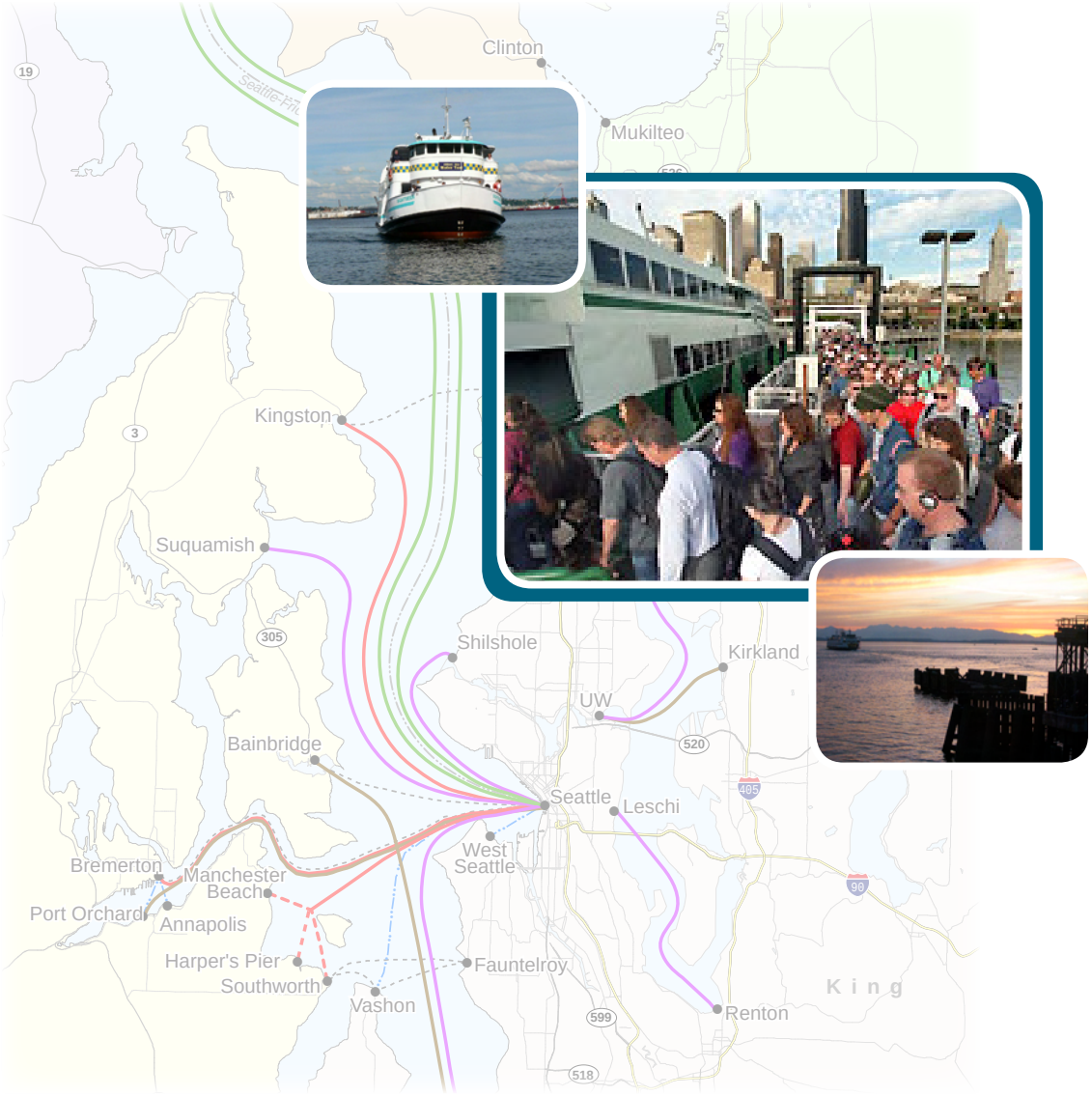
Puget Sound Regional Council
PSRC

Regional Passenger-Only Ferry Study

Executive Summary



Final Report

November 2008

Acknowledgments

The Regional Passenger-Only Ferry Study was completed by the Puget Sound Regional Council in partnership with the Project Advisory Committee (PAC) and the consultant team.

Kim Abel, former mayor, City of Port Orchard
Bruce Agnew, Discovery Institute / Cascadia Center
Ken Attebery, Port of Bremerton
Rep. Sherry Appleton, Washington State Legislature
Sheila Babb, Senator Patty Murray staff
Eric Baker, Kitsap County Dept. of Community & Development
Janice Baumgardt, Senate Transportation Committee
Gene Baxstrom, WA Joint Transportation Committee
Mike Beck, King County Metro
Jeff Bender, Seattle Department of Transportation
Teresa Berntsen, House Transportation Committee
Marc Bissonette, Port of Kingston / Victoria Clipper
Mike Bookey, Port of Kingston
Dan Burke, Port of Seattle
Greg Byrne, Bainbridge Island Planning Deptartment
Tim Caldwell, Port Townsend Chamber of Commerce
Eric Chipps, Sound Transit
Greg Cioc, Kitsap County Public Works
Julie Collins, Port of Tacoma
Dennis Conklin, Inland Boatmans Union
Ray Deardorf, Washington State Ferries
Pete DeBoer, Port of Kingston
Steve Demeroutis, Master, Mates, & Pilots Union
Bob Distler, Washington Transportation Commission
Su Dowie, Foss Waterway Development Authority
Walter Elliott, FAC Executive Committee, Kingston Ferry Advisory Committee
Rebecca Erickson, Poulsbo City Council
Leonard Forsman, Suquamish Tribe
Chuck Gale, Pacific Int'l Engineering
Reema Griffith, Transportation Commission Staff
Molly Harris, City of Tacoma
Dick Hayes, Kitsap Transit
Joe Hudspeth, All American Marine
Mary Ann Huntington, Port of Bremerton
Josh Johnston, King County Council
Nate Jones, City of Renton
Debbie Lester, Bainbridge Island Ferry Advisory Committee
Marko Liias, State Representative
Kjris Lund, Lund Consulting (for King County Ferry District)
Darlene Kordonowy, City of Bainbridge Island
Terry Mast, Inland Boatmans Union (Nat'l)
Mary McClure, Kitsap Regional Coordinating Council
Katie McSherry, Opinion Research Northwest
Alan Mendel, Vashon Ferry Advisory Committee
Melinda Miller, Port of Seattle
Sarah Miller, State Representation Rolfes staff
David Munnecke, House Transportation Committee
Marilyn Omey, Vashon Ferry Advisory Committee/Vashon Comm. Council
Dan O'Neal, Washington Transportation Commission
Phil Osborne, Pacific Int'l Engineering
Charles Prestrud, WSDOT
Kathryn Quade, Mayor, City of Poulsbo
Steve Rodrigues, Rodrigues Enterprises
Rep. Christine Rolfes, State Representative
Chris Rose, Washington UTC
Jill Satran, Governor Gregoire's office
Jim Seitz, City of Renton
Andrea Spencer, City of Bremerton Dept. of Community Development
Russell Steele, Clearwater Casino
Nels Sultan, Kingston Express Association
Ann Sutphin, Seattle Department of Transportation
Alice Tawresey, WSF tariff advisory committee (former Chair)
Tom Waggoner, Kingston Chamber & Ferry Advisory Committee
Geoff Wentlandt, Bremerton Planning Dept.
Susan White, former member, Des Moines City Council
Randy Witt, City of Bainbridge Island Public Works
Sonny Woodward, Marine Transportation Assoc. of Kitsap/Kingston Chamber
Tina Zaiss, Clearwater Casino

PSRC Staff and Consulting Team

Eric Anderson, Art Anderson Associates
Becca Aue, Nelson/Nygaard Consulting Associates
Larry Blain, Puget Sound Regional Council
Ben Brackett, Puget Sound Regional Council
Tom Brennan, Nelson/Nygaard
Mike Cummings, Puget Sound Regional Council
Charlie Howard, Puget Sound Regional Council
Chris Johnson, Puget Sound Regional Council
Greg Jose, Art Anderson Associates
Stephen Kiehl, Puget Sound Regional Council
Maggie McGehee, Nelson/Nygaard
Bob Sicko, Mirai Associates

Nelson|Nygaard
consulting associates

Table of Contents

Table of Figures

PASSENGER-ONLY FERRIES IN THE PUGET SOUND REGION

Overview

The Puget Sound region has a long history of reliance on waterborne transportation. Many cities and counties are bordered by water, and several communities—including Vashon Island and the San Juan Islands—are completely reliant on ferries to access the mainland. Ferries play a key role in the regional transportation system and economy, by connecting residents to jobs and services, and taking visitors to recreational opportunities. While most of the ferries operating in the PSRC region today are combined car and passenger ferries, passenger-only ferries (POF), which carry *only* foot passengers and can be likened to waterborne transit, also have a regional presence.

Foot ferries, or passenger-only ferries as they are referred to in this report, once filled a vital role in the regional transportation network. Between the years 1850 and 1930, hundreds of small, steam-powered ferries called the *Mosquito Fleet* connected numerous Western Washington ports. By 1930, the heyday of the fleet had passed, as it faced increasing competition from railroads, road travel, and a new generation of diesel-powered auto ferries that were the predecessors to Washington State Ferries (WSF's) modern day auto ferry fleet. In more recent history passenger-only ferries have played a continuing, if diminished, role in the region's transportation system. Unreliable public funding, low ridership, historically high fuel costs, and competition with other travel modes led to the 2005 shutdown of Seattle-Kingston passenger-only ferry service and more recently, the termination of the Seattle-Bremerton passenger-only ferry route.

Furthermore, in 2006 the State Legislature directed WSF to exit the passenger-only ferry business to focus its resources on auto ferry routes. Recognizing the importance of passenger-only ferries to the Puget Sound region, the Legislature simultaneously enabled cities, counties and transit agencies to form new Ferry Districts and Public Transportation Benefit Areas (PTBAs) with expanded tax-collecting authority to fund passenger-only ferry service. The legislature also reduced regulatory and legal barriers to new passenger ferry service. These actions laid the necessary groundwork for local and private passenger-only ferry service development and delivery.

In response, the King County Ferry District (KCFD) was formed and began collecting new property taxes in 2008. The funds will be used immediately to take over operation of passenger-only ferry service between downtown Seattle and Vashon Island and to enhance Elliott Bay Water Taxi service between West Seattle and downtown Seattle. Several other routes are now being studied by the KCFD for possible demonstration service. In addition to these passenger-only ferry services, Kitsap Transit offers year-round foot ferry service between Port Orchard, Annapolis and Bremerton. The Port of Kingston is working to reinstate direct service between Kingston and downtown Seattle. And, during the summer season, private operators run for-profit passenger-only ferry service geared to the Victoria, B.C. and San Juan Island tourist markets.

The Puget Sound Regional Passenger-Only Ferry (POF) Study

Today, in the face of escalating fuel costs, record high transit demand, and the need for more environmentally-friendly transportation options, there is great interest in the increased role passenger-only ferries could play in meeting regional transportation needs. Many believe POF could help the region achieve key transportation, economic, environmental, and land use objectives. While many studies in recent years have shed light on the need for passenger-only ferries in this region, most have focused narrowly on a specific agency, service area, or route, and do not provide a coordinated regional framework for POF service. And while the region's long-range transportation plan - *Destination 2030* - presents a multimodal transportation investment strategy that includes passenger-only ferries as an element of the region's high-capacity transit system, the ferry component of the plan is out of date.

Thus, in the spring of 2006 the Puget Sound Regional Council (PSRC) Transportation Policy Board asked staff to evaluate the current status of passenger-only service in the Central Puget Sound Region and explore the need for a coordinated regional approach to planning for passenger-only ferries. Following initial discussions, the policy board instructed staff to prepare a study to examine the role of POF in the region's transportation system, assess the regional market for passenger ferry service, prepare ridership forecasts, identify and evaluate possible routes, and develop a regional framework to guide decisions on system investments. The *Regional Passenger-Only Ferry Study* is intended to:

- Assist in the coordination of state, regional, and local ferry system investments,
- Integrate ferry system planning with transit, roadway, bike and pedestrian improvements,
- Provide guidance for ferry supportive land use, and
- Establish a policy framework for passenger-only ferry service that can be incorporated into Transportation 2040, the region's new transportation plan, to be adopted in spring 2010.

Over the past year and a half, PSRC has been working in close consultation with stakeholders to develop a regional plan for coordinated passenger-only ferry service. The full study is available at: www.psrc.org/projects/ferry/index.htm. Primary stakeholders include:

Transit agencies: Transit agencies provide service which is integral for bringing customers to and from ferry terminals. In addition, transit agencies can also be providers of passenger-only ferry service. In the PSRC region, Kitsap Transit operates service between Port Orchard, Annapolis and Bremerton via the Kitsap Transit Foot Ferry, and they are in the planning phases to offer Bremerton-Seattle service in the future.

Cities and counties: Local jurisdictions host ferry terminals, operate passenger-only ferry service (e.g. King County Ferry District), devise zoning codes that impact land use around ferry terminals, and develop the bicycle, pedestrian and roadway systems that are vital connections to terminals.

System users: Ferry system riders have a unique perspective which is critical to planning for system improvements. The Planning Advisory Committee (PAC) created for the Regional Passenger-Only

Ferry Study included numerous users, who contributed valuable input.

Ports: Ports have the authority to fund and operate passenger-only ferry service in the Puget Sound. Today, the Port of Kingston is moving ahead to develop and implement Seattle – Kingston service.

Washington State Ferries: Even though WSF will soon end operation of passenger-only ferry service, it will continue to operate nine important auto ferry routes in Western Washington. Future passenger-only ferry service should be planned in coordination with WSF to ensure it complements WSF service offerings and capital investments to meet the needs of all ferry system users.

Washington State Department of Transportation: Passenger and auto ferries act as an integral element of the region's highway system. While passenger-only ferries won't carry vehicles as WSF vessels do, many POF passengers will still complete a portion of their trip on state and local highways. Future POF expansion can play a role in mitigating demand for highway capacity, but may also increase traffic demand around new or expanded terminals. Future route expansion and terminal siting must be coordinated closely with WSDOT.

State Legislature: The Washington State Legislature plays an important oversight role for passenger and auto ferries. It has the authority to pass legislation impacting regulatory and/or funding mechanisms that can support regional passenger-only ferry service. In particular, the Joint Legislative Transportation Committee plays a central role. Both the JTC and legislators contributed to the planning effort as part of the POF study Planning Advisory Committee.

Transportation Commission: The Washington Transportation Commission provides policy guidance to the Legislature and sets fares for the ferry system. Members of the commission provided ongoing input to this study.

This study is intended to provide a framework that will guide these and other stakeholders as they consider opportunities for developing POF service. The work effort included a thorough literature review, a market analysis, ridership estimation and demand modeling, peer systems evaluation, evaluation of potential future POF routes and assessment of opportunities and challenges for integration with landside transportation systems. This report summarizes the outcomes and findings of these technical tasks and discusses regional implementation, next steps and regional roles.

EVALUATING MARKET OPPORTUNITIES FOR PASSENGER-ONLY FERRIES

To assess the demand for passenger ferry service, the study used a three-pronged approach: 1) market analysis and route identification, 2) ridership estimation using the regional travel demand model, and 3) further detailed evaluation against key criteria. This process resulted in the Regional Passenger-Only Ferry Strategy, which recommends phased implementation of 17 potential routes. The study also identifies regional coordination actions to help implement the passenger ferry system over time.

Market Analysis and Route Identification

Thirty-three routes were identified and analyzed to varying degrees in this process. They included:

- All existing passenger-only ferry routes
- Routes included in the current Regional Transportation Plan–Destination 2030.
- Passenger-only ferry routes studied previously in other planning processes
- Promising routes identified by the Project Advisory Committee (PAC) guiding this study
- Routes identified by community members and ferry system users
- Routes that appeared promising based on regional population and employment growth and documented travel patterns. Existing travel patterns were analyzed using the 2007 Washington State Ferry Customer Survey and the Puget Sound Household Travel Survey.
- While the majority of the routes analyzed primarily connect locations between or within the PSRC region's four counties (King, Kitsap, Snohomish and Pierce Counties), several routes were analyzed in areas outside the PSRC region where one terminus of the route was located within PSRC's jurisdictional boundaries.

Ridership Estimation and Demand Modeling

The thirty-three initial routes were analyzed using PSRC's regional multimodal travel demand model to arrive at ridership estimates for the year 2030. The key strength of the model is its ability to replicate actual travel behavior in the Puget Sound region, while weaknesses include its inability to accurately account for non-peak hour and recreational demand. The model is developed using data obtained from household travel surveys, which provide a statistically sound modeling suite that does well in replicating observed behavior.[1]

The project team then analyzed the results, adjusted some of the service assumptions, and removed or combined competing services within the same market to gauge the impact (e.g., removing one of two competing routes, or combining similar routes). A second model run was then completed, with post-modeling adjustments made to better account for recreational and tourist demand and revised service frequency assumptions. At this point, routes with extremely low estimated daily ridership (below 200 daily riders) were combined with other routes or removed from consideration. The remaining routes were then evaluated using a more comprehensive list of evaluation criteria.

1 For more information on the demand modeling process, see the Task 5 report *Market Analysis and Demand Modeling* at http://www.psrc.org/projects/ferry/Task5-MarketAnalysis_121107.pdf, and Chapter 2 of the Task 8 report *Regional Passenger-Only Ferry Strategy* at http://www.psrc.org/projects/ferry/Task8chapter2.pdf.

Criteria for Route Evaluation

Ridership estimates are only one factor affecting the viability of future POF service; a number of other factors impact how well future passenger-only ferry routes will perform. To assess these factors, the 17 more promising routes were evaluated using the following criteria, which take into account both current and planned conditions:

Demand – This set of criteria examined the estimated daily peak period ridership and the potential for tourist and recreational use and off-peak use (i.e. to access shopping or healthcare services).

Modal Advantage - This evaluation factor assessed whether or not other viable transportation modes (e.g. transit, highways, auto ferries) were available as an alternative, and what degree of time savings could be realized on passenger-only ferries compared to the next best available mode.

Land Use – This criterion evaluated both existing and planned land use and development densities in both the immediate terminal area, as well as the greater area surrounding the terminal. In this category the viability of terminal siting was also analyzed.

Operations & System Integration – In this category, routes were assessed based on the navigability of the waterways, adequacy of connecting transit service, quality of bicycle and pedestrian connections and facilities, availability of terminal area parking and the perceived vulnerability of the ferry terminal area to traffic impacts.

Cost – This criterion looked at capital costs associated with getting service up and running, ongoing operating cost per passenger mile, and whether the presence of passenger-only ferry service could help defer or eliminate significant alternative transportation infrastructure investments that might otherwise be needed to meet demand.

Environment – This final criterion assessed the sensitivity to wake impacts generated by vessels on the route, and to what degree the passenger-only ferry service would allow users to avoid driving on heavily congested roadways. It also assessed near shore environmental impacts related to terminal development and vessel traffic (e.g. eel grass, salmon, etc.).

This evaluation exercise was not used to further screen out potential routes. Rather, it was used as a tool to see which routes might be more viable in the immediate versus longer-term, to identify issues and challenges associated with any given route, and to begin analyzing what level of landside connections and improvements may be needed to support future passenger-only ferry service.

Route Evaluation Results

The evaluation process enabled the project team to categorize the final 17 routes according to the recommended implementation timeline. These categories are described below.

Immediate-term: Most Viable Routes Existing and New

Existing Routes. The existing routes in this category are already in operation and planned to continue under the authority of either the King County Ferry District or Kitsap Transit. This evaluation supports the continuation and expan-

sion of services on these routes over the next three years (2008-2011). These routes include:

- Vashon Island – Downtown Seattle
- West Seattle – Downtown Seattle (Elliott Bay Water Taxi)
- Annapolis – Bremerton (Kitsap Transit Foot Ferry)
- Port Orchard – Bremerton (Kitsap Transit Foot Ferry)

New Cross-Sound Routes. Three potential new routes in this category are deemed most immediately viable in terms of market demand and ridership, and are identified as routes with a high level of significance for meeting regional transportation needs. Existing markets on both sides of Puget Sound (King and Kitsap Counties) would provide sustainable ridership on these routes, even if they were to be implemented immediately or within the next few years. Most of these routes have some dock and terminal infrastructure in place to support POF service, as well as connecting transit, bicycle and pedestrian connections. As such, these routes are proposed for implementation over the next three years (2008-2011). Routes in this category include:

- Kingston – downtown Seattle
- Bremerton – downtown Seattle
- Southworth/Manchester Beach – downtown Seattle

Medium-term

The routes in this category have the potential to develop a viable market and operations plan in the medium-term, defined as within the next four to ten years. However, they would require demonstration testing, market and cost analysis, improved landside connections, operating subsidy, capital investment to fund vessels, docks and terminal facilities, and/or land use and development changes. Routes in this category include two potential new cross-Sound routes, and one King County route. They are:

- Bainbridge Island – Des Moines
- Port Orchard – downtown Seattle
- Kirkland – University of Washington

Long-term

These routes are probably not viable within the next decade, but have the potential to develop a viable market in the longer-term (ten or more years). However, they would require demonstration testing, substantially enhanced markets, improved landside connections, operating subsidy, capital investment to fund vessels, docks and terminal facilities, and/or land use and development changes. This category includes four King County routes and one cross-Sound route.

- Suquamish – downtown Seattle
- Kenmore – University of Washington
- Renton – Leschi
- Des Moines – downtown Seattle
- Shilshole – downtown Seattle

Tourism and Recreation-focused Routes

These seasonal routes would primarily serve tourist and recreation markets and are not integrated into the phasing strategy because they most likely require a private rather than public operator to deliver service. Both routes recommended in this category, however, do appear to have an existing market and could likely be feasible in the short to medium term, depending on the interest of

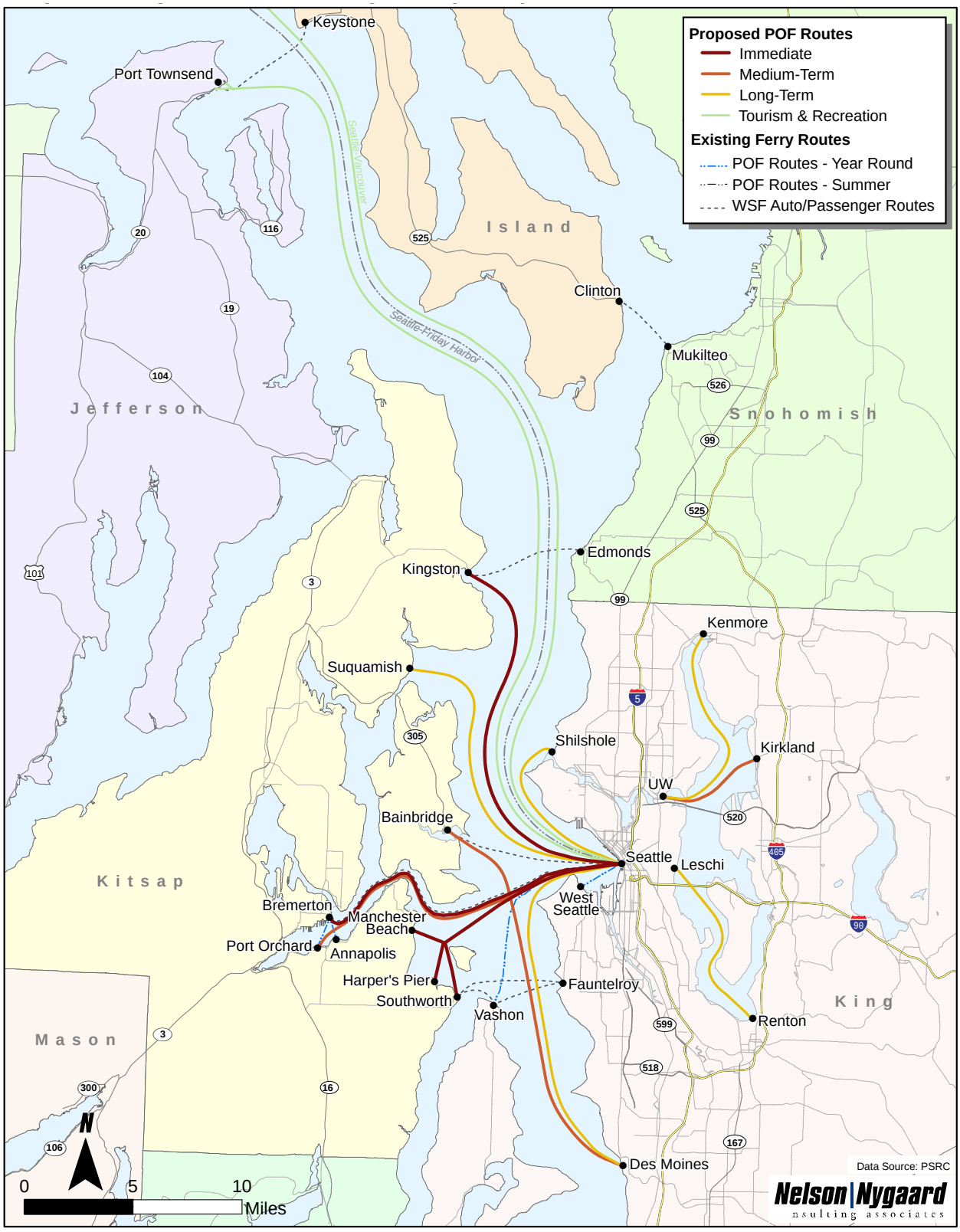
potential private operators and other entities that might choose to subsidize the service (i.e. businesses, developers, or government agencies). The two recreational routes include:

- Port Townsend – downtown Seattle
- Vancouver B.C. – downtown Seattle

All routes, and recommended phasing, are depicted in Figure 1.

There were additional routes identified during the course of the study that were not evaluated in detail. Two routes in particular are Lake Washington services between Renton and Kirkland and Renton and Bellevue. These were identified as a mitigation measure for travelers in the heavily congested I-405 corridor. There was also interest expressed in service between Bellevue and Seattle. These routes may be among others studied by King County Ferry District (KCFD) as possible long-term POF investments (they are not on the current list of routes KCFD is studying).

Figure 1 Puget Sound Regional Passenger-only Ferry Strategy



THE REGIONAL PASSENGER-ONLY FERRY STRATEGY

This section gives further detail on all of the routes included in the Regional Passenger-Only Ferry Strategy. For the Immediate-term routes, the following information is presented:

Map and Route Overview - Schematic maps show the path of the proposed POF route as well as basic route information. *It is important to note that all operating plan information, operating costs and capital costs are conceptual for planning purposes only.*

Operating Cost Summary – This section gives estimated totals for each operating element, including fuel, maintenance and labor. As with terminal improvement and vessel costs, all operating costs as estimated in April 2008 are calculated in 2008 dollars, and may change dramatically (especially, for example, as fuel prices increase).

Fare Options –This section lists what the farebox recovery rate would be at the assumed fare level, as well as what the fare would need to be to achieve a 40 or 60 percent farebox recovery rate.[2] Farebox recovery is a commonly used performance metric for transit and ferry systems that specifies what proportion of annual operating costs is recovered from passenger fares. A review of peer POF systems that operate as part of a public transit network shows that a farebox recovery target of 40 percent to 50 percent is normal.[3]

For the medium-term, long-term and recreational routes, a text description of the route is given along with key considerations, challenges and opportunities, as well as summary operating information. For more information on each route's operating and service plan, including assumed operational and capital costs, and more detailed estimated cost breakdowns, see the Task 8 report from this study, *Regional Passenger-Only Ferry Strategy,* at http://www.psrc.org/projects/ferry/Task8FullReport.pdf.

2 PSRC's Regional Travel Demand Model assumed fares comparable to the average regional transit fare, which may or may not be the appropriate price for any given POF route. As POF services are more fully analyzed and brought towards implementation, more analysis will be needed on the appropriate fare level, given specific objectives of the operating entity.

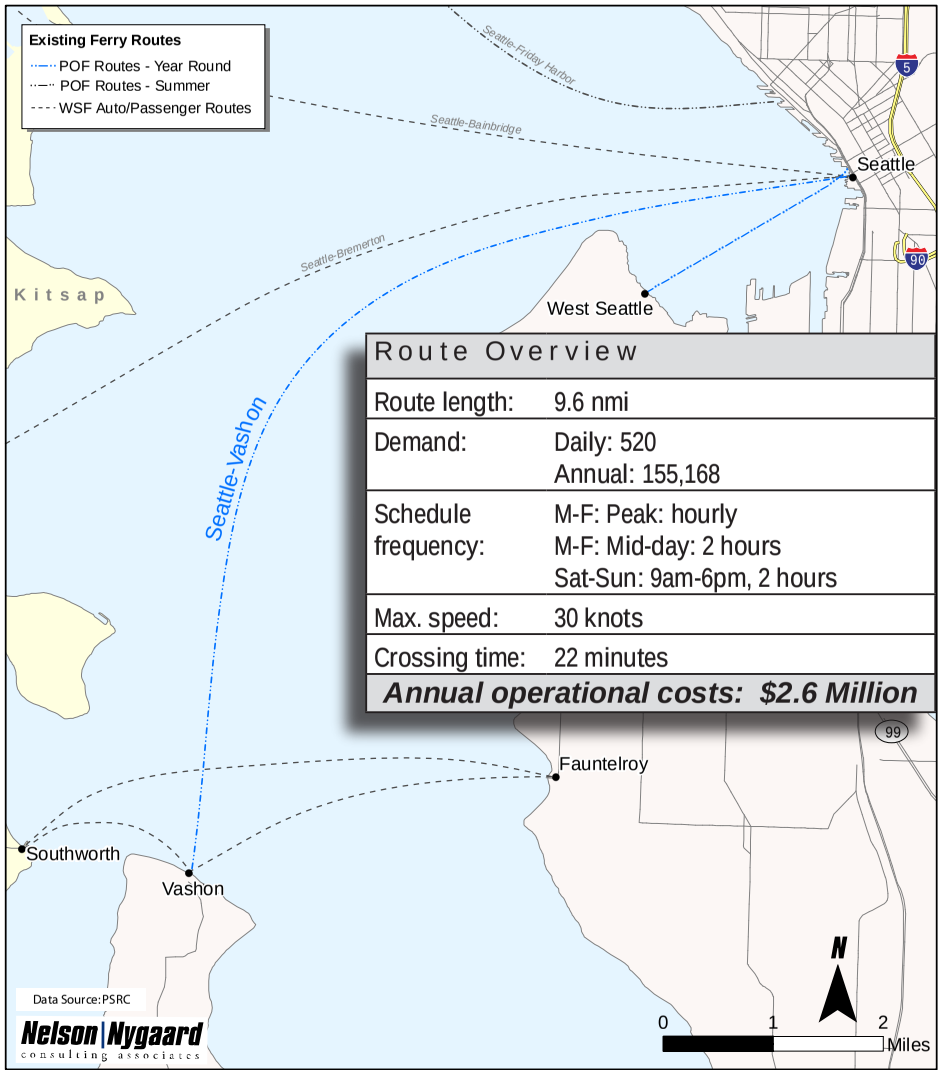
3 For a point of reference, the average farebox recovery for urban bus or rail transit systems is typically in the range of 20 percent to 40 percent, and the tentative target adopted in 2006 for WSF's auto ferry system was 80 percent.

Immediate-Term: Most Viable Routes (Existing Route)

Vashon Island - Downtown Seattle

Immediate Term - King County Existing POF Service

Figure 2 Vashon Island - Downtown Seattle Route Overview



Route Overview	
Route length:	9.6 nmi
Demand:	Daily: 520 Annual: 155,168
Schedule frequency:	M-F: Peak: hourly M-F: Mid-day: 2 hours Sat-Sun: 9am-6pm, 2 hours
Max. speed:	30 knots
Crossing time:	22 minutes
Annual operational costs: $2.6 Million	

Vashon Island – Downtown Seattle

Currently operated by WSF, this route will fully transition to the King County Ferry District in July 2009. The route co-exists with WSF auto ferry service out of Vashon, and POF docking facilities are already in place. Vashon-Seattle is an important route for commuters, and the POF service provides a 30% faster connection to Seattle than the alternative of taking WSF's auto ferry to Fauntleroy and driving the rest of the way to downtown. While today there are only two peak-hour runs Monday through Friday, this plan recommends boosting service by adding a peak-hour run, mid-day and weekend service.

Vessels	
Number needed:	1
Recommended Vessel Type:	149-pax operating at 30kts.
Special needs:	None
Vessel capital costs: $3-5 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$900,000
Labor:	$1.3 Million
Maintenance & insurance:	$340,000
Annual operational costs: $2.6 Million	

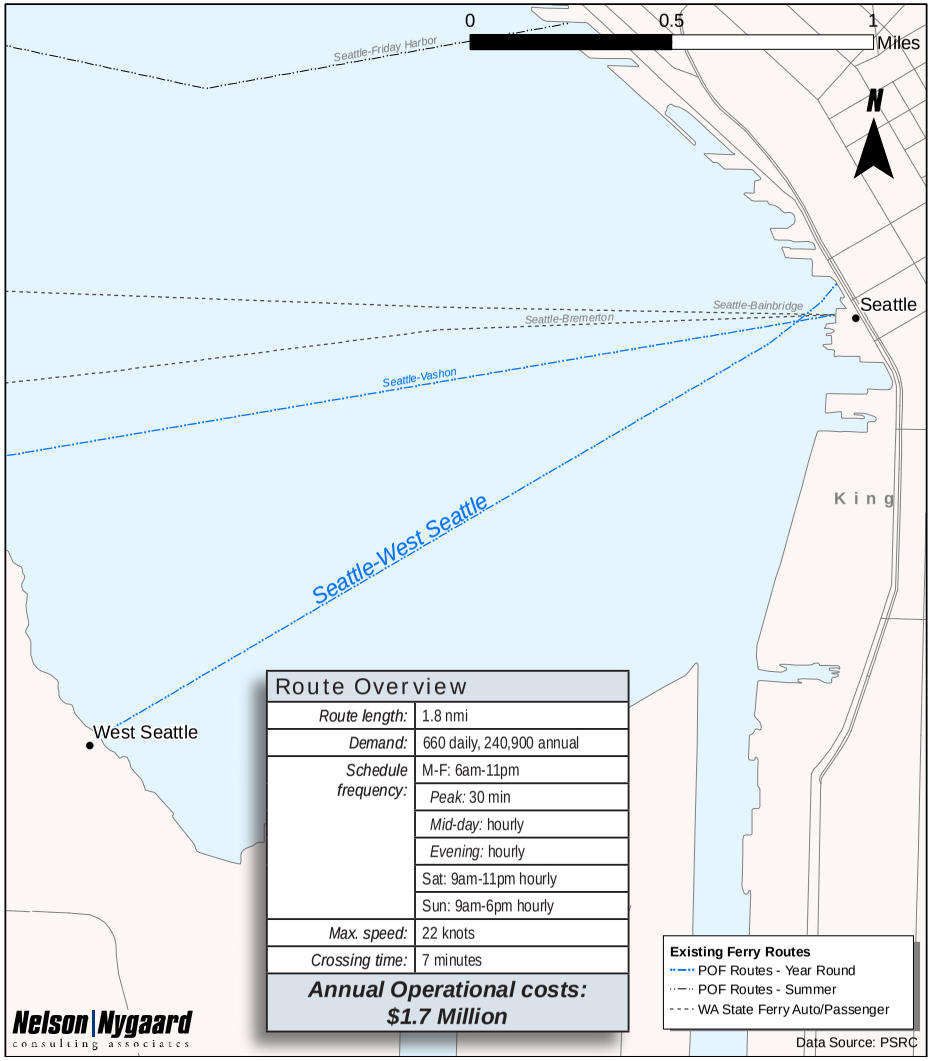
One-Way Fare Options	
Fare	Recovery %
$3.35 (assumed)	18%
$7.50	40%
$11.20	60%

Immediate-Term: Most Viable Routes (Existing Route)

West Seattle - Downtown Seattle

Immediate Term - King County Existing POF Service

Figure 3 West Seattle - Downtown Seattle Route Overview



West Seattle – Downtown Seattle

This route, known as the Elliott Bay Water Taxi, is operated by King County Metro and will be under the jurisdiction of the King County Ferry District. The Water Taxi serves multiple markets, including commuters, tourists, and special events traffic. Currently only operated during the summer months, the Water Taxi saw greatly increased ridership in 2007 and its service was extended an extra month. The route will become year-round under the King County Ferry District. This plan recommends adding peak-hour service Monday through Friday, and extending the weekday evening schedule.

Vessels	
Number needed:	1
Recommended Vessel Type:	80-pax operating at 22kts.
Special needs:	None.
Vessel capital costs: $2-4 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$160,000
Labor:	$1.3 Million
Maintenance & insurance:	$210,000
Annual operational costs: +$1.7 Million	

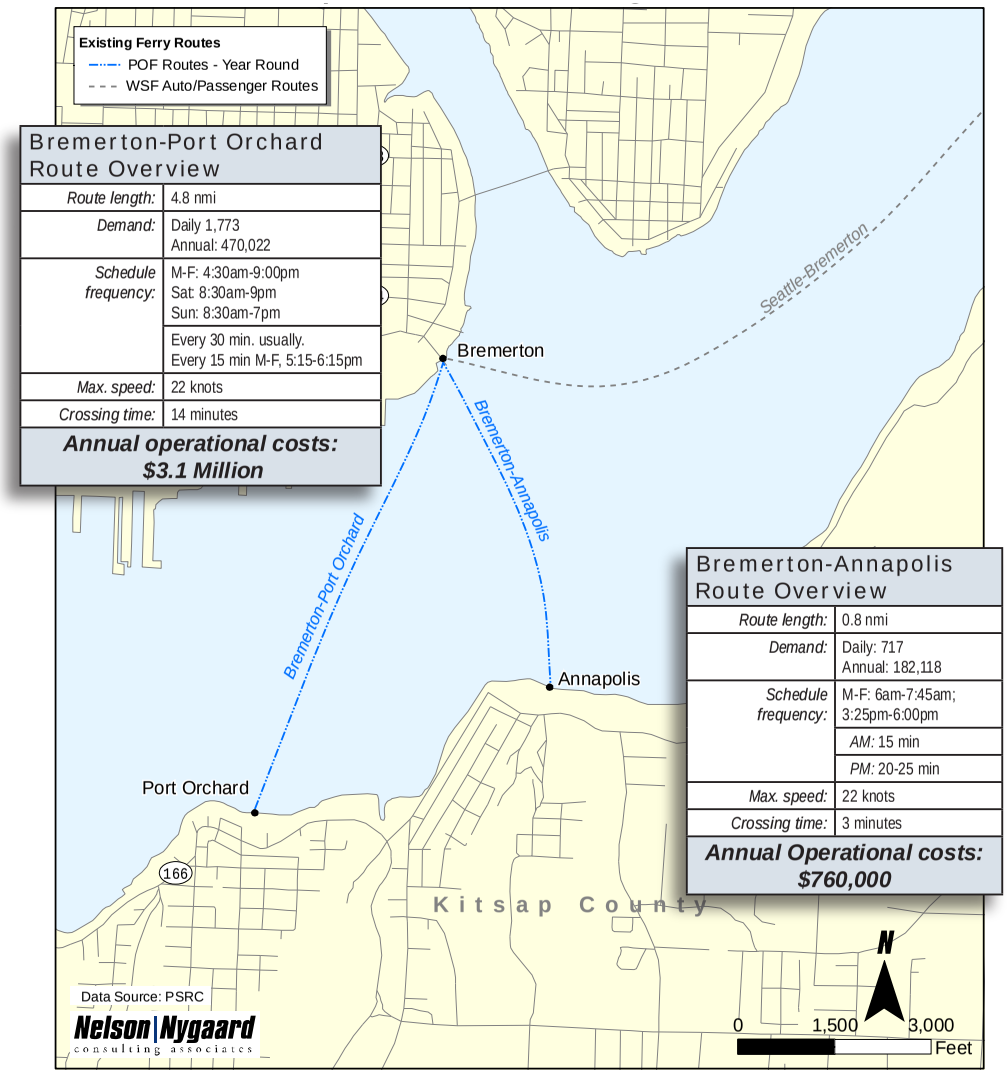
One-Way Fare Options	
Fare	Recovery %
$1.75 (assumed)	24%
$2.90	40%
$4.40	60%

Immediate-Term: Most Viable Routes (Existing Routes)

Port Orchard - Annapolis - Bremerton

Immediate Term - Kitsap County Existing POF Service

Figure 4 Port Orchard - Annapolis - Bremerton Route Overview



Port Orchard – Annapolis – Bremerton

Known as the Kitsap Transit Foot Ferry, these two routes are operated by Kitsap Transit. The Foot Ferry is a critical connection between Port Orchard and Annapolis and the Bremerton – Seattle ferry, and an important public transit link for bringing people to Bremerton's urban core. The Port Orchard – Bremerton Foot Ferry runs all day, seven days a week, while the Annapolis – Bremerton route only operates during peak hours Monday through Friday. Kitsap Transit will continue to operate this route. This study recommends continuing the service with greater service levels during the a.m. and p.m. peaks.

Port Orchard - Annapolis - Bremerton

Immediate Term - Kitsap County Existing POF Service

Vessels	
Number needed:	1
Recommended Vessel Type:	80-pax operating at 22kts.
Special needs:	None.
Vessel capital costs: $2-4 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$930,000
Labor:	$1.8 Million
Maintenance & insurance:	$371,000
Annual operational costs: $3.1 Million	

One-Way Fare Options	
Fare	Recovery %
$1.50 (assumed)	34%
$1.80	40%
$2.70	60%

Annapolis - Bremerton:

Vessels	
Number needed:	1
Recommended Vessel Type:	80-pax operating at 22kts.
Special needs:	None.
Vessel capital costs: $2-4 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$50,000
Labor:	$500,000
Maintenance & insurance:	$212,000
Annual operational costs: $760,000	

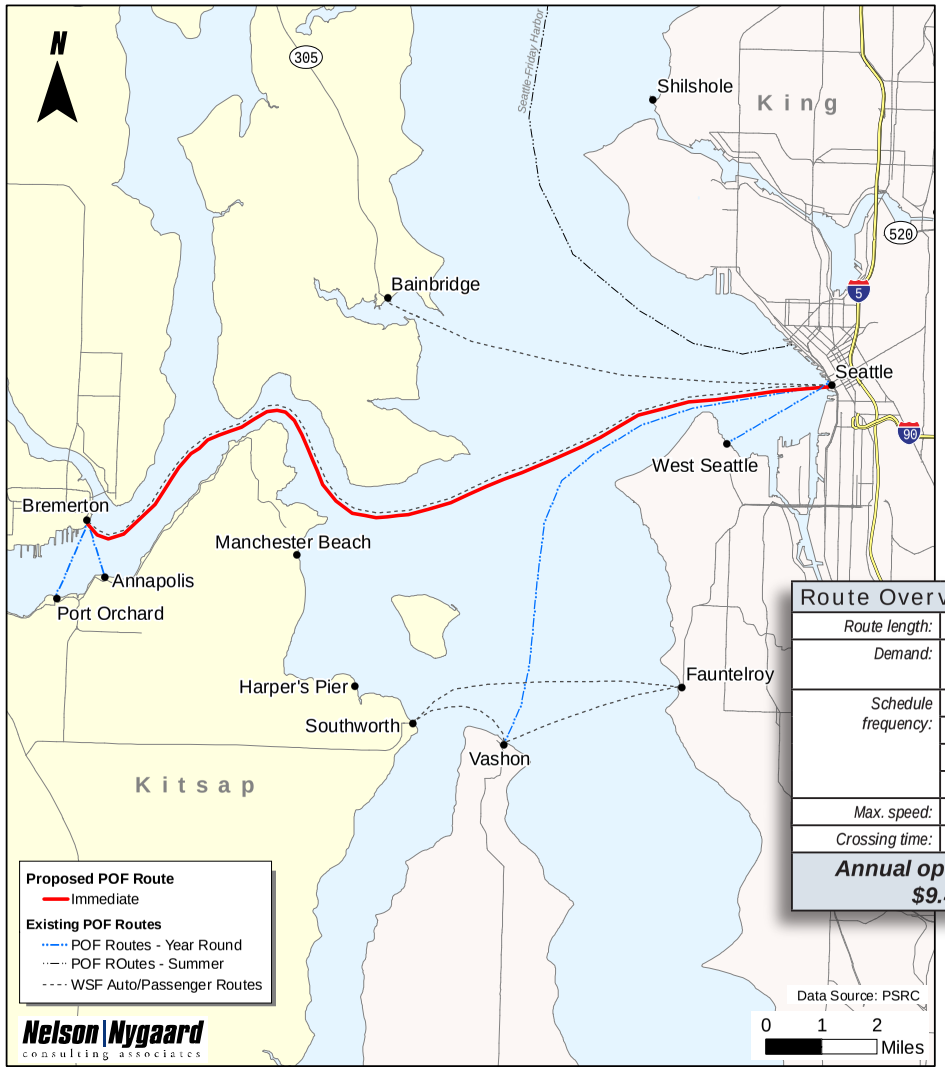
One-Way Fare Options	
Fare	Recovery %
$1.50 (assumed)	22%
$2.80	40%
$4.20	60%

Immediate-Term: Most Viable Routes (New Route)

Bremerton - Downtown Seattle

Immediate Term - New Cross-Sound Routes

Figure 5 Bremerton - Downtown Seattle Route Overview



Route Overview	
Route length:	13.8 nmi
Demand:	Daily: 3,460 weekday Annual: 1,032,464
Schedule frequency:	M-F: Peak: 40 min
	M-F: Midday: hourly
	Sat-Sun: 9am-6pm
	every 2 hours
Max. speed:	30 knots
Crossing time:	30 minutes
Annual operational costs: $9.4 Million	

Bremerton – Seattle

POF service connected these two urban centers in the past, bringing passengers to employment, shopping, and service destinations in both. POF terminals exist on both ends, and excellent transit connections are in place to bring walk-on traffic to a new POF line. This route would mirror WSF's Bremerton – Seattle auto ferry, but POF service would make the cross-Sound trip in half the time of the auto ferry.

Vessels	
Number needed:	4
Recommended Vessel Type:	149-pax operating at 30kts.
Special needs:	Low wake design
Vessel capital costs: $9-15 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$4.1 million
Labor:	$4.2 million
Maintenance & insurance:	$1.1 million
Annual operational costs: $9.4 Million	

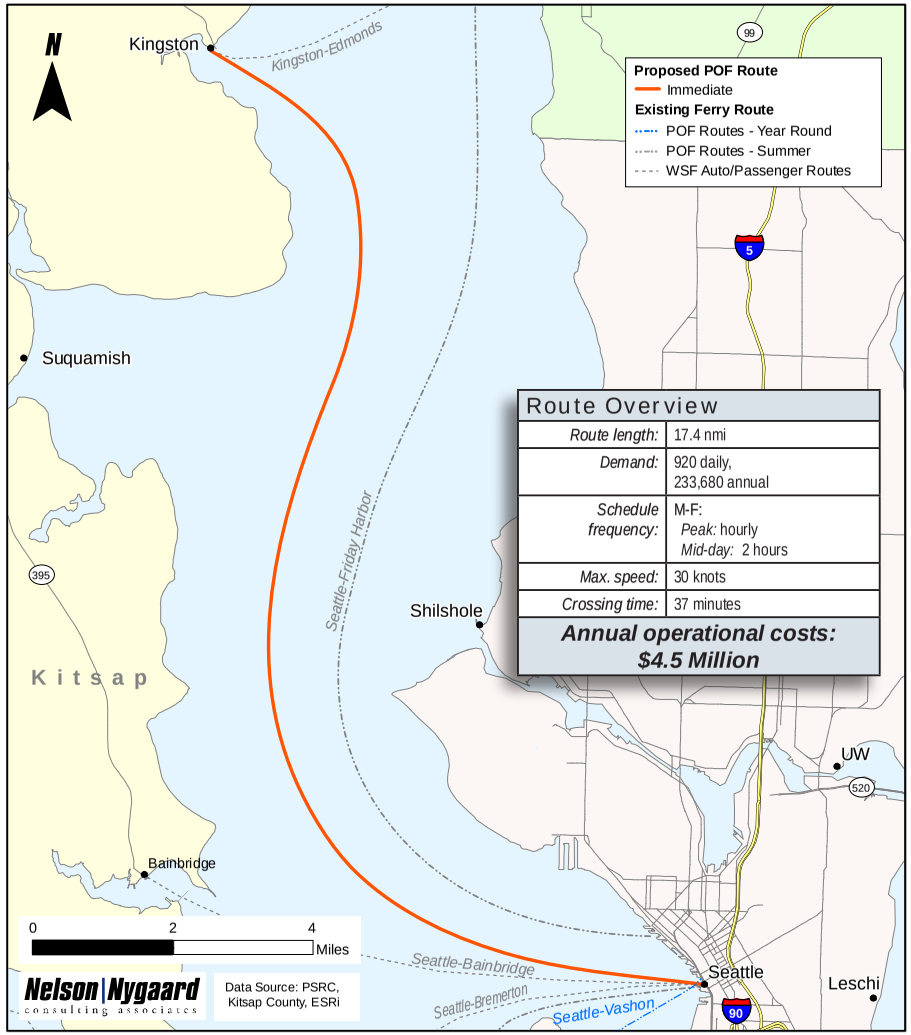
One-Way Fare Options	
Fare	Recovery %
$3.35 (assumed)	38%
$3.60	40%
$5.40	60%

Immediate-Term: Most Viable Routes (New Route)

Kingston - Downtown Seattle

Immediate Term - New Cross-Sound Routes

Figure 6 Kingston - Downtown Seattle Route Overview



Kingston –Seattle

Like Bremerton, Kingston has in the past been served by POF service to Seattle. Capital costs for minor repairs or upgrades to the existing POF terminal should be minimal. For commuters today, the fastest connection from Kingston to Seattle is via WSF auto ferry to Edmonds, with a transfer to Sounder commuter rail into Seattle. New POF service, currently proposed by the Port of Kingston, will shave 42% off the total travel time for this trip.

Vessels	
Number needed:	2
Recommended Vessel Type:	149-pax operating at 30kts
Special needs:	None
Vessel capital costs: $6-10 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$1.9 Million
Labor:	$2.1 Million
Maintenance & insurance:	$540,000
Annual operational costs: $4.5 Million	

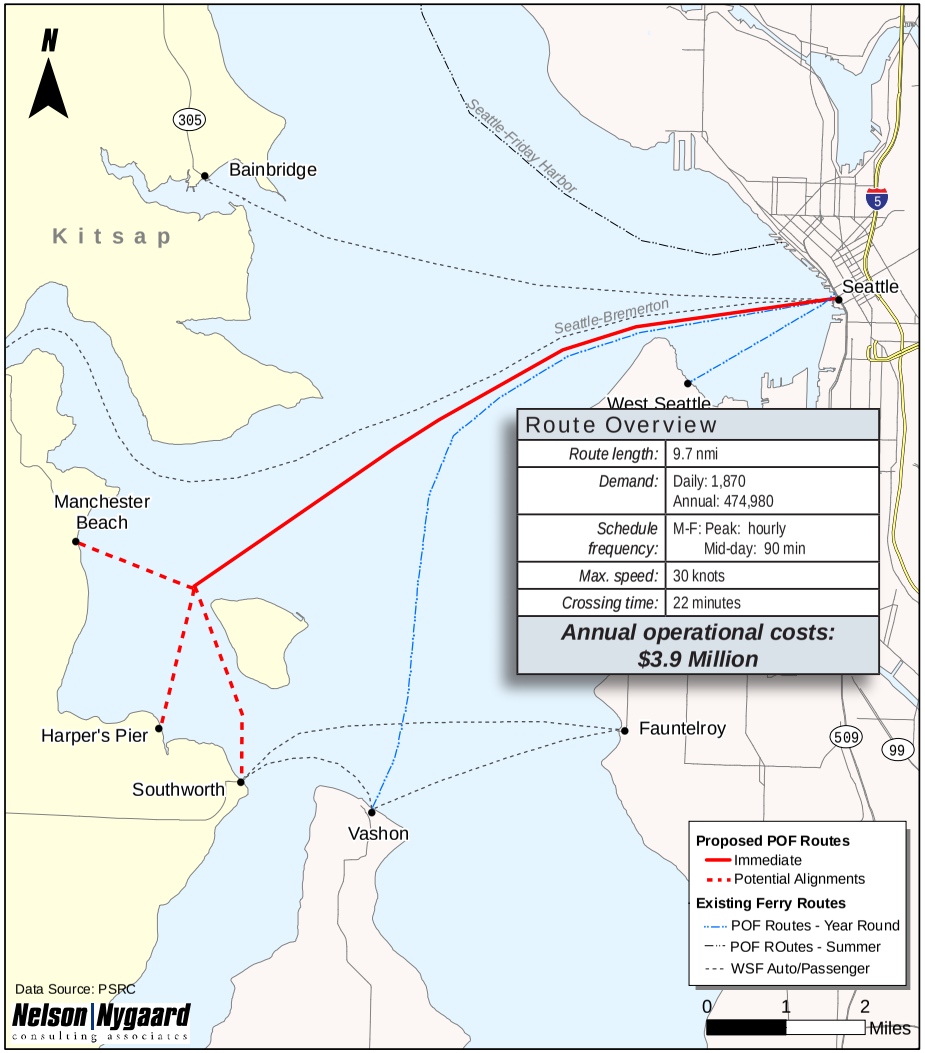
One-Way Fare Options	
Fare	Recovery %
$3.35 (assumed)	18%
$7.60	40%
$11.40	60%

Immediate-Term: Most Viable Routes (New Route)

Southworth/Manchester Beach - Downtown Seattle

Immediate Term - New Cross-Sound Routes

Figure 7 Southworth/Manchester Beach - Seattle Route Overview



Southworth/Manchester Beach –Seattle

Currently, walk-on customers from Southworth to Seattle take the WSF auto ferry to Vashon Island and transfer to the existing POF service to Seattle. POF service running directly from Southworth would be 50% faster than these options. Three terminal options were considered for this route, at Southworth, Manchester Beach, and Harper's Pier. The Southworth location appears most promising, as it will be easier to lease and adapt a portion of the existing WSF terminal in Southworth, adjacent to abundant parking, than to negotiate for and build a terminal in Harper's Pier or Manchester.

Vessels	
Number needed:	2
Recommended Vessel Type:	149-pax operating at 30kts
Special needs:	None
Vessel capital costs: $6-10 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$1.5 Million
Labor:	$1.9 Million
Maintenance & insurance:	$515,000
Annual operational costs: $3.9 Million	

One-Way Fare Options	
Fare	Recovery %
$3.35 (assumed)	41%
$3.30	40%
$5.00	60%

Medium-term: Routes with Potential to Develop

The routes in this category have the potential to develop a viable market and operations plan in the medium-term, defined as within the next four to ten years. However, they would require demonstration testing, further enhanced markets, improved landside connections, capital investment, and/or land use and development changes. Figure 8 shows the three medium-term routes, and key operating characteristics assumed for each in this study.

Port Orchard – Seattle

In the immediate-term, the Port Orchard market would be served by the Bremerton – Seattle route, connected by the Kitsap Transit Foot Ferry from Port Orchard and Annapolis, and the Southworth/Manchester – Seattle service to the south. In the medium-term, direct peak-period service between Port Orchard and Seattle may be viable. If this direct service were in place, it would draw some ridership from both the Bremerton and the Southworth/Manchester routes to Seattle.

The location of the Port Orchard terminal is assumed to be the current ferry terminal at the end of Sidney Avenue in downtown Port Orchard, currently used for the Kitsap Transit Foot Ferry service. Negotiation with Kitsap Transit for berthing space to accommodate additional POF service to Downtown Seattle would need to take place prior to service implementation.

Bainbridge – Des Moines

This route would provide Kitsap residents an improved connection to Sea-Tac Airport. Its success would rely on new dedicated all-day transit shuttle service between the Des Moines terminal and the Airport. The City of Des Moines currently operates a large public marina facility on its waterfront. While waterfront infrastructure is in place, there do not yet appear to be facilities adequate to provide POF service, and the current marina master plan does not include a passenger-only ferry terminal.

A Bainbridge Island POF terminal would be most easily and strategically located immediately northeast of the existing WSF ferry terminal, although a second possible site is at the Eagle Harbor maintenance facility to the southwest. A large indoor waiting area already exists at the WSF terminal. It is anticipated that this space can be shared to accommodate future passen-

Figure 8 Medium-term Routes' Operating Characteristics

Route	Daily Riders (2030)	Route Length (nautical miles)	Schedule Frequency		Speed (knots)	Crossing Time (min.)
			Weekday	Weekend		
Port Orchard - Seattle	1,740	14.8	Peak only: 40 min.	No service	30	32
Bainbridge - Des Moines	270	23	Peak: hourly Off-peak: 90 min.	2 hours	30	48
Kirkland - UW	420	6	Peak only: hourly	No service	22	20

ger-only ferry needs. However, the anticipated distance and elevation change from the WSF waiting area to a potential POF terminal is great, and would likely require an additional outdoor waiting area closer to the terminal float. Potential future reconstruction of WSF's passenger terminal would provide an excellent opportunity to address these issues.

While transit service to the Bainbridge terminal is good today, expanded transit service in the mid-day, and an improved bike route in the SR 305 corridor would greatly enhance access to the Bainbridge terminal.

Kirkland – University of Washington

This route was previously studied in the King County Waterborne Transit Policy Study (2005) and is currently under consideration for demonstration testing by KCFD within the next two years. For this trip passenger-only ferry service could provide a 29 percent time savings compared to driving or taking transit across the SR 520 bridge. This service would provide an alternative to driving in this congested corridor, and would also help mitigate the future construction of a new SR 520 bridge.

Downtown Kirkland features a small waterfront park with a public marina and pier. A terminal float and gangway may need to be constructed to provide passenger-only ferry access, although there is potential that a small vessel could use the existing pier. The University of Washington has two potential sites for a passenger-only ferry terminal. The first is at or near the Waterfront Activities Center (WAC), directly behind Husky Stadium. The second is at Sacuma Point near the Oceanography Dock. Both locations feature existing waterfront infrastructure. Significant challenges exist at the WAC location due to competing future land uses in that location, such as transportation uses versus medical or sports center expansion, conflicting small craft uses in the area, as well as the ongoing light rail station construction. Due to these challenges it would probably be at least four years before a permanent terminal could be sited with good landside access.

Long-term: Routes That May Become Viable in the Future

These routes are probably not viable within the next decade, but have the potential to develop a viable market in the longer-term (ten+ years), particularly if land use actions are taken to increase the number of residences and/or jobs within a short distance of proposed terminal areas. These routes would all require demonstration testing, substantially enhanced markets, improved landside connections, significant capital investment or operating subsidy, and/or land use and development changes. Figure 9 shows the five long-term routes, and key operating characteristics assumed for each in this study.

Suquamish – Seattle

In the immediate and medium term, Suquamish markets would be served by Kingston – Seattle service as well as the existing WSF Bainbridge – Seattle auto ferry. In the long-term, direct service between Suquamish and Seattle could become viable. Although this study assumed a general docking location somewhere on Suquamish's waterfront, planning for the redeveloped community pier precludes accommodation of future POF service at that site, and no other docking location has been identified. Furthermore, the Suquamish Tribe has not endorsed a passenger-only ferry route to Suquamish. More analysis and coordination with the Suquamish Tribe would be necessary in order to evaluate potential sites, and the Tribe would need to endorse any future service and docking sites.

Potential Future King County Routes

In addition to the Kirkland – University of Washington route (a King County route recommended for medium-term implementation) in this study, four additional King County routes are recommended as candidates for further study of long-term viability. They are:

- Kenmore – University of Washington
- Renton – Leschi
- Des Moines - Seattle
- Shilshole – Seattle

Figure 9 Long-term Routes' Operating Characteristics

Route	Route Length (nautical miles)	Schedule Frequency		Speed (knots)	Crossing Time (min.)
		Weekday	Weekend		
Suquamish - Seattle	15	All day: 2 hrs.	All day: 2 hrs.	30	32
Kenmore - UW	8.3	Peak only: 90 min.	No service	22	28
Renton - Leschi	7.1	Peak only: 90 min.	No service	22	24
Des Moines - Seattle	16	Peak only: 45 min.	No service	30	36
Shilshole - Seattle	8.5	Peak only: 90 min.	No service	30	28

All of these routes were previously identified by King County as potential POF demonstration routes but have not yet undergone intensive market or feasibility analysis. According to the analysis performed in this study, none of these routes would be viable in the immediate- or medium-term, primarily due to low estimated future daily ridership. A number of factors combined to produce low ridership estimates on the Lake Washington routes, including lack of existing landside transportation connections to potential terminals, lack of density in terminal locations, and competing transportation alternatives that offer competitive travel times. On the Seattle side, many available terminal locations have poor road and transit access to the Center City and other key Urban Villages.

However, this does not mean the routes could not become viable in the longer term, and they, along with other potential King County demonstration routes, should undergo further analysis as part of the next planning phase of the King County Ferry District. In particular, KCFD should undertake route-level analysis to determine demand, examine private partnership opportunities in relation to each potential route, and develop patronage estimates that are more sensitive to local markets. KCFD should focus on developing conceptual transit feeder and distribution routes as an integral part of their system planning, and as planned, the County should roll out short-term demonstration service to test feasibility before implementing permanent service.

Tourism and Recreation-focused Routes

These seasonal routes would primarily serve tourist and recreation markets and are not integrated into the phasing strategy because they most likely require a private for profit operator to deliver service. Both routes, however, do appear to have an existing market and could likely be feasible in the short to medium term, depending on the interest of potential private operators and other entities that might choose to subsidize the service (i.e. businesses, developers, or government agencies).

Figure 10 shows the two recreational routes, and key operating characteristics assumed for each in this study.

Port Townsend – Seattle

This route was in demonstration service over the winter holiday season of 2007/2008 where it temporarily replaced WSF's auto service while the vessel underwent repairs. During this period, the route saw regular ridership and in the end, was deemed a successful trial by users and stakeholders. This demonstration illustrated potential for seasonal operations.

Vancouver B.C. – Seattle

Although this route appears to have a viable market, its feasibility may be compromised by the sheer time and distance it would take for the vessel to complete the one-way trip, estimated to be about four hours, as well as the many competing landside routes (including Greyhound, Amtrak and personal auto). However, the appeal of water travel compared to land-based routes, as well as the ability to avoid the land border crossing, might serve to counteract these factors and draw a healthy ridership.

Figure 10 Medium-term Routes' Operating Characteristics

Route	Route Length (nautical miles)	Schedule Frequency		Speed (knots)	Crossing Time (min.)
		Weekday	Weekend		
Port Townsend - Seattle	42.3	May-Sept: Friday only, 4 runs	May-Sept: 4 runs per day	35	75
Vancouver B.C. - Seattle	129.8	May-Sept: Friday only, 4 runs	May-Sept: 4 runs per day	35	225

IMPLEMENTATION CONSIDERATIONS

This section outlines key considerations for jurisdictions and agencies involved in the funding and implementation of passenger-only ferry service. First, fleet and terminal facility implementation needs and coordination opportunities are discussed, focusing on how the region can coordinate in the area of capital planning. Second, four primary components of a successful passenger-only ferry system are presented with attention to how these issues translate to the Puget Sound regional context.

Fleets and Facilities

It is likely that the regional passenger-only ferry system will evolve on an incremental basis, adding new operators and services over time. There is, however, opportunity for regional operators to realize financial savings and system benefits by sharing resources and coordinating capital planning. This is particularly important as docks and terminals are developed and new vessels are designed and purchased. To be successful, passenger-only ferries will need to prove to be a cost effective service delivery mode; cost sharing, shared facilities and vessels and reuse of existing docks or terminals will reduce system development and maintenance costs. This section addresses opportunities for coordination to optimize cost-effectiveness and maximize interoperability.

Vessels

Puget Sound POF operators will require new vessels as they expand services and are required to replace aging vessels. Beyond the benefit of meeting exacting service requirements for the specific operator, newer vessels are more fuel efficient, environmentally-friendly and typically have lower maintenance and preservation costs than existing ones. Vessel standardization is an important fleet management practice that allows for economies of scale: for procurements, reducing operational and maintenance costs, and for vessel sharing opportunities, which could lead to a lower overall fleet requirement. In the Puget Sound region vessel sharing could be applied to:

- **Peak vs. off-peak hours:** A vessel used for peak period service on one route could make midday or evening trips on another. This synergy could also be applied to WSF, where passenger-only ferries could potentially supplement late-night auto ferry runs or fill mid-day gaps to provide better levels of service to WSF riders while allowing the agency to maintain or reduce the number of sailings of largely-empty auto ferries.
- **Commuter vs. recreational routes** - Vessels used Monday through Friday on commuter routes could shift over to a recreational route on the weekend.
- **Backup vessels**. Instead of each operator owning and maintaining a back-up fleet, one or two agencies could own the backup vessels for the whole fleet, leasing to other operators as necessary, thus decreasing overall system costs.

Jurisdictions developing or designing new terminals benefit since standard vessel types minimize the challenges of accommodating multiple vessel types. Finally, a standardized fleet allows a passenger to become familiar with the vessel characteristics and arrangements, a subtle but important service benefit. While certain routes may require unique vessels, most regional routes could be served by one of two standard vessel classes. The anticipated vessel classes are:

- **Class I: 149-passenger capacity:** A 149-passenger vessel is in the "sweet spot" of

operational cost effectiveness with regard to passenger capacity. Above this threshold, US Coast Guard regulations mandate additional safety, crewing and terminal requirements. A 149-passenger, single-deck vessel will require a minimum of 2 crew to operate (master and one deckhand). Most 149-passenger catamarans in operation today are double-decked, requiring more crew and increased operating costs.

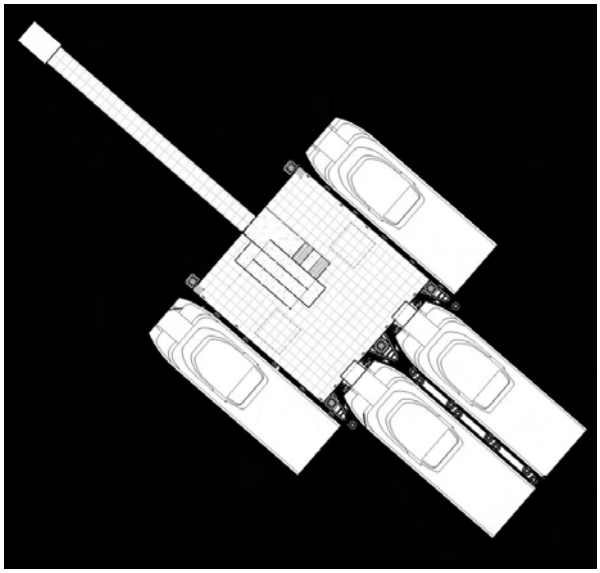
Bow loading vessels allow rapid boarding and deboarding.
Source: Art Anderson Associates

- **Class II: 80-passenger capacity:** An 80-passenger vessel class will supplement the 149-passenger class by providing a smaller, more cost-effective option for secondary markets, demonstration routes, and service during off-peak hours on some routes. This vessel class should be designed to meet the same operational requirements as the 149-passenger class (e.g. loading configuration, service speed)
- It is recommended that both the 149 and 80-passenger vessels should include a catamaran hull form, aluminum hulls, 3,000/1,400 horsepower and 30-knot operating speed, bow- and side-loading capability, ADA accessibility and a low-emission, low-wake design.

Terminals

Much like the case for vessel standardization, terminal standardization allows for familiarity by customers and employees, and creates economies of scale in procurement, construction, maintenance and operations. A standard Puget Sound terminal design should be developed and implemented for all new terminals, similar to the strategy being employed by the Bay Area Water Emergency Transit Authority (WETA), with standardized floats for docking vessels. For Puget Sound operations, a 70'x100' concrete float would provide berthing space and ADA pedestrian access for up to four vessels. Such a float could provide two side-loading and two bow-loading berths.

Existing floats or piers should be used in cases where there is functional existing pier infrastructure that can be used with a minimal improvement. Use of existing infrastructure lowers the bar for new terminal communities working to develop new POF services.



An example of a potential standardized float design
Source: Art Anderson Associates

Efficiency, accessibility and safety should be the chief concerns when dealing with passenger loading and unloading, with a goal to safely minimize turnaround time. To meet this goal, bow-loading should be used wherever possible, and access walkways and gangways should be shallow (1/12 elevation change or less) and wide (at least 10'), allowing passengers to walk up to four abreast, significantly reducing the amount of time required to load and unload a vessel. Whenever possible, POF terminals should include indoor, heated space with restrooms, food/beverage vendors and traveler information, ticketing machines or vendors and a secure, segregated area for paid passengers. In many cases, POF passenger facilities could be shared with Washington State Ferries, which already provides many of these elements at its terminals.

Seattle Terminal Requirements—Piers 48 and 50

Of the 17 routes evaluated in this portion of the study, eleven connect to downtown Seattle. Ideally, all POF routes serving Seattle—with perhaps the exception of privately operated tourist routes—would connect through Colman Dock, the main terminal for all existing WSF auto and passenger ferry service. Consolidating ferry service operations at one location allows better intermodal connectivity, a simplified user experience, and enhanced user choice (i.e. if a passenger misses the POF boat to Bremerton, they could choose to board the WSF auto boat instead).

Ridership estimates show that these eleven POF routes would carry a combined 9,000 daily riders to downtown Seattle in 2030. With this many passengers and vessels at a single location, significant planning and design must be done to develop terminal facilities that can accommodate the anticipated level of traffic. The current facility at Pier 50, which serves the Vashon-Seattle POF at Colman Dock, provides only two side-loading passenger ferry berths, and is not sized or designed to handle the future loads anticipated in this study.

King County passenger-ferry plans call for replacement of the dock at Pier 50 with a new 110'x40' concrete float, which will not increase vessel or passenger capacity. While these plans are adequate for the two King County Ferry District routes (Vashon and Elliott Bay) and probably the Kingston – Seattle service too, the single new float will not be sufficient to meet anticipated total future POF demand serving other Kitsap County destinations such as Bremerton or Southworth. The area between Colman Dock to the north and Pier 48 to the south could likely handle the anticipated level of vessel traffic if it is well-planned and designed. Use of at least the northern part of Pier 48 could provide sufficient space for a landside terminal. Modification to the southern end of Colman Dock is also a possibility, although it would impact the pier's existing vehicle lanes. Coordinated planning is needed between the City of Seattle, WSF, KCFD and any future POF operators serving downtown Seattle to determine a final design for an expanded POF terminal at Colman Dock, or a new POF hub facility in the vicinity. Initial phases of dock construction should be designed to be expandable with a goal of accommodating peak period vessel loads for all immediate and medium term services identified in this plan.

Components of a Successful POF System

Establishing a regional framework for POF requires agreement on what defines a successful system. The project team looked to systems in the Puget Sound, around North America, and abroad to determine the keys to a successful POF system. More importantly, local stakeholders were asked to discuss the most critical challenges and opportunities in the Puget Sound region. The team identified four primary policy components of a successful POF system that create a framework for regional system development:

1. Locally appropriate governance
2. Sustainable financing
3. Supportive land use, and
4. Good transportation system integration.

All these are critical to support the recommended passenger-only ferry system and operational strategy.

Locally Appropriate Service Delivery Model

POF service can be developed and delivered by the private sector or the public sector (e.g. counties, cities, state and transit agencies), or by numerous variations on public-private and public-public partnerships. Each model has its merits and downfalls, and the option that is best for a specific passenger-only ferry service is highly dependent on the particulars of the market, route, operating and political environment, as well as existing or upcoming opportunities for partnerships.

Private Operation. Under this model, the private operator has full control of service design and planning, operations and maintenance, and fares. A local example is the Victoria Clipper serving Seattle and Victoria. While this model is often the most cost-effective approach and presents little to no risk to public finances, fares may be set at a premium, there is no public oversight to route and service planning, and assets such as public docks, terminals and connecting landside transportation services may not be utilized.

A variation on this model is private operation with public subsidy, a model used by the New York Water Taxi, where the private operator uses terminals leased from the City. New York Water Taxi also works creatively with developers who provide dock space and a guaranteed number of riders in exchange for passenger-only ferry service to the development.

Public-Private Partnerships. Under this common scenario, a public agency and private operator work together jointly to plan, deliver and manage service. Examples of this model include the Vallejo BayLink ferry in the Bay Area, Vancouver SeaBus, and the Kitsap Transit Foot Ferry. Here, the public entity has full responsibility for service planning, fares and operating costs while the private entity provides daily operations and frequently, maintenance services. This model is frequently cited as a strongly beneficial approach due to the sharing of risk and reward, relatively flexible service, capitalization of the private entity's maritime expertise, and ability to maintain strong public oversight.

Key Findings – POF Governance

Key study findings on POF governance include:

- **Partnerships will be integral to POF success.** Public-private partnerships help avoid complicated labor issues, take advantage of existing industry expertise and private capital, utilize existing public assets (i.e. transit service, docks and terminals) and leverage grant opportunities, all while maintaining public oversight and control.
- **Start with small scale business plans where feasible.** Port districts, cities, counties and transit agencies should look to the Port of Kingston's approach as a model to pilot identified POF routes.
- **Governance models must consider the ability to generate operating funds.** While various grant programs exist to fund capital costs, it is much more difficult to generate ongoing operations revenues, since fares typically cover only a portion of operating costs.
- **Regional oversight (PSRC's role) is important.** PSRC can help shape regional system development, ensure balanced regional investment, supportive land use policies, and landside integration.
- **The role of Washington State Ferries should be reconsidered.** The state's role needs clarification in WSF's Long-Range Plan. State support in the form of resource sharing and capital may meet state, regional and local objectives.

Public Operation. Under this model, the public operator has full control of service design and planning, operations, maintenance and fares. The operator may be a single agency (e.g. Sydney Ferry Corporation), or may be a partnership between two or more public agencies (Bay Area Water Emergency Transit Authority), leveraging an array of public resources and assets to deliver integrated service.

New York Water Taxi Source: Creative commons

Sustainable Financing

Funding for passenger-only ferries can be generated through a variety of sources including fares, federal grants, local taxes, bridge tolls, private funding via partnerships, concessions, charters, advertising, and even philanthropic grants. Creative approaches can be found among peer systems, such as the Bay Area's use of bridge tolls and federal and state emergency evacuation grants to fund operations and capital, and Casco Bay Lines' (Portland, Maine) use of tourist charters and advertising, which generates a full 24 percent of its revenue.

Regional governance and operation of POF in the Puget Sound region is likely to remain divided among a number of agencies and organi-

Key Findings – POF Financing

Key study findings on POF financing include:

- **Countywide ferry districts**, such as that recently formed in King County, will play a key role in funding POF operations, capital facilities, and supporting landside transportation, but counties need refinements to taxing authorities to allow them to successfully generate local operating funds.
- **Most routes will require public subsidy**. While fare revenues may support a portion of operations, only routes that operate high-demand connections and are limited to peak period service, or privately operated tourist routes with premium fares, have the potential to recover a significant percentage of operating cost through fares. The remaining portion of operating expenses, capital and preservation costs will require other funding sources.
- **Tourist markets provide opportunity for revenue generation**. Providers may be able to offset operational costs with the flexible use of vessels for tours and events.
- **Partnerships with private developers can leverage funding.** Partnerships with private developers interested in building in ferry-terminal communities provide an innovative mechanism to fund capital projects, guarantee fare revenues, and/or build new markets.
- **POF should be considered in the context of tolling and congestion pricing.** In discussions around regional tolling, decision-makers should consider the possibility of using future toll revenue to fund passenger-only ferry service.
- **Existing ferry funding mechanisms have key shortfalls**. The use of Public Transportation Benefit Areas (PTBAs) to generate ferry funding can be problematic since PTBA boundaries don't necessarily align with POF beneficiaries. County-wide ferry districts create a challenge in getting public acceptance if the district isn't perceived to provide benefits to all the county's constituents.
- **Port Districts are uniquely positioned to participate in or solely govern POF operations**, although in most cases this will be for a single or very limited number of routes.
- **The State can help support POF.** While WSF is not currently authorized to operate POF service, many of the state's existing ferry docks and terminals could be used by local POF operators, thus reducing the cost of POF service. These joint use opportunities should be pursued.
- **POF roles should be used as revenue opportunities**, such as disaster planning and emergency management, or transportation mitigation in the cases of the Alaskan Way Viaduct and SR 520 bridge replacement projects.

zations for the foreseeable future; as such it will be difficult to develop a consolidated regional funding strategy. Each operating agency will rely on a unique combination of sources to fund POF operations and support capital needs. That said, regional agencies should continue to work together to share costs and leverage new sources through partnerships and demonstration of effective service integration.

Supportive Land Use

The provision of dense, mixed-use developments surrounding ferry terminals is an effective way to build ridership and increase accessibility to passenger-only ferry services. Transit-oriented development (TOD) is defined as compact development within easy walking distance of transit stations. TOD contains a mix of uses, such as housing, jobs, shopping, restaurants and entertainment. TOD can be an effective land development approach to support the use of transit, as well as non-motorized modes of travel. TOD can be applied to ferry terminals with equally positive results. This is illustrated by the Bay Area's Water Transit-Oriented Development (WTOD) Program and the Hingham TOD project in the Bos-

Supportive Land Use Recommendations

To ensure supportive land use, it is recommended that the region and local jurisdictions:

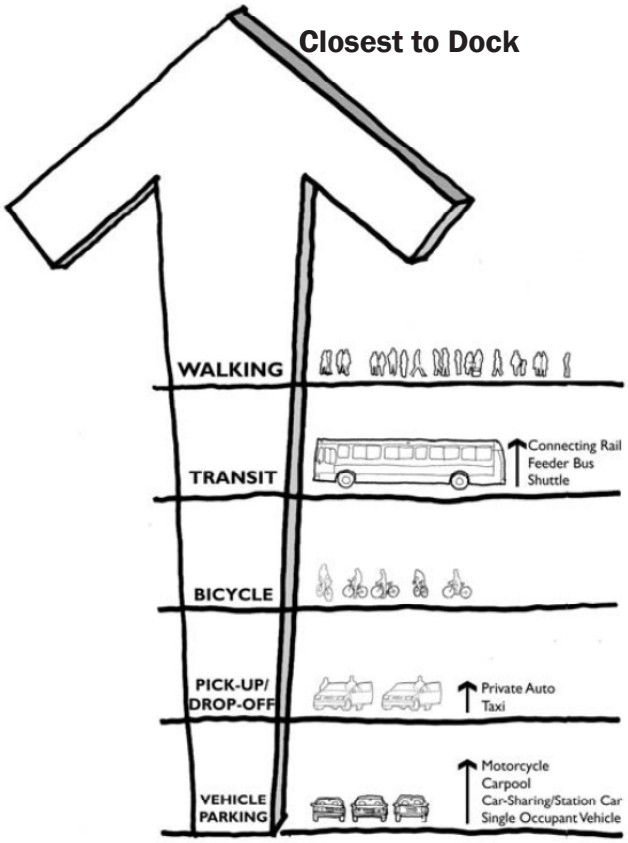
- **Develop supportive land use and zoning policies** that match the local context (e.g. urban, suburban or rural) and enable application of WTOD concepts of compact mixed-use development to appropriate urban and suburban ferry terminal locations.
- **Design around the pedestrian first.** Maximize pedestrian safety, accessibility and comfort, and focus development from a pedestrian perspective.
- **Develop a mix of land uses near terminals.** Provide a mix of complementary land uses and spaces appropriate to the setting (urban, suburban or rural).
- **Use the terminal as a focal point for concentrated development**. Public and private interest in waterfront development is an opportunity to site terminals, plan for future POF service, and create inviting and walkable public spaces in waterfront districts.

Hingham TOD project leveraged $7 million in federal money for dock development
Source: Nelson\Nygaard

ton region, which leveraged $7 million in federal funds for development around a Massachusetts Bay Transit Authority ferry dock. PSRC could play an important role in supporting smaller cities by developing a set of supportive transportation connectivity and land use development guidelines and policies that could be considered by terminal area communities.

Transportation System Integration

The world's most successful POF services share a few common characteristics – they typically serve dense walkable areas and provide excellent connections to numerous other landside public and private transit modes. The success of new routes in the Puget Sound region will rely on careful terminal siting that allows walk and bike access to a mix of land uses, connections to transit routes and access to kiss-and-ride and park-and-ride facilities.



Access Hierarchy for POF Terminals

Keys to System Integration

To create excellent system integration, the region should:

- **Encourage non-SOV access to terminals** by maximizing available transit, bicycle and walking opportunities and creating a continuous, connective pedestrian network surrounding the terminal area.
- **Build from the pedestrian's perspective**, creating an environment pleasant for walking. This entails siting a mix of uses, with buildings pushed up to the sidewalk and locating parking either on the street, behind buildings, or in a nearby garage.
- **Maximize pedestrian safety, accessibility and comfort** and the availability and clarity of passenger information.
- **Provide comprehensive, frequent and direct supportive transit service**, with stops located closely and conveniently to terminals, and transit service scheduled to enable easy passenger connections to arriving and departing ferries.
- **Minimize scheduling and physical conflicts between modes,** allowing seamless and convenient transfer between ferries and transit.
- **Manage parking demand strategically**, such as with time-limiting and/or requiring payment for street parking to reduce parking demand. When parking is deemed essential, provide parking in nearby park-and-ride lots with connecting transit service, or in lots or garages within easy walking distance of the terminal.

Good terminal design minimizes the walking distance from where the vessel unloads to other transportation connections. Terminals should be designed so that public transportation, walking and bicycling facilities are the closest to the terminal, with private single-occupant vehicle parking the furthest away.

Access pathways should be smooth, wide and well-lit, and should meet ADA requirements. Signalized crosswalks should be provided for nearby roads. Shelters should be provided for nearby bus stops and bus service should be coordinated with the ferry schedule. The terminal should provide regularly updated traveler information, including schedules for both the ferry and landside transportation. Signage and wayfinding should be clear. For locations where on- or near-site parking is unavailable, shuttles to nearby park-and-rides should be provided if public transit does not provide adequate connections.

The Bremerton Transportation Center is a model for transit and ferry system integration.
Source: Nelson\Nygaard

REGIONAL ROLES AND ACTION STEPS

This plan represents a first step in moving the region toward the development of a successful and sustainable passenger-only ferry system. The Puget Sound Regional Council, waterfront communities, counties and the state will need to work together to move the regional passenger-only ferry strategy forward, and to create a world-class network of passenger-only ferries that fulfills regional and local mobility, economic, social and environmental goals. In some cases this will require state and local policies in support of POF to be revised and reconsidered. It is possible that the most effective financing and governance solutions have not yet been explored and the POF vessel of the future is not yet imagined. However, many of the key building blocks are already in place to move the region forward toward a future where passenger-only ferries not only serve more passengers and communities, but also play a key role in land use development and growth management. This section outlines expanded roles that existing and potential stakeholders can play in advancing passenger-only ferry systems in the Puget Sound region.

The table (Figure 12) summarizes key action steps and the most probable lead agency or organization. More detailed descriptions of actions needed to implement the regional passenger-only ferry strategy follow.

Puget Sound Regional Council

The Puget Sound Regional Council, the region's metropolitan planning organization, sets regional planning policies in the areas of transportation, economic development, and growth management, and distributes transportation funds via the Regional Transportation Improvement Program (TIP), under which POF is eligible. PSRC can play a stronger, expanded role in advancing POF systems in the following areas:

Transportation 2040 **(the region's new transportation plan)**. The region's new plan should include the routes identified in the Regional POF Strategy, with an emphasis on the Immediate- and Medium-Term routes. The Plan should also incorporate the recommended landside transportation connections included in Task 9 of this study for supporting POF service in specific locations. In addition, Transportation 2040 should incorporate land use guidelines for ferry terminal areas, and a discussion of promising funding sources for potential future regional POF services. As more specific POF projects are identified by project sponsors, PSRC has the authority to provide funding through the regional TIP.

Research and Surveys. Good planning stems from good data, and PSRC could enable improved ferry planning by conducting continued research into existing and future ferry markets, user preferences, potential customer reactions to various fare structures, and overall research into and testing of a variety of ferry service concepts. By partnering with King County Ferry District and WSF on research, PSRC could bring a valuable regional perspective to POF evaluation.

Design Guidelines for Terminal Areas. PSRC could work with county and local partners to develop and adopt guidelines for water transit-

Figure 12 Summary of Regional Roles and Action Steps

Stakeholder	Action Step	Potential Partners
Puget Sound Regional Council	Include POF Strategy with new routes in *Transportation 2040* Plan	
	Conduct ongoing data collection and analysis for service planning using market research and surveys	King County Ferry District and WSF
	Develop regional Water Transit Oriented Development (WTOD) strategices, including local guidelines for developing mixed-use, pedestrian-oriented terminal areas	County, local jurisdictions and private developers
	Develop coordinated regional POF service design and performance standards	All stakeholders Coordinate with transit providers to improve service and facilities to support POF
	Support capital planning by POF providers in securing funds and coordinating investments	State, county and local jurisdictions
	Create and staff Regional Ferry Coordinating Forum	All stakeholders
	Develop new and innovative regional funding sources	
Transit Agencies	Coordinate facility planning for new passenger-only ferry services, including park-and-ride lots and intermodal centers	POF providers, PSRC, WSF
	Coordinate service planning and scheduling to provide frequent and direct landside transit connections	POF providers, PSRC, WSF
	Work toward fare integration/reciprocity with ferries	POF providers, WSF
Cities and Counties	Adjust zoning and land use codes to support ferry terminals and leverage investment in waterfront development	Private developers
	Develop good pedestrian and bicycle connections to terminal area	User groups
	Develop strategic Seattle Hub Terminal and other new ferry terminal sites	State and regional ferry providers
	Manage parking at terminal sites strategically through pricing and time limits	Private sector
Port Districts	Use funding authority to initiate new and/or pilot POF services	Cities, counties, transit agencies
	Share physical assets to reduce cost burden of POF start-ups	Cities and counties
Washington State Ferries (WSF)	Share existing WSF assets (docks, terminals, etc.) where possible to reduce cost burden of POF start-ups	POF providers
	Develop strategic Seattle Hub Terminal accommodating auto and foot ferries	City of Seattle, King County Ferry District, other regional ferry operators
	Evaluate role of POF in off-peak service provision	POF providers
Washington State Legislature/ Joint Transportation Committee	Allow toll revenues to support transit services, including ferries	WSDOT, Transportation Commission
	Review current funding mechanisms and requirements for POF (PTBA, County District, etc) and consider revisions that reflect beneficiaries	Counties, POF providers, Transit Agencies

oriented development, and developing terminals in urban, suburban and rural settings.

Development of Coordinated Service Standards. PSRC could work with stakeholders to ensure that all existing and future POF service meets minimum quality of service levels. In addition to working with POF service providers to determine what appropriate service standards might be, the region could develop performance measures to evaluate whether jurisdictions would meet minimum requirements for POF service, such as ridership and access. This could apply in particular to POF services that would receive competitive federal, state or regional funds, to ensure transportation dollars are distributed to the most productive and regionally significant services.

Capital Planning. Through targeted research into other systems' capital programs and trends in ferry system technology, PSRC could develop important cost data, best practices, and other resources to assist potential future POF providers to craft credible capital plans. PSRC could work with jurisdictions to seek Federal appropriations to support POF. For example, $50 million would provide capital funding for all the Immediate-term routes.

Enhanced Regional Coordination. PSRC could foster enhanced regional coordination by forming a new Regional Ferry Coordinating Forum comprised of agencies and interested parties from the region and state, which could generate and adopt ideas for service planning, terminal area design guidelines, vessel and terminal design standards and regional funding sources. In particular, this collaborative body could generate ideas for modifying existing funding mechanisms so that they work even better for existing and future providers and work together to lobby the legislature on behalf of these changes

Evaluation and Development of New Regional Funding Sources. PSRC could take a lead role in identifying and advocating new regional funding sources for passenger-only ferry service and facilities, such as bridge or highway tolls, emergency mitigation and disaster management funds, or transportation mitigation funding.

Transit Agencies

Whether or not transit agencies actually provide passenger-only ferry service themselves, they can take steps to ensure the success of existing and future POF services. Transit agencies can play a stronger, expanded role in advancing POF systems in the following ways:

Facility Planning. When developing capital investment plans, transit agencies should consider existing and planned POF service, and ensure adequate park-and-ride capacity exists, with good shuttle connections to terminals.

Service Planning and Schedule Coordination. Transit agencies should ensure good transit connections to ferry terminals with service levels that are well-matched to the market (e.g. peak-period service for commuter markets and all day connections for broader markets). Transit and POF providers should partner to actively develop park-and-ride shuttle and local distribution routes. Transit agencies and ferry service providers should also work together to ensure transit-ferry schedule coordination. This is especially vital when headways are 30 minutes or longer and a missed connection due to poorly coordinated

schedules could result in long waits, loss of time saving advantage and, consequently, loss of both potential transit and ferry riders.

Fare Integration. Fare integration between transit and ferry systems is very important and can help capture a greater rider base. Passenger-only ferry and transit service providers should work together to offer transferable fares. This will require significant up front coordination to overcome challenges related to fare collection, fare differentials between systems, method of revenue distribution and funding, and development of enabling technology.

Cities and Counties

There are many steps cities and counties can take to ensure the success of existing and future passenger-only ferry services, especially in the arena of land use planning. Local jurisdictions can support the advancement of the regional POF strategy through:

Land Use and Zoning. The provision of supportive land uses surrounding ferry terminals is perhaps the most effective way to ensure high levels of ridership and increase accessibility to POF services; land use planning falls squarely in the court of cities and counties. Waterfront development is an opportunity to site terminals and plan for future POF service, create inviting and walkable public spaces and work with private developers in partnership to create new ferry riders. Cities and counties should ensure land use plans and zoning codes are fully supportive of existing and future POF service.

Multi-Modal Service Integration. The success of passenger-only ferry service is highly dependent on the quality of service integration

Smart waterfront development is a key way for cities to support POF service

Source: City of Hercules, CA – Waterfront Master Plan

with landside transportation networks. Cities and counties can assist by inventorying existing conditions on the landside bicycle, roadway, pedestrian and transit networks surrounding existing and planned POF terminals—including parking supply—noting deficiencies and needs, and then working to ensure seamless integration of modes and improved connections to ferry services.

Strategic Siting of POF Terminals. One of the biggest challenges in planning POF service is finding a terminal location that will allow people to walk, bike, or take transit to the boat, minimizing the need to drive. When assessing potential terminal locations, allowed and proposed land uses should be reviewed, favoring sites that have or allow a mix of uses and denser residential development. In particular, the City

of Seattle and King County should partner with the State and other regional ferry operators to develop a Seattle Hub terminal to accommodate future demand. Interest in community development and renewal in ferry communities should be capitalized upon to help capture local, regional, state and federal grants to rehabilitate or build new terminals.

Appropriate Management of Parking Supply Near Terminals. The need for parking at or near the terminal will vary by location and depend on land use and densities, as well as the values important to a particular community. While terminals located in urban centers with good transit connections can probably get away with zero parking at the terminal, these locations may need limited parking nearby in structures or lots. In more suburban or rural locations terminals will need to be supported with park-and-rides at a minimum, and potentially parking near or at the terminal as well.

Port Districts

The Washington State Legislature has granted Ports Districts the authority to operate POF service, and the Port of Kingston has developed a business plan for providing Kingston – Seattle service. The Port has received federal start-up funds and is moving ahead towards implementation. Other Ports within potential POF markets could similarly consider operation of service and work with cities, counties and transit agencies to develop POF business plans.

State/ Washington State Ferries

While the State has been legislatively mandated to exit the passenger-only ferry business as a service provider, there are steps the state could take to support regional passenger-only ferry service and at the same time advance their own system objectives. These steps include:

Partnering with POF Providers to Share Existing WSF Assets. Terminals and vessels are costly capital investments. The state can support the regional passenger-only ferry strategy by offering shared use of their terminals and vessels where and when it makes sense.

Develop a Downtown Seattle Hub Terminal Supportive of POF Service. While it is still unclear when redevelopment of Colman Dock will occur or where the funding will come from, stakeholders agree the facility is in need of eventual refurbishment to support WSF services as well as passenger-only ferry service. The state should partner with the City of Seattle, the King County Ferry District and other regional ferry operators to develop a downtown Seattle terminal that accommodates future demand for both auto and foot ferries.

Ensure Toll Revenues Will Support Transit (Including POF Service). Similar to the Bay Area, this region should consider POF service in the context of regional tolling and congestion pricing. As policies for raising and spending toll revenues are set in place, the state should ensure that passenger-only ferry services, along with land-based transit services, are eligible to receive toll revenues in affected corridors or proportionate to need under a system-wide tolling approach.