking in with an attendant to fully automated. The latter can include a transponder in the car, a magstripe card with a personal identification number, or a printed booking with a barcode that is scanned. For security reasons, the system cannot be fully automated – there will always be an attendant at WSF terminals.
- All systems require some sort of deposit, to minimize the no-show rate. Some systems charge extra for reservations. One system discounts reserved travel (compared to first come/first serve) if it is booked online.
- Most of the ferry systems contacted have flexible operating policies about the variability of the customers' return trip home (for example, in case of a traveler with reservations getting stuck



in traffic, working later than anticipated, or if a doctor's appointment runs longer than anticipated). If a reservation is missed, most systems put the traveler on the next available sailing with no financial penalty. Several systems indicated that returning travelers often return via an earlier sailing than the one originally reserved – and that they can accommodate the traveler with available space.

### **Systemwide Elements of a Vehicle Reservation System**

While implementation details and schedules will vary from route to route based upon the unique ridership and operating characteristics of the individual routes and terminals, there are some common issues that would need to be addressed at each terminal:

- Percent of reserved spaces by sailing time, which would vary by route and sailing time.
- Preference given to spaces for:
  - Emergency vehicles
  - Vanpools and carpools
  - Commuters and frequent users on designated sailings
  - Local residents
  - Commercial traffic
- Reservation fees and partial or entire pre-payment of fares. WSF does not plan to charge a fee for use of a reservation system, but would charge a portion of the fare or the entire fare at the time a reservation is made.
- Timing and phase-in of the system. This would occur gradually, as reservations are tailored to each route and sailing time and customers become more accustomed to the system.
- How WSF could pursue opportunities to leverage WSDOT investments in central back office systems as they become available.

### **Key Implementation Issues of a Vehicle Reservation System**

Initial WSTC survey results and feedback received during public comment found that customers typically did not view a vehicle reservation system favorably. 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.



WSF recognizes that for it to be successful, a vehicle reservation system must be designed to work well for its customers as well as addressing the system's demand management needs. While potential implementation issues and operating policies will be addressed in more detail as part of a pre-design effort, WSF has critically analyzed reservation systems employed by other ferry systems and its own experience at Port Townsend-Keystone and Anacortes-Sidney to identify preliminary operating policy issues and key concerns frequently raised by customers.

- How would the customer make and complete a reservation? As noted above, a vehicle reservation system would not require a fee, but would require a form of pre-payment, most likely all or part of the vehicle fare. Cutoff times for making a reservation and for showing up to use the reservation on a particular sailing would be developed with community input as the system is phased in over time. Operationally, the lower the percent of capacity reserved, the more in advance the arrival would need to be, so stand-by vehicles could be loaded in time to meet the schedule. These times would be subject to review and evaluation as part of the system design process.
- What happens if a user misses a reservation? The system would need to have policies guiding how this would work for the customer, for example by transferring the reservation to another sailing, obtaining a credit for a future sailing, receiving a refund, or arriving for the next sailing with priority status in the standby lane. If advance notice was not given, or if the arrival cutoff time was missed, the system would have to have policies on what happens; for example, would the user join the standby line and travel on the next available sailing, and at what point would the user lose some or all of the pre-payment?
- What happens if the ferry system cancels a sailing? WSF would need methods to accommodate passengers with reservations, such as diverting them to alternate routes where possible or giving refunds or credits. When service was restored, how will customers with reservations on earlier sailings be given priority over those with reservations on later sailings?
- Would policies be different for residents, frequent users, and tourists? It will be possible to have a resident and/or frequent user program that would set aside a share of each sailing to give priority to these users for high demand and commute sailings. Customers enrolled in a resident or frequent user program would also be able to make multiple reservations at one time.
- How would a vehicle reservation system differ by route? Many facets of the vehicle reservation system would differ by route.

These include advance arrival requirements, the percentage of each sailing that is reserved, and the percent of each sailing set aside for residents or frequent users.

- How can the ferry system ensure a vehicle reservation system will work? A working vehicle reservation system would begin by identifying the “right” technology, and then making the necessary facility improvements to accommodate the chosen reservation system. The vehicle reservation system will be implemented slowly, with only specific sailings requiring reservations on select routes at first. As operational issues are identified and resolved, routes and sailings will gradually be added to the system. This full system roll out would likely take several years, with input from stakeholders on each route
- How do customers deal with the loss of spontaneity? Although customers will have to change their approach to using WSF, the reservation system will actually improve customers’ abilities to make spontaneous travel decisions. A reservation system would reduce the instances where a customer decides to take a ferry on the spur of the moment, only to arrive at the terminal and find the sailing full. Using the system, the user could find out ahead of time if space is available on the sailing, and reserve that space if desired. If space was not available, the user could make a reservation on the next available sailing and spend the waiting time productively instead of at the terminal.
- Finally, how will we measure success? WSF would develop a set of measurements to indicate how well the system is functioning to meet customer needs as well as addressing demand management effectiveness. These measures would be used to make adjustments to reservation system policies and operations.

Given the significant operational change it represents, implementation of a vehicle reservation system would happen gradually, in a phased approach.

### **Future reservation system uses**

WSF expects a reservation system to be a key element in its marketing program. Ideally, it would be linked with other State facilities, such as parks.



## 13. OTHER OPERATIONAL STRATEGIES

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In addition to the 90 operational strategies originally considered for inclusion in this Plan, other strategies believed to have significant cost efficiency benefits (though little to no effect on demand management) were also identified.

### 13.1 Fuel Saving Strategies

Fuel costs comprise a significant portion of WSF's operating costs. The JTC Vessel Study evaluated strategies to conserve fuel consumption.

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

Exhibit 18 below details the fuel conservation strategies that WSF has already identified.

**Exhibit 18  
Fuel Conservation Initiatives**

Vessel Class	Fuel Saving Initiative	Predicted Savings	Status
<b>Vessel Specific Strategies</b>			
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	Upgrade control systems 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
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
<b>Systemwide Strategies</b>			
	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.



## 13.2 Other Strategies

In addition to fuel cost saving strategies, WSF is examining ways to more aggressively expand non-fare operating revenue streams. Some avenues for consideration might include:

- Concession sales in terminals and on vessels. WSF currently generates a small portion of its operating revenues from the sale of concessions on vessels and in terminals. It will pursue strategies to grow this revenue stream.
- Naming rights. WSF has received inquiries and expressions of interest from private parties in buying naming rights. WSTC has been directed by the Legislature to consider selling naming rights.
- Advertising. WSF currently generates a small portion of its operating revenues from the sale of advertising space on vessels and in terminals. It will continue to pursue these activities and explore ways to grow advertising revenues.
- Co-development Opportunities. WSF has identified three potential terminals where co-development opportunities might be a feasible option. Such opportunities would enable WSF to leverage private sector investment in capital facilities (see sidebar on page 99 for more information).

### **Future Role of Passenger-Only Ferries**

As per the legislative direction provided during the 2006 session, the 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.

### WSF and Passenger-Only Ferries

WSF provided POF service between Vashon and downtown Seattle between 1990 and 2008, until July 2008 when 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. The Snohomish and Chinook were sold in 2009. King County has created a ferry district and has contracted with WSF to operate a route between Seattle and Vashon. The King County Ferry District will assume responsibility for Vashon to Seattle service on September 26, 2009.





## 14. PRICING

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### 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 Long-Range Plan, there are two key objectives associated with pricing strategies: (1) to generate sufficient revenue to meet the fare revenue requirement 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.

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 were also incorporated.

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

### 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 vehicle reservation system, and the following analysis details options and incentives WSF can use in conjunction with a vehicle reservation system to elicit 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.

### 14.1 Pricing and a Vehicle Reservation System

As proposed, there will be no additional fees associated with the vehicle 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 vehicle 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 avoid paying extra.

### 14.2 Fuel Surcharge

Fuel is a large 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 up and down to reflect increases and decreases 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. The surcharge would be reduced when fuel prices fell.

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 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 19 below, with a few notable exceptions, the average per gallon price of diesel fuel has been relatively stable over

#### 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.

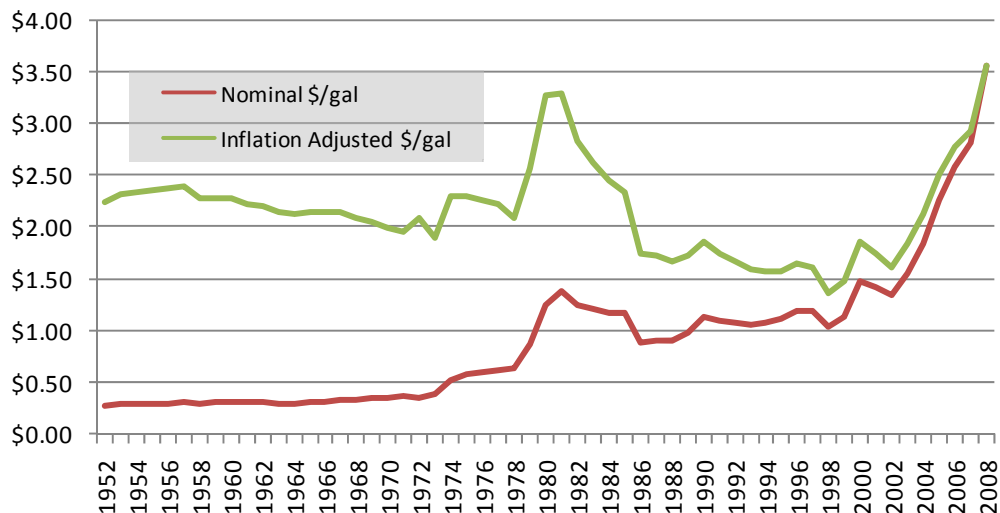


the period in question. As a result, setting the base price to the long-term inflation-adjusted price of fuel would incorporate the “typical” level of fuel costs experienced by WSF.

A fuel surcharge would be introduced to the extent that the actual current cost of diesel would differ substantially from this long-term average.

The 2009-11 transportation budget requires that, if the WSTC considers implementing a fuel surcharge, it must first submit an analysis and business plan to OFM and the Legislature.

**Exhibit 19**  
**Historic Fuel Prices (1952-2008)**



Source: Energy Information Administration, 2008.

### 14.3 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 with public input.

In the near term, the strategies discussed above will be the system’s primary area of focus. Depending upon actual experience with a vehicle 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 K.

Some of the pricing strategies evaluated would be difficult to implement given that WSF only collects fares in one direction on many routes. For this reason, one-point toll collection issues were

also evaluated as part of this long-range planning process. For more detail on one-point toll collection, please see Appendix L.

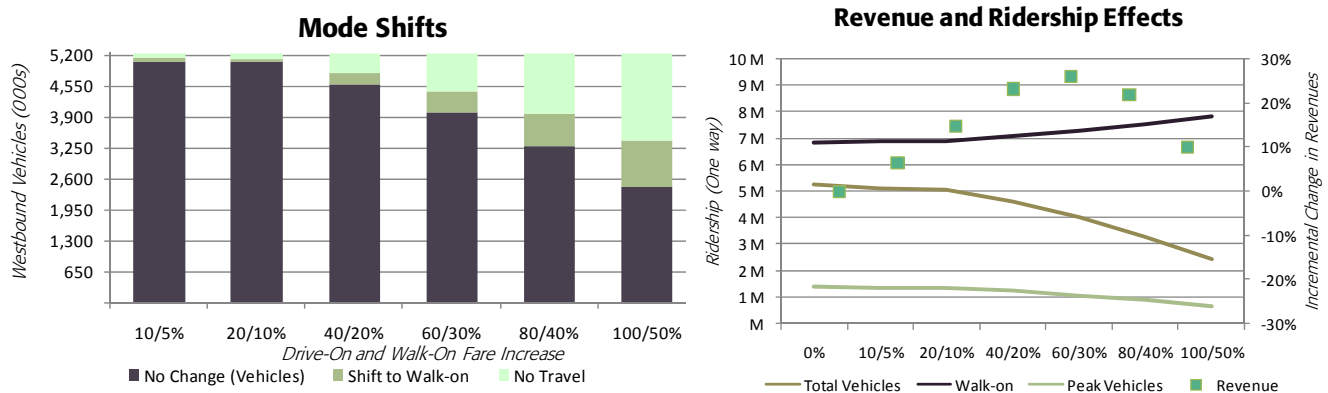
The three strategies discussed below have been brought forward because they have demand management benefits and are narrowly targeted strategies that together could be revenue neutral while providing benefits to local customers. As such, they are likely to be considered for implementation prior to other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

### 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 20 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 20**  
**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.

The Legislature specifically directed that vehicles and passenger fares be changed by the same percentage. This pricing strategy will not be used, but remains in the toolbox for future consideration.

### **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 on 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 13 feet, though some very small commuter cars that are popular in Europe and Asia are being successfully introduced to the US market. There are also significant operational issues associated with small car prices. The ticket seller would need a means of determining vehicle size. Without a definite means of measuring car length, each seller would have to estimate size or be able to recognize qualifying makes and models. This is currently a problem in distinguishing between vehicles over and under 20 feet. Ultimately this would lead to more time at the toll booth and fare disputes.

### 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, such a program might be feasible as long as “non-resident” is defined as out-of-state.

The revenue impact such a policy might have is uncertain, and WSF will continue to evaluate this option for potential future implementation. As with pricing by size, non-resident differentials have implementation issues. Ticket sellers do not see license plates and do not ask for driver licenses. License plate recognition equipment is available, but is expensive.

### Pricing Strategies for Future Consideration

Once WSF has fully implemented the proposed vehicle 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).



## SERVICE PLAN AND INVESTMENT NEEDS

The goal of this Plan is to identify a single package of service improvements, demand management strategies, LOS standards, and funding requirements that is responsive to the legislative direction set forth during the 2009 session, 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.

The Revised Draft Plan submitted to Legislature on January 31, 2009 presented two different visions (“bookends”) for the future of WSF. Scenario A assumed that current levels of service remained constant with minor improvements, operational strategies were implemented over time, and several new vessels would come online. Scenario B assumed a reduced State-run marine highway system and that most operational strategies would be implemented over time. The detailed discussions of Scenarios A and B are included in Appendix M as a reference.

Using these two scenarios as bookends, the Legislature offered a number of clear policy directives, which have been incorporated into this Final Long-Range Plan. These directives include:

- Funding support so that existing service levels can be maintained.
- Funding support of capital projects to include essential projects that are absolutely necessary to support existing service levels.
- Deferring projects that are either not immediately necessary or where the benefits have not yet been adequately demonstrated.

In addition to the above directives, there was conditional support for two key operational strategies:

- Vehicle reservations (a final decision will come in the 2010 legislative session after a pre-design report due November 2009).
- Transit enhancement investments in terminals, which will be



### Moving Washington

Moving Washington is WSDOT's vision for prioritizing transportation investment over the next 10 years to increase mobility and reduce congestion. Its three strategies are:

- Adding capacity strategically to best use limited resources
- Operating efficiently to get the most out of infrastructure
- Managing demand by offering more choices

The Long-Range Plan aligns with the vision and strategies of Moving Washington:

- Reservations delay the need to upgrade terminals and boats by maximizing the use of existing assets
- There are strategic capacity improvements achieved through the replacement of retired and retiring vessels with larger capacity vessels
- Reservations and pricing strategies manage vehicle demand by encouraging mode and time shifts



reviewed as the need is demonstrated over time through growth in walk-on passengers and an assessment of the availability of local transit service.

## 15. LEGISLATIVE PLAN COMMITMENT

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The Legislative policy direction was incorporated into the Legislature's 16-year final plan. This plan captures the level of future funding commitment for the operating and capital programs that were approved as part of the 2009 legislative session.

This section includes a discussion of the program-level detail contained in the 16-year legislative funding plan. This section also extends the basic logic that underlies the 16-year legislative funding plan by six additional years. This 22-year plan represents a vision of the future for ferry services.

### 15.1 Operating Program

The package of operating and pricing strategies will assume a continuation of current service levels with minor adjustments to reflect vessel deployment changes due to vessel acquisitions and recommended vessel slowing to reduce fuel consumption.

The proposed vehicle reservation system would be such a fundamental change in how customers make use of ferry services, that it is difficult to estimate the actual ridership response. Recognizing this, the proposed operating program will provide marginal capacity improvements on several routes related to the vessel procurement program.

The vessel procurement program also restores the system's capability of having a viable standby vessel so that service can be maintained in the event of a vessel breakdown.

### Proposed 2030 Service Details

The proposed vessel deployment plan is shown in Exhibit 21 for both 2015 (which is the end of the first vessel procurement cycle) and for 2030 (which is the end of the second vessel procurement cycle). **Error! Reference source not found.** uses the summer sailing schedule to illustrate the specific impacts to routes from new vessel deliveries. Appendix N includes similar exhibits for all schedule seasons.

**Exhibit 21  
Summary of Proposed Long-Range Plan  
Fleet Deployment**

2015 Proposed Fleet Deployment Plan				
Route	# of Vessels	Fall, Winter, Spring	Shoulder	Summer
Bainbridge	2	2 Jumbo		
Bremerton	2	2 Large		1 Medium 1 Jumbo
Clinton	2		1 Large 1 Medium	
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)		4 Large
Interisland	1	1 Small (Winter)		1 Mid-Size
Fauntleroy-Vashon-Southworth	3		2 Medium	
				1 Mid-Size
<b>Total Deployed</b>		<b>17</b>	<b>18</b>	<b>19</b>

2031 Proposed Fleet Deployment Plan				
Route	# of Vessels	Fall, Winter, Spring	Shoulder	Summer
Bainbridge	2	2 Jumbo		
Bremerton	2	2 Large		1 Large 1 Jumbo
Clinton	2	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 Medium
Interisland	1	1 Small (Winter)		1 Mid-Size
Fauntleroy-Vashon-Southworth	3		2 Medium (2 in Winter)	
				1 Mid-Size (Winter Only)
<b>Total Deployed</b>		<b>17</b>	<b>18</b>	<b>19</b>

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

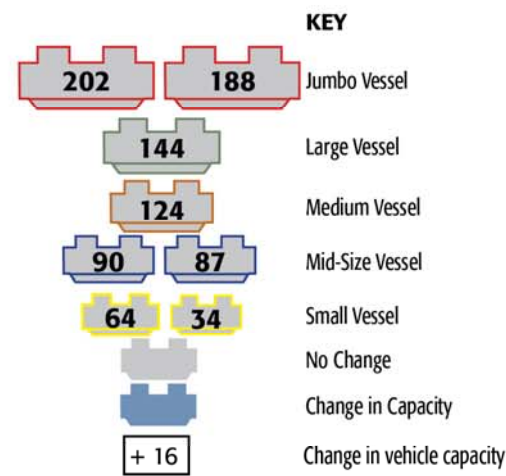






### Exhibit 22 Vessel Assignments & Procurement Impacts – Final Long-Range Plan (Summer)

	2009-11	2011-13	2013-2025	2025 - 2031
<b>Anacortes - Sidney</b> (Vessel makes two daily round-trips to Sidney & one to San Juans)	124	124	144 + 20	124
<b>Anacortes - San Juan Islands</b>	144 144 144	144 144 144	144 144 144 New	144 New 144 New 144 New
<b>Interisland</b>	87	87	90	90
<b>Port Townsend - Keystone</b>	64 64 + 64	64 64 + 64	64 64 + 64	64 64 + 64
<b>Mukilteo - Clinton</b>	124 124	124 124	144 New 124 + 20	144 New 144 New + 40
<b>Edmonds - Kingston</b>	202 188	202 188	202 188	202 188
<b>Seattle - Bainbridge</b>	202 202	202 202	202 202	202 202
<b>Seattle - Bremerton</b>	124 188	124 188	124 188	144 New 188 + 20
<b>Fauntleroy - Vashon - Southworth</b>	87 87 124	87 87 124	124 87 124 + 37	124 124 124 + 74
<b>Pt. Defiance - Tahlequah</b>	48	64 + 16	64 + 16	64 + 16
<b>Standby (emergency reserve)</b>	34	34	87 + 53	144 + 110
<b>Maintenance Reserve</b>	144 90	144 90	144 124	144 New 124



- Two 64-car vessel (Island Home) are delivered
- Funding for one 64-car vessels (under construction)
- Two new 64-car vessels are delivered; one in 2010 & one in 2011 (Port Townsend - Keystone)

- 64-car vessel program is complete; delivery of final 64-car vessel
- Start new 144-car vessel program
- One new 64-car vessel is delivered (Pt. Defiance - Tahlequah) in 2012
- Rhododendron is retired

- Two new 144-car vessels are delivered
- One new 144-car vessel is delivered in 2014 (Mukilteo - Clinton)
- 124 from Mukilteo - Clinton moves to Fauntleroy - Vashon - Southworth and increases route capacity
- One new 144-car vessel to San Juan Domestic in 2014. 144 from San Juan Domestic moves to Sidney and increases route capacity to both Sidney and San Juan Domestic routes
- 124 from Sidney moves to Fauntleroy - Vashon - Southworth and increases route capacity
- 87 bumped from Fauntleroy - Vashon - Southworth increases standby capacity
- Evergreen State and Hiya are retired

- Five new 144-car vessels are delivered
- One new 144-car vessel is delivered in 2027 (Mukilteo - Clinton)
- 124 from Mukilteo - Clinton moves to Fauntleroy - Vashon - Southworth and increases route capacity
- Two new 144-car vessels are delivered in 2028 and 2029 (San Juan Domestic)
- One new 144-car vessel to maintenance in 2028 moves Hyak to standby and retires Klahowya
- One new 144-car vessel is delivered in 2029 to Bremerton.
- 124 from Bremerton moves up to Sidney
- Tillikum and three 144-car vessels are retired (Elwha, Kaleetan, and Yakima)





**Seattle-Bainbridge**

- Two 202-car Jumbo Mark II vessels running full-time year-round.

**Seattle-Bremerton**

- At the end of the planning period there would be two 144-car vessels running in the fall, winter, and spring; one 144-car and one 188-car Jumbo Mark I running in the summer. Beginning in 2015, the second new 144-car vessel will run in the fall, spring, and winter replacing a 124-car vessel. Beginning in 2029, a new 144-car vessel will run in the summer and replace a 124-car vessel.

**Mukilteo-Clinton**

- Current service is provided by two 124-car vessels. The first new 144-car vessel delivered would replace a 124-car vessel in 2014. Beginning in 2027, a new 144-car vessel would replace the remaining 124-car vessel.

**Edmonds-Kingston**

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

**Fauntleroy-Vashon-Southworth**

- By 2015 one of the two 87-car Evergreen Class vessels, would be replaced by a 124-car vessel.
- By 2030 there will be three 124-car vessels operating fall-winter-spring on this route and two 124-car and the 90-car Sealth would operate in winter.

**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 in 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 2012.

**San Juan Islands and International**

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 vessel. As with the existing winter schedule, the interisland vessel would not operate on weekends, and one of the

Changes in Financial Assumptions

Since release of the Revised Draft Long-Range Plan on January 31, 2009, a number of changes have been made to the revenues and costs presented in this document.

Many of the updates reflect legislative direction and are discussed in detail in this Final Plan.

In addition to the programmatic changes, a number of other refinements and modifications were made as follows:

- Revenue forecasts updated to June 2009 State forecast
- Review and modifications to cost escalation assumptions
- Re-scoped several terminal projects
- Updated cost estimates for reservations
- Reduced administrative and support costs associated with on-going capital support functions





144-car vessels would be crewed nine hours per day Monday through Thursday. Currently there is no Sidney service during the winter.

Spring and Fall. Anacortes-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. All vessel assignments would be implemented with the deployment of the second 144-car vessel in 2015. Sidney service would be provided for one round-trip per day with the 124-car vessel Chelan.

Summer. Two round trips to Sidney with the 124-car Chelan, three new 144-car vessels would be assigned to the route from Anacortes to the San Juan Islands. However, between 2013 and 2025 a 144-car vessel will replace the 124-car Chelan on the Sidney route. The ferry system could continue to operate with an increased capacity in the San Juans after 2025, however this would reduce the amount of maintenance weeks for the 144-car vessel class and would require that one of the new 144-car vessels be built to SOLAS standards.

Interisland. The interisland vessel provides necessary connections between the four ferry-served San Juan Islands. By one vessel providing interisland service, the other vessels on the route can 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 capacity 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, traffic either has to turn around on the vessel or back on, so 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, because:

- It has an unobstructed car deck for turning large interisland vehicles around instead of backing on.
- There is flexibility to use the Sealth 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.

## 15.2 Capital Program

With the passage of the 2009-11 Budget, the Legislature provided WSF with direction on how it intends to fund the first 16 years of the Long-Range Plan.

The Legislative plan funds capital projects that are absolutely necessary to support existing service levels. This includes the preservation of terminals and vessels, replacing retiring vessels (largely in-kind), funding selected terminal improvements, and providing an allowance for emergency repairs and vessel improvements to meet regulatory (i.e. Coast Guard) requirements.

The Long-Range Plan has taken this direction and extended it six more years to construct a full 22-year plan of capital expenditures. This 22-year capital program is summarized below in Exhibit 23.

Some of the WSF capital needs that were identified in the Revised Draft Plan were determined by the Legislature to be non-essential and excluded from the current level of Legislative commitment. These projects could be reconsidered in the future, if conditions changed or additional funding sources, primarily Federal, were to become available. These projects will be discussed in the next section.

### Exhibit 23 22-Year Capital Expenditures (YOE\$)

	Emergency Repairs	Terminal Preservation	New Vessel Construction	Terminal & Vessel Improvements	Vessel Preservation	Admin, Support, & Indirect	Expenditure Total
2009-11	6.3	50.7	117.3	36.2	50.3	24.0	284.8
2011-13	4.6	69.3	139.4	24.4	33.4	21.2	292.3
2013-15	4.9	55.9	249.0	20.6	68.3	21.7	420.4
2015-17	5.2	173.2	0.0	40.6	101.6	22.3	342.9
2017-19	5.6	95.9	0.0	24.2	98.9	23.1	247.8
2019-21	6.0	129.2	0.0	7.3	99.1	24.0	265.6
2021-23	6.4	49.3	0.0	7.8	112.7	24.9	201.1
2023-25	6.9	49.2	13.6	7.5	126.8	25.8	229.8
<b>16-Yr Subtotal</b>	<b>46.0</b>	<b>672.7</b>	<b>519.2</b>	<b>168.5</b>	<b>691.1</b>	<b>187.0</b>	<b>2,284.6</b>
2025-27	7.4	129.7	655.7	8.0	140.5	26.8	968.0
2027-29	7.9	79.3	718.7	8.6	219.5	27.8	1,061.8
2029-31	8.5	103.4	0.0	9.2	227.2	28.8	377.1
<b>LRP Total</b>	<b>69.8</b>	<b>985.1</b>	<b>1,893.6</b>	<b>194.3</b>	<b>1,278.2</b>	<b>270.4</b>	<b>4,691.5</b>



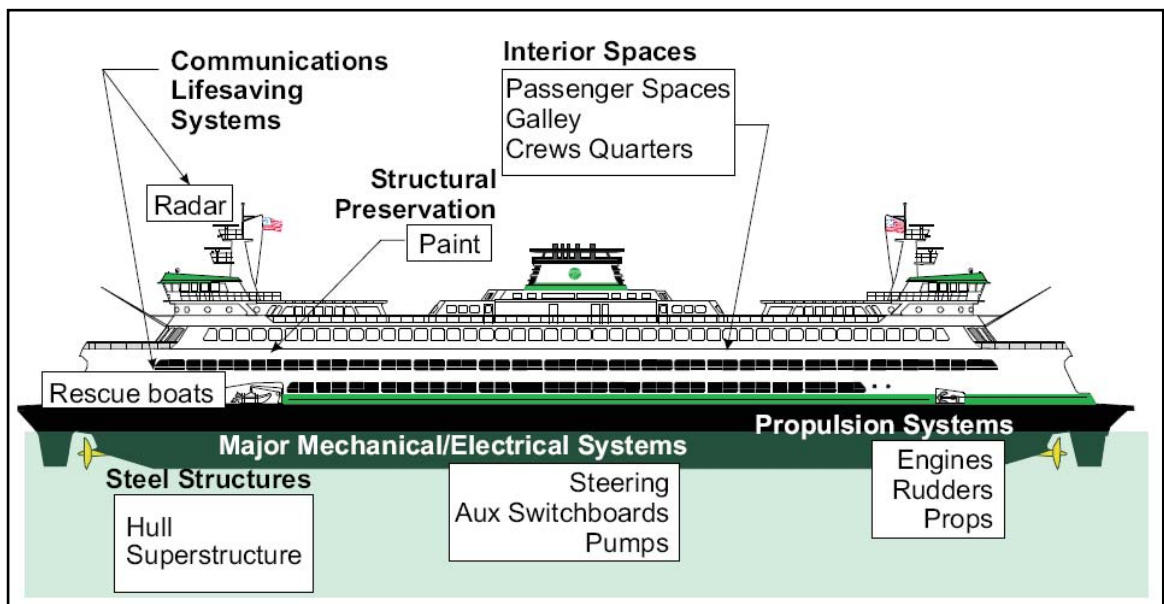
## Vessel Program

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 35 years (with oldest vessel being 62 years old, and the newest being 11 years old). 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. Procurement of new vessels
3. Improvements

For purposes of the following discussion, Exhibit 24 below shows examples of vessels systems that typically that require preservation and improvements.

**Exhibit 24**  
**Examples of Vessel Systems**



Vessel Preservation. Vessel preservation needs are developed using the Life Cycle Cost Model (LCCM), which identifies when assets are expected to be replaced, based on current condition ratings and an expected useful life. The total 22-Year cost of this program is estimated to be \$1.2 billion (YOES).

Vessel Improvements. The plan includes approximately \$83 million over 22 years to address future vessel improvement needs. These include investments in the following three areas:

- Fuel conservation. These vessel investments are designed to support the fuel conservation program in the 2009-11 biennium. No further investments are assumed, because in new vessels, fuel conservation measures will be incorporated into the design.
- Regulatory-related and other target improvements. This is a biennial allowance of about \$3.6 million to address issues raised by regulatory compliance agencies, such as the Coast Guard or the EPA, as well as 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.

Emergency Repairs. Consists of expenditures related to the emergency repair of vessels.

Vessel Procurement. The most significant capital funding need over the next 22 years is new vessel acquisitions to support the upcoming retirements of several aging vessels in the fleet. The proposed procurement program, summarized in Exhibit 25, includes the following elements:

- In the near-term, acquire three Island Home Class vessels estimated to cost a total of \$184.2 million (YOE\$).
- Invest approximately \$17.6 million in the Hyak to extend its life 20 years.
- After the initial three Island Homes are built there will be a procurement of 144-car vessels, assuming funding is available. The first grouping will include the procurement and construction of two 144-car vessels. Both will be constructed and delivered in 2014. The total procurement costs of new vessels constructed between 2010 and 2014 are estimated to be \$321.4 million (YOE\$). (see sidebar for discussion of alternative procurement plan).
- A second procurement grouping of 144-car vessels will include five additional vessels with pre-design beginning in 2024 and the first delivery to occur in 2027. The total new vessel costs of the last five vessels are estimated to be \$1,387.9 million (YOE\$); this includes pre-design expenditure totals of \$13.6M (YOE\$).
- Once the second new 144-car vessel is built and put into operation in 2014, WSF will be able to maintain a de-crewed 87-

Implications of Alternate Initial Procurement Plan (4+1)

For the purposes of the operating plan contained in the 22-Yr Long-Range Plan, the funding assumption is that initially, three Island Home 64-car vessels will be constructed, followed by two 144-car vessels.

An alternative option that could be considered would be to construct four Island Homes and only one 144-car vessel. The fourth new 64-car vessel would allow an 87-car vessel to serve as a standby reserve and would also allow the Hiya to be retired. However, there are some disadvantages to this plan which include:

- **Fleet Composition.** Due to its small size, the 64-car vessel would not effectively substitute on routes more suitable for larger vessels. This limits the ferry system's flexibility in terms of serving the greatest number of routes.
- **Interisland.** The 4+1 plan would downsize the Interisland route by running the small 64-car vessel year-round instead of only in the winter. Given the fleet composition discussed above, additional service capacity would not be possible for other routes.



car vessel to serve as standby so that it will be available for emergency backup service.

This vessel procurement program results in a fleet of 22 vessels, which provides sufficient capacity to meet fleet preservation needs while maintaining an adequate standby vessel.

Exhibit 25  
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)
<i>Procurement #1 (144's)</i>		
2014	144-car vessel #1	Replace the Evergreen State
2014	144-car vessel #2	Restore standby/reserve capacity; 87-car vessel moved to standby
<i>Procurement #2 (144's)</i>		
2027	144-car vessel #3	Replace the Tillikum
2028	144-car vessel #4	Replace the Klahowya
2028	144-car vessel #5	Replace the Elwha
2029	144-car vessel #6	Replace the Kaleetan
2029	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. This procurement program was developed in response to several changes in conditions, including:

1. Financial and funding challenges in the next biennial budget
2. Findings and recommendations from the JTC Vessel Acquisition Sizing and Timing report

The revised program better reflects the current and expected needs of the system, assuming a continuation of current service levels, and extends vessels to their full service lives before retirement. The Legislature has directed WSF to develop a comprehensive vessel maintenance plan. The purpose of this plan is to ensure that out-of-service time is minimized across the fleet.

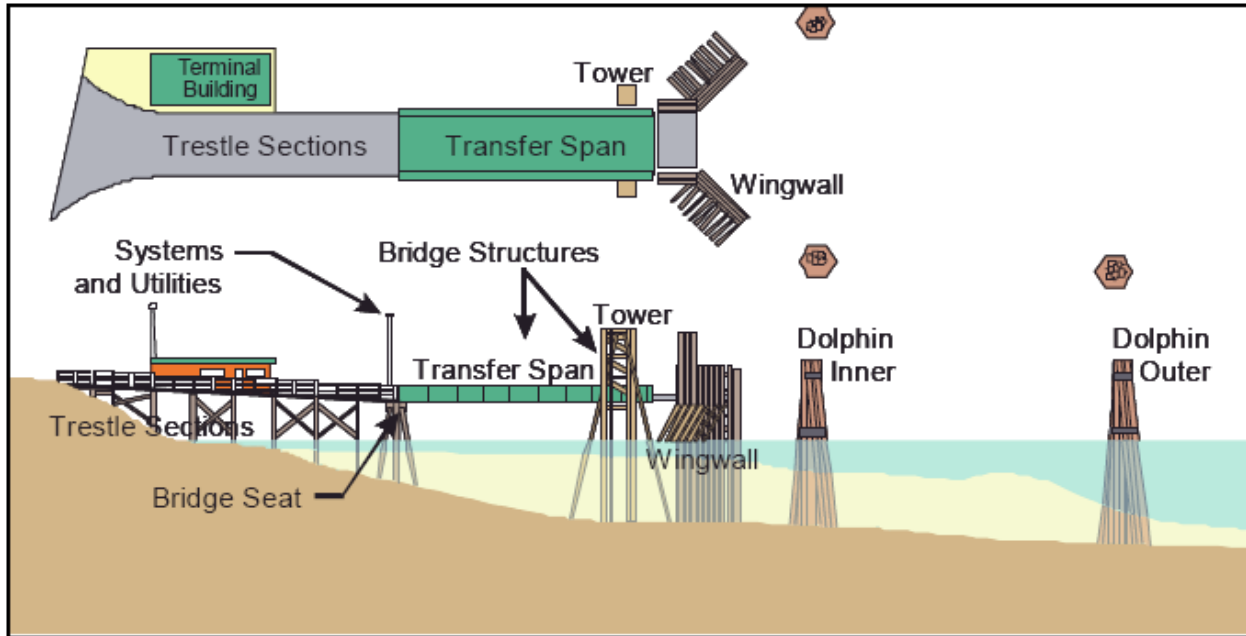
Maintenance Plan. WSF has been asked by Legislature to assess the design of its vessel maintenance plan in order to minimize vessel out-of-service time and free-up additional weeks of stand-by. By minimizing vessel out-of-service time, WSF may be able to operate with one fewer vessel. The cost savings impact to the

operating and capital programs would include reduced fixed vessel costs and a reduced vessel construction program.

**Terminal Program**

For purposes of the following discussion, Exhibit 26 below shows examples of terminal systems that typically require preservation and improvements.

**Exhibit 26  
Examples of Terminal Systems**



Terminal Preservation. The preservation program for terminals focuses on identifying the needs for operating at current service levels and maintaining, preserving, and replacing existing capital assets. Terminal preservation needs are developed using a Life Cycle Cost Model (LCCM), which has been updated for current facility condition ratings and to reflect current costs of asset replacement. Legislative direction for the 16-Year Plan was to reduce work on non-vital systems to get closer to WSF's asset maintenance performance goals, and to defer projects not due in the LCCM. Total asset maintenance costs for the 16-Year Plan amount to \$570.0 million (\$ '08). Extending the Plan six more years would add an additional \$247 million (\$ '08). Exhibit 27 provides a brief summary of the key preservation activities at each facility.



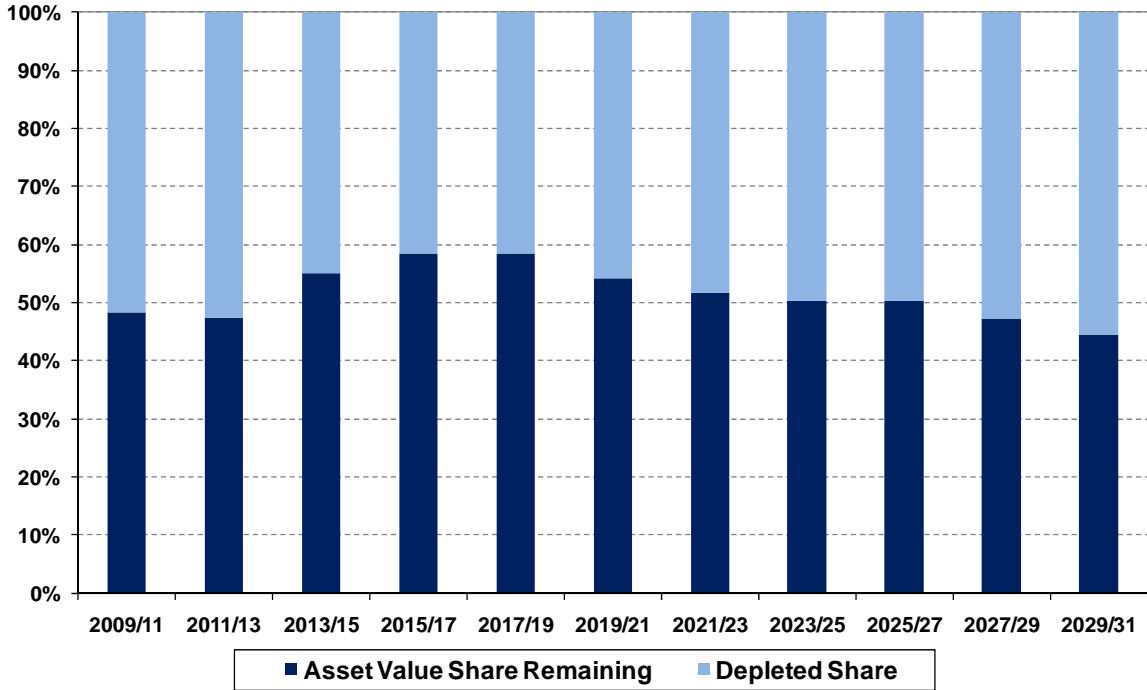
**Exhibit 27  
Summary of Essential Terminal Preservation Projects  
(\$ '08 millions)**

<b>Terminal</b>	<b>Buildings &amp; Overhead</b>					<b>Total</b>
	<b>Slip Preservation</b>	<b>Trestle</b>	<b>Wingwalls &amp; Dolphins</b>	<b>Loading</b>	<b>Other</b>	
Point Defiance	\$1.1	\$3.5	\$10.6	\$0.9	\$0.7	<b>\$16.8</b>
Tahlequah	\$1.1	\$4.0	\$5.1	\$0.3	\$0.6	<b>\$11.0</b>
Fauntleroy	\$1.6	\$34.0	\$7.1	\$1.8	\$1.6	<b>\$46.1</b>
Southworth	\$1.0	\$15.5	\$7.9	\$2.2	\$1.3	<b>\$27.9</b>
Vashon	\$2.3	\$32.5	\$18.5	\$3.2	\$1.8	<b>\$58.2</b>
Seattle	\$27.2	\$101.2	\$19.4	\$69.3	\$3.6	<b>\$220.6</b>
Bremerton	\$9.6	\$0.0	\$16.8	\$3.4	\$1.1	<b>\$30.9</b>
Bainbridge	\$4.1	\$0.0	\$14.1	\$8.7	\$1.7	<b>\$28.6</b>
Edmonds	\$1.0	\$8.0	\$13.6	\$3.6	\$1.4	<b>\$27.7</b>
Kingston	\$7.7	\$1.0	\$27.8	\$7.1	\$1.2	<b>\$44.8</b>
Clinton	\$2.0	\$0.0	\$13.0	\$2.4	\$2.3	<b>\$19.7</b>
Mukilteo	\$2.5	\$0.0	\$6.1	\$0.0	\$0.0	<b>\$8.6</b>
Keystone	\$11.1	\$0.0	\$6.6	\$0.0	\$0.9	<b>\$18.6</b>
Port Townsend	\$18.5	\$0.0	\$7.0	\$0.3	\$2.6	<b>\$28.4</b>
Anacortes	\$8.0	\$17.7	\$21.4	\$39.7	\$7.5	<b>\$94.3</b>
Friday Harbor	\$1.5	\$8.4	\$7.9	\$1.6	\$3.1	<b>\$22.4</b>
Orcas	\$4.6	\$2.8	\$7.1	\$1.0	\$1.4	<b>\$17.0</b>
Lopez	\$11.7	\$2.2	\$6.5	\$0.7	\$1.6	<b>\$22.8</b>
Shaw	\$1.3	\$3.2	\$3.1	\$0.1	\$0.3	<b>\$8.1</b>
Eagle Harbor	\$4.4	\$15.3	\$22.9	\$18.3	\$3.7	<b>\$64.6</b>
<b>Total</b>	<b>\$122.2</b>	<b>\$249.3</b>	<b>\$242.6</b>	<b>\$164.5</b>	<b>\$38.4</b>	<b>\$817.0</b>

As shown in Exhibit 28, 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 28**  
**Asset Value Remaining per Biennium (All Terminals)**



Terminal Improvements. Legislative direction for the Long-Range Plan reflects some modest terminal improvements, where these improvements can be demonstrated to add significant value. All improvements projects fall within the 16-year funding timeframe and total \$125.6M (\$ '08), of which \$99.2 million (\$ '08) is funded from expected resources. One improvement project is scheduled to be completed at Edmonds in the 2029-31 biennium and will total \$26.0M (\$ '08). The difference will likely need to be made up through higher federal funding commitments for several key projects. A summary of the major terminal improvement elements include:

- Major terminal projects at Mukilteo, Seattle, Anacortes, and Edmonds \$114.5 million (\$ '08). The Edmonds improvements are assumed to occur outside the 16-year legislative planning window.
- Addition of modifications to support the proposed vehicle reservation program \$16.4 million (\$ '08).
- Modest improvements including utility investments, building preservation, seismic strengthening and ADA requirements \$20.7 million (\$ '08).



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

### *Vehicle Reservation System*

A vehicle reservation system is the key adaptive management strategy included in this Plan, moving vehicle queues away from the terminals and better distributing traffic.

The total capital costs of a vehicle reservation system are estimated to be \$16.4 million (\$ '08). The Legislature requires WSF to conduct the following before implementation:

- Develop a pre-design report and submit to the JTC before implementation of a pilot project and eventual broad implementation, and
- Conduct evaluations to ensure that the reservation system is working together with the current Wave2Go Electronic Fare System (EFS) and ORCA.
- The pre-design report will also ensure that the reservation system is consistent with an eventual move to a statewide WSDOT tolling back-office system.

### *Major Terminal Projects*

- Mukilteo Relocation. 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 and removal of traffic conflicts at the existing site, but it does not include overhead loading. The total cost of the entire project is \$106 million (\$ '08). This will be partially offset by \$70 million of avoided preservation needs at the current facility (with no realignment), making the net cost of the new facility \$46 million.

Legislative direction was to continue environmental and archeological studies in the 2009-2011 biennium to determine the feasibility of moving the terminal. Currently total funding for the project is about \$55.0 million (\$ '08); \$63.3 million (YOES). The Legislature has directed WSF to seek federal funding to support the higher cost of moving the terminal.

- Seattle. The majority of the major Seattle terminal costs relate to preservation (\$220.6M), where significant elements of the current facility will need to be replaced during the next 20 years including, the north trestle and the terminal building. In addition to the major rebuild elements, improvements would include funding for terminal building electrical upgrades of about \$7.1 million (\$ '08).

- Anacortes. This project includes the construction of a replacement building and associated terminal reconfiguration to improve circulation. The building replacement was found to be desirable as a preservation matter. This new building would be larger and better suited to the longer wait-times that are typical at this facility, especially in the summer. The cost of this project was estimated to be \$26.4 million (\$ '08). The project has been approved by the Legislature but only if WSF can secure federal funds for this project.
- Edmonds. The Plan assumes that the Edmonds terminal will remain in its current location. An allowance of \$26 million is included to enhance multimodal connections.

#### *Other Projects*

Projects in this category include relatively minor terminal improvements (most are below \$1.0 million) such as seismic retrofits, EFS, and security improvements. Funds for relocating tollbooths to a side-by-side configuration at Port Townsend were included to improve fare collection.

## 16. ADDITIONAL LONG-TERM FERRY NEEDS

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### **Projects Needs Beyond the 16-Year Legislative Budget**

The Legislature limited the funding commitment to capital projects that were determined to be essential for continuing current service levels. This reflects a significant focus on vessel and terminal preservation needs and vessel replacement investment requirements, and to a much smaller degree on terminal improvements.

During Plan development, a number of terminal projects have been identified that would meet specific service enhancement needs or otherwise provide potential benefits to customers and communities. Some of these projects have preliminary legislative support, but a funding commitment is contingent on other factors, such as additional funding from other sources (federal, regional, or local) or operational considerations (ridership growth, increased walk-ons, etc.). Exhibit 29 below summarizes the deferred projects.



### Possible Crew Endurance Needs

The US Coast Guard has required the Ferry System to eliminate touring watches due to concerns about the effect of these types of shifts on crew endurance and fatigue levels.

While the impact of these changes are still being worked through, there is a possibility that a new tie-up slip at Southworth might be the most effective approach to both meeting the Coast Guard concerns and maximizing service efficiency and overall cost effectiveness on the Southworth-Vashon-Fauntleroy route.

If this is determined to be the preferred approach, approximately \$5 million of the estimated \$11.5 million project has been secured via a federal earmark appropriation.

## Exhibit 29 Projects Beyond the Legislative Commitment (\$ '08)

Terminal	Transit-Related	Improve Dwell Time	Other Improvements	Total
Point Defiance	\$0.0	\$2.3	\$0.3	\$2.6
Tahlequah	\$0.0	\$2.4	\$0.4	\$2.8
Fauntleroy	\$0.0	\$17.2	\$0.6	\$17.9
Southworth	\$0.0	\$0.0	\$1.2	\$1.2
Vashon	\$0.0	\$0.0	\$0.8	\$0.8
Seattle	\$0.0	\$0.0	\$3.8	\$3.8
Bremerton	\$0.0	\$0.0	\$9.8	\$9.8
Bainbridge	\$30.2	\$0.0	\$4.1	\$34.3
Edmonds	\$0.0	\$0.0	\$0.8	\$0.8
Kingston	\$1.4	\$0.0	\$1.6	\$3.0
Clinton	\$9.9	\$21.9	\$2.6	\$34.4
Mukilteo	\$0.0	\$0.0	\$0.5	\$0.5
Keystone	\$0.0	\$1.0	\$0.5	\$1.5
Port Townsend	\$0.0	\$7.0	\$1.2	\$8.2
Anacortes	\$0.0	\$0.0	\$7.4	\$7.4
Friday Harbor	\$0.0	\$0.2	\$0.9	\$1.1
Orcas	\$0.0	\$0.0	\$0.7	\$0.7
Lopez	\$0.0	\$0.0	\$1.2	\$1.2
Shaw	\$0.0	\$0.0	\$0.7	\$0.7
Eagle Harbor	\$0.0	\$0.0	\$3.1	\$3.1
<b>Total</b>	<b>\$41.5</b>	<b>\$52.0</b>	<b>\$42.3</b>	<b>\$135.7</b>

### 16.1 Terminal Improvements

#### *Transit-Related Improvements*

Transit-related improvements include projects such as improved terminal access for pedestrians and transit vehicles, which are necessary to accommodate increasing volumes of walk-on customers. These improvements are expected to cost \$41.5 million (\$ '08), with a large portion of that cost incurred at the Bainbridge Island Terminal. The Legislature has deferred funding for these projects until increased walk-on ridership is realized, additional transit service is available, and pre-design studies are received.

To the extent that these improvements can encourage mode shift, it reduces demand on the vehicle deck and forestalls the need to invest in additional vessels. New vessels, 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 30 includes a list of the specific proposed transit enhancements by terminal. In addition to these investments, further enhancements requiring coordination with other divisions of 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 30  
Proposed Transit Enhancements**

<b>Terminal</b>	<b>Transit Enhancement</b>	<b>Expected Capital Cost (\$ '08)</b>
Bainbridge	Passenger Pick-up/Drop-off Improvements	\$1,349,000
	Transit Facility Improvements	\$5,896,000
	Transit-related Improvements to Terminal Building & OHL	\$18,489,000
	Improved intersection at Winslow Way for Bikes & Peds	\$4,464,000
Kingston	Relocate tollbooth for improved transit access	\$1,377,000
Clinton	Walkway for park n' ride	\$9,877,000
<b>Total</b>		<b>\$41,452,000</b>

*Improvements Targeting Dwell Time*

These improvements would allow the ferry system to minimize terminal time and maximize capacity during peak periods in order to maintain schedule reliability on routes. The type of improvements include projects such as overhead loading for passengers, and 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 above the auto transfer span on two of the busiest routes in the system. These improvements will also provide passenger comfort and safety benefits that also support the transit enhancement and mode shift goals. A list of proposed dwell time improvements is below in Exhibit 31.



## Exhibit 31 Proposed Dwell Time Improvements

Terminal	Dwell Time Improvement	Expected Capital Cost (\$ '08)
Clinton	Overhead Loading	\$21,896,000
Fauntleroy	Overhead Loading	\$17,239,000
Friday Harbor	Pedestrian Gates and Barriers	\$227,000
Keystone	Add Signal at Exit Lane Intersection	\$959,000
Point Defiance	Tollbooth Improvements	\$578,000
	Increased Holding Capacity	\$1,673,000
Port Townsend	Straighten Exit Lanes (Relocate Park)	\$7,005,000
Tahlequah	Add Exit Lane to Allow Double Lane Offload	\$2,431,000
<b>Total</b>		<b>\$52,008,000</b>

### *Small Terminal Projects*

A few minor terminal projects were excluded from the 16-year Legislative Plan. These projects include storm drainage improvements for all terminals at a total cost of \$28.4 million (\$ '08), \$379,00 (\$ '08) in ADA compliance projects, and \$1.0 million (\$ '08) for generators at Port Townsend and Shaw.

### **Preservation Needs due to Deferred Improvement Projects**

The deferral of one major terminal building improvement project at Anacortes until additional funding could be acquired and one transit-related project at Bainbridge Island until increased ridership is realized would increase preservation capital costs in the 16-year planning period beyond the current assumed preservation commitments discussed earlier.

- Anacortes. This deferred project, as discussed above, was to implement a design for a replacement building and associated terminal reconfiguration to improve circulation. The cost of this project was estimated to be \$26.4 million (\$ '08) and the preservation impacts of deferring the project are estimated to be \$11.6 million (\$ '08). Preservation needs include terminal and secondary buildings and paved areas on the trestle, traffic lanes, holding areas, and parking.
- Bainbridge. This deferred project included transit-related building improvements and overhead loading. The cost of this project was estimated to be \$18.5 million (\$ '08) and the preservation impacts of deferring the project are estimated to be \$17.6 million (\$ '08). Preservation needs include terminal and secondary buildings and overhead loading on the trestle, traffic lanes, holding areas, and parking.

# LONG-RANGE PLAN IMPLEMENTATION

## 17. LONG-TERM FUNDING IMPLICATIONS

The proposed package of services and investments will result in a significant unfunded gap of approximately \$3.3 billion over 22 years, or an average of approximately \$300 million per biennium. While the gap is not a surprise, given the reduction in dedicated tax funding for ferries, the magnitude of the gap reflects a significant recapitalization effort related to aging assets, particularly with vessels. A noteworthy point is that the funding shortfalls are almost exclusively in the capital program.

To address this need, there are two ways to fill the gap:

1. Reallocation of a higher share of current resources. As discussed previously, WSF has been getting a share of general highway funds to backfill for the lost MVET since 2000. The estimated gap in capital funding outlook already assumes that significant funds are transferred from highway accounts, at the level assumed in the 2009 Legislative Financial Plan. One option would be to allocate higher shares of these funds or a new allocation of some other existing state, regional, or local fund source. However, feasibility is very questionable due to the funding gap highway and other non-ferry transportation projects.
2. New revenues. The other possible source is from new revenues, either at the state, regional, or local level. This typically means new or higher taxes.

The question of where additional funding might come from was the subject of the WSTC's Ferry Funding Study, which was a parallel effort to the development of this Plan. The WSTC was charged with identifying and recommending an approach to restoring WSF to a financially sustainable condition. WSTC's recommendations were based on the needs identified in the Draft submitted to Legislature in January. WSTC's recommendations are discussed below.

### 17.1 Operating Program

Providing the Plan's service level is estimated to cost approximately \$6.4 billion over the 22-Year Long-Range Plan planning horizon as summarized in Exhibit 32. Total revenues are estimated to be approximately \$6.0 billion, with \$5.1 billion coming from operations and the rest from dedicated tax support and a small amount from

#### 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 was submitted to the Legislature during the 2009 session.

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

This Plan does not incorporate any findings from the PPP's study. If there are opportunities that emerge that warrant further review, WSF will work with the 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.





transfers from other highway funds. The methodology and assumptions used to develop the operating program revenues and expenditures are detailed in Appendix O.

### Exhibit 32 Operating Funding Outlook (YOE\$ in millions)

	LRP (22-Yr)	16-Year
<i>2009-11 Cash Carry-Forward</i>	(4)	(4)
<b>Operating Revenue:</b>		
Farebox Revenue	\$4,966	\$3,228
Miscellaneous Revenue (Concessions, etc)	\$112	\$73
<b>Total Revenue from Operations</b>	<b>\$5,078</b>	<b>\$3,301</b>
<b>Operating Program:</b>		
Vessel Costs	\$4,595	\$3,048
Terminal Costs	\$1,106	\$732
Management & Support Costs	\$736	\$502
Other Misc Costs (State Employee Compensation Adj)	(\$39)	(\$28)
<b>Total operating program</b>	<b>\$6,399</b>	<b>\$4,255</b>
<i>Farebox revenue as % of Total Operating costs</i>	78%	76%
<b>Net operating income/(subsidy required)</b>	<b>(\$1,321)</b>	<b>(\$954)</b>
Dedicated Ferry Taxes (Operating Account)	\$782	\$542
Administrative Transfers (Operating Account)	\$57	\$54
<b>Estimated Subsidy Available</b>	<b>\$840</b>	<b>\$595</b>
<b>Net operating surplus/(deficit)</b>	<b>(\$486)</b>	<b>(\$363)</b>
<i>Average per biennium</i>	(\$44)	(\$45)
Fuel Surcharge Revenues	\$297	\$229
<b>Net operating surplus/(deficit) with Fuel Surcharge</b>	<b>(\$189)</b>	<b>(\$134)</b>

**Note:** Operating revenues, dedicated tax revenues, and fuel costs are based on June 2009 Transportation Economic & Revenue Forecast. Legislative Plan was adopted using March forecast.  
**Note:** Fuel Surcharge would be implemented only if Legislature approves the fuel surcharge plan  
**Note:** Parenthetical values represent shortfalls in the operating program; positive values represent operating surpluses

- Ridership growth and fare increases result in an average farebox recovery rate of 78% over the 22-year horizon.
- Base fare assumptions assume the revenue equivalent of the current policy (annual increases of 2.5%).
- Dedicated tax revenues and fares alone would not be enough to support the operating program in both the 16- and 22-year windows. The additional State support needed over the 22-year plan would be \$486 million.
- The funding analysis assumes that WSF will receive the expected \$46.4 million in support from other transportation funds over the next two biennia (per 2009 Legislative session). Following that period, no additional support is anticipated from the motor vehicle fund, except treasury deposit earnings and a small amount of

MVET distributions related to the elimination of the handling loss deduction for the motor vehicle fuel tax set forth by SB 5027.

There is considerable risk in the assumed growth in fuel prices. The costs shown in Exhibit 32 are based on Global Insights June 2009 baseline forecast for the 22-Year Long-Range Plan. Using this June forecast increased total fuel cost estimates by almost \$300 million from March forecasts used to develop Scenario A submitted to Legislature in January.

Two recent pieces of legislation (RCW 43.19.642 and HB 1303) have the potential to require WSF to power its fleet with at least a portion of biodiesel in the near future. RCW 43.19.642 requires state agencies to use a minimum of 20% biodiesel in their fleets by June 1, 2009, and HB 1303 would require that agencies, to the extent practicable, power their diesel fleets with 100% biodiesel by June 1, 2015. For 2009-11, WSF is directed to use up to five percent biodiesel if the price differential does not exceed five percent.

With these goals, the State is recognizing that biodiesel pollutes less; releases fewer air toxins and cancer-causing compounds, degrades faster, and is less toxic than petroleum diesel. Using biodiesel or biodiesel blends will also help the State comply with ultra-low sulfur diesel requirements, as well as the alternative fuel purchase requirements of the national Energy Policy Act of 1992. In preparation for these requirements, WSF has been testing the use of biodiesel in a pilot program funded by outside grants. The pilot program has been successful, but deploying biodiesel across the fleet will have costs not accounted for in this Plan.

## 17.2 Capital Program

The capital program proposed for the Plan is estimated to cost a total of \$4.9 billion over the 22-Year Long-Range Plan horizon. This includes the 16-year Legislative commitment total of approximately \$2.5 billion that was adopted as part of the 2009 Legislative session. Even with dedicated funding, assumed federal funding, and other committed state funds, the capital program is still unbalanced. As Exhibit 33 illustrates, to fund the 16-year capital commitment will require \$954 million more than current assumed funding; \$3.1 billion will be needed to fund the full 22-year capital program. The funding that is already committed includes:

- Transfers from the Motor Vehicle and Multimodal Accounts in the 16-Year Plan which are assumed to stop at the end of the 16-year commitment.
- Dedicated funding (gas tax) is based on the June forecast.
- Bond proceeds as per the 2009 Legislative Financial Plan.



- An assumed average of about \$15 million per year in Federal funding.

### Exhibit 33 Capital Funding Outlook (YOE\$ millions)

	LRP (22-Yr)	16-Year
<i>2009-11 Cash Carry-Forward</i>	\$2	\$2
<b>USES OF FUNDS</b>		
Terminals Preservation	\$985	\$673
Vessel Preservation	\$1,278	\$691
New Vessel Construction	\$1,894	\$519
Terminal & Vessel Improvements	\$194	\$169
Existing Debt Service	\$212	\$212
Miscellaneous Uses	\$336	\$230
<b>Total core capital program</b>	<b>\$4,899</b>	<b>\$2,494</b>
<b>SOURCES OF FUNDS</b>		
Dedicated tax distributions to Ferries	\$711	\$575
Administrative Transfers	\$450	\$450
Federal Funds	\$340	\$252
Local Funds & Deposit Earnings	\$15	\$15
Bond Proceeds	\$245	\$245
<b>Total Sources</b>	<b>\$1,762</b>	<b>\$1,538</b>
<b>Net Funding Capital Program</b>	<b>(\$3,136)</b>	<b>(\$954)</b>
<i>Average per biennium</i>	(\$285)	(\$119)

**Note:** Dedicated tax revenues are based on June 2009 Transportation Economic & Revenue Forecast. Legislative Plan was adopted using March forecast.

**Note:** The 16-Year new vessel construction expenditures include \$13.6 million of additional costs attributable to new vessel design for five new 144-car vessels.

**Note:** Parenthetical values represent shortfalls in the capital program; positive values represent capital surpluses

Including the additional WSF needs that were not part of the Legislative budget (dwell time improvements, transit-related improvements, etc.) would increase capital costs by \$229 million. This would increase the net capital funding gap to \$3.4 billion, and would cover the total amount of capital funding needed to meet all of the capital projects identified in this LRP. The methodology and assumptions used to develop the capital program revenues and expenditures are detailed in Appendix O.

## 17.3 Long-Term Funding Outlook

This document was put together to serve as a framework policy document that would guide future actions and decisions regarding ferry services and investments. The Legislature set clear direction for what the 16- and 22-year operating and capital commitments would encompass. However, the elements of this Plan are subject to further

review (many will require pre-design studies) and ultimately, funding availability.

### **Additional Federal Support**

A ferry system bill entitled The U.S. Ferry Systems Investment Act of 2009 was sponsored by Senator Murray and Congressman Larsen in late April of 2009. This bill would provide more than \$1 billion to the nation's ferry systems between FY 2010 and FY 2015, at an annual investment level of \$200 million per year. The funding would be divided into two parts. Half of the money would be distributed according to a formula that takes into account passenger and vehicle ridership and how many total miles the routes contain. The other half would be distributed at the discretion of the Secretary of Transportation using a competitive process. It is estimated that the State could receive about \$40 million per year under the proposed formula.

### **Washington State Transportation Commission Funding Study**

During the 2007 Legislative session, as part of EHSB 1094, the Washington State Transportation Commission (WSTC) was directed to conduct a study to identify and evaluate long-term funding alternatives for WSF. The study was coordinated with a number of concurrent studies mandated by EHSB 2358.

The analysis was focused on identifying WSF's long-term funding challenges and how to address those challenges with state, regional, or local funding options. The report presented alternative funding scenarios for WSF, citing that operating and capital shortfalls could be funded by a combination of state and local taxes, fare increases, and/or other operating income (advertising).

The WSTC delivered this report on major challenges faced by WSF on March 2, 2009. Neither the Governor nor the Legislature has yet acted on these recommendations. However, the Joint Transportation Committee is conducting a comprehensive analysis of mid-term and long-term funding mechanisms as part of its 2009 work plan which includes a review of all state transportation funding needs, including those identified for WSF.

The major findings and recommendations from the final WSTC study are summarized below.

- Increase fares and other operating revenues to close operating gap. Fare increases would need to be greater than 2.5% in order to close the operating gap. For example, the operating gap could be closed as early as 2014 with 6% annual fare increases, or by 2018 with annual fare increases of 4%.



Annual increases of 2.5% would occur in both scenarios following the breakeven year. Other methods of increasing operating revenues include:

- Reducing the impacts of fuel price volatility by implementing a fuel surcharge.
- Adding a super summer surcharge on single fare purchases during the busiest traffic months.
- Increasing ancillary revenues such as advertising and naming rights, and expanding on-board and terminal concessions.
- Use fare increases in lieu of local tax funding, while leaving the option open for the future. This would include creating government structures (Transportation Benefit District, Ferry District) that could be employed to raise funds through regional taxes such as the property tax. Fare increases would still be a simpler and more viable option, because of the substantial effort and cost required to obtain local funding.
- Fund long-term capital needs with vehicle-based excise or similar tax. Utilizing a reliable and stable tax source, such as vehicle excise tax, over the long-term is more feasible than using the motor vehicle fuel tax. Without new revenue for capital, administrative transfers would need to increase to fund the capital needs of this Plan. An MVET or similar tax would allow for the elimination of these transfers.
- Set state tax rate to allow elimination of administrative transfers. The amount of MVET should be set at an amount that not only eliminates the funding gaps of WSF, but also eliminates the administrative transfers. This MVET would likely be in the range of 0.15% - 0.22%.

The long-term funding challenges that WSF is facing will need to be addressed as part of future budget decisions.

## 18. OTHER ISSUES AND RISKS

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### 18.1 Environmental Considerations and Regulatory Risks

WSDOT conducted an environmental evaluation (Appendix P) to analyze potential environmental impacts from, and the ability to meet environmental regulatory obligations through implementation of the long range plan. For the analysis, the study area was defined as the Washington State Ferries (WSF) system in Puget Sound which includes the 19 terminal locations and the maintenance facility, and

serves the communities of Kitsap, King, Island, Pierce, Skagit and San Juan Counties.

This environmental evaluation does not provide any National Environmental Policy Act (NEPA) or State Environmental Policy Act (SEPA) level analysis, but rather provides a qualitative assessment of the major environmental elements that could pose substantial issues on future development of any of the ferry terminals and implementation of operational solutions.

### Land Use

Strategies that have been developed in the Long-range Plan are not expected to change the land uses of any of the ferry communities with exception of Mukilteo where the terminal may be relocated. At Mukilteo, if feasible, the terminal will be relocated to an abandoned industrial property to allow an active, urban water front for commercial uses. This change is consistent with the city's comprehensive and land use plan.

### Air Quality

- Air quality improvements are anticipated in the communities near terminals where the proposed reservation system will be implemented. Emissions from passenger vehicles using the ferry system will be reduced by shortening the queues of idling vehicles.
- This plan delays the installation of transit-related improvements to the terminals until increased walk-on ridership is realized, and maintains the current cost pricing ratio between vehicles and passengers. The delay to terminal transit improvements, and not changing the pricing strategy, will likely delay the shift of ferry ridership from single occupancy vehicles to alternative modes of transit. This assumption is based on the ease of use, accessibility and cost factors that affect transportation choices. If this assumption is accurate, then it may be difficult for the for the ferry system to contribute to statutory per capita vehicle miles traveled and greenhouse gas reduction targets. Delaying a greater shift to transit will also delay the realization of potential reductions in criteria pollutants associated with transit use.
- The proposed demand management strategies and transit improvements are expected to create greater efficiency in system. This would minimize the number of vessels needed to meet projected demand, and therefore help minimize air emissions related meeting the projected demand. The proposed new vessels are designed to maximize fuel efficiency and will meet new EPA standards for emissions control. The replacement of the fleet's oldest vessels with vessels that meet current EPA



standards is expected to reduce emissions of criteria pollutants from the fleet.

- Although total greenhouse gas emissions are expected to decrease with this plan, given currently identified fuel use reduction strategies, it is uncertain and perhaps unlikely that WSDOT will be able to meet statutory greenhouse gas reduction targets without significant changes in fuel, propulsion technology and/or operations of the vessels.

### **Noise**

- Terminal preservation and improvements identified in the plan may have noise related impacts during construction. During project development and implementation, it is WSDOT's practice to work with the applicable cities and counties to minimize noise related construction impacts, as is practicable, and ensure compliance with local ordinances.
- Implementation of the plan is unlikely to cause noticeable changes to the noise levels associated with system operations. WSDOT studies indicate that the loudest source of noise at the terminals during operations is from passenger vehicle loading and unloading.

### **Water Quality**

- Implementation of the proposed reservation system is expected to minimize, and in some cases reduce, the amount of vehicle holding area needed at the terminals. Consequently, this is expected to avoid the need for addressing additional pollution loading surfaces in the system.
- Because the mechanism for funding stormwater system upgrades is currently dependent on the development and implementation of terminal improvement projects and proposed terminal improvements have been postponed or delayed within the final plan, upgrades to the stormwater treatment at the terminals will also be postponed or delayed. The result is that stormwater runoff from many of the terminals will continue to be untreated. In addition, the plan does not appear to address resources that will be required to comply with new stormwater permit requirements.

### **Ecosystem and Species**

- The Puget Sound ecosystem supports a diversity of habitats and species, many of which are found or could occur near ferry terminals. Protected habitats and species include eelgrass beds, Puget Sound Chinook salmon, Hood Canal summer chum salmon, Steelhead, Humpback whale, Killer whale, Leatherback Sea turtles, Steller sea lion, Bull trout, and Marbled murrelet.



- Aspects of the Puget Sound Ecosystem are degraded including surface water quality from pollutants carried in stormwater runoff, regional air quality from pollutants partially generated by the transportation sector, and fish and wildlife species populations, as is evident in the listing of multiple species under the Endangered Species Act.
- Typical impacts from improvements to terminals include shading from overwater structures, underwater noise impacts from steel pile driving, and changes to the harbor line. The Mukilteo Multi-Modal project, which would relocate the terminal to a different location, is expected to impact the habitat of the near-shore environment at the new terminal location.
- WSDOT follows a tiered approach for minimizing adverse impacts to protected wildlife, fish and their habitats. Through project design, construction scheduling and implementation planning, WSDOT first seeks to avoid potential adverse impacts to protected species and their habitat. If impacts are unavoidable, WSDOT works to minimize the magnitude and duration of the impacts to the extent feasible. Remaining impacts that are considered significant and adverse are mitigated to the extent feasible and in accordance with local, state and federal regulations.
- WSDOT conducts in-water pile driving to maintain the safety of key facilities at ferry terminals. The department is performing independent research and working jointly with other states and resource agencies to identify how noise works underwater, how fish and diving birds are affected by the noise, and what mitigation, if any, may be warranted.
- WSDOT also analyzes wake-wash and propeller scour of new vessels to identify and minimize impacts to the shore and near-shore habitat. Maximum vessels speeds are identified for transit near shorelines identified as sensitive to erosion.
- Engine noise is minimized through vibration dampening engine mounts and tighter clearances in gearbox assemblies. In addition, propeller noise is minimized through cavitation-minimizing propeller design.
- Furthermore, to avoid adverse impacts to marine mammals, the vessels are operated in accordance with National Oceanic and Atmospheric Administration's "Be Whale Wise" guidelines.

## Earth

- Terminals already identified as having erosion related problems include Fauntleroy (erosion) and Southworth (bluff erosion).



Terminals that may be susceptible to seawall problems from storm surges include Mukilteo, Seattle and Fauntleroy.

- The current DNR maps indicate that the several WSF terminals are within a moderate to high liquefaction susceptibility areas. And, based on the age of the facilities, some of the ferry terminal structures do not meet current design standards for earthquake or liquefaction.
- The susceptibility of the area to erosion, storm surge damage, liquefaction and sub-standard design of existing structures will have to be taken into consideration during development of any terminal improvement project. Soils that are susceptible to liquefaction may require retrofit measures such as ground stabilization, selection of deeper foundations, different types of foundations, and/or selection of appropriate structural systems to accommodate anticipated displacements.

### **Traffic/Congestion**

- The proposed reservation system will reduce ferry-related vehicles queuing traffic impacts on the local communities. The increases in vessel vehicle capacity is expected to increase peak off-load traffic on some routes. If off-load traffic is projected to increase significantly over historical off-load levels, WSDOT will assess and mitigate as appropriate.

### **Tribal Resources and Treaty Rights**

- The relocation of a terminal, as is proposed for Mukilteo, has the potential to impact tribal Treaty Usual and Accustomed fishing grounds. If the project is found to impact the Treat Usual and Accustomed fishing grounds then WSDOT will be required to mitigate the impacts. This may take the form of a mitigated settlement to be negotiated with treaty tribe(s).

### **Historic and Cultural Resources**

- Based on a recent WSDOT inventory of the ferry system terminals the proposed terminal projects are not anticipated to have any impact on historical resources.
- Project level cultural resource surveys completed at some of the terminals show there might be the presence of archaeological resources. Consultations with the Washington Department of Archaeology and Historic Places and Puget Sound Tribes have occurred on potential known sites. Further surveys and consultation will be warranted for any proposed project at potential sites.
- Implementation of a reservation system will minimize the terminal area “foot-print” requirement, on land and over water, of the ferry

system. This affects the quantity and scale of terminal improvements projected for the system. The result is a minimization of likely impacts to cultural resources, and reduction in the potential for these impacts when compared with previous long range system plans.

### Park and Recreational Lands

- Some of the ferry terminals are located in or adjacent to parks and recreation lands, and therefore improvement projects at the terminals could have the potential to impact these areas. Actual impacts to and mitigation for parks recreational lands will be evaluated at the individual project level.

### Department of Natural Resources Lands

- Implementation of the plan may require harbor line revisions at terminals where preservation or capital improvements are programmed. Identification of needed harbor line revisions will occur at the individual project level.

#### WSF Marketing Plan

As a way to mitigate some of the long-term ridership and demand risks faced by WSF, the Legislature provided \$1.1 million to WSF to develop and implement an aggressive marketing strategy starting in the 2009-11 biennium.

## 18.2 Ridership and Demand Risk

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

- The baseline ridership forecast assumes an approximately 37% increase in ridership over the next 22 years.
- 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. For example, the impact of declining annual ridership by 0.5% over current projections would decrease farebox revenues by \$290 million over 22 years. This implies that the operating gap would also increase by \$290 million. Across the board annual fares would have to increase to 3.3% in order to return the operating gap back to its original level of \$133 million. In this scenario of lower ridership and demand the ferry system would be in a position to reconsider the size of replacement vessels to address the lower ridership and decreased demand pressure.
- Conversely, if baseline ridership is higher, then demand pressure to improve services will increase and WSF would have to address this increased demand pressure.
- WSF plans to increase marketing efforts in order to mitigate some of these risks associated with decreasing ridership and demand.



- Changing demographics of WSF's service area also present a risk in predicting how ridership and demand will grow in the next 22-years. The ferry system is making strides in understanding its customers better and refining ridership forecasts. Although not perfect, utilizing existing projections from PSRC and OFM will assist the ferry system in predicting patterns in employment and population that affect ridership.

### 18.3 Cost and Inflation Risk

There is considerable risk in projecting cost changes over the 22-year time horizon. The greatest risk is using an inflation index that is too low, which would underestimate future costs. For example, inflationary pressures on salary and wages are different than those on construction costs of new vessels. The inflation indices used in constructing the Long-Range Plan reflect the current view of future prices. Any significant changes to these inflation assumptions would impact expenditures greatly, compounding year over year, exacerbating the funding challenge that is already a significant issue for WSF.

WSF has some ability to mitigate its operating risk through contract negotiations. However, the market dictates the price of goods for commodities such as fuel and labor and materials for capital projects. Even minor shifts, when compounded over time, make the existing funding problems much larger.

- For example, the capital program (and funding gap) would increase by more than \$653 million if the indexes used to inflate capital costs increased annually by 1%. In addressing this inflation risk, especially as it pertains to construction, more money will be needed, or WSF will need to build less.
- In a scenario where all non-fuel operating costs were to increase annually by 1% would increase the operating gap by about \$150 million. Additional operating revenues would be needed to offset the increased costs, primarily from annual fare increases.

#### Fuel Price Volatility

There are also sizeable risks in the assumed growth in fuel prices. Diesel fuel costs in the last year have fluctuated between approximately \$1.25 and \$4.62 per gallon. Exhibit 35 below is based on Global Insights projections for the last year, and illustrates the risk that fuel prices pose to the operating program.

A 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. The surcharge concept is that all fares would be adjusted to collect the

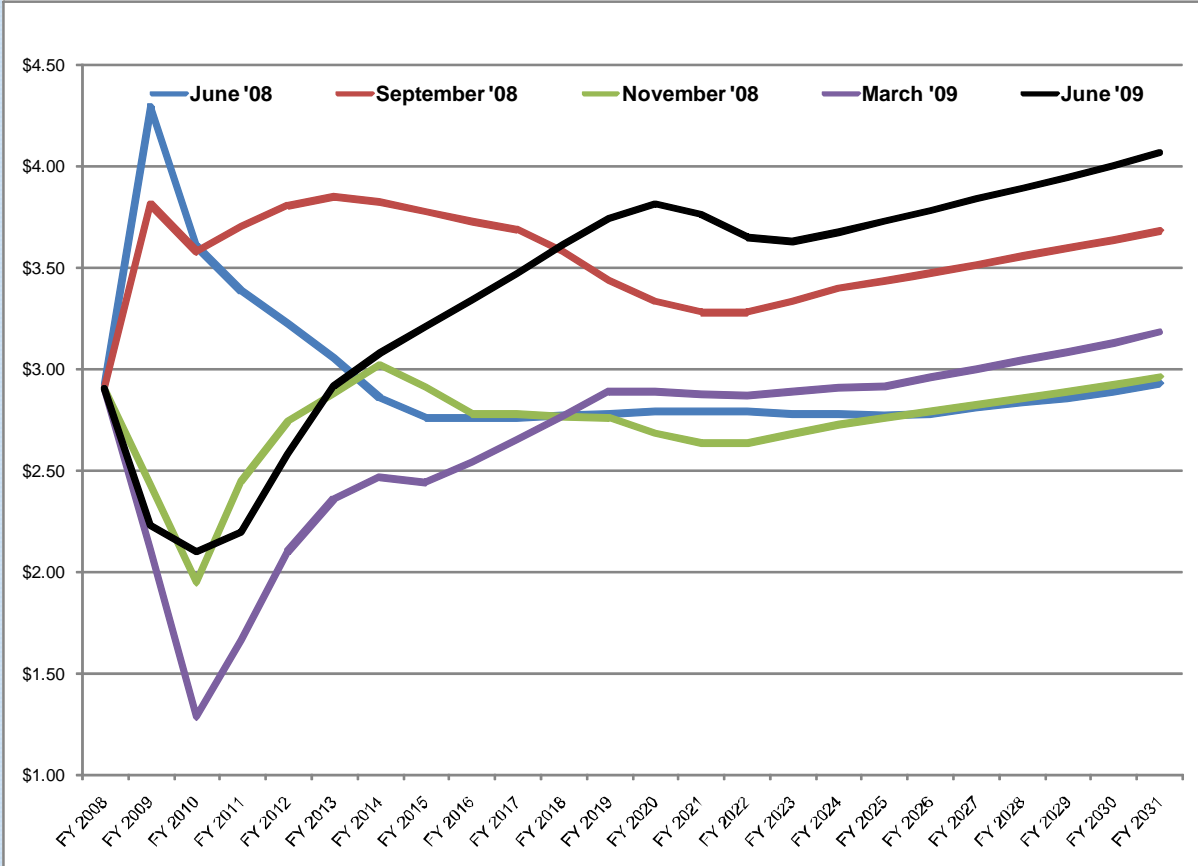
additional revenue needed to recover the cost of fuel beyond the “historical base cost of fuel.” Legislature agreed with the fuel surcharge concept, but provided no formal decision on implementing a fuel surcharge that would adjust fares up and down for fluctuations in fuel prices. If the fuel surcharge were to not be applied, the higher price of fuel would exacerbate the operating funding challenges that are already a significant issue for WSF.

- The impact of a 1% annual increase to the diesel price per gallon would increase operating costs by more than \$150 million over 22 years.
- The fare surcharge would cover the additional increase in operating 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 price 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. The chart below illustrates the potential variability in fuel price per gallon and the difficulty in accurately predicting future fuel costs.

**Exhibit 34  
Comparison of Recent Fuel Price Forecast History**



## 18.4 Fleet Age and Service Reliability

WSF's fleet is among the oldest of any major ferry operator, with four vessels retired on an emergency basis in 2007. WSF is also faced with a significant level of capital investment over the next 22 years, most of which is vessel replacement. Recognizing that ferry vessels are 60-year investments, the type and timing of replacements becomes an extremely important decision. The service reliability of the fleet is directly correlated to the age of the fleet. By extending the life of its oldest vessels beyond their retirement dates, WSF would make itself vulnerable to events that would drive up maintenance costs and out-of-service time. Replacing vessels at their retirement dates and having an emergency standby vessel are both ways that WSF plans to mitigate these risks.

The replacement of vessels is not an isolated problem within the 22-year time horizon. Much of the existing fleet is scheduled for retirement within ten years of 2031. The retirement schedule just beyond the 22-year Long-Range Plan, up to 2042, includes:

- Hyak 2032
- Two Jumbo Mark I vessels to be retired in 2033;
- The first Issaquah class vessel to be retired in 2039;
- Two additional Issaquah class vessels (Kitsap and Kittitas) retired in 2040;
- Final two Issaquah class vessels (Cathlamet and Chelan) retired in 2041; and
- Sealth retired in 2042.

## 18.5 LOS Standards

The proposed new LOS standards presented earlier in this Plan were developed with the same ridership funding assumptions used for other elements of the Plan. Assuming ridership and funding expectations are met, WSF foresees that all of its routes would be in compliance with the new proposed LOS standards throughout the planning horizon.

However, depending upon actual ridership changes and capital funding availability for the vessel procurement plan, WSF may be presented with a situation where the proposed new LOS standards are not being met on one or more routes.

In this situation, WSF would need to evaluate the best feasible course of action and choose one or a combination of the following options:

- Employ additional adaptive management strategies;
- Invest in capital assets to increase capacity;
- Allow degradation in LOS provided and update standards to reflect this.

As the Plan describes in previous sections, LOS is just one element of a broader decision-making process. WSF recognizes that allowing a degradation in LOS has a negative impact on communities served by the affected routes. Decision-making around affected routes would consider funding available at the time and engage the affected customers and communities.

With the exception of the Mukilteo-Clinton route, there is no Growth Management Act or regulatory issue triggered by non-compliance with LOS. WSF will continually update its forecasts of LOS performance based on ridership and other relevant information. If a route is projected to fall out of compliance with LOS standards, WSF still take steps to engage stakeholders to address the situation. In the case of Mukilteo-Clinton, WSF will work closely with the County to ensure that local land use and transportation planning goals are being met.

