



WASHINGTON STATE DEPARTMENT OF TRANSPORTATION  
FERRIES DIVISION

FINAL LONG-RANGE PLAN

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APPENDIX M  
SCENARIO A AND SCENARIO B

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## SCENARIO A AND SCENARIO B

### INTRODUCTION

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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 WSF 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.

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. These scenarios were an initial response to ESHB 2358, and 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.

Scenario A and Scenario B as described in the Revised Draft Plan are presented below.

### 1. SCENARIO A

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

A key planning objective for Scenario A is to first maximize the use of existing assets and facilities through the deployment of the adaptive management strategies (operating and pricing) discussed previously. Capacity improvements were then evaluated in terms of the relative costs and benefits of each.

It is important to note that WSF is facing a significant level of capital reinvestment over the next 22 years as almost half the fleet and several of the busiest terminals will need to be renovated in this timeframe. These investment needs are a higher priority than any investments in new capacity and were a key factor in weighing the relative costs and benefits of expanding services.

As discussed previously, Scenario A should be viewed as WSF’s proposal for the most that can be reasonably delivered over the next 22 years, given the needs of the ferry system and the funding constraints.

### 1.1 Operating Program

The package of operating and pricing strategies will improve the overall effectiveness of ferry services and increase the utilization on many routes. The proposed vehicle reservation system will be such a fundamental change in how customers will make use of ferry services that it is very difficult to estimate the actual ridership response. As a result of this, and the overall funding challenge facing WSF at this time, Scenario A proposes minor service expansions. There will also be minor capacity improvements related to the vessel procurement program.

#### Proposed 2030 Service Details

The proposed 2030 vessel deployment plan is shown in Exhibit 1.

**Exhibit 1  
Summary of Proposed Fleet Deployment for Scenario A**

Route	# of Vessel	Proposed Fleet Deployment Plan: Scenario A		
		Fall, Winter, Spring	Shoulder	Summer
Bainbridge	2	2 Jumbo		
Bremerton	2	2 Large		1 Large 1 Jumbo
Clinton	2	1 Large 1 Medium		2 Large
Kingston	2	2 Jumbo		
Point Defiance	1	1 Small		
Port Townsend	1 or 2	1 Small	2 Small	
San Juans & Sidney	3 or 4	2 Large 1 Med. (Sidney ex. Winter)		3 Large 1 Med
Interisland	1	1 Sm. (winter)	1 Mid-Size	
Southworth-Fauntleroy	1	1 Medium		
Vashon-Fauntleroy	2	2 Medium		
Vashon-Southworth	1	1 Small		
<b>Total Deployed</b>		<b>18</b>	<b>19</b>	<b>20</b>

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

#### Potential Future Service Additions

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

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

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

- Create a Southworth to downtown Seattle route.
- Add service hours to one of the Anacortes/San Juan Islands vessels during the summer schedule to allow an additional mid afternoon sailing and a late evening sailing.
- Add service hours to one of the Port Townsend/Keystone vessels in the summer months.
- Add service hours to the Seattle/Bremerton route to close some of the gaps in the mid-day and late evening schedule.
- Add a third boat to Edmonds-Kingston, requiring a new operating slip and railroad grade separation at Edmonds.

#### Seattle-Bainbridge

- Two 202-car Jumbo Mark II vessels year round.

#### Seattle-Bremerton

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

#### Mukilteo-Clinton

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

#### Edmonds-Kingston

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

#### Fauntleroy-Vashon

- Two 124-car vessels, operating in direct service between Fauntleroy and Vashon.
- The two 87-car Evergreen Class vessels would be retired in 2015 and 2017 and replaced on the route with 124-car vessels.

#### Fauntleroy-Southworth

- One 124-car vessel, operating in direct service between Fauntleroy and Southworth.

#### Vashon-Southworth

- A small vessel, operating between Vashon and Southworth to allow for direct service on Fauntleroy-Vashon and Fauntleroy-Southworth and increase the overall capacity on both of these routes.

#### Point Defiance-Tahlequah

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

#### Port Townsend-Keystone

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

#### San Juan Islands and International

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

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

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

Interisland. The interisland vessel provides necessary connections between the four ferry-served San Juan Islands. By utilizing one vessel to provide interisland service, the other vessels on the route are able to be scheduled in more efficient ways to move traffic between the San Juan Islands and the Anacortes/Skagit County mainland. For instance, a mainland vessel can make up to five round trips in a 16-hour operating day if it does not have to operate on the interisland circuit; making interisland stops would reduce its overall 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, so traffic either has to turn around on the vessel or back on, it is important that the interisland vessel has a relatively unobstructed vehicle deck. For future projected winter service volumes, an Island Home class 64-car vessel should be adequate for the service. For the Spring, Summer, and Fall, however, the 90-car Sealth is proposed as an interisland vessel for these reasons:

- Unobstructed car deck for turning large interisland vehicles around instead of backing on
- Flexibility to use on Anacortes based route on weekends when interisland traffic is lower; potentially to address recreational travel sensitivity tests which indicate the possibility for higher growth rates during those time periods.

### Changes in Financial Assumptions

Since release of the Draft Long Range Plan on December 19, 2008, a number of changes have been made to the revenues and costs presented in this document.

Many of the updates reflect programmatic changes that are discussed in detail in this Revised Draft Plan.

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

- Revenue forecasts updated to November 2008 State forecast
- Review and modifications to cost escalation assumptions
- Refined fuel surcharge methodology
- Re-scoped several terminal projects
- Updated cost estimated for reservations
- Reduced administrative and support costs associated with on-going capital support functions

## 1.2 Capital Program Needs

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

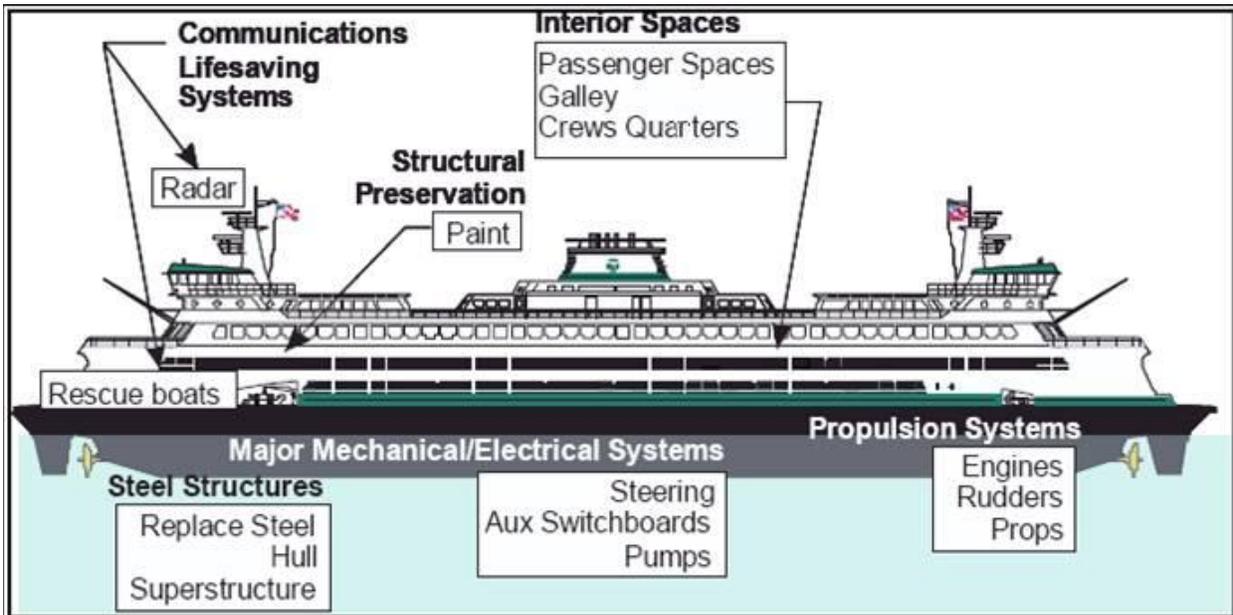
### Vessel Program

WSF faces a significant fleet recapitalization requirement over the next 22 years. The fleet is among the oldest of any major ferry operator, with an average vessel age of more than 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 2 below shows examples of vessels systems that typically require preservation and improvements.

**Exhibit 2**  
**Examples of Vessel Systems**



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

- Fully fund the preservation needs for all assets related to the structural integrity of the vessels. This includes steel preservation, propulsion, major mechanical and electrical systems, and related communication systems. The total preservation need for these assets in the Scenario A is \$285.2 million (\$'08).
- Fund preservation items that are not directly related to the structural integrity of the vessel based on actual condition ratings and strategically defer or re-scope to optimize funding needs. These preservation items include topside paint, passenger and crew spaces, and security, and total \$478.1 million (\$'08).
- To the extent possible, limit investments for vessels nearing retirement.

Vessel Procurement. The most significant capital funding need over the next 22 years is related to new vessel acquisitions to support the upcoming retirements of several aging vessels in the fleet. The proposed procurement program, summarized in Exhibit 3 includes the following elements:

- In the near-term, acquire three Island Home Class vessels estimated to cost a total of approximately \$226.5 million (\$'08).
- Invest approximately \$20 million in the Hyak to extend its life 20 years.
- Begin major vessel construction program in 2012 to construct seven 144's to be delivered between 2013 and 2025. Total cost of this program is estimated to be \$991 million (\$'08).
- Replace the 34-car Hiyu in 2027 with a used 40-50 car vessel at a cost of \$12 million (\$'08).
- Throughout the 22-Year Plan the vessel procurement program will maintain a de-crewed vessel to serve as standby. The de-crewed vessel is maintained and preserved, such that it will be available for emergency backup service.

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

Subsequent to that, it is proposed that seven large size vessels be constructed to replace WSF's aging fleet. The 144-car size vessel is felt to be the most applicable on WSF routes since it can effectively substitute for smaller and larger vessels, giving the ferry system additional operational flexibility. The 144-car vessels would be the same size or larger than the vessels being replaced. They would also be the most efficient in terms of operating costs per vehicle space, with an operating profile similar to the current Issaquah Class vessels, which are among the most efficient ships in the fleet.

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

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

- A steady / constant shipbuilding rate - enables shipyards to invest in capital improvements to increase efficiency and productivity, thus lowering vessel construction costs. Doing so avoids the cost of developing a new construction capability within the Puget Sound shipbuilding sector multiple times.
- It allows shipyards to maintain their workforce and gain maximum labor efficiency.
- It enables reduced production costs per vessel since design, tooling, start-up, and learning curve costs get spread over more vessels. Thus, each boat is cheaper than that one purchased before it.

This vessel procurement program results in a fleet of 23 vessels, which provides sufficient capacity to meet fleet preservation needs while maintaining a standby vessel at all times.

### **Exhibit 3 Vessel Procurement**

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

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

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

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

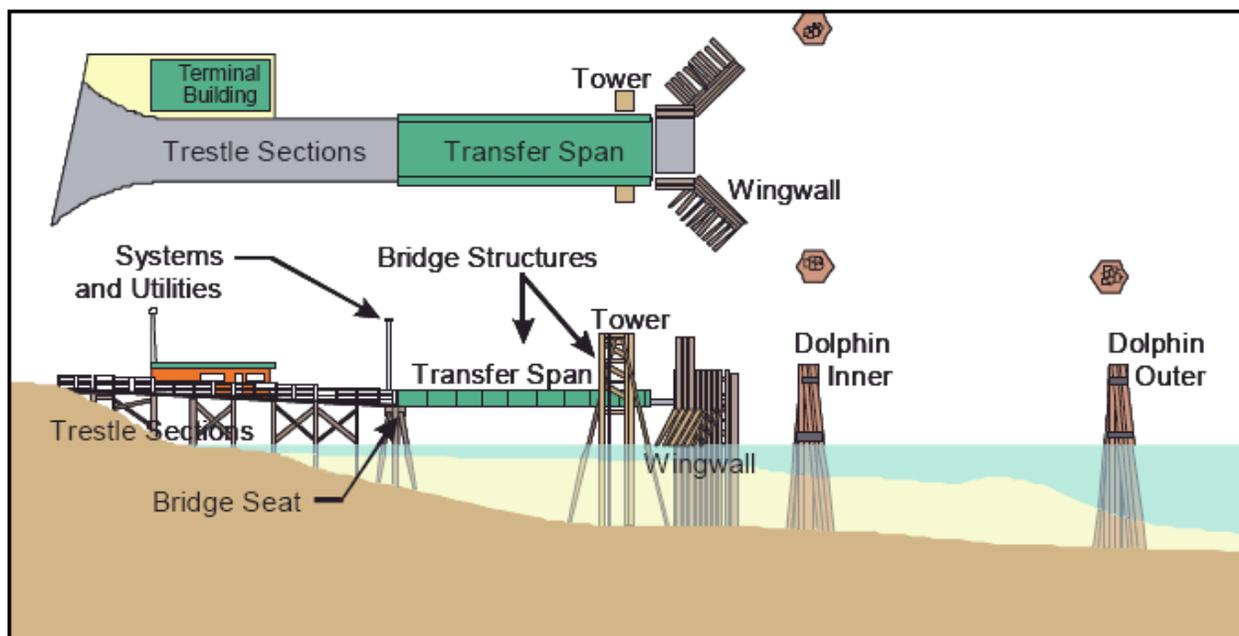
Vessel Improvements. Scenario A includes approximately \$50 million over 22 years to address future vessel improvement needs. These include investments in the following three areas:

- Fuel conservation. There are approximately \$10 million in vessel investments designed to support the fuel conservation program in the 2009-11 biennium. No further investments are assumed. In new vessels, fuel conservation measures will be incorporated in the design.
- Regulatory-related and other target improvements. This is a biennial allowance of \$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.

### Terminal Program

For purposes of the following discussion, Exhibit 4 below shows examples of vessels systems that typically that require preservation and improvements.

**Exhibit 4**  
**Examples of Terminal Systems**



Terminal Preservation. The preservation program for terminals focuses on identifying the needs of operating at the current service level and maintaining, preserving, and replacing existing capital assets. As with vessels, terminal preservation needs are developed using an LCCM, which has been updated for current facility condition ratings and to reflect current costs of asset replacement.

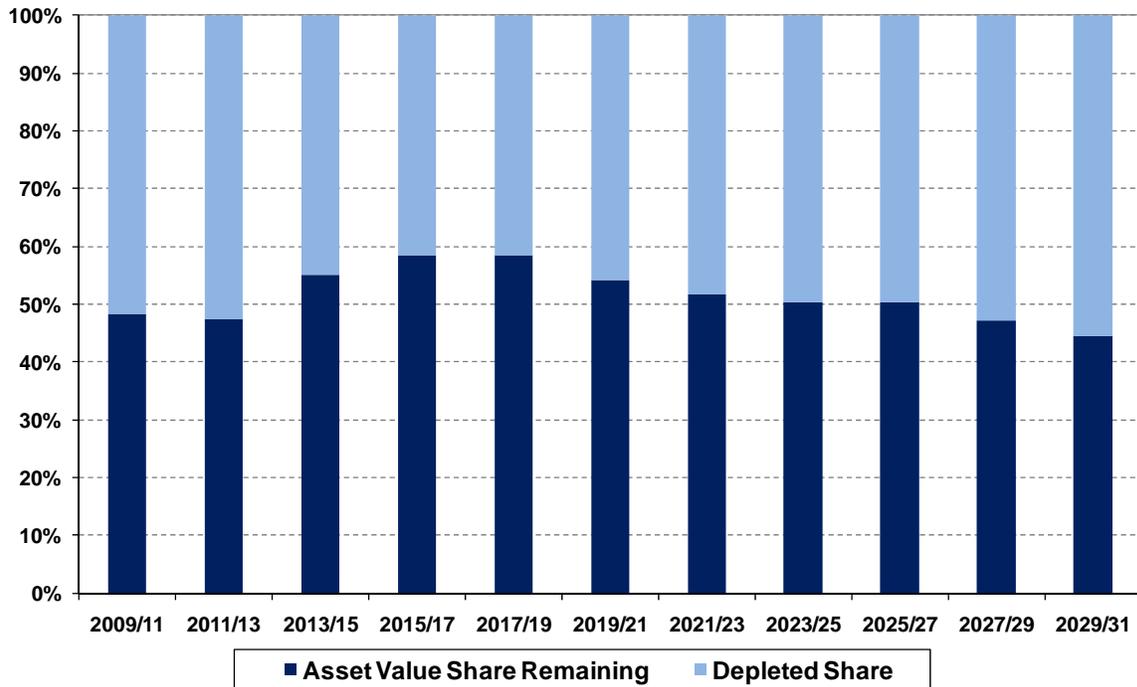
Exhibit 5 provides a brief summary of the key preservation activities at each facility:

**Exhibit 5**  
**Terminal Preservation Summary (\$ '08 millions)**

Terminal	Slip Preservation	Trestle	Wingwalls & Dolphins	Buildings & Overhead Loading	Other	Total
Point Defiance	\$1.1	\$5.0	\$10.6	\$0.9	\$0.6	<b>\$18.2</b>
Tahlequah	\$1.1	\$6.2	\$5.1	\$0.4	\$1.2	<b>\$14.0</b>
Fauntleroy	\$1.9	\$48.9	\$7.1	\$1.7	\$2.2	<b>\$61.7</b>
Southworth	\$1.0	\$7.3	\$7.9	\$2.5	\$2.2	<b>\$20.9</b>
Vashon	\$2.3	\$40.5	\$18.5	\$5.2	\$1.0	<b>\$67.4</b>
Seattle	\$31.0	\$148.6	\$20.4	\$87.9	\$2.6	<b>\$290.5</b>
Bremerton	\$9.6	\$0.0	\$18.2	\$3.4	\$1.7	<b>\$32.9</b>
Bainbridge	\$4.1	\$0.0	\$14.1	\$8.7	\$2.1	<b>\$29.0</b>
Edmonds	\$0.0	\$8.0	\$1.5	\$0.0	\$2.2	<b>\$11.7</b>
Kingston	\$7.7	\$1.0	\$28.3	\$1.4	\$1.6	<b>\$39.9</b>
Clinton	\$2.0	\$0.0	\$13.0	\$2.4	\$2.8	<b>\$20.2</b>
Mukilteo	\$2.5	\$0.0	\$6.1	\$0.0	\$0.0	<b>\$8.6</b>
Keystone	\$9.9	\$0.0	\$8.5	\$0.0	\$1.9	<b>\$20.4</b>
Port Townsend	\$22.0	\$0.0	\$8.3	\$0.3	\$2.8	<b>\$33.5</b>
Anacortes	\$8.0	\$17.7	\$25.2	\$39.7	\$9.1	<b>\$99.6</b>
Friday Harbor	\$1.5	\$11.4	\$7.9	\$1.9	\$3.4	<b>\$26.1</b>
Orcas	\$4.6	\$4.1	\$7.3	\$1.0	\$2.8	<b>\$19.8</b>
Lopez	\$11.7	\$2.2	\$8.4	\$0.0	\$2.4	<b>\$24.8</b>
Shaw	\$1.3	\$3.2	\$3.8	\$0.1	\$0.5	<b>\$8.9</b>
Eagle Harbor	\$3.8	\$13.6	\$34.4	\$15.7	\$3.0	<b>\$70.6</b>
<b>Total</b>	<b>\$127.1</b>	<b>\$317.6</b>	<b>\$254.7</b>	<b>\$173.3</b>	<b>\$45.8</b>	<b>\$918.6</b>

As shown in Exhibit 6, 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 6**  
**Asset Value Remaining per Biennium (All Terminals)**



Terminal Improvements. The terminal improvement program proposes \$376 million in Scenario A and reflects the following major elements, as shown in Exhibit 7:

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

**Exhibit 7**  
**Summary of Proposed Terminal Improvement Costs (\$'08 in Millions)**

	Improve				Other	Total
	Transit-Related	Dwell Time	Major Terminal	Reservation System		
Point Defiance		\$2.3		\$0.4	\$1.5	<b>\$4.1</b>
Tahlequah		\$2.4		\$0.4	\$0.7	<b>\$3.6</b>
Fauntleroy		\$17.2		\$1.9	\$0.8	<b>\$19.9</b>
Southworth				\$1.7	\$11.7	<b>\$13.4</b>
Vashon				\$0.3	\$6.9	<b>\$7.2</b>
Seattle				\$3.2	\$12.3	<b>\$15.5</b>
Bremerton				\$3.3	\$2.1	<b>\$5.4</b>
Bainbridge	\$32.8			\$1.8	\$15.5	<b>\$50.1</b>
Edmonds			\$26.0	\$3.7	\$1.3	<b>\$31.1</b>
Kingston	\$1.4			\$3.7	\$2.6	<b>\$7.7</b>
Clinton	\$9.9	\$21.9		\$2.1	\$2.5	<b>\$36.3</b>
Mukilteo			\$119.8	\$1.7	\$0.9	<b>\$122.4</b>
Keystone		\$1.7		\$1.4	\$1.3	<b>\$4.4</b>
Port Townsend		\$7.6		\$1.3	\$1.5	<b>\$10.4</b>
Anacortes			\$26.1	\$0.2	\$9.6	<b>\$35.9</b>
Friday Harbor		\$0.2		\$0.4	\$1.7	<b>\$2.3</b>
Orcas				\$0.4	\$1.2	<b>\$1.5</b>
Lopez				\$0.4	\$1.0	<b>\$1.4</b>
Shaw					\$0.6	<b>\$0.6</b>
Eagle Harbor					\$3.1	<b>\$3.1</b>
<b>Total</b>	<b>\$44.0</b>	<b>\$53.4</b>	<b>\$171.9</b>	<b>\$28.4</b>	<b>\$78.5</b>	<b>\$376.3</b>

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

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

**Transit-Related Improvements**

Transit-related improvements include projects such as improved terminal access for pedestrians and transit vehicles (Exhibit 8 includes a complete list by terminal), which are necessary to accommodate increasing volumes of walk-on customers. These improvements are expected to cost \$44 million, with the majority of that cost incurred at the Bainbridge Island Terminal.

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

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

Exhibit 8 includes a list of the specific proposed transit enhancements by terminal that would be funded through the ferry system's capital program. In addition to these investments, further enhancements, requiring coordination with WSDOT and local transit agencies, are necessary for full mode shift benefits. These could include: better coordinated schedules, the provision of real time information on transit departures and new/expanded transit services to better connect ferry customers with their destinations on both sides of the water.

**Exhibit 8**  
**Proposed Transit Enhancements Funded by WSF**

Terminal	Transit Enhancement	Expected Capital Cost Borne by WSF
Bainbridge	Passenger Pick-up/Drop-off Improvements	\$3,939,000
	Transit Facility Improvements	\$5,896,000
	Transit-related Improvements to Terminal Building & OH	\$18,489,000
	Improved intersection at Winslow Way for bikes and pec	\$4,464,000
Kingston	Relocate tollbooth for improved transit access	\$1,377,000
Clinton	Walkway for park n ride	\$9,877,000
		<b>\$44,042,000</b>

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

**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. Its main terminal capital components include transponder lanes and ITS equipment at each of the terminals. This equipment allows for fast processing of reservations and real time information available to customers.

The total capital costs of a vehicle reservation system are estimated to be \$28.4 million, with system costs accounting for \$6 million and terminal-related capital costs estimated at approximately \$22.4 million. The \$6 million in system costs have been allocated to the Edmonds, Kingston, Port Townsend, and Keystone terminals. The other terminal costs include ITS Equipment required at each of the terminals as well as transponder lanes, assuming one lane per terminal for all terminals where the survey indicates there is a large base of repeat users. Terminals that would not have transponder lanes are those with a largely recreational ridership and/or very small numbers of riders, including: Anacortes, the San Juan Islands, Port Townsend, Keystone, Point Defiance, and Tahlequah.

As discussed in Section 12 a vehicle reservation system helps to move customers with time flexibility out of the peak to better distribute demand and increase asset utilization without requiring investment in additional vessels. Because a vehicle reservation system effectively moves physical queues out of the terminal, it significantly reduces the need for costly terminal expansion and reduces queuing impacts for communities. The transponder lanes are a key component of the system because they allow people to move through the system quickly, avoiding the need for more operating staff, shortening the lead-time that must be allowed for arrivals, and providing more customer convenience.

### Major Terminal Projects

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

- Mukilteo. The Mukilteo terminal is proposed for relocation to the tank farm site just east of the current terminal. This proposal would address a number of issues that cannot be adequately addressed at the current site, including providing overhead loading, increasing holding, and removing the traffic conflicts at the existing site. The \$120 million cost (\$'08) will be partially offset by \$72 million of avoided preservation needs at the current facility, making the net cost of the new facility \$48 million.
- Edmonds. This Scenario assumes that the Edmonds terminal will remain in its current location and that an allowance of \$26 million is included to enhance multimodal connections.
- Anacortes. The proposal for Anacortes is to implement the current design for a replacement building and the associated terminal reconfiguration to improve circulation. The building replacement is necessary as a preservation matter, though the new building will be larger and better suited to the longer wait-times that are typical at this facility, especially in the summer.

### Improvements Targeting Dwell Time

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

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

### Escalation Assumptions and Cost Estimating Risk

The cost estimates prepared for this planning effort have been based on the best available information at the time. In some cases, cost estimates were based on detailed designs and in other cases very preliminary concepts. To manage cost estimating risk, appropriate design and scope contingencies were used, especially where project information is not as well developed. As projects continue to be refined and developed cost estimates will be reviewed and updated,

Besides scope and design risk, the other significant area of risk in the cost estimates are the assumed escalation factors. Costs are estimated using today's prices for labor and materials. However, most of the expenditures in the plan will be in the future, when cost will be higher due to cost escalation. Expectations about cost escalation can vary significantly depending on the type of expense. In the case of WSF, the key to future costs will be escalation for fuel, labor, steel, concrete and ship building and shipyard services. The following are the key escalation assumptions used for this analysis:

- Vessel labor – 3.6% per year based on a 10-year average rate of growth for WSF labor costs.
- Vessel non-labor – 1.9% per year based on forecast of the implicit price deflator (IPD)
- Terminal costs – 3.0% per year based on a blend of labor costs at 3.6% and non-labor costs at IPD
- Fuel costs – based on November fuel forecast adopted by the State Forecast Council (approximately 1% per year)
- All other operating costs, including non-represented labor at IPD.
- Vessel capital costs, including new vessel acquisitions – 4.7% per year based on the 20-year average cost escalation in the U.S. shipyard industry
- Emergency repairs – 4.7% per year since most emergency repairs are related to vessel capital
- All other capital costs – IPD forecast (1.9% per year) consistent with budget assumptions used for all WSDOT projects

### 1.3 Funding Implications

The proposed package of services and investments will result in a significant unfunded gap of approximately \$3.3 billion, or approximately \$300 million per biennium (ranging from a low of \$110 million to a high of \$390 million), including capital and operating gaps. This is not a surprise given the reduction in dedicated tax funding for ferries. The magnitude of the gap is noteworthy and reflects a significant recapitalization effort related to aging assets, particularly with vessels. Another noteworthy point is that the funding shortfalls are almost exclusively in the capital program.

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

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

The question of where additional funding might come from is the subject of the WSTC's Ferry Funding Study, which has been a parallel effort to the development of this Plan. The WSTC is charged with identifying and recommending an approach to restoring WSF to a financially

sustainable condition. The Commission will be basing its funding recommendations on the needs identified in this plan.

Operating Outlook. Providing the service level in Scenario A is estimated to cost approximately \$6.4 billion over the 22-Year Long-Range Plan planning horizon. Total revenues are estimated to be approximately \$6.2 billion, with \$5.3 billion coming from operations and the rest from dedicated tax support and a small amount from transfers from other highway funds.

**Exhibit 9**  
**Operating Funding Outlook (YOE\$ millions)**

	LRP (22-Yr)	16-Year
<b>Operating Revenue:</b>		
Farebox Revenue	\$5,165	\$3,352
Miscellaneous Revenue (Concessions, etc)	\$122	\$80
<b>Total Revenue from Operations</b>	<b>\$5,286</b>	<b>\$3,432</b>
<b>Operating Program:</b>		
Vessel Costs	\$4,361	\$2,945
Terminal Costs	\$1,098	\$717
Management & Support Costs	\$937	\$641
<b>Total operating program</b>	<b>\$6,396</b>	<b>\$4,303</b>
<i>Operating revenue as % of Ferries Division cost</i>	<i>83%</i>	<i>80%</i>
<b>Net operating income/(subsidy required)</b>	<b>(\$1,110)</b>	<b>(\$871)</b>
Dedicated Ferry Taxes (Operating Account)	\$809	\$561
Administrative Transfers (Operating Account)	\$88	\$88
<b>Estimated Subsidy Available</b>	<b>\$897</b>	<b>\$649</b>
<b>Net operating surplus/(deficit)</b>	<b>(\$213)</b>	<b>(\$222)</b>
<i>Average per biennium</i>	<i>(\$19)</i>	<i>(\$28)</i>
<b>Note:</b> Parenthetical values represent shortfalls in the operating program; positive values represent operating surpluses		

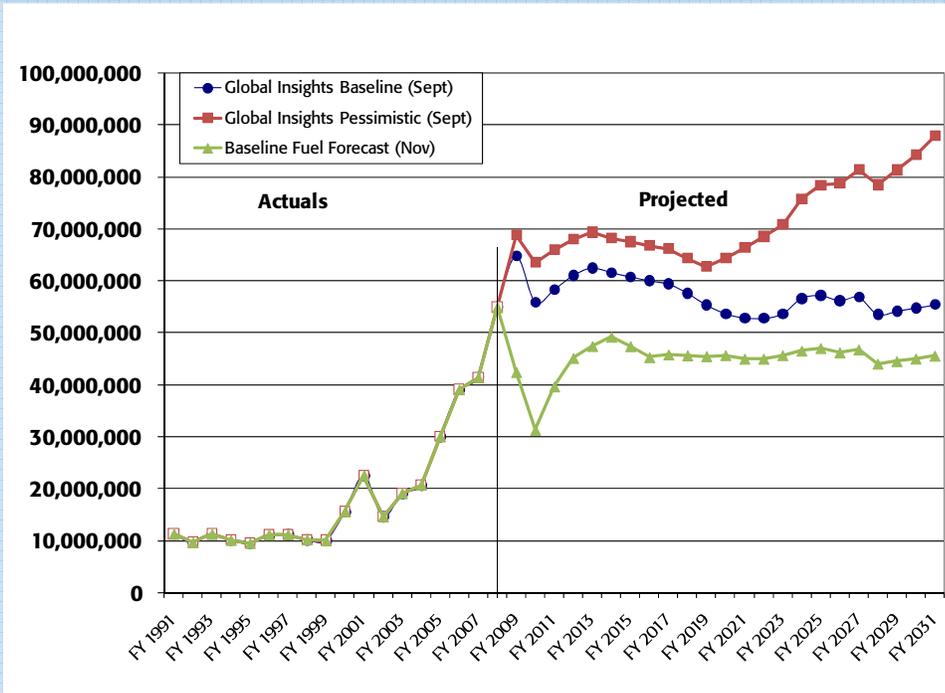
- Ridership growth and fare increases result in an average farebox recovery rate of 83%.
- Base fare assumptions assume the revenue equivalent of the current legislative annual increases of 2.5%. Since passenger fares are proposed to grow at half the rate of vehicle fare, vehicle fares would need to grow an average of 2.8%, while passenger fares would grow at 1.4% per year to generate the same level of revenue.
- Fuel surcharges are set to cover the increased costs of fuel associated with variances in fuel costs beyond the long-term average cost of fuel (\$2.15/gallon). Based on the November 2008 forecast of fuel prices, it is assumed that a fuel surcharge would be in effect from fiscal year 2011 – 2020, at which time the charge would be eliminated. Total estimated fuel charge revenues over that period are \$50.6 million.
- The funding analysis assumes that WSF will continue to receive the \$88 million in support from other transportation funds over the next three biennia (per the 2008 Legislative 16-Year Plan). Following that period, no additional support is anticipated from the motor vehicle fund.

There would be considerable risk in the assumed growth in fuel prices. The costs in Exhibit 9 are based on Global Insights' November 2008 baseline forecast for the 22-Year Long-Range Plan.

Using this forecast decreases total fuel cost estimates by \$634 million from the September forecast. The proposed fuel surcharge would significantly eliminate the budget risk of fuel cost variability by shifting this risk to the customer who would face higher fares in the event of significantly higher fuel costs

### Fuel Price Risk

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



Two recent pieces of legislation (RCW 43.19.642 and HB 1303) have the potential to require WSF to power its fleet with 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.

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.

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

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

Capital Outlook. The capital program proposed for Scenario A is estimated to total \$5.7 billion over the 22-Year Long-Range Plan horizon. Funding the capital needs of the Revised Draft Plan will require \$3.1 billion more than current assumed funding, which includes:

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

**Exhibit 10**  
**Capital Funding Outlook (YOES\$ millions)**

	LRP (22-Yr)	16-Year
<b>USES OF FUNDS</b>		
Terminals Preservation	\$1,137	\$860
Vessel Preservation	\$1,544	\$820
New Vessel Construction	\$1,793	\$1,474
Terminal & Vessel Improvements	\$531	\$452
Existing Debt Service	\$212	\$212
Miscellaneous Uses	\$453	\$303
<b>Total core capital program</b>	<b>\$5,669</b>	<b>\$4,121</b>
<b>SOURCES OF FUNDS</b>		
Dedicated tax distributions to Ferrie	\$829	\$685
Administrative Transfers	\$1,126	\$736
Federal Funds	\$347	\$259
Bond Proceeds	\$241	\$241
<b>Total Sources</b>	<b>\$2,543</b>	<b>\$1,921</b>
<b>Capital Funding Gap</b>	<b>(\$3,126)</b>	<b>(\$2,200)</b>
<i>Average per biennium</i>	<i>(\$284)</i>	<i>(\$275)</i>
<b>Note:</b> Parenthetical values represent shortfalls in the capital program; positive values represent capital surpluses		

## 2. SCENARIO B

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

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

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

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

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

## 2.1 Operating Program

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

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

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

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

- Reduce Bremerton to only 1 boat.
- Eliminate weekday night service between mid-October and mid-May on Edmonds-Kingston route.
- Reduce service in Triangle to two medium vessels (2 medium vessels between Fauntleroy and Vashon, sharing with Southworth with a two-boat schedule).

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

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

The net effect of these changes is a reduction in total service hours of approximately 17%, but with the exception of the international route all current routes in the system maintain ferry services. The significant savings from these service cuts come in two parts: (1) the service can be provided with a

fleet of 17 vessels (5 fewer than under Scenario A); and (2) generally the routes that have been cut are also relatively poor financial performers or the proposed service reductions are during low productivity periods.

### Exhibit 11 Summary of Proposed Fleet Deployment for Scenario B

<b>Proposed 2030 Fleet Deployment Plan: Scenario B</b>				
<b>Route</b>	<b># of Vessel</b>	<b>Fall, Winter, Spring</b>	<b>Shoulder</b>	<b>Summer</b>
Bainbridge	2	2 Jumbo		
Bremerton	1	1 Medium	1 Jumbo	
Clinton	2	2 Medium		
Kingston	2	2 Jumbo		
Point Defiance	1	1 Small		
Port Townsend	1	1 Small		
San Juan Islands	2 or 3	2 Large	3 Large	
Interisland	1	1 Small	1 Mid-Size	
Fauntleroy-Vashon-Southworth	2	1 Medium	2 Medium	
		1 Mid-Size		
<b>Total Deployed</b>		<b>14</b>	<b>14</b>	<b>15</b>

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

### Dialogue with Local Governments

WSF recognizes that the service reductions identified in Scenario B would have negative impacts on ferry-served communities in terms of customer service and the local economic environment. If Scenario B is determined by the Legislature to be the future of ferry system, WSF would want to engage local governments in ferry-served communities in a dialogue about how these negative impacts could be mitigated or reduced.

An example of how local governments could help to mitigate the reduction in WSF service would be implementation of local passenger-only ferry (POF) service, as previously authorized by the Legislature. In fact, the Puget Sound Regional Council is concluding a POF study that has confirmed that the most promising cross-sound candidates for POF service are:

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

All three of these routes are negatively impacted by the service reductions in Scenario B and would benefit from local POF service.

During the 2009-2011 biennium, before the service reductions on these routes would occur, WSF would want to engage local governments in ferry-served communities in a dialogue on how service might be maintained and supplemented, mitigating potential reductions.

## 2.2 Capital Program

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

### Vessel Program

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

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

**Vessel Procurement.** The most significant capital savings in Scenario B come from a reduced vessel procurement program. Instead of an 11-vessel procurement, Scenario B would require a 5-vessel procurement plan. The proposed procurement program, summarized in Exhibit 30, includes the following elements:

- In the near term acquire only one Island Home Class vessel estimated to cost a total of approximately \$84 million (\$'08).
- Invest approximately \$20 million in the Hyak to extend its life 20 years.
- In the 2019-2021 timeframe acquire two small vessels, the first to replace the retiring Elwha and the second to retire and replace the Hiyu.
- The 144-car vessel program is reduced from seven vessels to just two and would not start until 2022. Total cost of this program is estimated to be \$226 million (\$'08).

### **Exhibit 12 Vessel Procurement Plan for Scenario B**

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

**Vessel Improvements.** To be conservative, Scenario B reduces vessel improvement assumptions by only \$2 million over the 22-year period relative to Scenario A.

## Terminal Program

Terminal Preservation. Since WSF will continue to provide services to all of its current terminal facilities, there are not expected to be savings to the terminal preservation program.

Terminal Improvements. The terminal improvement program for Scenario B proposes approximately \$92.2 million in reductions from the \$376 million list of projects in Scenario A. The following are the key terminal improvement facility assumptions:

- Transit-related projects for improved transit access and walkways for Bainbridge, Clinton, and Kingston have been eliminated. However, the building and overhead loading improvements for Bainbridge are still included.
- All dwell time improvements have been eliminated in Plan B.
- Costs for major terminal improvements and reservation system costs remain unchanged from Plan A.
- Other changes include eliminating walkways improvements at Lopez and Bainbridge.

## 2.3 Funding Implications

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

Operating Outlook. As shown in Exhibit 13, the operating costs for Scenario B are estimated to be \$5.5 billion over the 22-Year Long-Range Plan horizon. Scenario B operating revenues are estimated to be \$5.0 billion over the same period, leaving \$550 million to be funded from the dedicated operating subsidy. With dedicated tax subsidies of almost \$900 million, there is an estimated cumulative tax subsidy surplus in the operating account of approximately \$347 million at the end of the planning period available to transfer to capital needs.

**Exhibit 13**  
**Operating Funding Outlook (YOES\$ in millions)**

	LRP (22-Yr)	16-Year
<b>Operating Revenue:</b>		
Farebox Revenue	\$4,860	\$3,163
Miscellaneous Revenue (Concessions, etc)	\$122	\$80
<b>Total Revenue from Operations</b>	<b>\$4,982</b>	<b>\$3,244</b>
<b>Operating Program:</b>		
Vessel Costs	\$3,667	\$2,527
Terminal Costs	\$969	\$642
Management & Support Costs	\$896	\$614
<b>Total operating program</b>	<b>\$5,532</b>	<b>\$3,783</b>
<i>Operating revenue as % of Ferries Division cost</i>	<i>90%</i>	<i>86%</i>
<b>Net operating income/(subsidy required)</b>	<b>(\$550)</b>	<b>(\$540)</b>
Dedicated Ferry Taxes (Operating Account)	\$809	\$561
Administrative Transfers (Operating Account)	\$88	\$88
<b>Estimated Subsidy Available</b>	<b>\$897</b>	<b>\$649</b>
<b>Net operating surplus/(deficit)</b>	<b>\$347</b>	<b>\$109</b>
<i>Average per biennium</i>	<i>\$32</i>	<i>\$14</i>

**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 90%.
- The reduced service levels result in lost ridership compared to Scenario A of approximately 9.6% overall (9% reduction in passengers, 10% in vehicles).
- Reduced ridership results in an estimated 6.3% loss in farebox revenues. Revenue loss is lower than ridership loss on a percentage basis because impacted routes are shorter routes with lower than average fares.
- As with Scenario A, the fare increases are assumed to match the current legislative financial plan assumption of average annual increases of 2.5%. In addition, fuel surcharges are set to cover the increased costs of fuel associated with variances on fuel prices beyond the long-term average cost of fuel.
- The funding analysis assumes that WSF will continue to receive the \$88 million in support from other transportation funds over the next three biennia (per the 2008 Legislative 16-Year Plan). Following that period, no additional support is anticipated from the motor vehicle fund.
- Relative to Scenario A, operating costs have been reduced by approximately 14%, while operating revenues have been reduced by approximately 6%. As a result, with the same fare policy as Scenario A, Scenario B is almost fully supported by operating revenues.
- The high farebox recovery rate results in a net surplus from operations of \$347 million, allowing for some transfers of dedicated operating taxes to help fund the capital program.

Capital Outlook. The capital program proposed for Scenario B is estimated to total \$4.2 billion over the 22-Year Long-Range Plan horizon. Funding the capital needs of the Revised Draft Plan will require \$1.68 billion more than current assumed capital funding, which includes:

- Transfers from the Motor Vehicle and Multimodal Accounts in the 16-Year Legislative Plan (continued through 2031).
- Bond proceeds as per the 2008 Legislative Financial Plan.
- The capital funding gap is somewhat back loaded with several vessel procurements in the final six years of the Plan. As a result, the 16-year funding gap is only \$728 million or less than half of the full 22 year gap.

If the potential transfers of operating tax subsidies that are available from the operating account surplus are included, the overall net funding gap for Scenario B is approximately \$1.3 billion. By looking at only the first 16 years, the overall funding gap is half as much at approximately \$619 million.

**Exhibit 14**  
**Capital Funding Outlook (YOE\$ millions)**

	LRP (22-Yr)	16-Year
<b>USES OF FUNDS</b>		
Terminals Preservation	\$1,138	\$860
Vessel Preservation	\$1,239	\$709
New Vessel Construction	\$761	\$224
Terminal & Vessel Improvements	\$415	\$341
Existing Debt Service	\$212	\$212
Miscellaneous Uses	\$453	\$303
<b>Total core capital program</b>	<b>\$4,218</b>	<b>\$2,650</b>
<b>SOURCES OF FUNDS</b>		
Dedicated tax distributions to Ferries	\$829	\$685
Administrative Transfers	\$1,126	\$736
Federal Funds	\$347	\$259
Bond Proceeds	\$241	\$241
<b>Total Sources</b>	<b>\$2,543</b>	<b>\$1,921</b>
<b>Capital Funding Gap</b>	<b>(\$1,675)</b>	<b>(\$728)</b>
<i>Average per biennium</i>	(\$152)	(\$91)
<b>Net operating surplus/(deficit)</b>	<b>\$347</b>	<b>\$109</b>
<b>Total Funding Gap</b>	<b>(\$1,328)</b>	<b>(\$619)</b>

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

Scenario B still shows a capital funding gap, even after the significant reductions in service and capital investments discussed above. To close this gap will require additional revenues, higher fares or additional service and investment reductions or some combination of thereof. It is important to

note, that further service reductions that might make a meaningful impact on the funding gap will require closing some domestic routes.