

# WSDOT Ferries Division

## Vehicle Reservation System Predesign

**Paula J. Hammond, P.E.**  
Secretary

**David L. Dye, P.E.**  
Deputy Secretary

**Steve Reinmuth**  
Chief of Staff

**David Moseley**  
Assistant Secretary  
Ferries Division

**Doug Schlieff**  
Operations Manager  
Ferries Division

**Joint Transportation Committee**  
January 5, 2010

# Introduction and Purpose

## 2009 Final Long-Range Plan

- Proposed a vehicle reservation system as the primary strategy for spreading peak period demand and offering high quality services with minimal capital investment needs.
- The first step in the process is completing a predesign study.

## Purpose of the Predesign Study

- Gain a clear understanding of facility constraints and options for addressing vehicle congestion and customer delay during peak times.
- Thoughtful analysis of options and costs.
- Define programmatic, qualitative, financial, and schedule requirements.
- Identify project limitations and risks.
- Decision-making tool for the Legislature.

# Background

## **In June 2009 WSF completed its Long-Range Plan**

- The Plan was developed over two years and responded directly to legislative requirements contained in ESHB 2358 (the “Ferry Bill”) which codified many of the findings in the JTC’s 2006 Ferry Financing Study.
- ESHB 2358 mandated that WSF fundamentally change its planning methods to first consider opportunities to manage demand before considering options to expand the system.
- The result is a plan that focuses on making the best use of existing assets by implementing a series of operational and pricing strategies over time to manage expected growth while minimizing the need for capital investments.

## **A vehicle reservation system was proposed as the key demand management strategy**

- A vehicle reservation system would allow WSF to offer high quality services with the smallest practical terminal holding areas.
- By minimizing holding needs, the Plan identified at least \$280 million of terminal investments that could be deferred or eliminated if reservations were broadly available.

# Legislative Direction

## **During the 2009 Session, the Legislature offered a number of clear policy directives related to the WSF Long-Range Plan**

- Fund the existing service levels.
- Manage demand through deployment of adaptive management strategies (operational and pricing strategies).
- Fund only “essential” capital projects (i.e. those that are absolutely necessary to support existing service levels, such as vessel replacements).
- Defer capital projects that: (1) are not immediately necessary; (2) where the benefits have not yet been adequately proven; or (3) where additional federal funding is being sought

## **2009-11 Budget contained proviso language related to potential implementation of a reservation system**

- Funding was provided to begin process of developing a reservation system by completing a pre-design study prior to the 2010 Legislative session.
- Compatibility of the WSF Electronic Fare System (EFS), proposed reservation system, and implementation of smart card (ORCA) must be evaluated as part of the pre-design study.

# Reservation System Goals

**The reservation system needs to work for customers and communities by:**

- Providing customers certainty with respect to which sailing they can board.
- Providing options to customers by giving them real time information about their preferred sailing.
- Reducing customer wait times.
- Reducing queuing outside terminals; improving traffic flow around terminals.
- Being easy to use (at the point of booking and upon arrival at terminals).
- Meeting the needs of different customer types (commuters, frequent riders, freight, recreational users).
- Providing flexibility to change and cancel reservations.

# Reservation System Goals

**The reservation system must also work for WSF by:**

- Spreading demand for peak sailings to times when there is available capacity.
- Maximizing use of existing assets.
- Serving more customers over time while minimizing capital costs and without significantly increasing operating costs.
- Integrating with existing fare collection and WSDOT technologies.
- Increasing opportunities to grow ridership by offering better and more predictable services.

# Study Approach

## Three-tiered approach

- Build the design on real experiences at WSF and other ferry operators
  - The predesign process included research and analysis of WSF's own systems and extensive outreach to other ferry operators.
  - Conducted a Request-for-Information (RFI) process to solicit information about reservation systems currently available in the marketplace.
- Engage all of the key departments at WSF in the process
  - Internal WSF technical teams were organized to work through the key elements of the predesign analysis.
- Engage with customers and community representatives
  - An Edmonds-Kingston Partnership Group was formed to bring together representatives from different customer groups (commuters, recreational users, residents, and commercial) as well as community leaders.
  - Public comments were accepted at Partnership Group meetings and at public meetings throughout the ferry service area.

# Lessons Learned

## Research and Experience

- Current WSF reservation system experience
- Research about reservation systems elsewhere in the world
- Edmonds-Kingston Partnership Group
- Responses to RFI from technology providers

## Major Lessons Learned

- Customers plan trips in different ways and want flexibility, especially around the return trip, which presents greater uncertainty about exact travel times.
- On-time performance and real-time communication are necessary to the success of the system.
- A reservation system can and should differ by route.
- Most large ferry systems have a reservation system, especially for recreational routes and commercial customers.

# Key Reservation System Elements

## Intelligent Transportation Systems (ITS) and Communication System Improvements

- Research into the successful deployment of reservations elsewhere highlighted the importance of effective and coordinated real-time information systems.
- These are not only essential to the operation of reservations, in many cases, the availability of real-time information provides demand management benefits on its own.
- There are two critical elements of these systems: (1) collection of reliable real-time information (wait times, sailing schedules/delays, space availability) and, (2) effective communication infrastructure to share the information widely.
- The system would need to include new and upgraded:
  - Highway/ferry advisory radio (HAR/FAR),
  - Variable messaging regional highway signs (VMS),
  - Local signs, email and text alerts, and
  - Improvements to WSF website traveler information

# Key Reservation System Elements

**Business rules define how a reservation system would need to operate to support the identified goals.**

**While the business rules will be tailored to system needs at the route level, as proposed the basic structure of the system includes:**

- Up to 90% of vessel is available for reservations on peak and commute sailings.
- Minimum 50% of vessel available for reservations during off-peak.
- Reservations will be available 4 weeks in advance on commute sailings and 6 months in advance on other sailings.
- Priority Access programs will provide benefits to commercial customers and frequent users – addresses concerns that reservations would favor tourists over local residents.
- Non-priority access reservations will require prepayment of fare. This is not an additional fee.
- There will be flexibility to cancel and change reservations.
- Customers will need to arrive 15 to 30 minutes in advance of their departure.

**These rules were developed in close consultation with the Edmonds-Kingston Partnership Group.**

# Key Reservation System Elements

## Vehicle Processing and Terminal Operations

- Reservations can be made to work at 17 of 20 WSF terminals (all except Fauntleroy, Tahlequah, and Vashon Island).
- Edmonds will require modest modifications to support reservations.
- Mukilteo is too risky, given the five-year lease on parts of the holding area.
- Fauntleroy has inadequate holding area, short headways, and multiple destinations that make reservations challenging, and would require significant terminal expansion or operational changes, such as shifting Southworth traffic to downtown Seattle.

## Reservations Information Technology

- The reservation system will share information with the existing ticketing system.
- At the tollbooths, operators must be able to access reservation confirmation to confirm and possibly modify fare payment.
- The reservation system will work with existing multi-ride products.
- The reservation system must accommodate full prepayment of fares for vehicles and their passengers.

# Predesign Alternatives Considered

**Alternatives must be evaluated in a predesign report. WSF developed five alternatives.**

**These were generally organized according to the complexity and scale of the system requirements**

- **Alternative 1:** Upgrade the reservation systems for Port Townsend-Keystone, Anacortes-Sidney, and commercial customers in the San Juan Islands to enhance communication and encourage online booking.
- **Alternative 2.** Alternative 1, plus expand reservations to all San Juan Island customers and to commercial customers system wide.
- **Alternative 3.** Alternative 2, plus build an effective, real-time regional ITS communication system to notify customers of terminal congestion and service disruptions.
- **Alternative 4.** Alternative 3, plus extend reservations to all customers in the north and central sounds.
- **Alternative 5.** Alternative 4, plus extend reservations to all customers on all routes (involves the addition of Vashon Island, Southworth, and Mukilteo-Clinton routes).

# The Preferred Alternative

## Selection of Preferred Alternative

- Alternative 4 was selected as the preferred alternative, for the following reasons:
  - Greatest overall benefit to customer time savings and demand management.
  - Offers benefits to majority of customers while keeping costs per rider low and implementation risks manageable.
  - All routes benefit from a commercial reservation program, improved communication systems, and real-time traveler information
  - Extending reservations to Mukilteo-Clinton, Fauntleroy-Vashon-Southworth and Point Defiance-Tahlequah is significantly more risky and expensive, and would require either major terminal investments or operational changes.

# Summary of the Preferred Alternative

Terminal	Reservation Availability	Communication Improvements			Terminal Improvements			
		Regional VMS	Highway Radio	Queue Detection	Local VMS	Traffic Signs	Ferry Radio	Other
Anacortes	All Customers		X			X	X	
Bainbridge	All Customers	X	X	X	Existing	X	X	
Bremerton	All Customers	X	X	X	Existing	X	X	
Clinton	Commercial Only		X	X		X	X	
Edmonds	All Customers	X	X	X	Existing	X	X	Tollbooth, gate
Fauntleroy	Commercial Only	X	X					
Friday Harbor	All Customers		X			X		3 Web cameras
Keystone	All Customers		X	X		X	X	
Kingston	All Customers	X		X		X	X	
Lopez Island	All Customers		X			X	X	

# Summary of the Preferred Alternative

Terminal	Reservation Availability	Communication Improvements			Terminal Improvements			
		Regional VMS	Highway Radio	Queue Detection	Local VMS	Traffic Signs	Ferry Radio	Other
Mukilteo	Commercial Only	X	X	X		X	X	
Orcas Island	All Customers		X				X	2 Web Cameras
Point Defiance	Commercial Only		X			X	X	2 Web Cameras
Port Townsend	All Customers		X	X		X	X	
Seattle	All Customers	X	X				X	
Shaw	All Customers						X	2 Web Cameras
Sidney	All Customers							
Southworth	Commercial Only	X	X		Existing	X	X	
Tahlequah	Commercial Only		X				X	
Vashon Island	Commercial Only		X					2 Web Cameras

# Proposed Implementation Program

- **Phase I.** Initial acquisition and testing of the “industry-standard” reservation system (May 2010 – June 2011).
  - Procure a reservation system and integrate it with existing IT systems.
  - Reservations will be deployed on routes that currently offer reservations.
  - Build ITS enhancements to accurately calculate wait times.
- **Phase II.** Full implementation in the San Juan Islands and commercial on all routes (July 2011 – June 2015).
  - Extend reservations to all Anacortes-San Juan Island customers and to commercial customers system wide.
  - Build remaining regional ITS enhancements.
- **Phase III.** Expansion to the Central Sound commuter-oriented routes (July 2015 – June 2018).
  - Operate a 3 – 6 month pilot on one Central Sound route.
  - Extend reservations to Seattle-Bainbridge, Seattle-Bremerton, and Edmonds-Kingston following a successful pilot.

# Proposed Implementation Program (continued)

## Benefits of the Implementation Program

- WSF will have more than two years of reservation system experience before requesting funding for Phase III implementation and expansion to the Central Puget Sound.
- The implementation schedule allows WSF to build the system gradually, starting with lower risk/lower complexity parts of the system.
- There will be an opportunity to learn the demand management benefits from the improved communication system on the Central Sound routes before implementing reservations

## Route-Level Implementation Measures

- Partnership Groups comprised of customers and local community leaders will be convened for each route where reservations are planned to engage key stakeholders.
- Modeled on the successful process used with the Edmonds-Kingston group, these groups will evaluate how the system should work on their route, including terminal modifications and business rule phasing.

# Budget Analysis

## Capital Costs over 16-year Legislative Financial Plan horizon

- Total cost is estimated to be \$25.9M in YOE dollars, spread over five biennia. This is \$8 million higher than the estimate included in the Long-Range Plan, because of proposed ITS/communications investments.
- The preferred alternative is two separate but interrelated projects:
  - \$14.3M regional ITS program, which could proceed without investment in the reservation system.
  - \$11.6M reservation system, which would build on investments in regional ITS, and greatly improve demand management capabilities.
- Phase III funding (\$6.5M for reservations in the Central Sound) will not need to be committed until WSF reports back on progress from Phases I & II.

## Ongoing Operating Costs

- \$1M per biennium in 2011-13 and 2013-15.
- Increasing to \$1.8M in 2015-2017 and \$2.5M in 2017-19 and beyond.
- Costs primarily include staffing impacts, IT support, and additional customer service requirements.
- Some costs Program X and some WSDOT Program C.

# Next Steps

- A final report will be completed based on OFM and legislative staff review and will be submitted January 11, 2010.
- If the Legislature directs WSF to proceed with the preferred alternative, Phase I implementation will begin as follows:
  - Begin final design of the project elements.
  - Procure a reservation system through a RFP process.
  - Integrate the reservation system with WSF's existing IT infrastructure.
  - Convene a local partnership groups for Port Townsend-Keystone, Anacortes-Sidney and Anacortes-San Juan Islands freight customers to discuss implementation and phasing on those routes.
  - Complete necessary terminal modifications at the Phase 1 terminals.
  - Launch the new reservation system on routes which currently have reservations (Port Townsend-Keystone, International, and commercial-only in the San Juan Islands) in spring/summer 2011, which will be just before the introduction of the new 64-car vessel on the Port Townsend-Keystone route.

# QUESTIONS?

For more information on the Reservation System Predesign Study,  
please contact:

David Moseley, Assistant Secretary, Ferries Division,  
at **[moseled@wsdot.wa.gov](mailto:moseled@wsdot.wa.gov)**, or **206-515-3401**.

For Partnership Group materials and information:

**<http://www.wsdot.wa.gov/ferries/planning/vehiclereservations.htm>**.