



WASHINGTON STATE DEPARTMENT OF TRANSPORTATION  
FERRIES DIVISION

FINAL LONG-RANGE PLAN

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APPENDIX I  
JOINT WSF/WSTC RECOMMENDATIONS ON ADAPTIVE  
MANAGEMENT STRATEGIES

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# JOINT RECOMMENDATIONS ON ADAPTIVE MANAGEMENT STRATEGIES

## 1. OVERVIEW

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Passed by the 2007 Legislature, Engrossed Substitute House Bill (ESHB) 2358 – “The Ferry Bill” – includes a number of directives related to how the Washington State Department of Transportation Ferries Division (WSF) is providing services and how it should be planning to meet the needs of the organization in the future. Specifically, the legislation requires WSF to “adopt 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 also requires that WSF and the Washington State Transportation Commission (WSTC) make joint recommendations to the legislature for improvement of operational strategies. This document details those joint recommendations.

### 1.1 The Intent of Adaptive Management Strategies

In this context, “adaptive management” refers to a process for learning from outcomes of operational programs and continually improving management practices to achieve the desired outcomes. With respect to the strategies proposed herein, the desired outcomes are twofold:

1. **Demand management** – Maximize use of existing assets through pricing and operational strategies that encourage customers to shift travel modes and times, spreading existing demand to times and modes that have excess capacity.
2. **Increase operational efficiency** – Employ operating strategies that reduce operating costs, queue length, and time spent in terminals to make more efficient use of existing resources.

### 1.2 Relationship to WSF Revised Draft Long-Range Plan

The Revised Draft Long-Range Plan, released by WSF on January 31, 2009, includes a number of pricing and operating strategies designed to achieve demand management goals and improve operational efficiency. The strategies included in the Revised Draft Plan were those determined to have the greatest demand management and operational efficiency impacts, while minimizing potentially negative impacts for customers and communities. They are described identified as “Highest Priority Strategies” and described in **Section 2** below.

The Revised Draft Long-Range Plan relies on a reservation system as the ferry system’s primary demand management tool. By moving existing queues into a virtual environment, providing more information about sailing availability, and guaranteeing spots on vessels, a reservation system would

eliminate the need for costly additional terminal holding space, facilitate time shift out of the peak, and provide a customer convenience.

While a reservation system is thought to be the most effective demand management tool at this time, it is certainly not the only option available. Preliminary analysis showed that congestion pricing, for example, could also be quite effective. However, there are a number of implementation and customer relation challenges associated with congestion pricing. Due to the system's existing one-point toll collection policy, toll collection booths would need to be built and staffed in a number of terminals, fare collection technology would need to be changed to stored value instead of trips, and frequent user policies would need to be revised.

For these reasons, a reservation system is thought to be the more effective initial demand management tool. A cost-benefit analysis will be undertaken as part of the system pre-design efforts. Additionally, the capital investments associated with the reservation system establish the toll collection systems through which congestion pricing (or other pricing strategies) could be more easily implemented as need arises. In fact it is likely that congestion pricing would work more effectively if implemented within a system of reservations than as a stand alone strategy.

In addition to congestion pricing, the analysis of operating and pricing strategies undertaken by WSF identified a number of other options that would also have positive demand management and operational efficiency outcomes. Depending upon the effectiveness of the strategies proposed in the Revised Draft Long-Range Plan (particularly the reservation system), WSF will pursue other strategies not specifically included in the Plan.

**Section 3** identifies a comprehensive list of what those potential additional strategies are. They include strategies with smaller demand management benefits that could be considered for implementation in the near term. They also include strategies that are expected to be effective demand management tools, which may have greater negative customer impacts. As the economic conditions and ridership characteristics that affect the system are continually changing and evolving, these strategies will be frequently re-evaluated and implemented as needed. Both WSF and WSTC are in agreement that the list of strategies identified here merit additional consideration and depending upon the needs of the system, may be adopted at the route or system level.

## 2. HIGHEST PRIORITY STRATEGIES

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The following strategies were included in the Revised Draft Long-Range Plan. Together, they represent a package of adaptive management strategies that will help the system to manage demand through mode and time shifting incentives as well as improve operating efficiencies. WSF will pursue implementation of these strategies in the short term, and depending on outcomes will consider implementing additional strategies as needed.

## 2.1 Operational Strategies

### Reservation System

A reservation system allows WSF to move vehicle queues from the physical environment of terminals to the digital environment, thereby reducing need for additional space at terminals. Furthermore, a reservation system can act as a demand management tool by providing information and helping to move riders who are time-flexible into less crowded sailings and it provides the infrastructure needed for some of the targeted pricing strategies recommended in this document. A reservation system is the primary demand management strategy proposed in the Revised Draft Long-Range Plan.

### Transit Enhancements

These are defined as strategies encouraging the use of public transit systems and thereby increasing mode shift. 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.

To effectively implement a package of transit enhancements most likely to result in mode shift behaviors, WSF will need to coordinate closely with local transit agencies. It is expected some of the costs for improvements would be borne by WSF, while local transit organizations would need to provide other service improvements. However, it is recognized that local transit agencies are also hard pressed for funding service enhancement. While the support of local transit agencies is desirable and provides the biggest mode shift impact, there are still mode shift benefits to be gained by the WSF only improvements, and those will be pursued.

The following is a list of recommended transit enhancements:

- Extend transit routes closer to the ferry
- Construct dedicated, convenient, sheltered (ferry to bus without getting wet) transit/ferry transfer facilities within the terminals.
- Coordinate transit schedules with ferry schedules
- Improve transit connections and frequencies
- Install inter-operable communications to ensure delayed buses or late ferries do not automatically mean missed passenger connections.
- Provide real time transit arrival, departure, and connections information
- Coordinate transit fare media with fare payment media used on ferries via a “universal smart card”

- Provide an overall benefit to users of the “universal smart card” by providing a discount walk-on ferry fares so that the total amount paid under the universal card is less than if a person were to pay for their transit and ferry fares separately.
- Utilize transit priority, bus lanes, or queue jumpers to ensure buses avoid traffic queues
- Provide new routes that serve the ferry and directly connect with employment centers or intermodal hubs (such as King Street and Westlake intermodal hubs)
- Provide connector shuttles to circulate passengers between the terminal and transit hubs, rental car agencies, activity centers or parking garages
- Increase passenger awareness of connecting transit routes, schedules, and fares, perhaps by training all employees or a single employee (e.g. a “mobility concierge” at each terminal)
- Construct new park-and-rides with good transit connections to terminals
- Expand vanpool and carpool fleets, and include dedicated priority access and staging of vanpools at terminals
- Pursue co-location of carsharing pods at all ferry terminals with reservations/usage potentially linked to electronic fare media use for ferries

### Fuel Conservation

Fuel costs comprise a significant portion of WSF’s operating costs, and to the extent that operating strategies can reduce fuel consumption, they should be considered.

- Vessel modifications – The Revised Draft Long Range Plan identifies a number of strategies specific to vessel classes that are designed to make these vessels more fuel efficient
- Tie-up methods – WSF could attempt to develop alternate vessel tie-up methods that allow for a reduction in shaft speed (or shut down of shafts) while docked
- Boat speed – 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, to reduce operating costs while minimizing negative impacts to customers.

## 2.2 Pricing Strategies

ESHB 2358 requires WSF to review fares and pricing policies annually, with the Commission approving and adopting by rule fares for the ensuing year. The legislature has provided specific direction regarding the use of 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 the 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 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 the impacts on users, capacity, and local communities; and,
- Keep the fare schedules as simple as possible.

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

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

Using new information from the WSTC-commissioned survey, WSF undertook a thorough review of pricing strategies as part of its long-range planning effort. A number of strategies were identified as having demand management benefits (for a more thorough review of the potential effectiveness of these strategies in achieving demand management outcomes, please refer to the Revised Draft Long-Range Plan). As a reservation system is proposed as the primary demand management strategy in the Plan, many of the pricing strategies considered were not explicitly included in the Plan.

The Revised Draft Long-Range Plan identifies no fees for reservations, a fuel surcharge, and differential passenger and vehicle pricing as the pricing strategies to pursue in the short term in order to meet the fare revenue requirements of the Transportation Budget, mitigate operating cost risk, and increase mode shift behaviors. This package of pricing strategies assumes a reservation system will be WSF’s primary demand management tool.

### Differential Vehicle and Passenger Pricing

Differential vehicle and passenger pricing refers to how specific fare categories could 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 in the near term, allows the differential between the two fare categories to grow more rapidly, creating a stronger pricing incentive for mode shift. WSTC survey results showed that this could be an effective strategy, and it is currently included in the Revised Draft Long-Range Plan.

### Reservation System Pricing

As currently proposed, the reservation system does not include any additional fees for reservations. There would need to be some form of prepayment to address the potential for no-shows, however, since this is proposed as the primary demand management tool, it is important to make it as attractive as possible to gain broad acceptance of the system and minimize negative impacts to customers.

### Fuel Surcharge

While it doesn't have an explicit demand management benefit (except to the extent that changes in total ticket price impact ridership through elasticity effects), a fuel surcharge is intended to mitigate operating cost risk with respect to fluctuating fuel prices. A fuel surcharge 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 for this strategy involves how to determine the current base fuel price from which future fuel surcharges would be pegged.

## 3. STRATEGIES FOR FURTHER CONSIDERATION

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Given that the economic conditions and ridership characteristic affecting the system are continually evolving and difficult to predict, WSF may need to consider additional options for achieving demand management and operational efficiency goals. Consistent with the "adaptive management" directive put forth by the Legislature, WSF and WSTC will continually monitor the outcomes of implemented operational and pricing strategies, making adjustments or pursuing new strategies as necessary. To that effect, the adaptive management strategies listed below are recommended for further consideration, as each was determined to be potentially effective.

### 3.1 Operational Strategies

In response to ESHB 2358, and as part of its long-range planning efforts, WSF conducted a comprehensive review of options and best practices to improve operating efficiencies. It considered the experience of transportation industry professionals and included an extensive national and international best practices review. Through these avenues a wide range of strategies was identified,

and over 90 discrete operational strategies were ultimately identified as having efficiency benefits for the ferry system. The strategies that merit additional consideration are discussed below.

#### Non-motorized Enhancements.

These are strategies designed to improve ease with which customers can walk-on or ride bicycles in lieu of driving on, thereby increasing mode shift behaviors.

- Provide or improve sidewalks between nearby housing and commercial centers to ferry terminal
- Provide or improve bicycle connections (bike lanes, paths, wide shoulders) accessing the terminal
- Provide bicycle hill-climb assistance via specialized equipment or vehicles
- Provide secure bike parking at terminals
- Provide or improve pedestrian and bicycle wayfinding signage around terminals and throughout nearby business districts
- Increase passenger awareness of bike and pedestrian amenities, connections, and resources perhaps by training all employees or a single employee (e.g. a “mobility concierge” at each terminal)
- Develop a bike sharing program at all ferry terminals with reservations/usage potentially linked to electronic fare media use for ferries.
- Install countdown timers indicating time to next boat departure for walk-on passengers to gauge the wait (and whether they need to rush)

#### Optimized Fare Collection Techniques.

These strategies are intended to reduce ticketing time and therefore queue lengths outside the tollbooth, generating a positive community impact.

- E-ticketing – WSF could implement on-line ticketing similar to an airline e-ticket website.
- Remote ticketing – Tickets could be sold and received in a remote holding location. Vehicles entering on-dock holding or loading would already be ticketed.
- Tandem ticketing – Booths could be added to each ticket lane, allowing two vehicles in each lane to be processed simultaneously.
- Payment method ticketing – Utilize booths specific to the method of payment, to allow pre-ticketed vehicles quicker access.
- Pre-paid/monthly transponders – Utilize in-vehicle RFID transponders tied to pre-paid credit accounts to process entering or exiting vehicles automatically.

- Round-trip ticketing – Encourage round-trip ticketing for trips departing from less congested terminals or during off-peak travel periods in order to allow more efficient boarding for return trips from congested terminals or during peak periods. Incentives might include providing a small discount for round trips or priority/early boarding for round trip ticket holders.
- Improved utilization of EFS system – The new fare collection system for the ferries seems to offer some opportunity for improved efficiency.
- Fare card/ Parking coordination – Use the same media for parking payment and WSF fares to encourage use of parking and mode shift.
- Limit accepted payment formats – Currently, the options include everything from personal check or cash to corporate account and Wave2Go cards, increasing processing time for employees who must negotiate the various fare media.
- Incentives for preferred payment – Offer reduced fares to those who utilize transponders, advance payment or whatever other service speeds the ticketing process

#### Enhanced User Information

These strategies are intended to encourage mode and time shift through better information and trip planning tools.

- Automated route planning
- Real-time queuing, departure and wait information
- Wayfinding: bicycles and pedestrians
- Wayfinding: parking
- Wayfinding: outside of terminals for vehicles
- Real-time parking capacity information

#### Scheduling

These strategies are designed 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 JTC Vessel Study will explore the costs and benefits of these options in more detail*).

- Extended ferry schedule with existing fleet type, if demand warrants and cost/benefit analysis determines it to be feasible
- Reduced schedule, eliminating sailing determined to be too expensive to run due to lack of utilization

## Traffic and Dock Space Management

These strategies could reduce queuing outside of the holding area and lessen negative community impacts.

- Traffic management to restrict the formation of queues on local streets with ordinances, signing, channelization, and enforcement
- Metered exit queuing to reduce the rate of vehicles arriving at congested intersections
- Minimize employee parking at terminals
- Reorganize flow and lane usage
- Relocate non-essential function from immediate holding area

## Promotion and Marketing of Non-SOV Modes

These strategies may encourage customer mode shift by providing information and incentives pertaining to increased use of HOV options.

- Partnering with Transportation Management Associations (TMAs)
- Expanded carpool definition and expanded HOV loading priority
- Creation of car-sharing pods at terminals and incentives for their use
- Subsidization of tax and/or rental car services
- General ongoing marketing and promotion of non-SOV modes of ferry access and amenities
- Development and implementation of a long-term marketing plan to encourage customer behavior shifts and reinforce desirable customer behaviors

## Parking and Holding

These strategies increase parking supply and efficiency, thus encouraging mode shift.

- Parking reservation system
- Shared parking
- Decentralized holding
- Increase parking capacity at terminals
- Remote holding

## 3.2 Pricing Strategies

Depending on the needs of the system and the effectiveness of any other operational or pricing strategies that have been implemented, WSF may need to pursue additional pricing strategies to better manage demand. Given their expected benefits in this respect, the following pricing strategies should be regularly evaluated and considered for inclusion in the tariff structure.

### Pricing Strategies for Near Term Consideration

The pricing strategies listed below could augment the pricing strategies included in the Revised Draft Long-Range Plan, providing additional mode and time shift benefits. As such, they may be considered in the short to medium term.

**Passenger Discounts.** Similar to the differential vehicle and passenger pricing strategy, a passenger discount could be considered to induce mode shift behavior. Given the negative revenue impacts of this strategy, it would likely need to be offset by a surcharge elsewhere.

**Seasonal Surcharge.** WSF's fare structure currently contains a seasonal surcharge component for the months May – October. 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. Therefore, WSF could consider adding a third level to its seasonal pricing structure that allows for a higher surcharge during July and August and additional demand management benefits during times when capacity constraints are most severe.

**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.

**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).

**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 through which out-of state residents pay higher relative fares.

### Other Pricing Strategies

The following list of congestion-related pricing strategies includes other options that could be effective demand management tools. Given the negative impact some of these could have on customers or ferry system revenues, they are not currently being considered. As a reservation system has been proposed as the system's primary demand management tool, WSF does not envision the need to implement these strategies in the near term. However, depending upon the

effectiveness of the reservation system as a demand management tool, WSF may wish to revisit these strategies in the future.

WSF and WSTC will continually monitor the outcomes of implemented pricing and operational strategies, making adjustments or pursuing new strategies as necessary.

**Congestion Pricing (Time of Day Surcharge).** 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 a variable congestion pricing approach.

**Congestion Pricing (Off Peak Discounts).** Off-peak discounts are a pricing incentive designed to encourage existing vehicle travelers to use lower demand sailings (thereby reducing pressure during peak periods) and to attract new riders to the system. While preliminary analysis shows that this strategy would have negative revenue impacts and only minor demand management benefits, it could be used in conjunction with tools such as surcharges to maximize demand management benefits while maintaining revenue neutrality. It could also be used as part of a larger commercial customer pricing program that seeks to accommodate large commercial vehicles on sailings with excess capacity.

**Vehicle Frequent User Policies.** Under the current frequent user policies a significant number of vehicle trips are paying the cheapest possible vehicle fare during the system's most congested times. To achieve its demand management goals, it may become necessary to revisit this policy and vary frequent-user fares based on congestion pricing principles in the future.

**Variable Pricing Among Substitutable Routes.** 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).

While these pricing strategies are recommended for future consideration, any change in fares will require WSF and WSTC to go through the process of modifying the Washington Administrative Code, including developing a specific fare proposal, seeking public comment, conducting a hearing and adopting by rule the proposed changes. As a result, this recommendation serves to identify the list of pricing strategies that will be considered during future tariff review cycles.