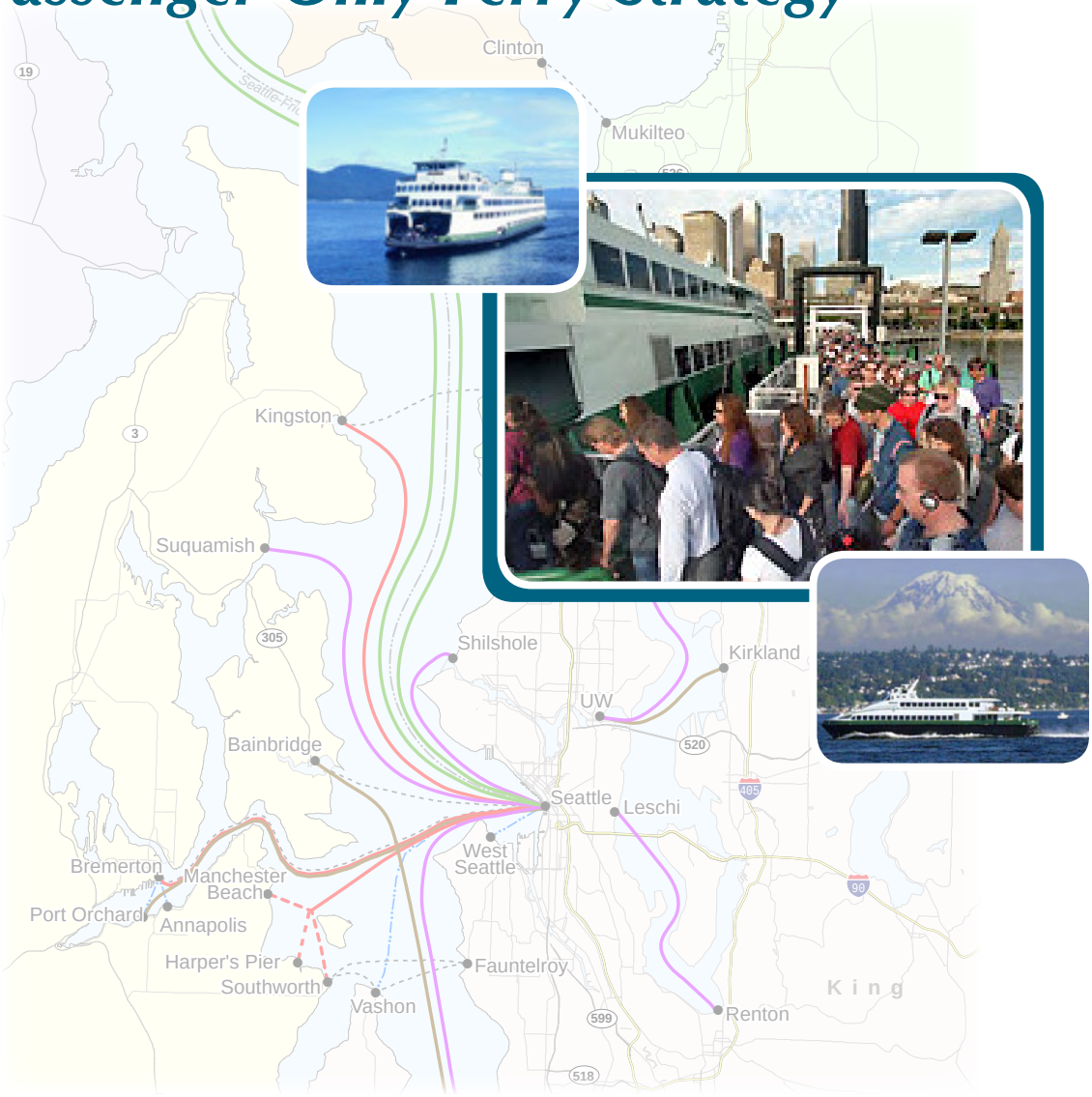
Puget Sound Regional Council
PSRC

Puget Sound Regional Passenger-Only Ferry Study

Task 8 Regional Passenger-Only Ferry Strategy



Final Report

July 2008

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CHAPTER 1. INTRODUCTION

The ferry system in the Central Puget Sound Region is currently at a critical juncture in its historic evolution. The context within which the existing ferry system operates is rapidly changing, due to factors such as:

- Historically high fuel prices,
- The recent loss of critical public funding to support the ferry system (due to elimination of the state motor vehicle excise tax),
- Forecasts of continued growth in demand on Washington State Ferries' (WSF's) existing auto ferry system and existing foot ferry services,
- Forecasts of significant future population and employment growth,
- Congested roadways and residents demanding better travel choices,
- The state's departure from the passenger-only ferry (POF) business, and
- The creation of new local funding options by the 2006 Legislature.

In the spring of 2006 the Puget Sound Regional Council's (PSRC's) Transportation Policy Board asked for an evaluation of the current status of POF service in the Central Puget Sound Region and the development of a regional framework to guide decisions on passenger ferry system investments.

Over the past year, the PSRC has been working in close consultation with staff from Washington State Ferries, local and regional transit agencies, Ports, local jurisdictions, representatives from existing and potential future ferry communities and the Legislature's Joint Transportation Committee to study this issue and develop a regional plan for coordinated POF service. The work effort has included a thorough literature review, a market analysis, ridership estimation and demand modeling, peer systems evaluation, evaluation of future POF routes, and landside integration. This report builds on previous tasks and presents the study's technical findings in support of a regional POF strategy.

CHAPTER 2. ROUTE EVALUATION PROCESS

The route evaluation process consisted of three steps – (1) market analysis and route identification, (2) ridership estimation and demand modeling, and (3) more detailed route evaluation based upon a set of adopted criteria. The analysis relied upon input from the Project Advisory Committee, local planning officials and staff, transit agency staff, and ferry system operators. The evaluation also considered policy guidance contained in adopted local and regional plans.

Route Identification

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

- All existing passenger-only ferry (POF) routes
- All of the POF routes that had been studied previously in other planning processes,
- Potentially promising routes identified by the Project Advisory Committee (PAC) guiding this study,
- Routes identified by community members, and;
- Routes that, in this study's market analysis work, appeared promising based on regional population and employment growth and documented travel patterns.[1]

The identified potential POF routes primarily connect locations between or within the four counties represented by the PSRC, but several routes were analyzed in areas outside the PSRC region where ferry trips cross from outside to inside the PSRC region. The PAC also advised the project team on what they thought appropriate service assumptions and frequencies should be for the various routes. These service assumptions were used in the first round of demand modeling, and were adjusted based on PAC and project team input, as well research conducted on POF peer systems currently in service.

Ridership Estimation and Demand Modeling

Overview

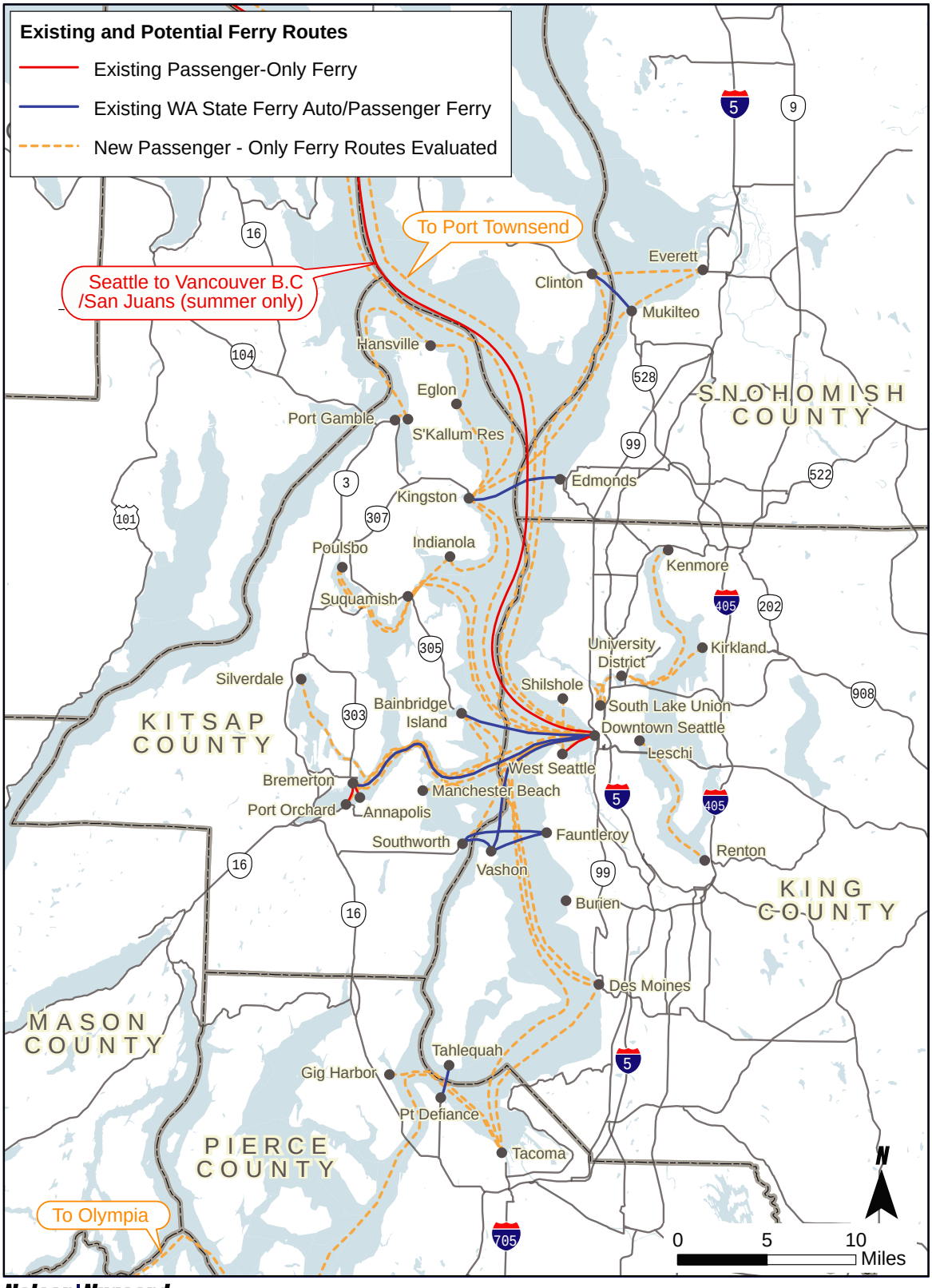
The thirty-three original routes were analyzed using PSRC's regional multimodal travel demand model to arrive at the first round of ridership estimates. This was done regardless of the fact that some routes drew from the same markets. A key strength of the model is its ability to replicate the general travel behavior found in the Puget Sound region. The model development uses data obtained from household travel surveys, providing a statistically sound modeling suite that does well in replicating observed behavior.

The key data inputs and assumptions in the PSRC model include:

- **Demographic and Economic Data:** Future year estimates of households and employment are prepared by PSRC using a regional forecasting model and a land use model. The land use data is reviewed by local jurisdictions to insure consistency with local comprehensive plans.
- **Transportation Infrastructure:** The PSRC regional travel demand model requires inputs that reflect the existing and future transportation infrastructure. This includes descriptions of roads and non-motorized facilities, transit routes (bus, rail, and ferry) and service assumptions, and park and ride lots, with assumed capacities.

1 See the Task 5 report from this study *Market Analysis and Demand Modeling* (December 2007), located online at http://www.psrc.org/projects/ferry/Task5-MarketAnalysis_121107.pdf

Figure 2-1 All Passenger-Only Ferry Routes Evaluated



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- **Transportation Costs:** A key input/assumption to the PSRC model is the cost associated with travel, including parking charges, transit fare, ferry tariffs and tolls.

The project team then analyzed the results, revised some of the service assumptions, and removed competing service within the same market to gauge the impact (i.e. removing one of two competing routes, or combining similar routes). A second model run was then completed.

Post-Modeling Adjustments

Recreational and Tourist Demand

A weakness in the regional model is its inability to predict recreational or tourist trip making (a common weakness in many regional models). To address this problem, a formula was applied to adjust the ridership estimates on the routes with the greatest potential for this type of travel. Adjustment factors were used to account for peak season and off season tourism and to account for the appeal of traveling by boat; the average weekday demand estimate from the PSRC model was multiplied by an average summer factor of 1.30 and an average winter factor of 1.09. These adjustments are based on tourist generation rates as they relate to the various micro level land uses at each termini of the ferry route. It is important to recognize that a commuter-oriented route will not vary much from the average. A route more influence by seasonality and tourism will have a wider variation from the average in the summer and winter. Additionally, since these adjustments were applied to the model outputs, low ridership routes that had a higher level of tourist and recreational travel appeal did not see large increases in estimated ridership.

Service Frequencies

After the last round of modeling and adjustments for tourism and recreational travel were made, the project team again adjusted the service frequencies and assumed speeds on several routes, developing final ridership estimates based on increased or decreased frequencies. These adjustments were made based on commonly accepted industry standards and observed impact of service changes on ridership.[2]

Reallocation of Ridership from Competing Cross-Sound Routes

Two routes were modeled in this effort even though they are commonly known to share markets with other proposed routes – Port Orchard to Seattle and Suquamish to Seattle. The proposed Port Orchard – Seattle route competes directly with the proposed Bremerton – Seattle and Southworth/Manchester – Seattle routes, and the Suquamish – Seattle route competes with the proposed Kingston – Seattle route as well as existing WSF auto ferry service between Bainbridge and Seattle.

Although Port Orchard – Seattle and Suquamish – Seattle are routes that modeled well from a ridership standpoint and could very well become viable routes in the future, in order to realize operational and cost efficiencies, this plan recommends implementing the Bremerton-Seattle, Southworth/Manchester – Seattle and Kingston

2 Post-modeling adjustments to service assumptions and ridership were adjusted based on an elasticity of 0.07. In short, every 1% increase/decrease in service was assumed to correspond with a 0.7 increase/decrease in ridership. This is based on transit service in suburban markets with relatively inelastic demand (i.e. not many other travel options are in place). See Transit Cooperative Research Program's report #95, *Traveler Response to Transportation System Changes-Chapter 9, Transit Scheduling and Frequency* (2004) for more information.

– Seattle routes as order of first priority, and then in the medium- or long-term, if demand warrants, implementing direct service to Seattle from Port Orchard and Suquamish.

However, the demand forecasting exercise estimated 2030 ridership on all the routes simultaneously, and did not account for the nuances of a phased approach. Therefore, ridership on the Suquamish and Port Orchard - Seattle routes was allocated to the "Immediate-Term" Bremerton, Southworth/Manchester and Kingston routes. If direct service to Seattle were implemented from Suquamish and Port Orchard, riders would be partially drawn from the Bremerton, Southworth/Manchester, Kingston, and WSF Bainbridge-Seattle service.

After post-modeling adjustments were made, the final estimates for average daily riders were obtained, and these are the numbers that were used for operations and service planning (see Chapter 3, Service and Operations Plans).

Final Filter

Based on a comprehensive review of other POF systems around the nation and world and their ridership numbers[3], a threshold for minimum ridership was established to pare down the initial list of 33 routes. Any route that showed estimated ridership of 200 riders per day or below was deemed infeasible and removed from the next round of modeling. However, several routes that had ridership below this threshold were retained because they have been identified as possible pilot runs by the King County Ferry District.

After routes with less than 200 daily riders were filtered out, the following routes remained:

1. West Seattle – Downtown Seattle
2. Vashon Island – Seattle
3. Port Orchard – Bremerton
4. Annapolis - Bremerton
5. Bremerton – Seattle
6. Southworth/Manchester Beach – Seattle
7. Kingston – Seattle
8. Bainbridge – Des Moines
9. Suquamish - Seattle
10. Port Orchard – Seattle
11. Kirkland – University of Washington
12. Kenmore – University of Washington
13. Renton – Leschi
14. Des Moines – Seattle
15. Shilshole — Seattle
16. Port Townsend – Seattle
17. Vancouver, B.C. – Seattle

It is important to note that the Vancouver B.C. – Seattle and Port Townsend – Seattle routes were not modeled since in each case at least one terminus was outside the Puget Sound region, making it impossible to evaluate these routes in the regional travel demand model. Ridership estimates were produced off model for these routes. The Vancouver B.C. – Seattle route was assumed to have 500 riders per day. This is based on the fact that the Victoria Clipper carries roughly 2,000 passengers per day. Because the Seattle to Vancouver run would take significantly more time, and because ample alternate travel modes exist that are more time-competitive (auto, Greyhound, Amtrak), ridership on this route was assumed to be 25 percent of the observed Victoria-Seattle ridership.

For the Port Townsend to Seattle route, the technical team examined known trip-making patterns between Port Townsend and Jefferson County

3 See the Task 5 report from this study *Market Analysis and Demand Modeling* (December 2007), located online at http://www.psrc.org/projects/ferry/Task5-MarketAnalysis_121107.pdf

and the greater Seattle area. Using the WSF 2006 Origin and Destination survey results, it was also determined what portion of existing WSF Bainbridge-Seattle, Keystone-Port Townsend, and Kingston-Edmonds auto ferry users were traveling to or from Jefferson County and the greater Seattle area. Layering this data with observed ridership on the short-term season POF between Port Townsend and Seattle that operated during the 2007/2008 holiday season and accounting for higher peak-season use, the team estimated 600 daily riders for the purpose of this analysis. The Port Townsend to Seattle service is assumed to operate only during peak season (May – Sept).

Additionally, the West Seattle – Downtown Seattle (i.e. Elliott Bay Water Taxi); Kitsap Transit Foot Ferry between Bremerton, Annapolis and Port Orchard; and the Vashon – Downtown Seattle routes are already in service. They were included in the travel demand model and retained for evaluation to both gauge their interrelationship with other proposed POF routes and to analyze whether service changes to those routes might be proposed as part of this study. All three of these existing routes are included in the phasing strategy and service plans, as this study recommends increasing service on those routes.

Detailed Route Evaluation

Ridership estimates are only one factor affecting the viability of future POF service. A broad range of other factors will affect how well future POF routes perform. To assess these factors a route evaluation framework was developed in concert with the Project Advisory Committee. The remaining 17 routes were analyzed against these criteria. The evaluation factors were as follows:

Demand – This set of criteria looked not only at what the estimated daily ridership was, but also 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 POF 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, the following factors were assessed:

- Navigability of the waterways
- Adequacy of connecting transit service
- Quality of bicycle and pedestrian connections and facilities
- Availability of terminal area parking
- The terminal communities perceived vulnerability to traffic impacts

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

Environment – This final set of criteria assessed the sensitivity to wake impacts generated by vessels on the route, and to what degree the POF service would allow users to avoid driving on heavily congested roadways.

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 long term, to identify particular 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 POF service. Although the service and operating plans discussed in Chapter 3 begin to identify some of these connectivity issues, the next step of this study (Task 9) is to look in fine detail at the issue of landside connections (including more detail on terminal siting and feasibility), and to identify what specific transit, bicycle, pedestrian and parking improvements might be needed in each terminal location to support future POF service.

A Route Scoring Key, summary table of evaluation results and detailed Route Evaluation Sheets for each route can be found in Appendix A.

Evaluation Results - Route Categories and Sequencing

The evaluation process enabled the grouping of the 17 routes into four categories based on the existing or anticipated future user markets, as well as the other important evaluation factors described previously. The routes were categorized as follows.

- Immediate term routes of regional significance (existing and proposed)
- Medium term routes with potential to develop
- Long term routes that may become viable in the future
- Tourism and recreation-focused routes

Figure 2-2 summarizes key operational characteristics of the final set of routes evaluated, such as route length, speed, crossing time, schedule frequency, estimated ridership, anticipated annual operating costs, and the one-way fare that would need to be charged to achieve a 40% farebox recovery rate.[4]

Immediate Term: Routes of Regional Significance – Existing and Proposed

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 expansion of services on these routes over the next three years (2008-2011).

4 A commonly used performance metric for transit and ferry systems is farebox recovery, which specifies what proportion of annual operating costs are recovered from passenger fares. A commonly accepted farebox recovery target used for POF systems is 40%.

Figure 2-2 Route Characteristics Overview

Route	Daily Riders (2030)	Route Length (nautical miles)	Schedule Frequency		Speed (knots)	Crossing Time (min.)	Annual Operating Cost	40% Recovery: One-Way Fare*
			Weekday	Weekend				
Immediate Term								
Vashon Island - Seattle	520	9.6	Peak: hourly Off-peak: 2 hrs.	2 hours	30	22	$2.6 M	$7.50
West Seattle - Seattle	660	1.8	Peak: 30 min. Off-peak: hourly	Hourly	22	7	$1.7 M	$2.90
Port Orchard - Bremerton	1,773	4.8	15-30 min.	30 min.	22	14	$3.1 M	$1.80
Bremerton - Annapolis	717	0.8	15-30 min.	30 min.	22	3	$0.8 M	$2.80
Bremerton - Seattle	3,460	13.8	Peak: 40 min. Off-peak: hourly	2 hours	30	30	$9.4 M	$3.60
Kingston - Seattle	920	17.4	Peak: hourly Off-peak: 2 hrs.	No service	30	37	$4.5 M	$7.60
Southworth - Seattle	1,870	9.7	Peak: hourly Off-peak: 90 min.	No service	30	22	$3.7 M	$3.30
Medium Term								
Bainbridge - Des Moines	270	23	Peak: hourly Off-peak: 90 min.	2 hours	30	48	$4.5 M	$23.60
Port Orchard - Seattle	1,740	14.8	Peak only: 40 min.	No service	30	32	$5.4 M	$6.00
Kirkland - UW	420	6	Peak only: hourly	No service	22	20	$2.4 M	$9.40
Long Term								
Suquamish - Seattle	310	15	All day: 2 hrs.	All day: 2 hrs.	30	32	$2.8 M	$14.00
Kenmore - UW	10	8.3	Peak only: 90 min.	No service	22	28	$0.8 M	$130.00
Renton - Leschi	10	7.1	Peak only: 90 min.	No service	22	24	$0.7 M	$117.00
Des Moines - Seattle	60	16	Peak only: 45 min.	No service	30	36	$1.9 M	$51.10
Shilshole - Seattle	10	8.5	Peak only: 90 min.	No service	30	28	$0.7 M	$56.00
Tourism and Recreation								
Port Townsend - Seattle	600	42.3	May-Sept: Friday only, 4 runs	May-Sept: 4 runs per day	35	75	$1.7 M	$10.20
Vancouver B.C. - Seattle	500	129.8	May-Sept: Friday only, 4 runs	May-Sept: 4 runs per day	35	225	$4 M	$28.10

* Given the service assumptions, this is the fare that would need to be charged to achieve a 40% farebox recovery rate, a commonly used metric for POF systems (see pages 3-1 and 3-2 for more discussion).

These routes should be considered routes of regional significance.

The proposed 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 would provide sustainable ridership on these routes, even if they were to be implemented immediately or within the next few years:

King County Existing Routes

Vashon Island - Downtown Seattle

West Seattle – Downtown Seattle

Kitsap County Existing Routes

Port Orchard - Bremerton

Annapolis –Bremerton

Proposed Cross-Sound Routes

Bremerton – Seattle

Kingston – Seattle

Southworth/Manchester Beach – Seattle

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.

Potential Future Cross-Sound Routes

Bainbridge – Des Moines

Port Orchard – Seattle

Potential Future King County Route

Kirkland – University of Washington

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). However, they would require demonstration testing, identification of feasible terminal locations, substantially enhanced markets, improved landside connections, significant capital investment or operating subsidy, and/or land use and development changes.

Potential Future Cross-Sound Route

Suquamish - Seattle

Potential Future King County Routes

Kenmore – University of Washington

Renton – Leschi

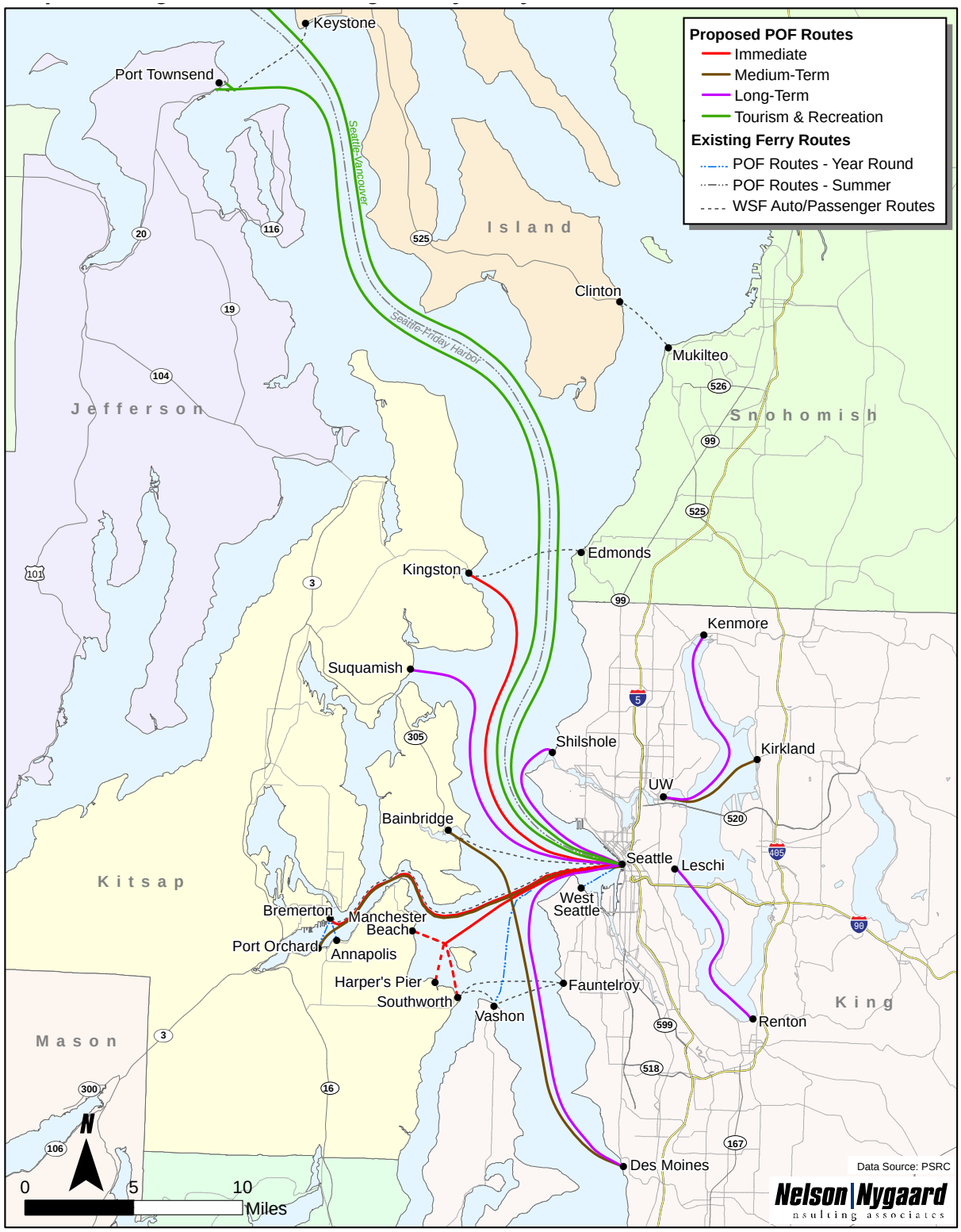
Seattle – Des Moines

Shilshole – Seattle

Tourism and Recreation-focused Routes

These seasonal routes would primarily serve tourist and recreation markets for ridership and are not integrated into the phasing strategy because they most likely require a private rather than public 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 2-3 Proposed Puget Sound Passenger-Only Ferry Routes



CHAPTER 3. SERVICE AND OPERATION PLANS

This section provides a description of the proposed service and operation plan for each route. Each section is standardized to provide the following categories of information.

Maps and Route Overview - Schematic GIS maps show the path of the proposed POF route and other existing ferry services, while zoomed-in maps of the terminal areas show the connecting street grid, existing and planned transit service, park-and-rides, terminal area parking, and bicycle/pedestrian facilities. The route map also includes a basic route overview, with information such as the route length, estimated daily ridership, schedule frequency, assumed vessel speed, estimated crossing time, and estimated overall annual operating costs. *It is important to note that all operating plan information, operating costs and capital costs are conceptual and are intended for planning purposes only.*

Terminals - This section details existing conditions and proposed improvements at each terminal area, or information on what elements would be necessary in the case that a brand new terminal is needed. Terminals served by multiple POF routes are fully described under the first relevant route discussed. Other routes reference the initial description.

The information provided for each terminal includes: existing and planned land uses, including any potential land use issues or conflicts; information on berths, waiting areas and docks; and basic information on transit, bicycle and pedestrian access, as well as at-terminal parking. Improvements needed to support each terminal are identified, and estimated improvement costs are given. *All improvement costs, estimated in April 2008, are calculated in 2008 dollars.* While preliminary information on landside transportation connections and access is provided, this issue will be explored in much greater depth in the next phase of this study (Task 9).

In some POF destinations, more than one location is viable for a future POF terminal. Although a single such location has been selected for the purposes of this analysis, this does not mean that either PSRC or the consultant team view the location as the preferred site. In the case of multiple potential terminal locations, more technical analysis will need to be conducted by potential operating agencies and local jurisdictions in order to establish the ultimate preferred terminal location.

Vessels - This section describes the vessel needs for each proposed route, including the vessel type, anticipated number of vessels needed, any special vessel requirements (environmental, technical, performance, capacity, etc), and anticipated capital cost to acquire vessels. *Again, these costs are planning-level estimates based on recent vessel purchase costs and are presented in 2008 dollars. Changes in vessel requirements, materials costs, labor rates and contracting provisions can dramatically influence the costs of a vessel.*

Operating Cost Summary – This section gives estimated total costs 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 – A commonly used performance metric for transit and ferry systems is farebox

recovery, which specifies what proportion of annual operating costs are recovered from passenger fares. Any portion of ongoing operating costs that are not recovered by fares must be subsidized through grants, taxes, or other funding sources (see Chapter 5, Funding and Fare Policy Options). A commonly accepted farebox recovery target used for POF systems is 40%.[1]

In the service and operation plan developed for each immediate term route, the "Farebox Options" section lists what the farebox recovery rate would be at the assumed transit fare level (i.e. if POF fares were set at the same rate as connecting landside transit services), as well as the fare required in order to achieve a 40 or 60 percent farebox recovery rate.[2] This does not account for any lost ridership that may occur due to increased fares, which is a known potential outcome of raising fares. While data exists to support the assumption that ferry users may be less sensitive to fare increases compared to users of other modes, this will vary substantially based on the availability and quality of other travel options.

Farebox recovery rates can be increased either by raising fares, or by increasing ridership on existing fleets while controlling costs. Many factors and actions can increase ridership, including additional population and employment growth, supportive land uses and densities, and targeted marketing and promotion campaigns.

1 For a point of reference, the average farebox recovery rate for urban public transit systems in the Puget Sound region is 20%, and the target adopted for WSF's auto ferry system is 80%.

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. See Chapter 5, *Fare Policy Options,* for a more detailed discussion on this topic.

Governance and Implementation - This section discusses potential organizational structure(s) for each route, and outlines the most likely or most promising funding sources.

This chapter provides summary operating information and service plans for each proposed route. For more information on each route's operating and service plan, including more detailed estimated cost breakdowns, see Appendix B, Detailed Route Information.

Immediate Term (next 3 years):

Routes of Regional Significance - Existing and Proposed

Existing routes in the "Immediate Term" category are already in operation and are planned to continue under the authority of the King County Ferry District or Kitsap Transit. This study's evaluation supports the continuation and expansion of services on these routes over the next three years (2008-2011). Further, these routes should be considered routes of regional significance.

The newly proposed routes within this "Immediate Term" 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 would provide sustainable ridership on these routes, even if they were to be implemented immediately or within the next few years:

King County Existing Routes

Vashon Island – Downtown Seattle

Currently operated by WSF, this route will fully transition to the King County Ferry District by 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, midday and weekend service.

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.

Kitsap County Existing Routes

Port Orchard – Bremerton
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 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.

Proposed Cross-Sound Routes

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.

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, to be operated by the Port of Kingston, will shave 42% off the total travel time for this trip.

Southworth/Manchester Beach – Seattle

Currently, traveling from Southworth to Seattle requires taking the WSF auto ferry to Vashon Island and transferring 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.

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Vashon Island - Downtown Seattle

Immediate Term - King County Existing POF Service

Figure 3-1 Vashon Island - Downtown Seattle Route Overview

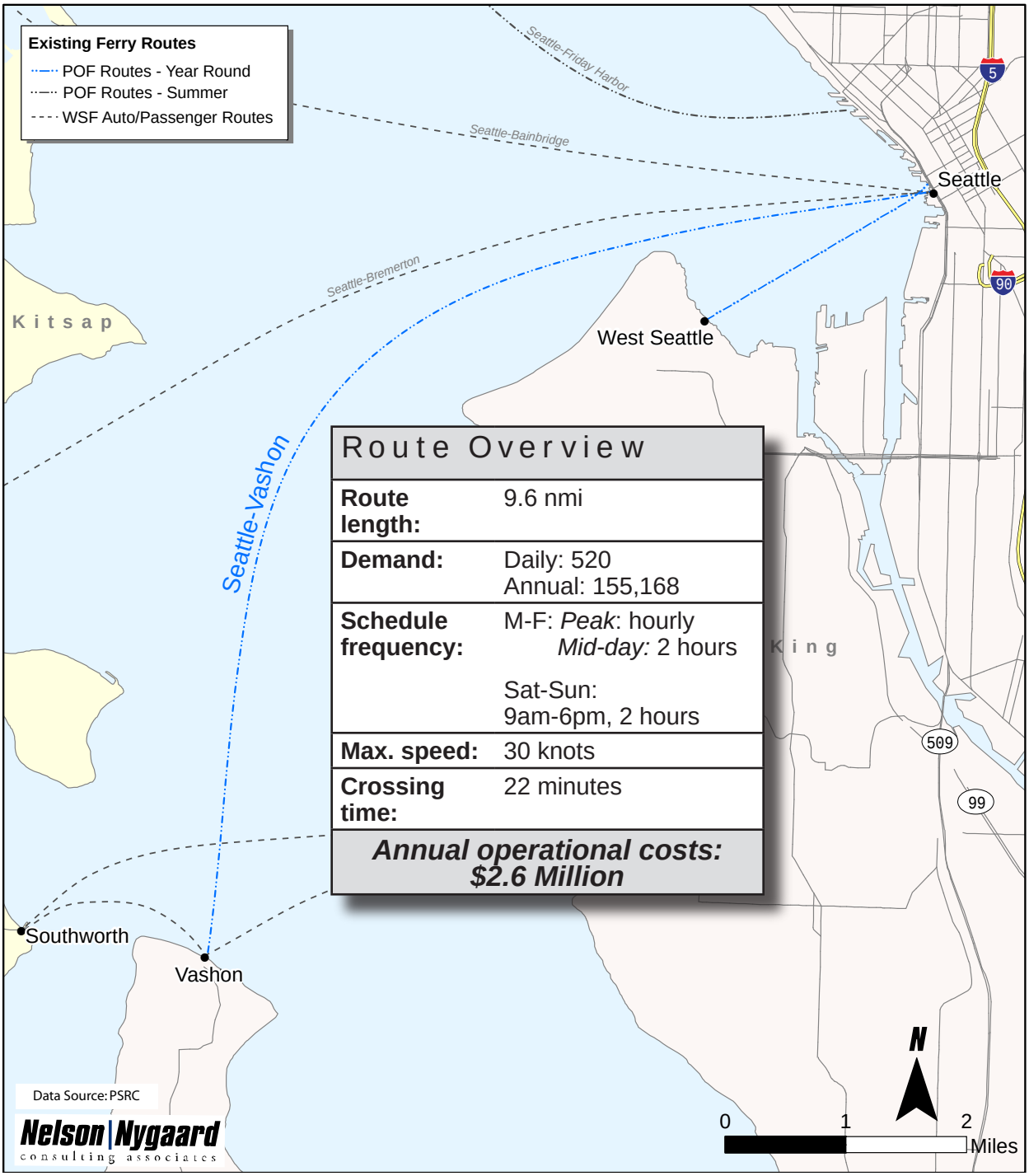
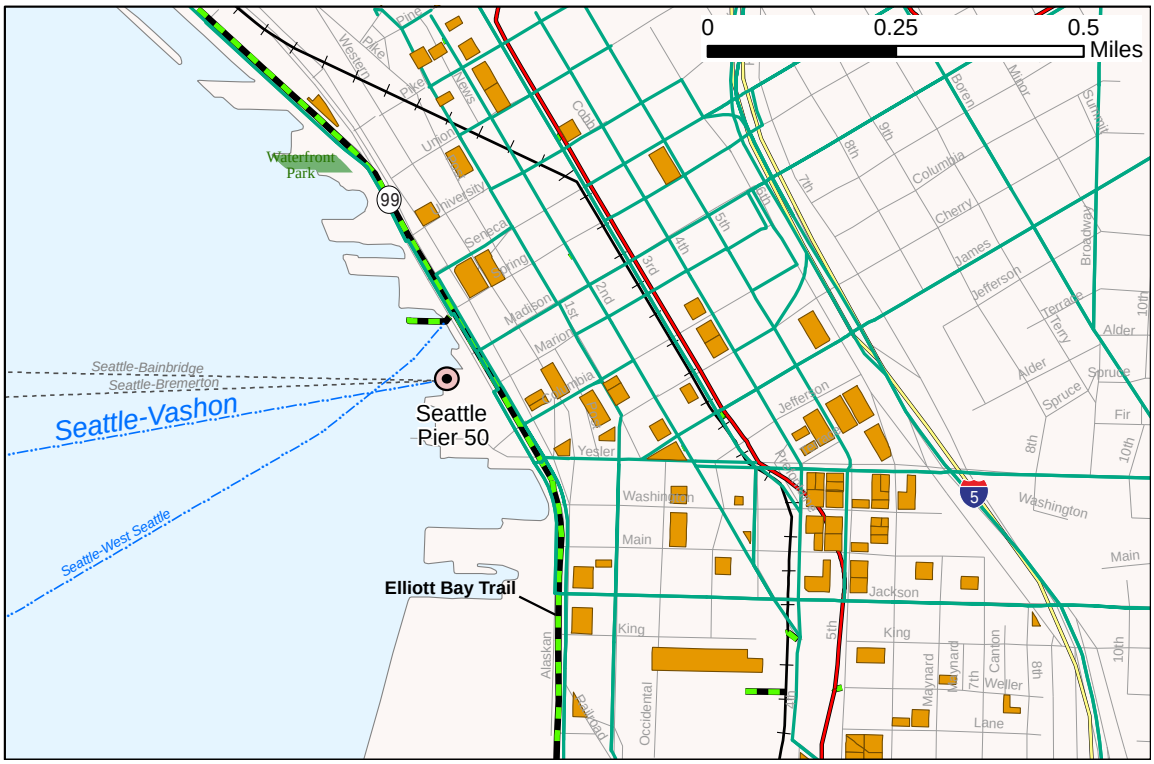
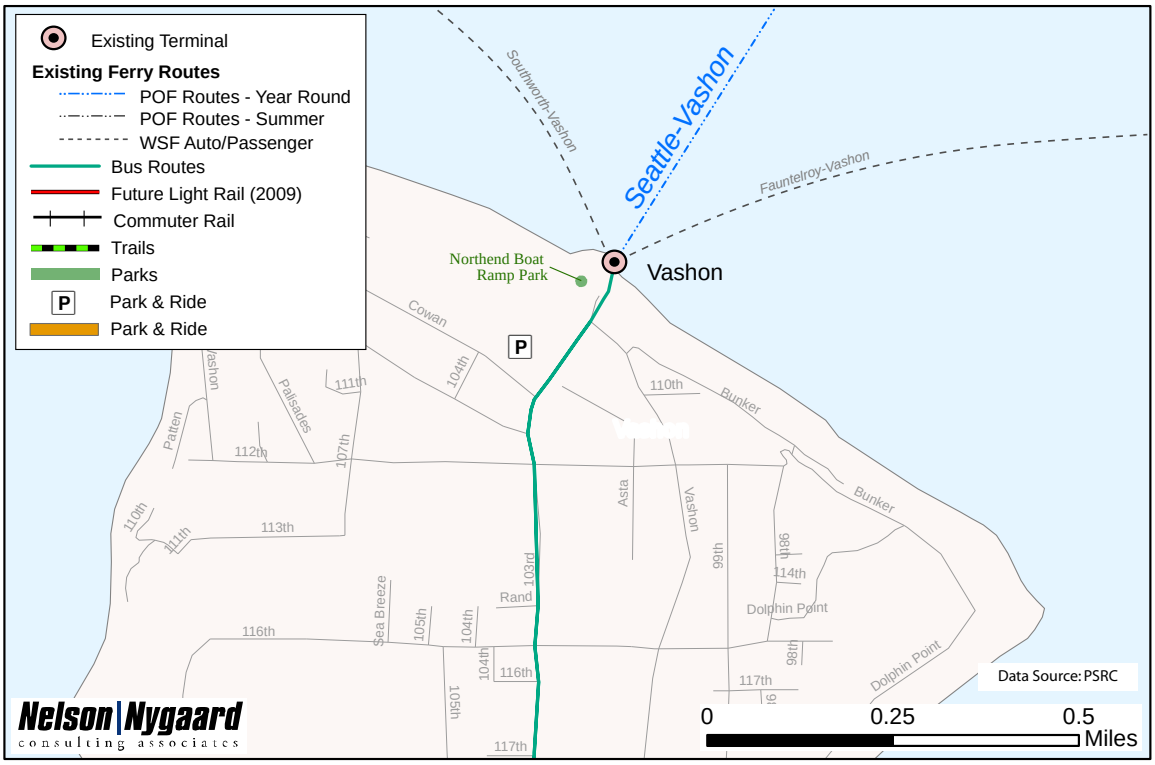


Figure 3-2 Vashon Island - Downtown Seattle Terminal Details





Immediate Term: King County Existing Routes

Seattle Terminal (Colman Dock)	
Location: Colman Dock Pier 50 hosts an existing POF terminal, immediately to the south of the existing WSF auto ferry terminal at Pier 52.	
Land Use	
Existing:	Urban center (high density, mixed use), existing POF terminal adjacent to auto ferry terminal.
Planned:	Same
*Potential **conflict:***	No potential land use conflicts. On the water side, there will be a significant degree of marine traffic from the existing ferry terminal, including WSF auto ferries, Harbor Island traffic, the Elliott Bay Water Taxi, and the WSF Vashon-Seattle POF service.
Existing Facilities	
Berths:	The current facility at Pier 50 provides only two side-loading berths, and is not sized or designed to handle the loads anticipated in this study.
Waiting areas:	Temporary tent terminal adjacent to the POF slip, no services. Main WSF terminal building located across vehicle holding area from the POF dock, at Pier 52.
Dock and landside:	A total of 11 routes in this study end in downtown Seattle, serving over 9,000 daily riders. With this many passengers and vessels at a single location, significant planning and design must be done to develop a new terminal facility that can accommodate the anticipated level of traffic.
Access	
Bicycle:	Fair. No designated on-street facilities nearby. Bicycles must cross and mix with auto ferry vehicle holding lanes in order to reach Pier 50. Bike connections are planned as high-priority projects after terminal reconstruction.
Pedestrian:	Fair. Separated walkways outside of the terminal. The overhead pedestrian bridge from the main Terminal Building links over Alaskan Way to 1st, 2nd, and 3rd Avenues
Park & Rides:	n/a. Theoretically, however, passengers could park in remote regional park & rides, continue downtown via transit, and either walk the rest of the way or transfer to one of two bus routes leading to the terminal
Transit from P&R:	n/a.
Transit:	Two King County Metro bus routes stop adjacent to the terminal, 20-30 minute frequencies. Major 3rd Ave transit connections located 0.4 mi away, uphill.
Adjacent parking:	No terminal parking. Though many public parking garages are located within a few blocks, many are at or near capacity.

Proposed Improvements continue on the next page

Proposed Improvements

King County plans call for replacement of the existing POF terminal 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 routes that the county is taking over, it will not be sufficient to meet anticipated future POF demand. King County should work jointly with other potential POF operators as well as WSF, to plan for and share the cost of a new facility with sufficient capacity to serve new routes and to grow as more come online.

Some strategies can be taken to mitigate vessel traffic. One approach is to develop coordinated schedules for Seattle-based routes that minimize the number of vessels using the Seattle terminal at a single time. This will not only aid in reducing the number of passengers passing through the terminal at once, but also make it easier and safer for vessels to arrive and depart.

Modern terminal design solutions can aid in terminal throughput. The Circular Quay Terminal in Sydney is one of the most prominent examples of a high-capacity POF terminal. Color coded routes, designated slips and clear signage and wayfinding are important considerations. Use of bow-loading can aid greatly in reducing vessel turnaround time and increasing passenger throughput. On the landside, a large terminal building will be important to allow sufficient space for passenger staging and to effectively manage the various passenger flows in and out of the terminal.

The area between Colman Dock to the north and Pier 48 to the south would likely be able to 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 also 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. Additional analysis would be needed before moving forward with these options.

Total Proposed Improvement Costs: $5.9 Million

King County Ferry District plans have estimated 10-year capital improvement costs of $5.9 Million for Colman Dock.

Vashon Island Terminal

Location: Located immediately west of the WSF auto terminal.

Land Use

Existing: Semi-rural, rural residential

Planned: Same

Potential conflict: Already being used as a ferry terminal, no land use conflicts exist. On the water side, vessel traffic may be encountered from the WSF terminal. The harbor lease is controlled by Washington State Ferries.

Existing Facilities

Berths: The terminal currently provides two side-loading berths.

Waiting areas: The location currently has a small indoor passenger waiting area that is shared between the auto and passenger terminals. Additional unsheltered staging area is available on the trestle.

Dock and landside: The existing Vashon Island terminal is already well-equipped for POF service.

Access

Bicycle: Fair. The local terrain is not particularly conducive to cycling because of the long, steep hills approaching the ferry terminal, although King County has identified these wide shoulders as bike routes. The terminal has one bicycle rack.

Pedestrian: Poor. A rural location, pedestrian access is unlikely. The terminal does not appear to be fully ADA-compliant (gangplanks). Although pedestrian connections are good between the terminal and the commuter parking lot and transit dropoff point, pedestrian conditions are poor along larger access arterials.

Park & Rides: Nearby free County-owned P&R lot has 200 spaces. Five additional P&R lots located farther from the terminal. Free parking at Southworth (for passengers who transfer from WSF's Southworth auto ferry to Vashon POF). Kiss-and-ride access is available via a turnaround on the pier, but such access is prohibited during peak hours.

Transit from P&R: King County Metro connects with five island park-and-rides farther from the terminal.

Transit: Two King County Metro routes currently serve the terminal well, connecting it with island park-and-rides and the town center.

Adjacent parking: There is no parking available at the terminal site except for two handicap spaces.

Proposed Improvements

No significant improvements are likely to be necessary to provide POF service from this location. King County Ferry District plans call for the following improvements:

- Maintenance and repair of the float, guide piles, concrete access pier deck, float fendering, topside railings, gangway and concrete access pier
- Utilities, lighting and communications on the float
- Installation of two ticket vending machines, four smart card reader machines and rider information rack
- Installation of new security gate closer to the top of the gangway
- Two new ADA-compliant gangplanks
- Signage and wayfinding upgrades
- Installation of Bosun's locker on the terminal float

Total Proposed Improvement Costs: $2.4 Million

King County Ferry District plans have estimated capital improvement costs of $2.4 Million for the Vashon terminal.

Vashon Island - Downtown Seattle

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	

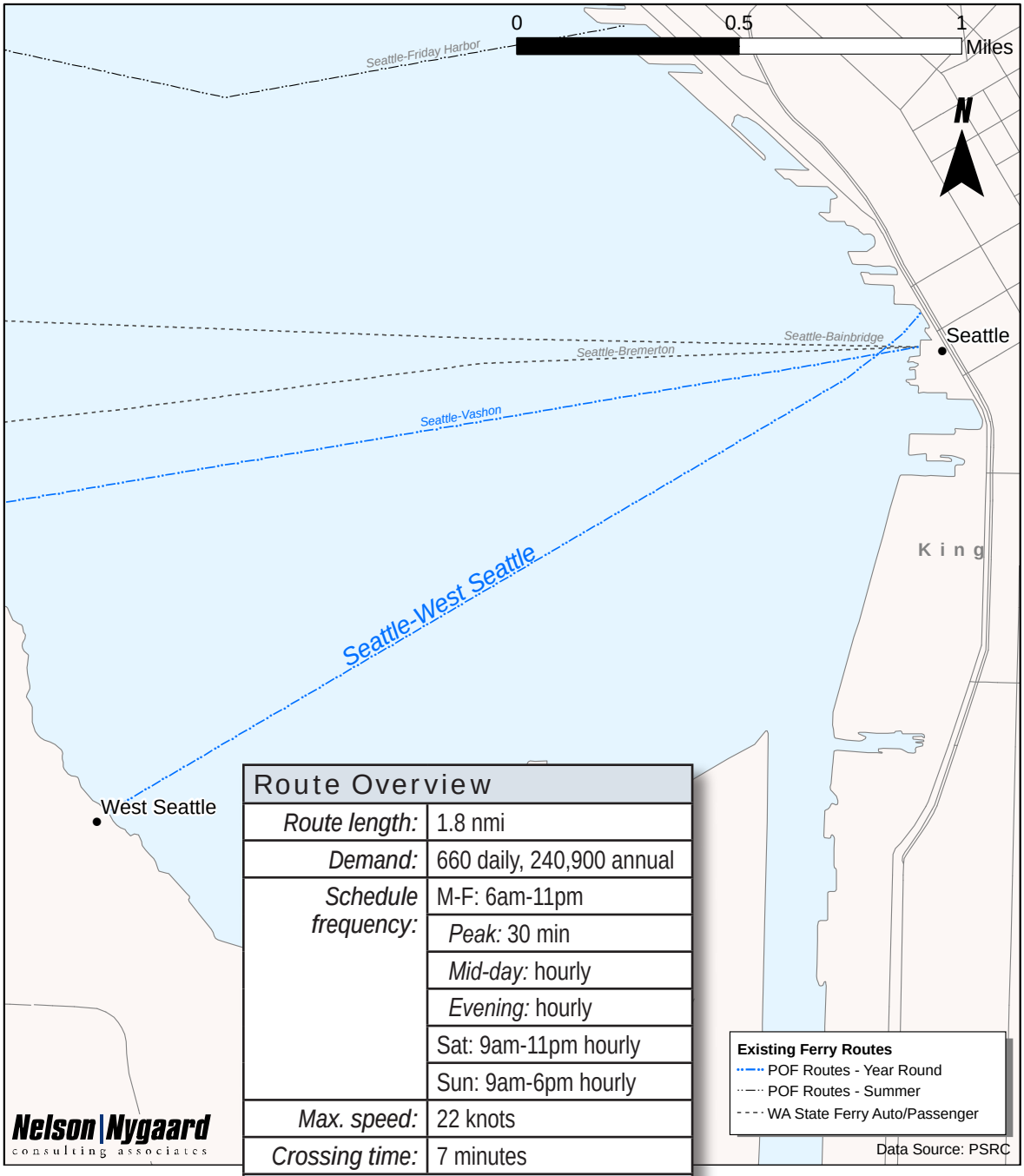
Fare Options	
Fare	Recovery %
$3.35 (assumed)	18%
$7.50	40%
$11.20	60%

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* This route will be operated by the King County Ferry District and funded by property taxes. Vessel maintenance and moorage will be contracted to an outside shipyard.
Promising funding sources	In addition to **fares**, **property taxes** and likely **FTA grants**, this route could be subsidized by potential **joint development** ventures in the vicinity of Colman Dock. This route may also qualify for funds from the **State POF Grant Account**. If an emergency transportation authority were created (similar to the Bay Area's Water Emergency Transportation Authority), the route may qualify for emergency/evacuation funds given the limited number of transportation links serving Vashon Island.

West Seattle - Downtown Seattle

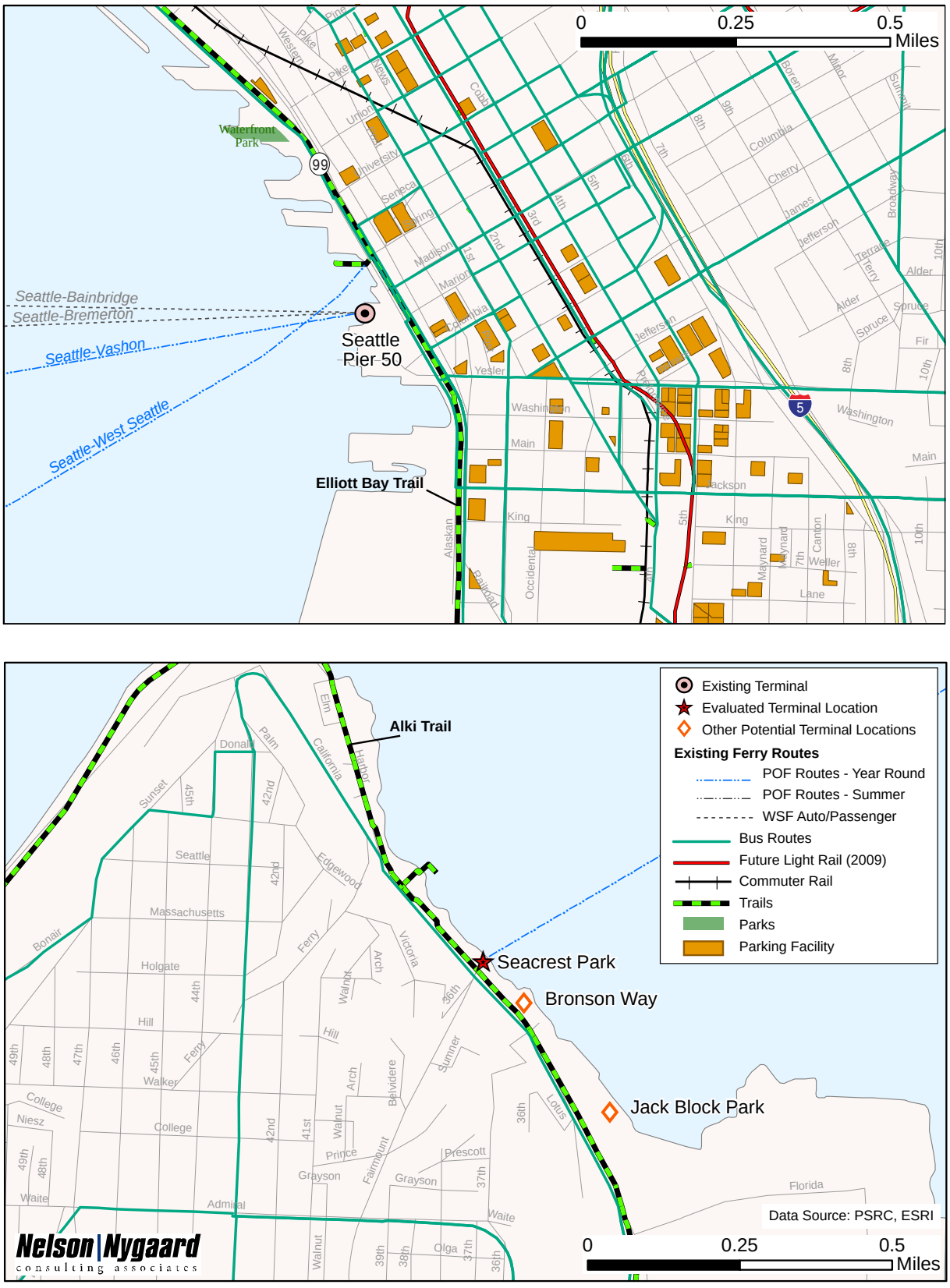
Immediate Term - King County Existing POF Service

Figure 3-3 West Seattle - Downtown Seattle Route Overview



Route Overview	
Route length:	1.8 nmi
Demand:	660 daily, 240,900 annual
Schedule frequency:	M-F: 6am-11pm
	Peak: 30 min
	Mid-day: hourly
	Evening: hourly
	Sat: 9am-11pm hourly
	Sun: 9am-6pm hourly
Max. speed:	22 knots
Crossing time:	7 minutes
Annual Operational costs: $1.7 Million	

Figure 3-4 West Seattle - Downtown Seattle Terminal Details



For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

West Seattle Terminal

Location: The Elliott Bay Water Taxi (EBWT) currently operates from the dock at Seacrest Park. For the purposes of this evaluation, we analyzed Seacrest Park dock location, consistent with the King County Ferry District's plans to date. If the location is changed in the future, additional analysis and study will be needed to evaluate the alternate locations at Jack Block Park and Bronson Way.

Land Use

Existing:	Park, adjacent to single-family residential, some commercial and mid-rise residential
Planned:	Same
Potential conflict:	Already used as a terminal, no particular land use conflicts exist. However, service growth may present negative impacts to park use. Ongoing use of Seacrest is questionable, given that it is funded by state IAC recreational funds, which may not allow long term POF use.

Existing Facilities

Berths:	The location currently has one berth, as needed in order to provide service.
Waiting areas:	There is currently no covered waiting area at this location, although the park does provide some picnic table seating. EBWT passengers typically wait on the float, at the park, or seek shelter at a nearby fish and chips stand.
Dock and landside:	The existing facility consists of a recreational timber float that is removed seasonally. No additional terminal infrastructure is in place.

Access

Bicycle:	Fair. There is a paved regional bike trail along the waterfront, but this shared use path has few street connections through to the residential areas. Bike racks are available.
Pedestrian:	Good. With some apartments/condos and restaurants nearby, the terminal is conducive to walk-on passengers. However, the current gangplank is not ADA-accessible.
Park & Rides:	n/a.
Transit from P&R:	n/a.
Transit:	Two King County Metro regular bus routes and one special ferry shuttle which is free to ride.
Adjacent parking:	No parking spaces are dedicated to the ferry terminal, and they are restricted to a 2-hour time limit. A small parking lot exists for the park, which can be used as a kiss-and-ride location.

Proposed Improvements

King County Ferry District plans propose near-term improvements for the Seacrest Park dock that include:

- Replacement of the timber floats with temporary concrete floats of a similar footprint.
- A new timber raised boarding platform and ramp to accommodate high freeboard vessels
- A new ADA-compliant gangplank
- Outdoor waiting area cover
- Float utilities/lighting
- Rider information and two ticket vending machines

Proposed long-term improvements include:

- Relocation of the float away from the fishing pier
- Replacement of the float with a 40'x100' concrete float
- New gangway ramp
- Relocation of covered waiting area and rider information/vending machines\
- Installation of a Bosun's locker on the float
- Signage and wayfinding upgrades
- Replacement of existing gate with an improved security gate.

Total proposed improvement costs: $8.0 Million

King County Ferry District plans anticipate a long-term $8.0 Million West Seattle terminal capital cost.

For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

West Seattle - Downtown Seattle

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	

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

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* This route will be operated by the King County Ferry District and funded by property taxes. Vessel maintenance and moorage will be contracted to an outside shipyard.
Promising funding sources	In addition to fares, property taxes and likely FTA grants, this route could be subsidized by potential joint development ventures in the vicinity of Colman Dock, and even along the Elliott Bay Waterfront should new development occur there. Given the ability for this route to reduce SOV travel to downtown Seattle, it may qualify for CMAQ funds. When the AWV undergoes replacement, the route could qualify for Transportation Mitigation Funding. In the future, regional tolling or congestion pricing may come into play, in which case toll revenues collected on the West Seattle Bridge or SR 99 could potentially help fund this route.

Port Orchard - Annapolis - Bremerton

Immediate Term - Kitsap County Existing POF Service

Figure 3-5 Port Orchard - Annapolis - Bremerton Route Overview

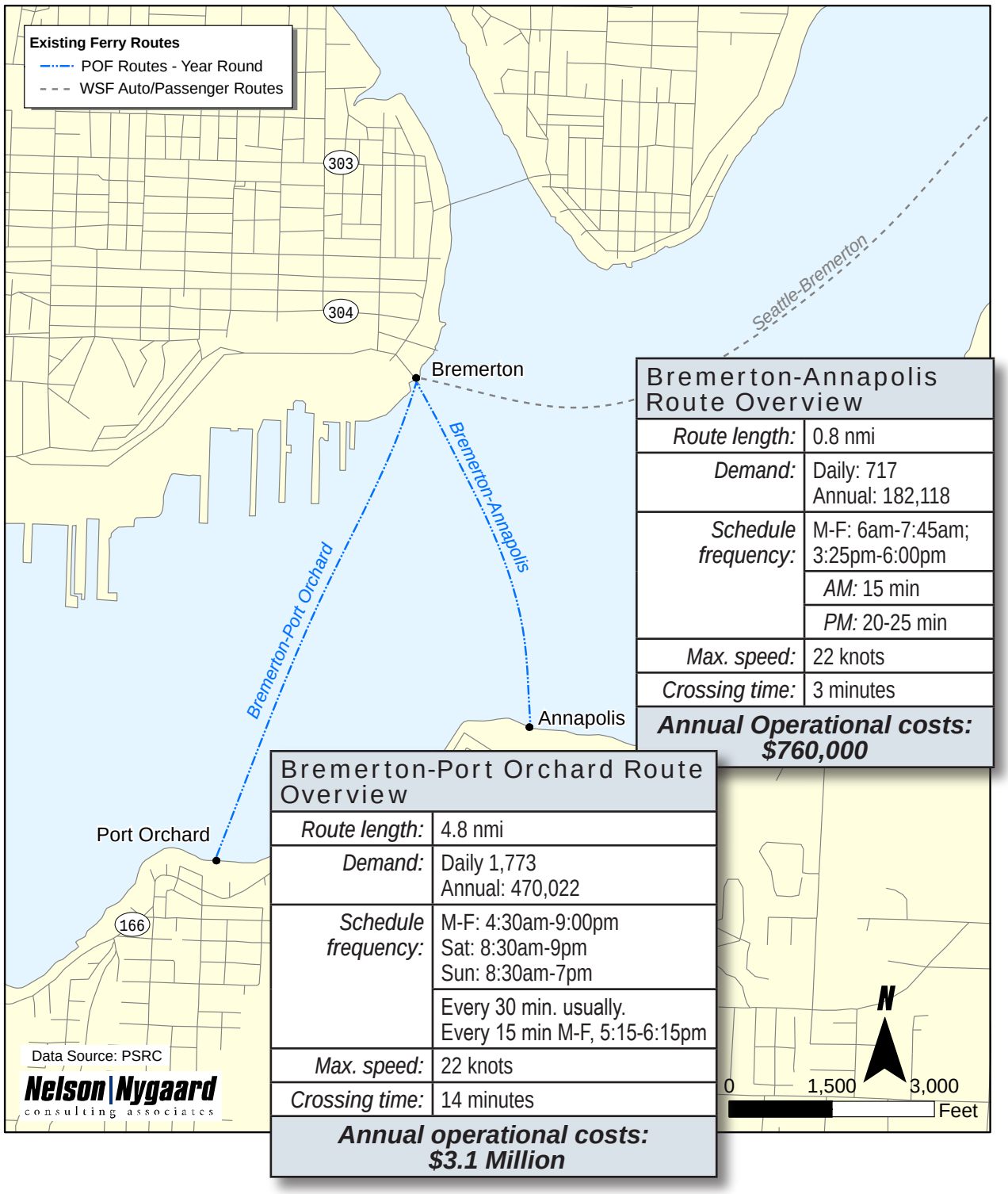
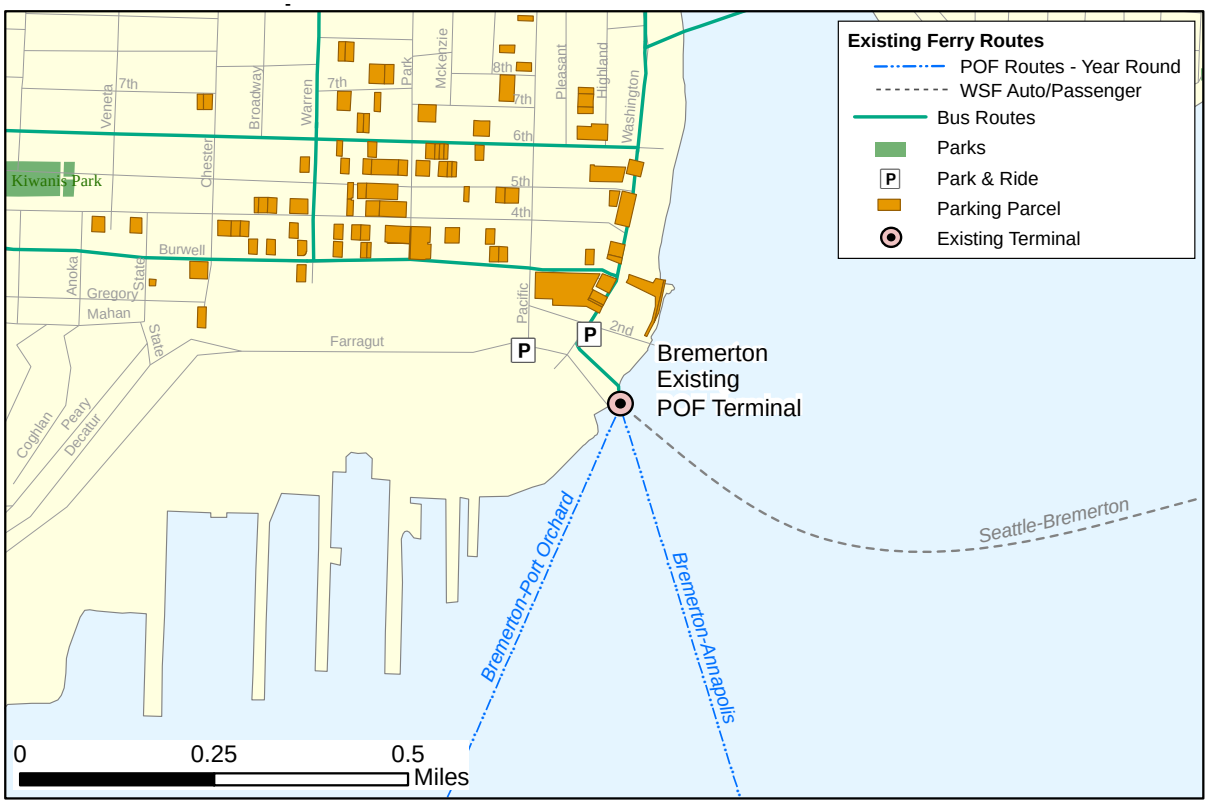
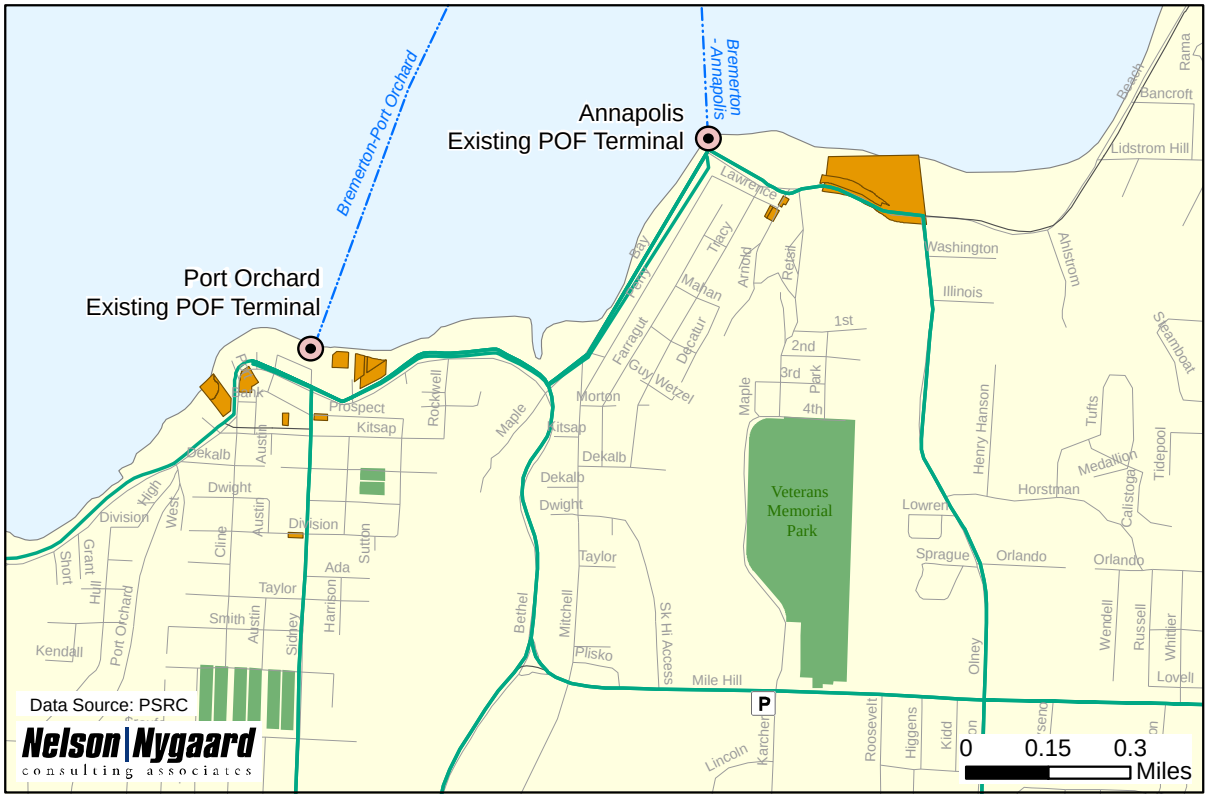


Figure 3-6 Port Orchard - Annapolis - Bremerton Terminal Details





Immediate Term: Kitsap County Existing Route

Port Orchard Terminal	
Location: Located at the end of Sidney Avenue in downtown Port Orchard.	
Land Use	
Existing:	Low- to medium-density commercial area
Planned:	Fair to good likelihood of increased densities in the future.
*Potential **conflict:***	Already being used as a ferry terminal, no land use conflicts exist. On the water side, vessel traffic may be encountered from the adjacent marina breakwater. Kitsap Transit controls the harbor lease at this location.
Existing Facilities	
Berths:	The Port Orchard terminal float provides side-loading berths for up to four vessels. The terminal is currently being used by the Kitsap Transit Foot Ferry running this route, with departures on the half-hour.
Waiting areas:	The terminal currently features a small sheltered waiting area and a number of benches both inside and outside the shelter. Additionally, a small park with additional benches and picnic tables is located on the landside. Kitsap Transit customer service offices and restrooms are available at the head of the gangway.
Dock and landside:	The Port Orchard terminal is already a fully-operational passenger ferry terminal.
Access	
Bicycle:	Fair. Bicycle facilities for novice riders are limited in the vicinity. However, it appears that traffic volumes are low. Access does exist from the terminal to recreational routes, but these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. No bicycle lockers or racks are currently present.
Pedestrian:	Good. Located in a small, walkable town center, the terminal is conducive to walk-on passengers. Some destinations are located within 1/2 mile radius of the existing Port Orchard foot ferry terminal. The terminal is fully ADA-accessible.
Park & Rides:	Existing P&R lots in town and to the south and east of town, though not to the west. A kiss-and-ride turnaround exists at the end of Sidney Avenue.
Transit from P&R:	n/a, But, Kitsap Transit has a solid reputation for providing ferry-supportive transit connections via routed busses and park-and-ride shuttles.
Transit:	Good. Given current densities and land uses, Kitsap Transit already provides good service to this location, with four buses per hour today.
Adjacent parking:	A number of paid, permit and timed parking lots are available near the ferry terminal.
Proposed Improvements	
	No significant improvements are likely to be necessary to provide POF service from this location. However, non-critical amenities may be desirable, such as bike lockers, float-to-boat ADA access, and additional covered passenger staging areas.
Total Proposed Improvement Costs: Negligible	

Annapolis Terminal

Location: The Annapolis POF terminal is located approximately one mile east of downtown Port Orchard, on Beach Drive.

Land Use

Existing:	Semi-rural residential setting, low density development
Planned:	Same
Potential conflict:	Already being used as a terminal, so the community is already accustomed to peak period traffic. Located at the base of a bluff, there are no view impacts to surrounding residences. There is minimal marine traffic. Kitsap Transit controls the harbor lease for this location.

Existing Facilities

Berths:	Two berths are available for side-loading vessel access.
Waiting areas:	A sheltered passenger waiting area with bench seating exists at the foot of the pier. However, due to the pier's length, passengers are apt to stage at the unsheltered end of the pier.
Dock and landside:	The existing pier is a narrow, concrete structure approximately 500 feet in length. A narrow gangplank connects the pier with the float, and is steep even at high tide. The existing 20' x 40' float is in poor condition.

Access

Bicycle:	Fair. There are few bike facilities in Annapolis, but the terminal is located along a bike route, and bike racks are provided at the base of the pier.
Pedestrian:	Fair. Few nearby destinations accessible by foot. Terminal is not ADA accessible.
Park & Rides:	Park and ride lot with 74 parking spaces located near the terminal
Transit from P&R:	Kitsap Transit has a solid reputation for providing ferry-supportive transit connections via routed buses and park-and-ride shuttles and already serves this location.
Transit:	The location is served by one bus route, connecting service that is adequate for a small town.
Adjacent parking:	74 spaces located near the terminal. A kiss-and-ride turnaround also existis along Beach Drive and Bay Street.

Proposed Improvements

Significant improvement will be necessary to provide POF service in the long term. Necessary improvements include replacing the float and gangway to provide ADA access, and building a safer, more durable facility. The existing piles could possibly be retained, but this is unclear without further study.

Total proposed improvement costs: $3-6 Million

Improvement costs will depend on the scope of improvements, particularly if piles need to be replaced.

Bremerton Terminal

Location: Immediately to the north of the current WSF terminal at the Bremerton Transportation Center.

Land Use

Existing:	Urban center (high density, mixed use), adjacent to existing ferry terminal at the BTC.
Planned:	Same, increasing development.
Potential conflict:	Already being used as a terminal, no potential land use conflicts exist. However, on the water side, there will be a significant degree of marine traffic from the existing WSF terminal and the new Bremerton marina. Kitsap Transit controls the harbor lease for the passenger ferry service at this location (while WSF controls the lease for auto ferry service).

Existing Facilities

Berths:	Two berths available for bow-loading vessel access. Two additional berths on the B-pontoon allow for tying up vessels, but have no passenger access.
Waiting areas:	An indoor waiting area with restrooms already exists at the WSF terminal, and additional sheltered staging capacity exists on the passenger terminal float.
Dock and landside:	The BTC is already well-equipped for POF service. As part of the adjacent marina expansion project, Kitsap Transit's "A-float" and "B-pontoon" are being installed. The A-float provides bow-loading berths for two vessels and side-loading for one vessel. The side-loading berth is currently being used by the Kitsap Transit Foot Ferry. The B-pontoon provides additional berth space for overnight/midday moorage.

Access

Bicycle:	Good. Bicycle storage available. On-street bicycle facilities and access to recreational routes, though these generally consist of the use of road shoulders, which may be more appropriate for more experienced riders. Some difficult intersections for cyclists. No dedicated bike connection into the terminal yet, though a tunnel with planned bike lane is under construction.
Pedestrian:	Good. Complete sidewalk network, signalized crosswalks, many nearby destinations. The urban nature of the location is conducive to walk-on passengers. The terminal landing is fully ADA accessible.
Park & Rides:	Two park & rides adjacent to the terminal. Kiss & Ride parking provided across Washington Avenue at the Kitsap Credit Union building.
Transit from P&R:	n/a, but Kitsap Transit has a solid reputation for providing ferry-supportive transit connections via routed buses and park & ride shuttles.
Transit:	Excellent. The BTC is a transit hub and a prime example of transit-oriented development. High bus frequencies, schedules coordinated with the ferries, dedicated stop directly in front of the terminal.
Adjacent parking:	13 paid and permit garages and parking lots within 3.5 blocks of the terminal.

Proposed Improvements

Necessary improvements include modifying the A-float to allow for passenger access and installing fendering.

Total proposed improvement costs: $1 Million

Kitsap Transit plans have estimated capital improvements costs of $1 Million for the Bremerton terminal in order to equip the A-float for extensive POF service.

Port Orchard - 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:	$930,000
Labor:	$1.8 Million
Maintenance & insurance:	$371,000
Annual operational costs: $3.1 Million	

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	

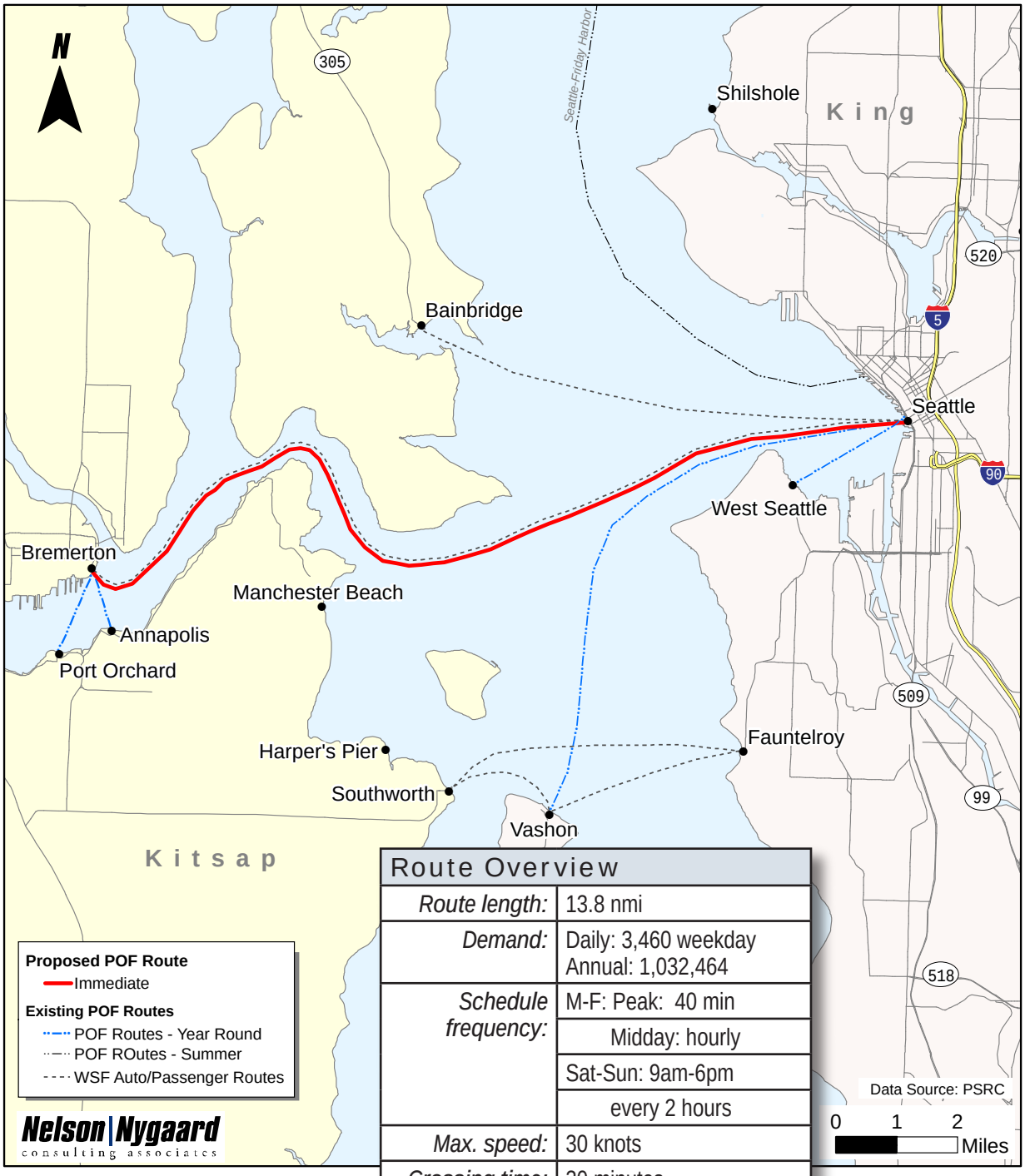
Fare Options	
Fare	Recovery %
$1.50 (assumed)	22%
$2.80	40%
$4.20	60%

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* This route is operated by Kitsap Transit, a Public Transportation Benefit Area Authority (PTBAA).
Promising funding sources	Current service is funded by fares and sales tax. Any future expansions to service would likely come from the same sources.

Bremerton - Downtown Seattle

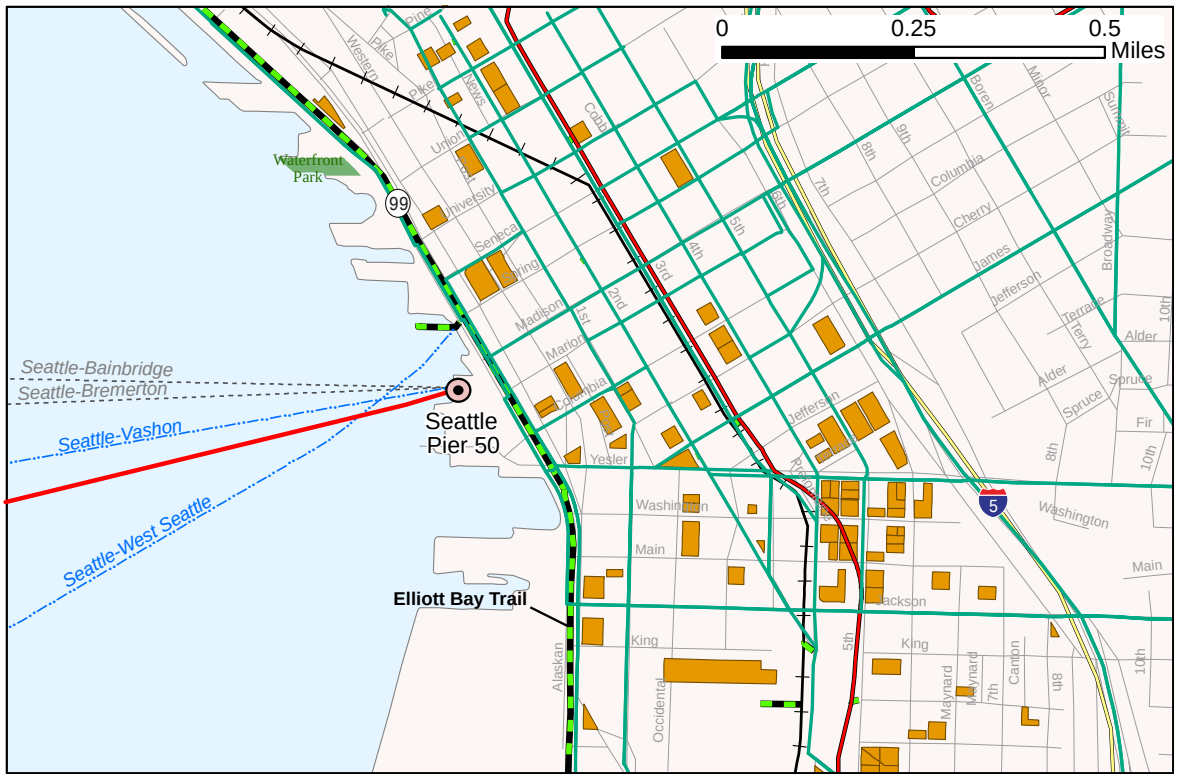
Immediate Term - Cross-Sound Routes of Regional Significance

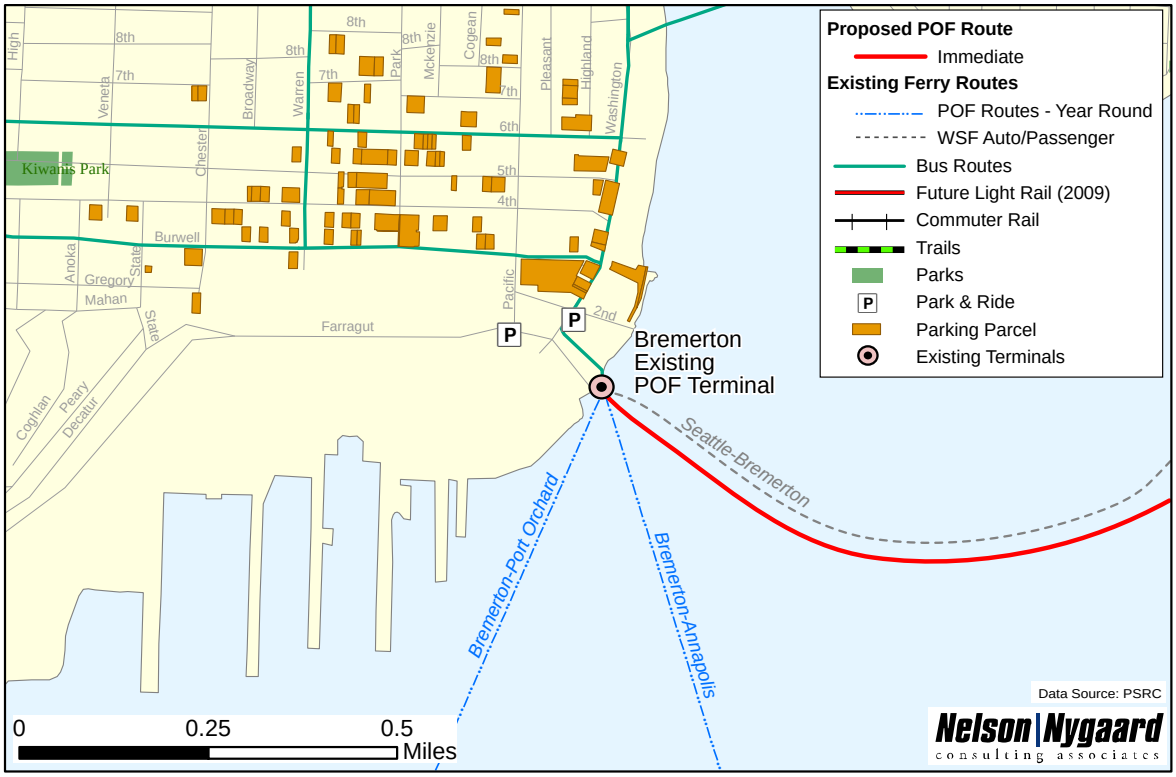
Figure 3-7 Bremerton - Downtown Seattle Route Overview



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

Figure 3-8 Bremerton - Downtown Seattle Terminal Details





For a discussion of the Bremerton terminal, see pp. 3-20.
For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Bremerton - Downtown Seattle

Vessels	
Number needed:	4
Recommended Vessel Type:	149-pax operationg 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

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

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* One organizational option is for a new PTBA to be set up in Kitsap County, allowing Kitsap Transit to deliver service using new sales taxes and MVET funds. A variation on this would be a public-public partnership between Kitsap and King Counties. A second option under this model is for the service to be assumed by a Regional Transportation Authority. This would require legislative action and approval. Elements of service delivery and/or maintenance could be contracted out to a private entity. *Publicly operated, but not tax financed:* Like the Kingston POF business model, under this scenario the Port of Bremerton would deliver service, relying on federal and state grants to fund capital needs, and passenger fares to support the full cost of operations.
Promising funding sources	Depending on the governance model, this route would be funded by some combination of fares, sales taxes, property taxes, MVET funds, Port District Funds, General Fund contributions, and/or FTA grants. Given that the Pessenger-only Ferry Task force identified this route as a first tier priority for the state*, and depending on the strength and will of future congressional delegations and the State Legislature, this route could receive earmark funds, FHWA STP funds, State POF grants, or subsidies from WSF. This route could also be subsidized by potential joint development ventures in the vicinity of Colman Dock or downtown Bremerton.

* Washington State Legislature, 2006. "Passenger-only Ferry Task Force's Report to the Joint Transportation Committee, pg.7.

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Kingston - Downtown Seattle

Immediate Term - Cross-Sound Routes of Regional Significance

Figure 3-9 Kingston - Downtown Seattle Route Overview

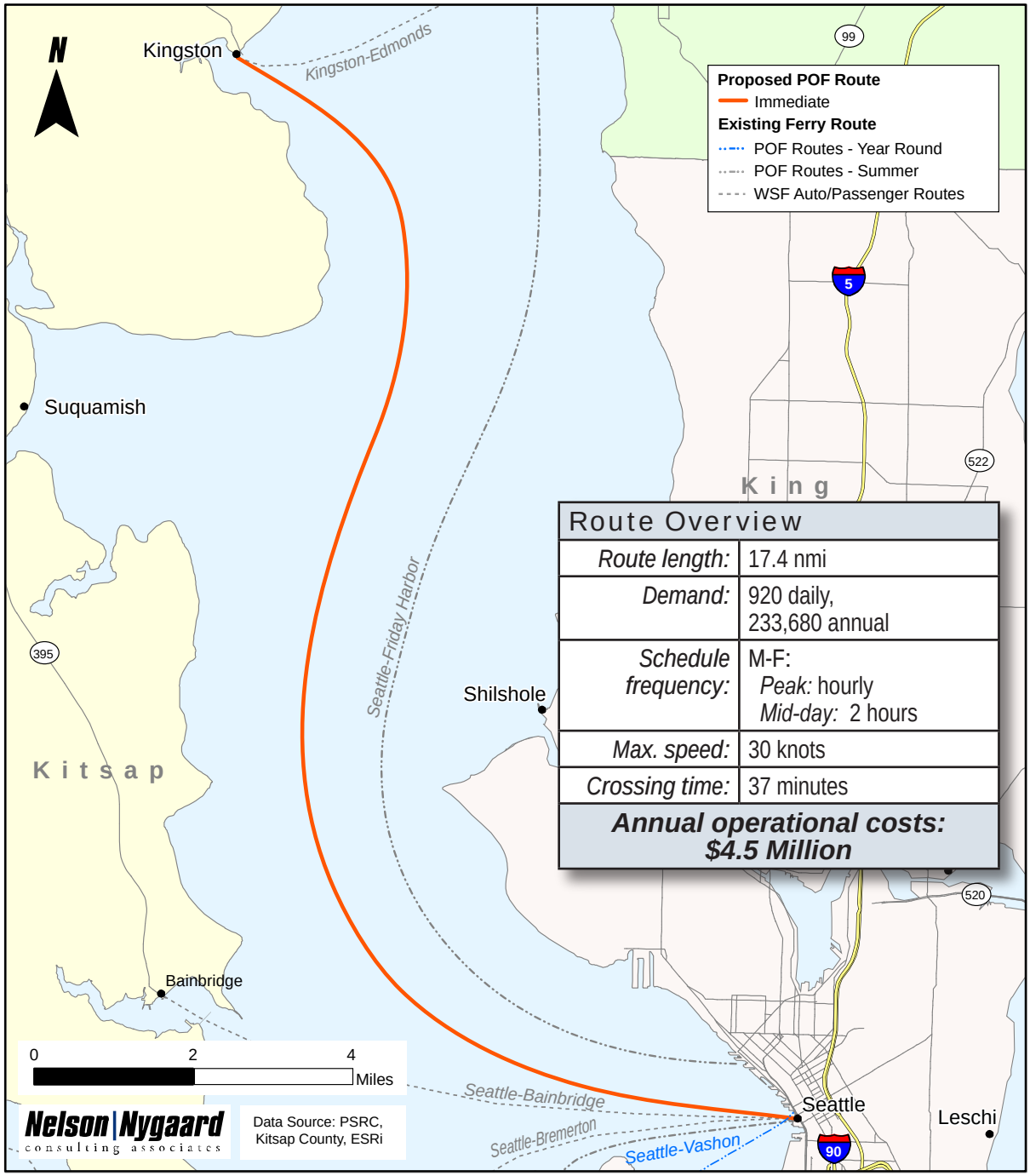
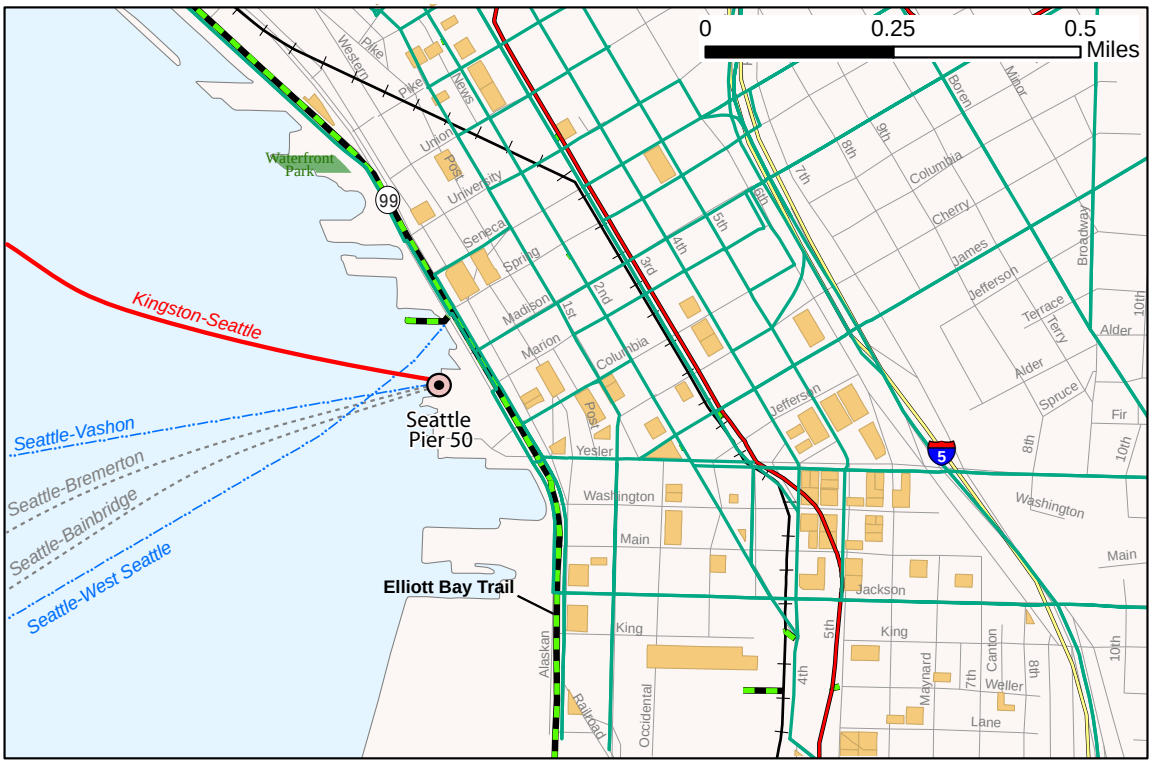
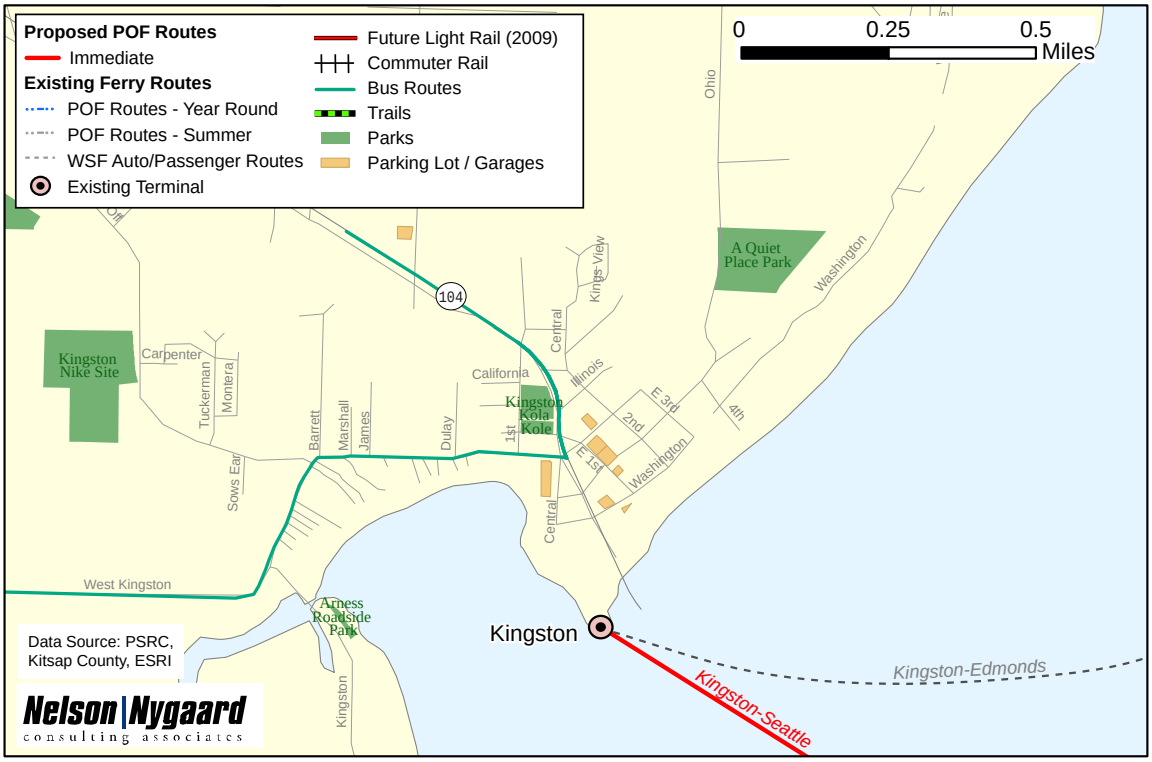


Figure 3-10 Kingston - Downtown Seattle Terminal Details





For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Kingston Terminal	
Location: Located immediately south of the existing WSF terminal at the Port of Kingston..	
Land Use	
Existing:	Rural town center, low- to medium-density development
Planned:	Good likelihood of increased density in the future
Potential conflict:	Already being used as a ferry terminal, no land use conflicts exist. Kingston has previously offered POF service to Seattle from a terminal located immediately south of the existing WSF terminal. On the water side, vessel traffic may be encountered from the WSF terminal and the marina. The Port of Kingston controls the harbor area.
Existing Facilities	
Berths:	The terminal provides side-loading berths for two vessels.
Waiting areas:	An indoor waiting area already exists at the WSF terminal, and additional sheltered staging capacity exists on the covered terminal access walkway.
Dock and landside:	The existing Kingston Terminal is already well-equipped for POF service, although there are no ticket sales or customer service areas.
Access	
Bicycle:	Fair. Bike storage is provided. Bike facilities appear to be minimal in this area. Roadways have relatively wide shoulders, and recreational riding is popular. However, auto speeds are high, and local "bike route" generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists.
Pedestrian:	Good. The terminal is conducive to some walk-on passengers. The existing ferry terminal is located in a walkable rural town center, but commercial and residential destinations and attractions within 1/2 mile are limited. The terminal float and gangway access are ADA-accessible.
Park & Rides:	n/a. Kiss-and-ride parking available at the Port of Kingston's large parking lot adjacent to the terminal.
Transit from P&R:	n/a, But, Kitsap Transit has a solid reputation for providing ferry-supportive transit connections via routed busses and park-and-ride shuttles.
Transit:	Kitsap Transit already serves this location. Transit service and access is fair, as transit frequencies are relatively low, and no routes or P&Rs connect points west.
Adjacent parking:	One paid parking lot exists at the Kingston Terminal, with 76 spaces.
Proposed Improvements	
	No significant improvements are likely to be necessary to provide POF service from this location. However, because the terminal has been unused for some time, minor repairs and maintenance may be necessary and non-critical amenities such as a customer service facility and ADA vessel access could be added.
Total Proposed Improvement Costs: $150,000 Terminal improvement costs to provide POF service to Seattle are estimated at $150,000.	

Kingston - Downtown Seattle

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	

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

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated but not tax financed:* The Port of Kingston will deliver service, relying on federal and state grants to fund capital needs and passenger fares to support the full cost of operations.
Promising funding sources	Given that the Passenger-only Ferry Task force identified this route as a first tier priority for the state*, and depending on the strength and will of future congressional delegations and the State Legislature, this route could receive earmark funds, FHWA STP funds, State POF grants, or subsidies from WSF in addition to fares, property taxes and likely FTA grants. This route could be subsidized by potential joint development ventures in the vicinity of Colman Dock.

* Washington State Legislature, 2006. "Passenger-only Ferry Task Force's Report to the Joint Transportation Committee, pg.7.

Southworth/Manchester Beach - Downtown Seattle

Immediate Term - Cross-Sound Routes of Regional Significance

Figure 3-11 Southworth/Manchester Beach - Seattle Route Overview

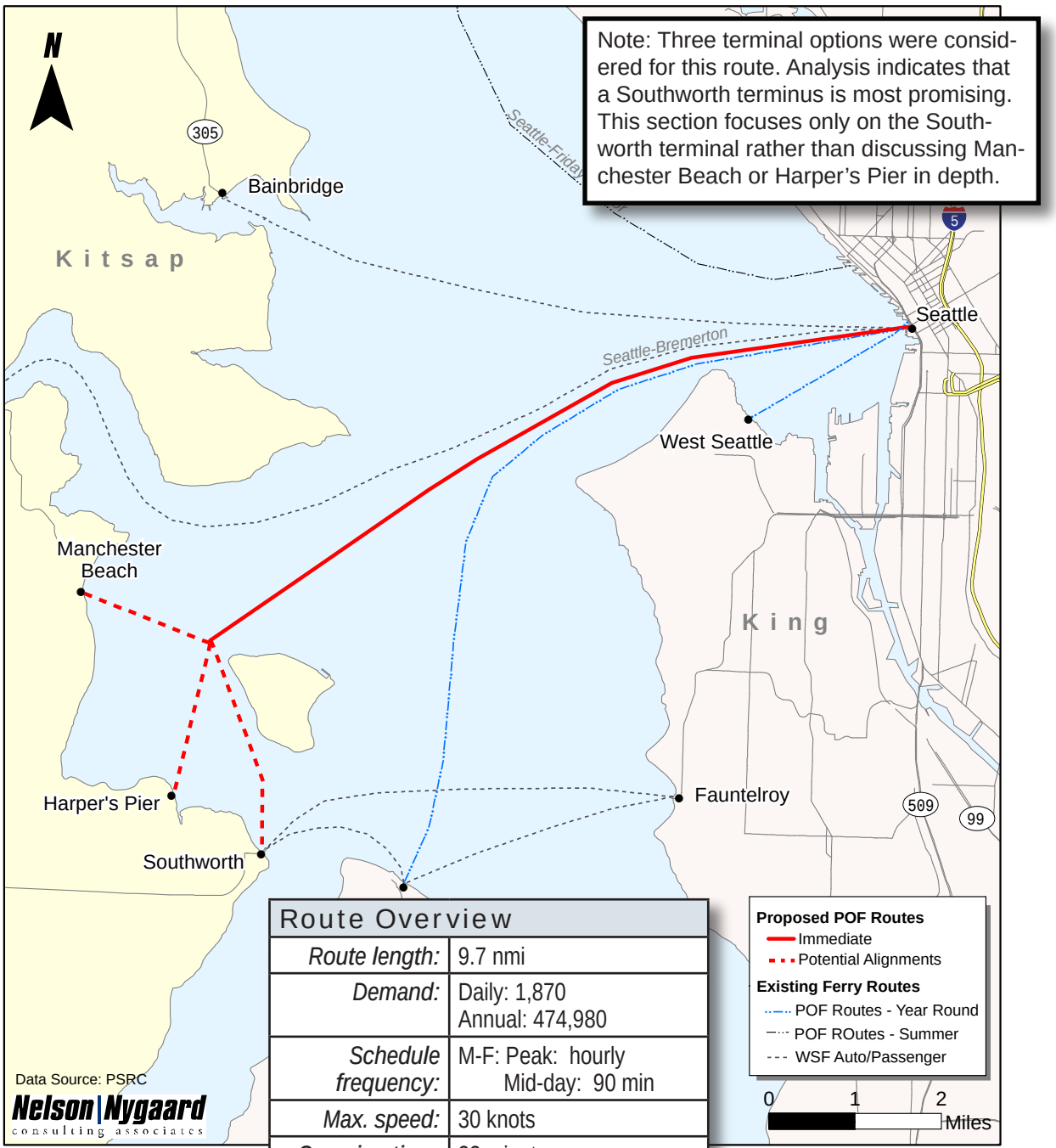
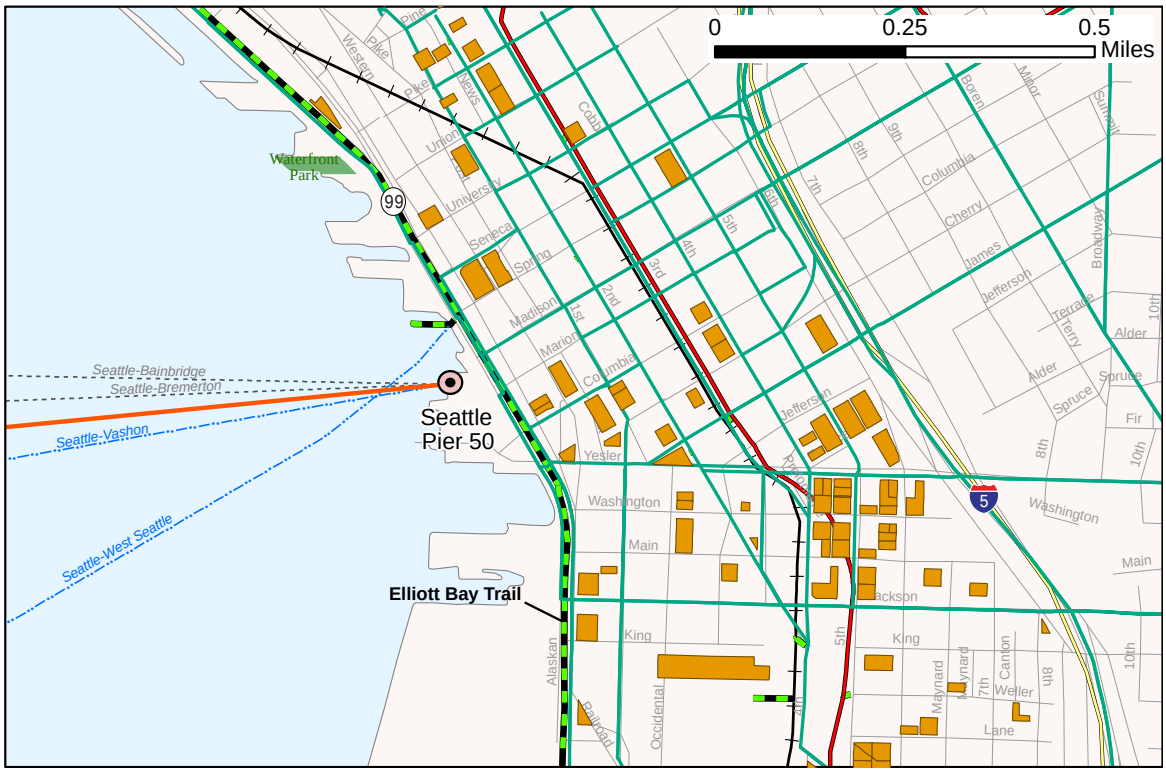
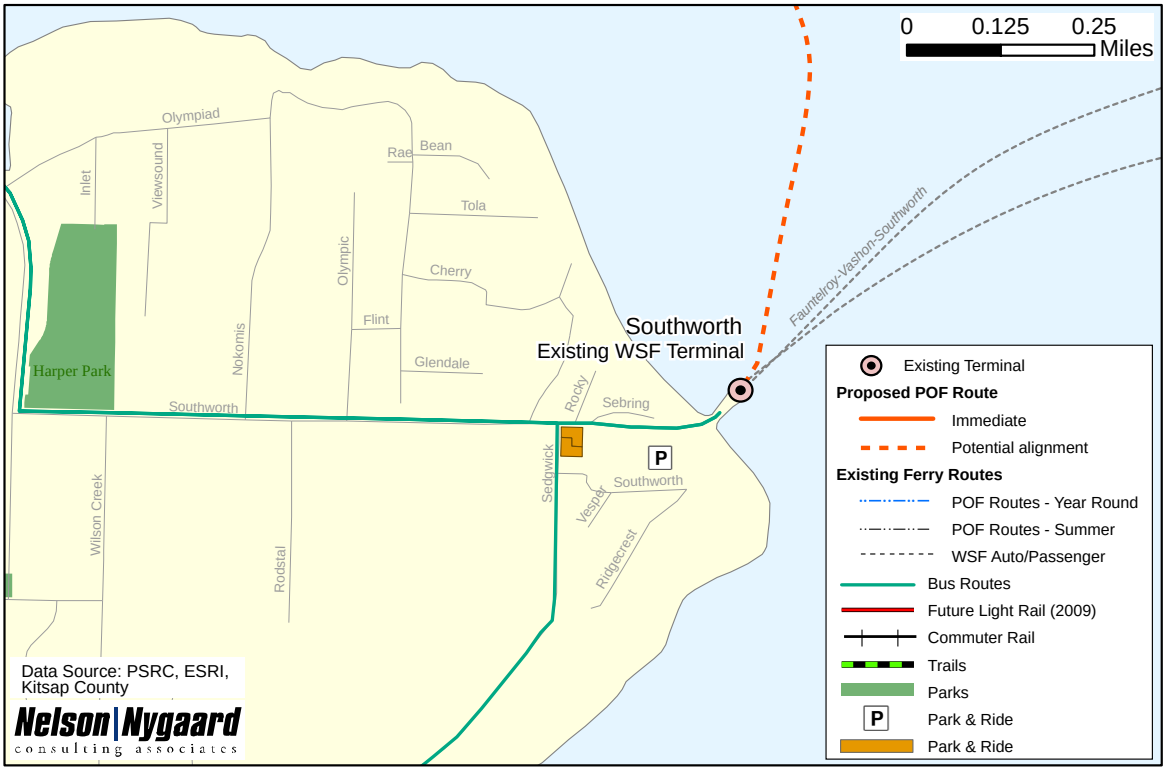


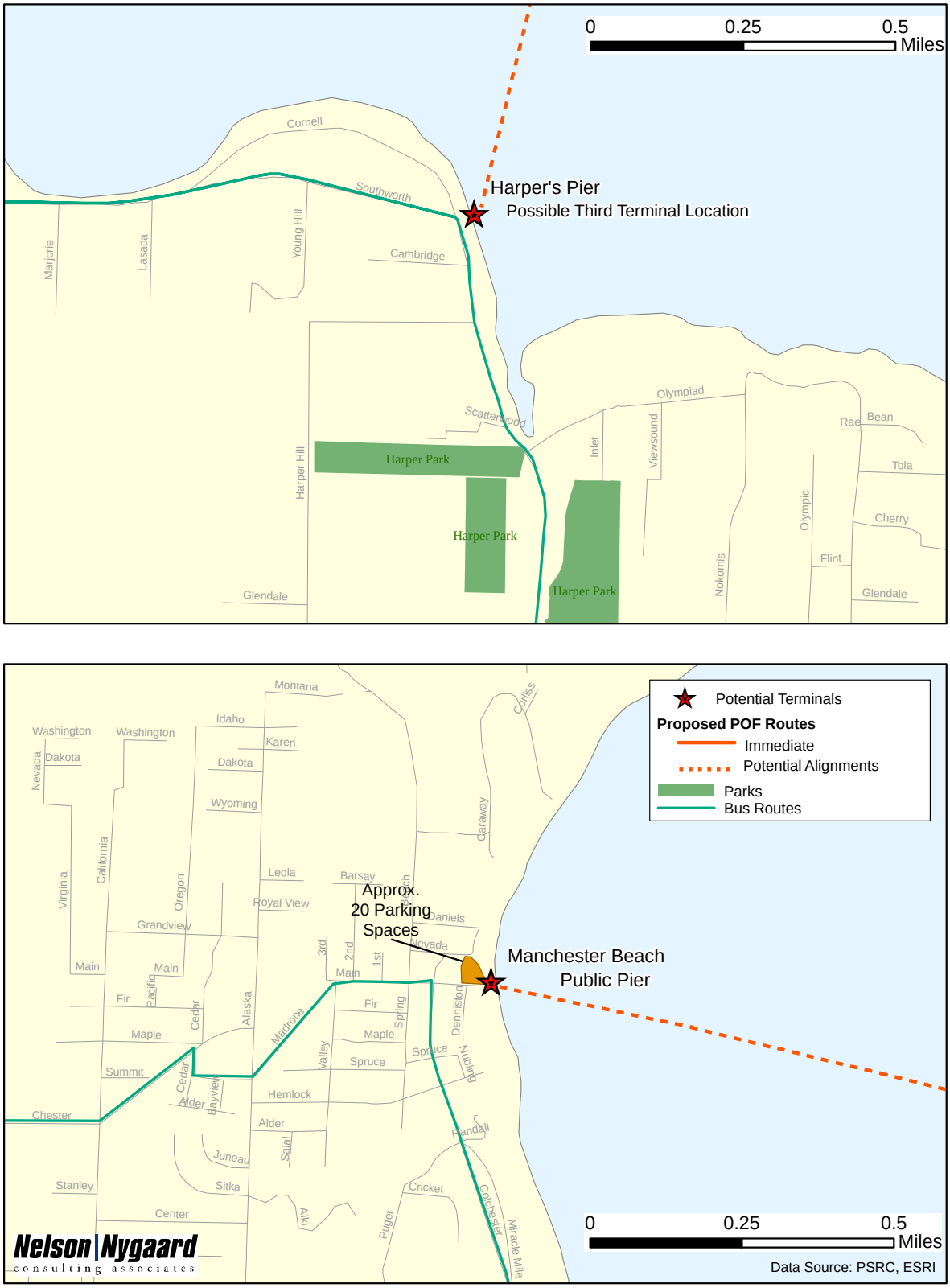
Figure 3-12 Southworth - Downtown Seattle Terminal Details





For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Figure 3-13 Manchester Beach - Downtown Seattle Terminal Details



Southworth Terminal

Location: Anticipated to be immediately southeast of the existing WSF ferry terminal..

Land Use

Existing:	Low density rural. Area currently used as a ferry terminal for WSF auto ferry.
Planned:	Small likelihood of increased densities in the future.
Potential conflict:	Because the location is currently being used as a ferry terminal, POF service would provide a minimal impact on the local community. However, the area is a view corridor, with the potential for impacts to residential views. Environmental issues are also a factor, as there are known eelgrass beds surrounding the terminal, particularly to the south. Any terminal must be designed to minimize shading impacts and avoid being placed over eelgrass beds. Shallow water depths will require a long trestle. Marine traffic may be encountered due to the presence of the WSF terminal. Because of the nature of the Southworth-Vashon-Fauntleroy triangle route, the auto ferry must often turn around near the terminal. A POF operator must be aware of these traffic issues and plan accordingly.

Existing Facilities

Berths:	Because no POF terminal currently exists, the number of berths available is dependent on the final design of the terminal float. Previous prototype terminal float designs have up to four berths (two side-loading, two bow-loading).
Waiting areas:	An indoor waiting area already exists at the WSF terminal. It is anticipated that this space can be shared with a future POF terminal.
Dock and landside:	No facilities currently exist to provide POF service from Southworth. However, the existing WSF terminal could possibly serve as the basis for POF infrastructure.

Access

Bicycle:	Fair. The Southworth terminal is located along bike paths, and bike racks are already present. However, bike facilities for novice riders are limited. There is access from the terminal to recreational routes, but these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists.
Pedestrian:	Poor. The rural location and limited destinations make pedestrian access less attractive and unlikely. Many streets in the immediate vicinity also lack sidewalks, and shoulders on roadways are intermittent. Previous POF terminal plans were developed to be ADA-compliant.
Park & Rides:	P&R lot at a church located 1/2 mile away from the terminal. Kiss-and-ride access can be provided at the east end of the parking lot.
Transit from P&R:	Yes. Kitsap Transit provides bus service connecting with park & rides.
Transit:	Kitsap Transit already provides routed bus service to the Southworth terminal. Transit service is fair given densities and projected ridership.
Adjacent parking:	Paid parking is available in a large lot west of the terminal, with approximately 340 parking spaces.

Proposed Improvements

The most recent terminal design concepts, developed by Kitsap Transit, situate a new terminal float to the southeast of the existing terminal. An additional access walkway will likely need to be added to the existing pier and be connected via a trestle and gangway to the terminal float. The State Dept. of Natural Resources controls the site. Bus frequencies would need to be increased and P&R lots would likely be needed at points west and northwest of the terminal.

Total Proposed Improvement Costs: $5.5 Million

Kitsap Transit plans have estimated capital improvement costs of $5.5 Million.

For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Southworth/Manchester Beach - Downtown Seattle

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	

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

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* One organizational option is for a new PTBA to be set up in Kitsap County, allowing Kitsap Transit to set up and deliver service using new sales taxes and MVET funds. A variation on this would be a public-public partnership between Kitsap and King Counties. A second option under this model is for the service to be assumed by a Regional Transportation Authority. This would require legislative action and approval. Elements of service delivery and/or maintenance could be contracted out to a private entity. *Publicly operated, but not tax financed:* Like the Kingston POF business model, under this scenario the Port of Manchester would deliver service, relying on federal and state grants to fund capital needs, and passenger fares to support the full cost of operations. This, of course, assumes a terminal located at Manchester Beach.
Promising funding sources	Given one of the above proposed models for public operation, funding for this route would derive from some combination of fares, sales taxes, property taxes, MVET funds, Port District Funds, General Fund contributions, and/or FTA grants. Depending on the strength and will of future congressional delegations, this route could receive earmark funds, or State POF Grants. This route could also be subsidized by potential joint development ventures in the vicinity of Colman Dock or even in downtown Manchester.

Medium Term (4-10 years):
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.

Potential Future Cross-Sound Routes

- **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 would likely 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.

- **Bainbridge – Des Moines**
  This route would provide Kitsap residents a more direct connection to Sea-Tac Airport. Its success would rely on dedicated transit shuttle service between the Des Moines terminal and the Airport.

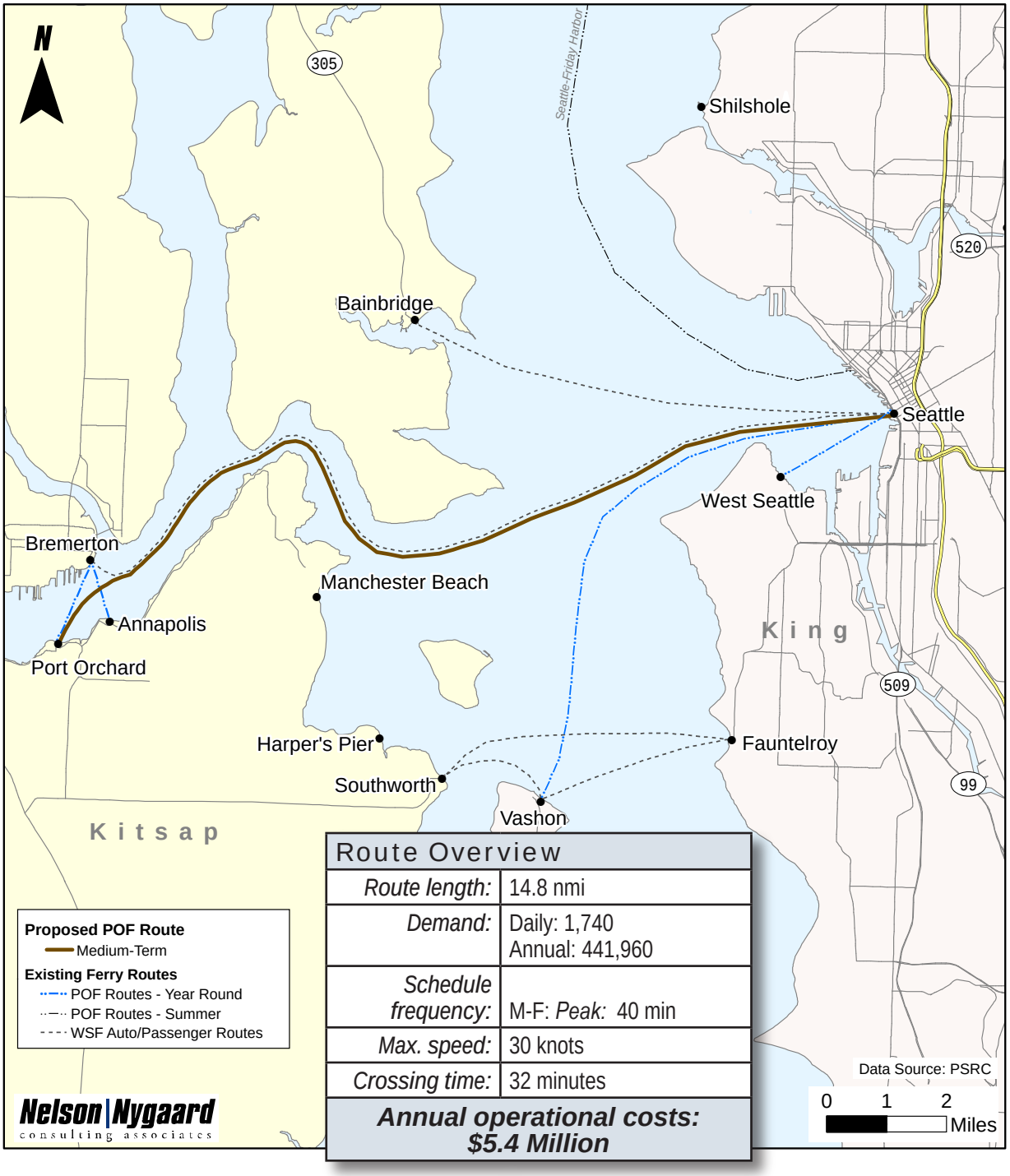
Potential Future King County Route

- **Kirkland – University of Washington**.
  King County cited this route as among the first for demonstration testing, probably in 2010. Due to challenges with terminal siting at the UW (partially due to ongoing light rail construction), it would probably be at least four years before a permanent terminal could be sited with good landside access.

Port Orchard - Downtown Seattle

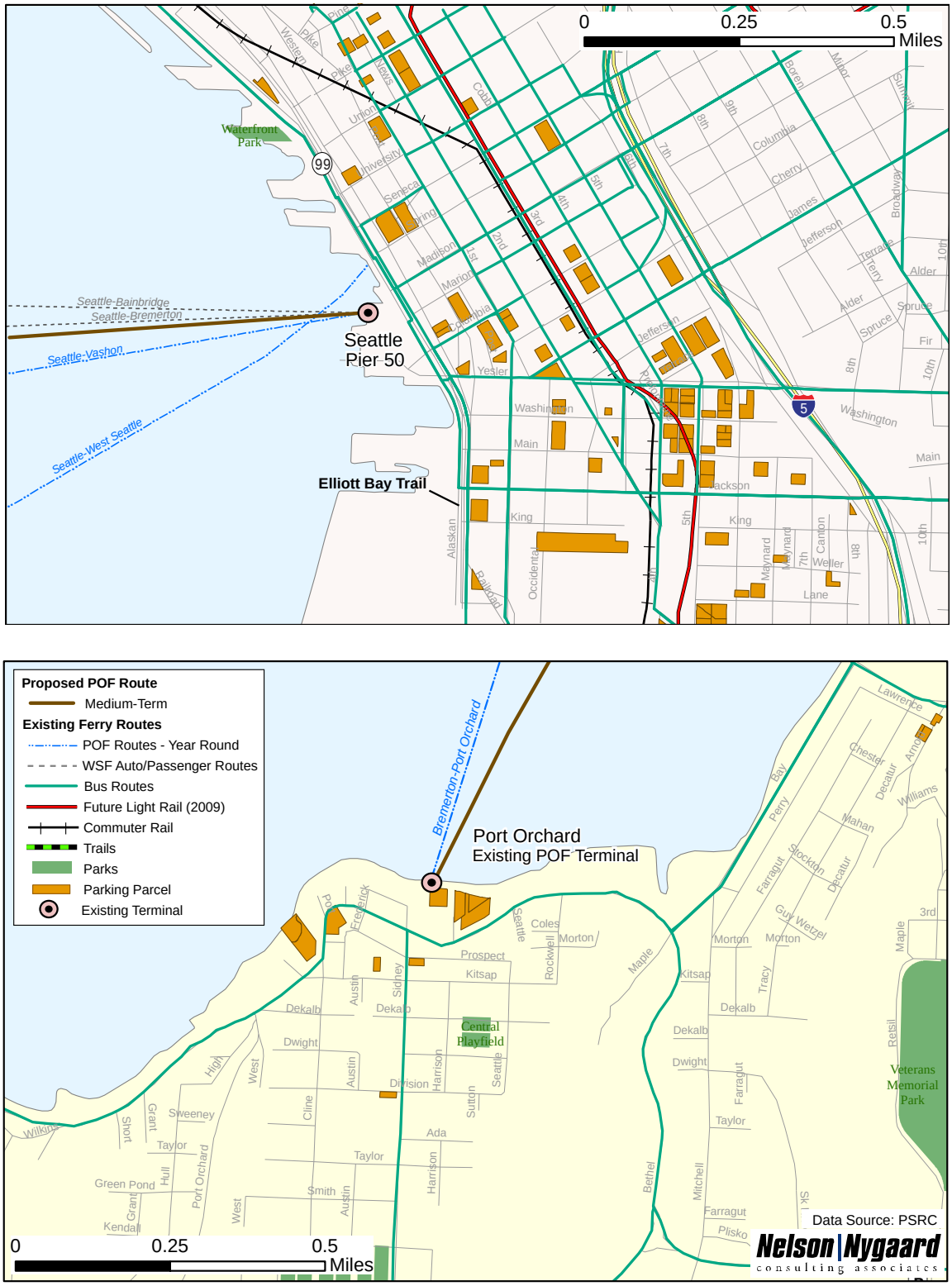
Medium Term - Cross-Sound Routes with Potential to Develop

Figure 3-14 Port Orchard - Downtown Seattle Route Overview



Note: This route is part of a larger catchment area. If this service were offered, it would draw some riders away from other routes.

Figure 3-15 Port Orchard - Downtown Seattle Terminal Details



For a discussion of the Port Orchard terminal, see pp. 3-18.
For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Port Orchard Terminal	
Location: Located at the end of Sidney Avenue in downtown Port Orchard.	
Land Use	
Existing:	Low- to medium-density commercial area
Planned:	Fair to good likelihood of increased densities in the future.
*Potential **conflict:***	Already being used as a ferry terminal, no land use conflicts exist. On the water side, vessel traffic may be encountered from the Kitsap Transit Foot Ferry and adjacent marina breakwater. Kitsap Transit controls the harbor lease at this location.
Existing Facilities	
Berths:	The Port Orchard terminal float provides side-loading berths for up to four vessels. However, the terminal is currently being used by the Kitsap Transit Foot Ferry, with departures on the half-hour. Negotiation for berthing space to accommodate additional POF service to Downtown Seattle would need to take place prior to service implementation.
Waiting areas:	The terminal currently features a small sheltered waiting area and a number of benches both inside and outside the shelter. Additionally, a small park with additional benches and picnic tables is located on the landside. Kitsap transit customer service offices and restrooms are available at the head of the gangway.
Dock and landside:	The Port Orchard terminal is already a fully-operational passenger ferry terminal.
Access	
Bicycle:	Fair. Bicycle facilities for novice riders are limited in the vicinity. However, it appears that traffic volumes are low. Access does exist from the terminal to recreational routes, but these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. No bicycle lockers or racks are currently present.
Pedestrian:	Good. Located in a small, walkable town center, the terminal is conducive to walk-on passengers. Some destinations are located within 1/2 mile radius of the existing Port Orchard foot ferry terminal. The terminal is fully ADA-accessible.
Park & Rides:	Existing P&R lots in town and to the south and east of town, though not to the west. A kiss-and-ride turnaround exists at the end of Sidney Avenue.
Transit from P&R:	n/a, But, Kitsap Transit has a solid reputation for providing ferry-supportive transit connections via routed busses and park-and-ride shuttles.
Transit:	Good. Given current densities and land uses, Kitsap Transit already provides good service to this location, with four buses per hour today.
Adjacent parking:	A number of paid, permit and timed parking lots are available near the ferry terminal.
Proposed Improvements	
	No significant improvements are likely to be necessary to provide POF service from this location. However, non-critical amenities may be desirable, such as bike lockers, float-to-boat ADA access, and additional covered passenger staging areas.
Total Proposed Improvement Costs: Terminal improvement costs to provide POF service to Seattle appear negligible.	

Port Orchard - Downtown Seattle

Vessels	
Number needed:	3
Recommended Vessel Type:	149-pax operating at 30 kts.
Special needs:	Low wake design
Vessel capital costs: $9-15 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$2.1 million
Labor:	$2.6 million
Maintenance & insurance:	$706,000
Annual operational costs: $5.4 Million	

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* One organizational option is for a new PTBA to be set up in Kitsap County, allowing Kitsap Transit to deliver service using new sales taxes, property taxes, and/or MVET funds. A second option under this model is for the service to be assumed by a Regional Transportation Authority. This would require legislative action and approval. Elements of service delivery and/or maintenance could be contracted out to a private entity.
Promising funding sources	Given one of the above proposed models for public operation, funding for this route would derive from some combination of **fares**, **sales taxes**, **property taxes**, MVET **funds**, **General Fund contributions**, and/or FTA **grants**. Depending on the strength and will of future congressional delegations, this route could receive **earmark funds**, or **State POF Grants**. This route could also be subsidized by potential **joint development** ventures in the vicinity of Colman Dock or even in downtown Port Orchard.

Bainbridge Island - Des Moines

Medium Term - Cross-Sound Routes with Potential to Develop

Figure 3-16 Bainbridge Island - Des Moines Route Overview

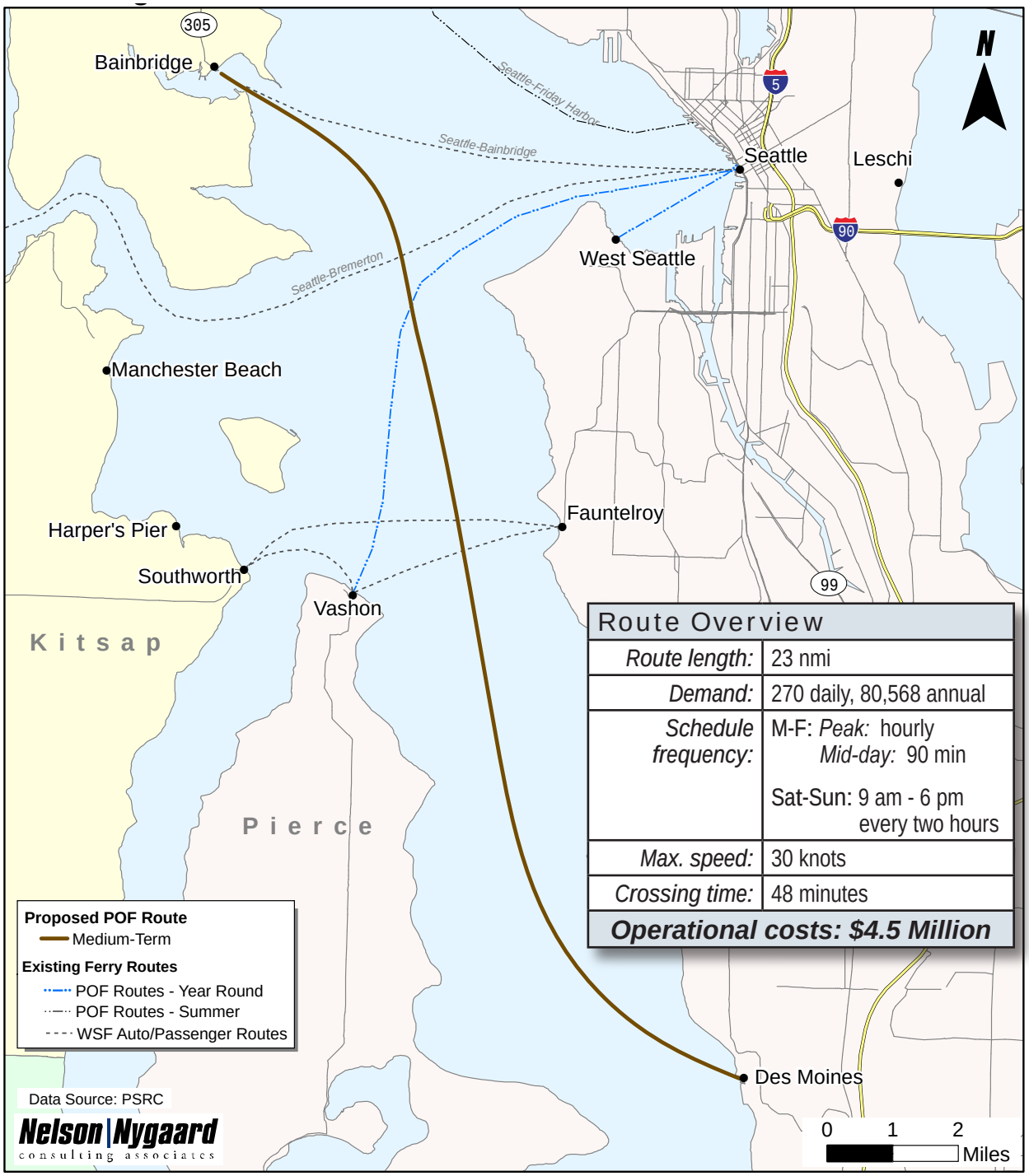
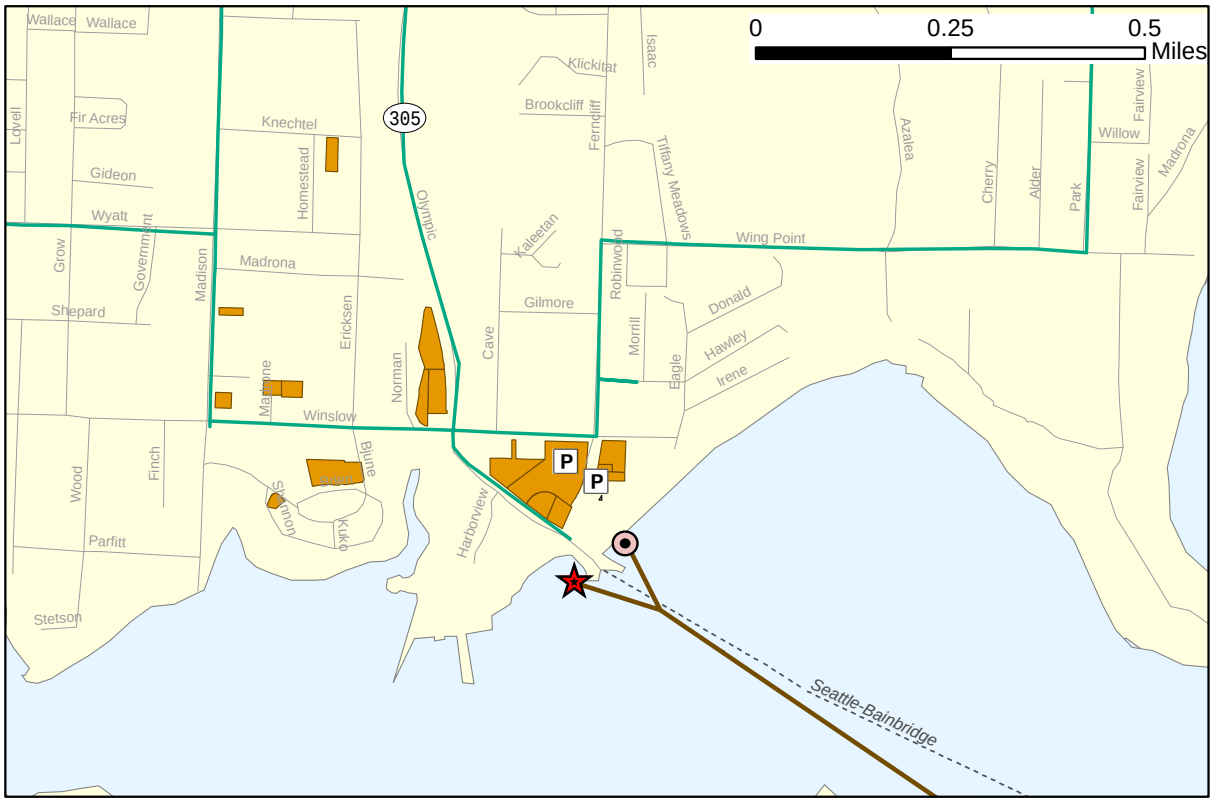
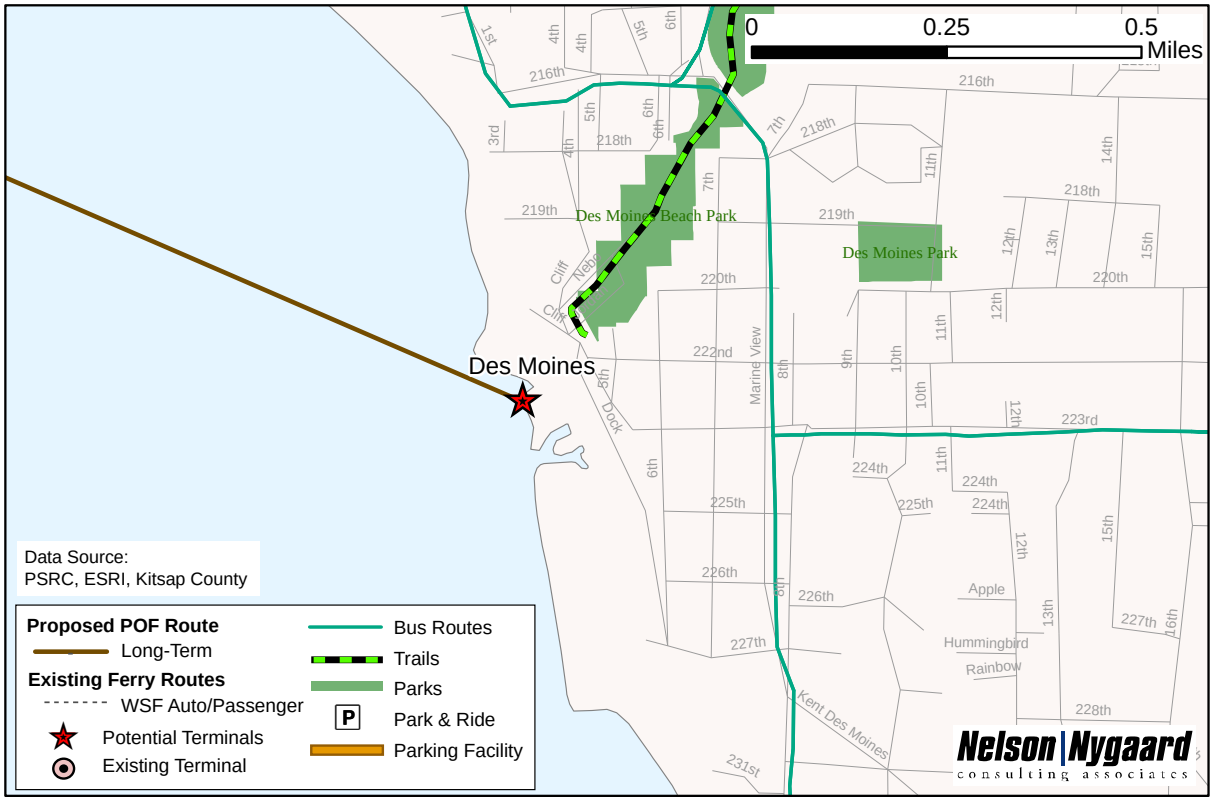


Figure 3-17 Bainbridge Island - Des Moines Terminal Details





Bainbridge Island Terminal	
Location: A Bainbridge Island POF terminal would most likely be located immediately northeast of the existing WSF ferry terminal, although a second possible site is at the Eagle Harbor maintenance facility to the southwest..	
Land Use	
Existing:	Medium density development
Planned:	Good likelihood of increased densities in the future.
*Potential **conflict:***	Already being used as a ferry terminal, no land use conflicts exist. The sea floor at the potential float site may not be in the WSF harbor lease area. Due to the significant amount of construction necessary to build a POF terminal, environmental impact issues are very likely. Additional environmental investigation would be necessary to determine the extent of environmental impact and necessary mitigation.
Existing Facilities	
Berths:	At least one berth will be necessary to provide service. However, because a standard terminal float would need to be installed, up to four berths may be provided (2 bow-loading, 2 side-loading).
Waiting areas:	A large indoor waiting area already exists at the WSF terminal. It is anticipated that this space can be shared with a future POF terminal. 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.
Dock and landside:	Bainbridge Island is one of the busiest ferry terminals in the WSF system. All auto ferry-related facilities, including the large concrete pier, are in good condition. However, no POF-related infrastructure currently exists.
Access	
Bicycle:	Good. Secure bike storage is already provided, and many WSF passengers access the ferry by bicycle. Bainbridge Marina appears to be difficult to navigate, however, there is access from the terminal to recreational routes. These generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists.
Pedestrian:	Good. Located in Bainbridge Island's town center (Winslow), the site is conducive to walk-on passengers. However, the ferry terminal has been designed to transport vehicles, and pedestrians have been allocated few crosswalks and virtually no landscaped barriers to the high volume of cars.
Park & Rides:	Several located along the SR 305 corridor.
Transit from P&R:	Kitsap Transit bus routes serve a number of park-and-rides in the SR 305 corridor and carry a large number of passengers to the Bainbridge Island terminal every weekday.
Transit:	Excellent. The location is a transit hub, and Kitsap Transit serves the terminal at high frequencies. Kitsap Transit, which operates service on Bainbridge Island and in North Kitsap County, designs its service to pulse with ferry connections. Flexcars are also available at the terminal.

Proposed Improvements and Costs continued on the next page

Bainbridge Island Terminal	
Adjacent parking:	Kiss-and-ride access and three large paid parking lots with over 1,000 spaces are already available within two blocks of the terminal. However, parking capacity has not increased in the last 25 years, and the lots are currently at capacity during the day.

Proposed Improvements

It is likely that another park-and-ride would be needed north of the terminal, adjacent to SR-305. Since no POF infrastructure is in place, significant improvement would be necessary to provide POF service.

One location for a POF terminal is immediately northeast of the auto ferry slip. A trestle routed underneath the existing auto ferry boarding gangway would be necessary to connect with a terminal float. Passenger access to the base of the pier from the terminal would need to be improved, as the terminal building cannot connect with a POF float via the overhead gangway due to its height. A new float would need to be installed, and pile driving will be necessary.

Another potential location for a POF terminal is immediately south of the ferry pier. Only minor pier improvements would be necessary for this location to provide safe passenger access from the terminal building. However, this arrangement presents problems due to passenger traffic crossing the path of the vehicle boarding roadway. A gangway would connect the pier with a new terminal float, for which pile driving would be necessary.

A list of basic necessary improvements includes:

- Standard terminal float
- Terminal float piles
- 120' gangway
- Rider information
- Signage and wayfinding upgrades
- Pier surface modification to provide a path from the terminal building
- Outdoor waiting area cover and seating near terminal float

Total Proposed Improvement Costs: $6-10 Million

Construction of a terminal at this location will require significant engineering analysis that is outside the scope of this study. Because of the number of unknowns, significant variation from the estimate may occur. The cost of the above improvements is estimated to be between $6 and $10 Million.

Des Moines Terminal

Location: The most suitable location for a Des Moines POF terminal is along the fishing pier at the north end of the Des Moines marina.

Land Use

Existing:	Medium-density development, multi-family and commercial zoning.
Planned:	Good likelihood of increased densities in the future.
*Potential **conflict:***	The pier is currently used for fishing and other recreational uses. Significant recreational boat traffic exists south of the pier, and fishing poles are usually cast from the north side. While the boat traffic is a concern, sufficient space exists to the south of the pier for a float to be constructed and a POF to maneuver.

Existing Facilities

Berths:	Because no POF terminal location exists, the number of berths is dependent on the design of the float. It is anticipated that a reasonable float design would provide side-loading berths for up to two vessels.
Waiting areas:	Passengers would most likely wait at the base of or along the pier.
Dock and landside:	The Des Moines fishing pier is approximately 700' long and is made of concrete. The pier rises approximately 25' above the water line. Landside facilities include a small area with picnic tables, a bike rack, and a public restroom.

Access

Bicycle:	Good. There is good bicycle accessibility and bike racks are available. Des Moines has a number of relatively low-traffic streets that are suitable for riding. Within three miles, cyclists have access to the Regional Green River Trail, although crossings of I-5 appear to be slightly difficult.
Pedestrian:	Good. The location is moderately conducive to walk-on passengers, although it is a significant walk uphill to the center of Des Moines. The Des Moines marina is surrounded by multi-family and commercial zoning, the appropriate set of land uses to encourage walking.
Park & Rides:	Kiss-and-ride access is available in the large parking lot east of the pier.
Transit from P&R:	n/a
Transit:	Poor. Transit service and access is poor, with only 2-3 buses per hour, and poor connections to key destinations such as Sea-Tac Airport and Southcenter. Routes are distant, located almost half a mile from the end of the pier, uphill, along Marine View Drive.
Adjacent parking:	200 stalls at the north end of the marina; many other lots nearby. Parking is free, utilization is low-medium.

Proposed Improvements

Two park-and-rides exist, one to the west and one to the south of Des Moines. An additional park and ride may be needed to the north of Des Moines in order to support POF service and accommodate passengers from the north. Any new park-and-ride would require more analysis by King County Metro to select a location. Significant improvement will be necessary to provide a POF terminal at this location. The height of the pier makes construction of an ADA-accessible gangway to the waterline a challenge. Assuming a 25' height, an accessible gangway would need to be at least 300', not including necessary landings. The pier would need to be modified to provide a side access to the gangway. It may be possible to secure a terminal float to the existing pier, but this would warrant additional study. If the float cannot be secured to the pier, pile driving will be necessary.

Total Proposed Improvement Costs: $6-10 Million - based on the assumed location

Construction of a terminal at this location will require significant engineering analysis that is outside the scope of this study. Because of the number of unknowns, significant variation from the estimate may occur. The cost of the above improvements is estimated to be between $6 and $10 Million.

Bainbridge Island - Des Moines

Vessels	
Number needed:	2
Recommended Vessel Type:	80-pax operating at 30kts
Special needs:	None
Vessel capital costs: $4-8 Million	

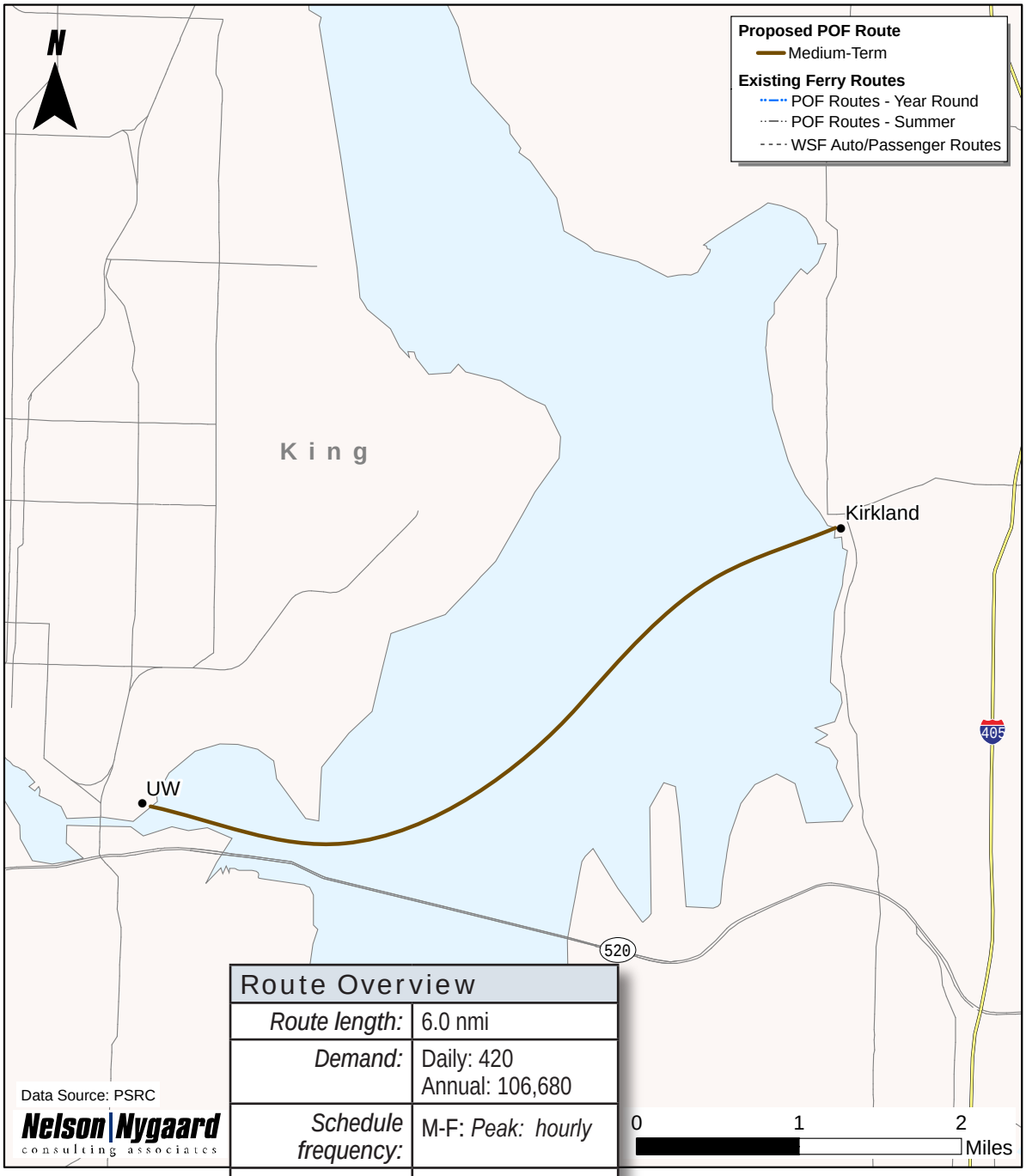
Operating Summary	
Annual Operational Cost Components	
Fuel:	$1.4 million
Labor:	$2.6 million
Maintenance & insurance:	$450,000
Annual operational costs: $4.5 Million	

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* There are three possible organizational structures under this model. First, the route could be operated by the King County Ferry District and funded by property taxes, in this case, vessel maintenance and moorage would be contracted to an outside shipyard. A second option is for a new PTBA to be set up in Kitsap County, allowing Kitsap Transit to deliver the service using new sales taxes, property taxes, and/or MVET funds. A third option is for the service to be assumed by a Regional Transportation Authority. This would require legislative action and approval.
Promising funding sources	Given one of the above proposed models for public operation, funding for this route would derive from some combination of **fares, sales taxes, property taxes, MVET funds, General Fund contributions**, and/or **FTA grants**. The route could also be subsidized by potential **joint development** ventures in the vicinity of the Winslow Terminal or downtown Des Moines. It could even be eligible for **subsidy from the Port of Seattle**, assuming targeted bus connections to Sea-Tac Airport.

Kirkland - University of Washington

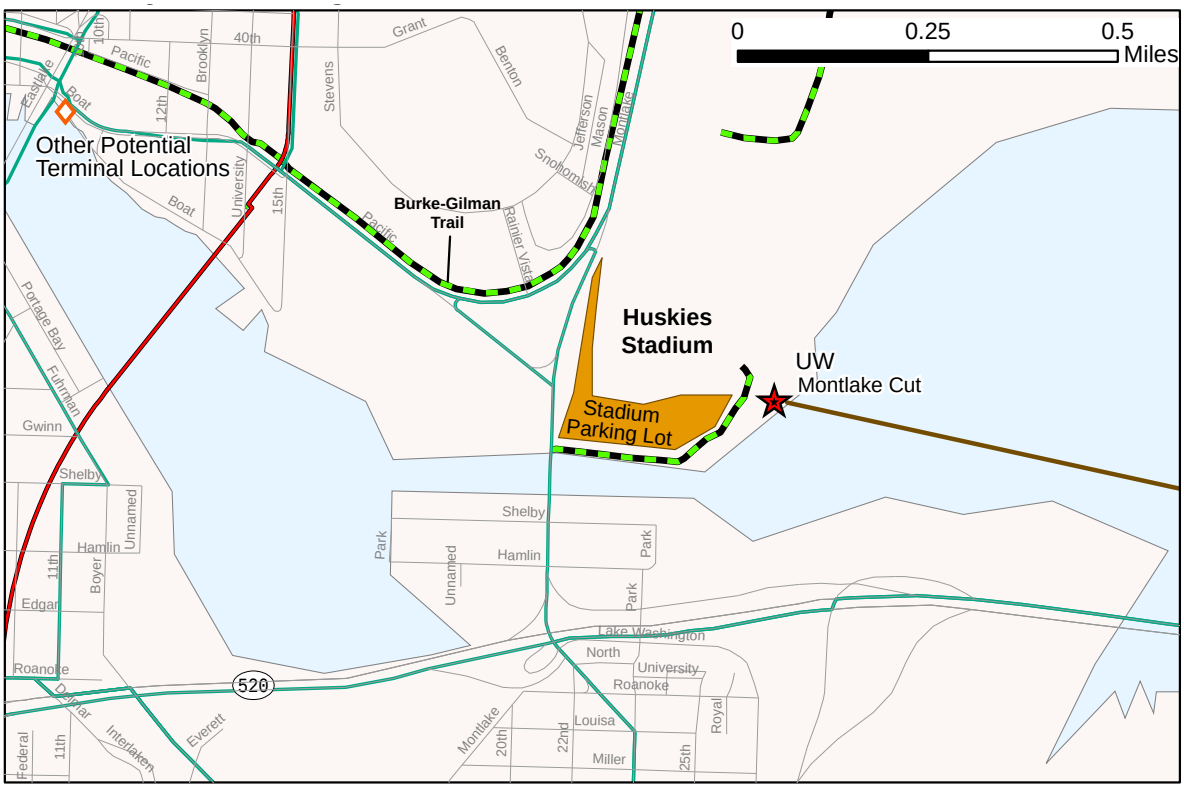
Medium Term - King County Routes with Potential to Develop

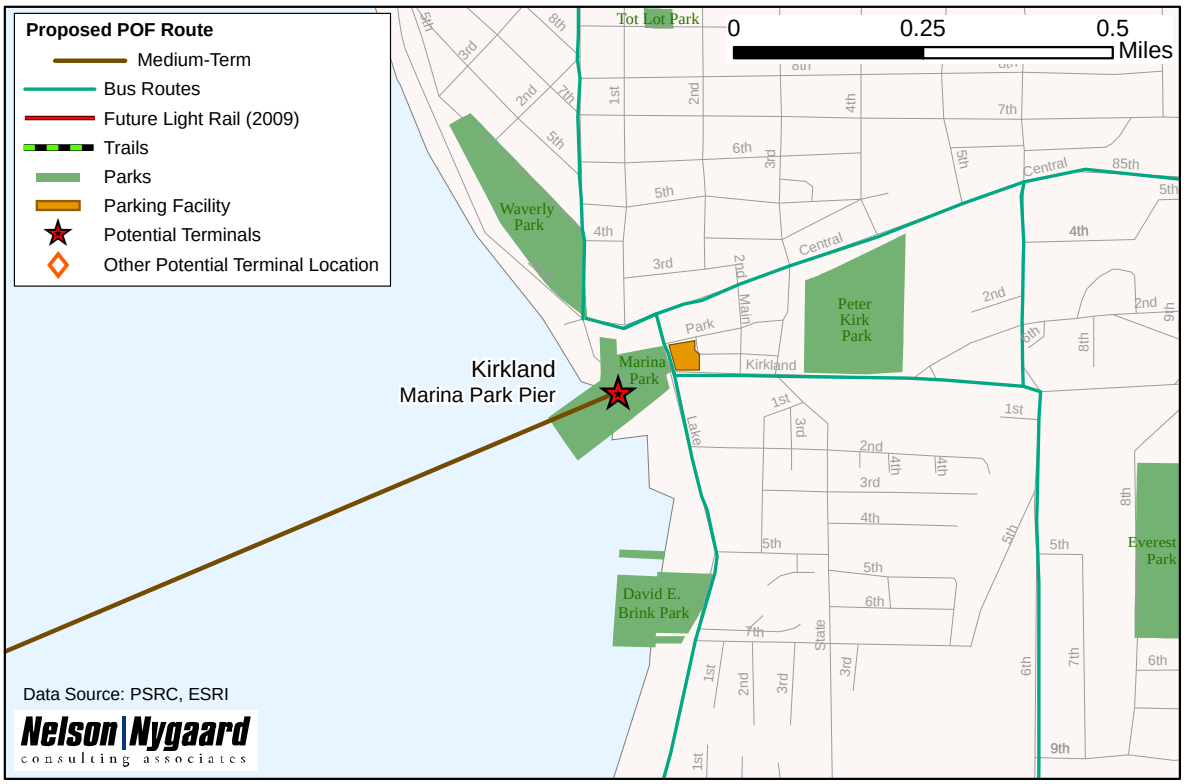
Figure 3-18 Kirkland - UW Route Overview



Route Overview	
Route length:	6.0 nmi
Demand:	Daily: 420 Annual: 106,680
Schedule frequency:	M-F: *Peak: hourly*
Max. speed:	22 knots
Crossing time:	20 minutes
Annual operational costs: $2.4 Million	

Figure 3-19 Kirkland - UW Terminal Details





Nelson|Nygaard consulting associates

Medium-Term: Potential Future King County Route

Kirkland Terminal

Location: Kirkland POF service would be provided from the end of the main pier at Marina Park, in downtown Kirkland.

Land Use

Existing:	Downtown, mixed-use core with high levels of multi-family housing
Planned:	Plans for increased densities in the future.
*Potential **conflict:***	No serious land-use conflicts exist. The pier is currently used for Argosy tours and recreational boat guest moorage.

Existing Facilities

Berths:	The existing 400' pier provides side-loading berthing space for multiple vessels.
Waiting areas:	Kirkland passengers would stage either on or at the base of the pier. Park restrooms and seating exist at the base of the pier.
Dock and landside:	The existing timber pier is in moderate-to-good condition and is currently used by a large Argosy tour boat. On the landside, the park features benches and public restrooms. Existing facilities are ADA-accessible.

Access

Bicycle:	Good. Bike racks are already provided. Kirkland has relatively low-volume streets with many alternative route options along quite residential streets. The city has developed a base biking network, with 41 miles of bike facilities built as of 2001. Bike connections to the marina were indicated as high priority projects in the 2001 plan.
Pedestrian:	Good. Located in an urban downtown area with many shops, restaurants, and housing, the terminal is highly conducive to walk-on passengers. Kirkland offers a pleasant pedestrian environment with numerous green open spaces, multifamily dwellings, and commercial destinations located immediately adjacent to the terminal. Parking appears to be buffered by landscaping to improve the walking connections between the terminal and the main commercial area.
Park & Rides:	Various located around Kirkland.
Transit from P&R:	At least two park and rides are served by downtown Kirkland transit routes.
Transit:	Excellent. Downtown Kirkland is already well-served with high-frequency transit, with 15 inbound and 18 outbound buses per hour. Though, passengers must walk more than 1,000 feet to the bus routes on Central Way/Market St.
Adjacent parking:	There is very limited parking within a few blocks of the public marina. Kiss-and-ride and time-limited parking are available at the park's parking lot. Paid garage and lot parking are located throughout the area.

Proposed Improvements

Minimal improvement would be necessary to provide POF service at this location. Needed terminal improvements include:

- Installation of fendering on existing pier
- Rider information
- Signage and wayfinding upgrades

Additionally, a covered waiting area may be desired. This could be constructed at the base of the pier, near the park restrooms.

Total Proposed Improvement Costs: $200,000

The cost of the above improvements is estimated at less than $200,000.

University of Washington Terminal

Location: The most likely location for a UW terminal is at the southern Waterfront Activities Center (WAC) float southeast of Husky Stadium. This assumed WAC location presents several concerns, including conflicts and noise affecting the recreational boating community; speed restrictions west of Webster Point that would reduce the travel time benefits of POF; and poor landside connections. In fact, the low ridership estimates for this route largely result from access and egress issues (i.e. there are no destinations close to the shore). We suggest that the King County Ferry District focus on developing conceptual feeder and distribution routes as an integral part of their system planning. Another possible terminal location was considered inside the channel adjacent to the National Oceanic and Atmospheric Administration (NOAA), but analysis indicates that this option inside the Ship Canal presents even greater speed constraints, and passengers walking to and from the terminal would face the considerable physical barrier created by the University of Washington Medical Center. This section therefore focuses only on the UW terminal location outside of the Ship Canal, at the southern WAC float, even though this location too is not without flaws.

Land Use

Existing:	The terminal area is characterized by high density mixed-use development
Planned:	Likelihood of increased densities in the future
*Potential **conflict:***	The location is currently the university's Waterfront Activities Center. From the water side, vessel access is speed-limited due to the approach to the Montlake cut and speed restrictions west of Webster Point. Measures would need to be taken to ensure boaters' safety in the significant amount of small, non-powered boat traffic (sailboats, canoes) from the WAC.

Existing Facilities

Berths:	The current float has side-loading berthing space for up to two vessels. A replacement float would likely be of a similar size.
Waiting areas:	No suitable area currently. Passengers would likely wait on land at an improved waiting area.
Dock and landside:	The existing 110'x12' timber float is in very poor condition and would need to be entirely replaced prior to service. The float is connected with the landside via a short set of 3 stairs and is not ADA-accessible. The float is secured to concrete piles that could possibly be re-used. From the water side, speed restrictions and recreational boaters are a concern (see "Potential Conflict," above). Landside conditions are also poor for POF service, due to physical barriers such as the WAC parking lot and upcoming on-going construction of the LINK light rail terminal. We suggest that the King County Ferry District focus on developing conceptual feeder and distribution routes as an integral part of their system planning. .

Access

Bicycle:	Good. Cyclists can access the Burke Gilman regional trail as well as find connections to Seattle neighborhoods. The terminal location is along a bike path, although no bike racks exist near the float. A gravel trail connects the float with the small parking lot and bike path. An asphalt path connects the bike path to the Husky Stadium parking lot up a short hill.
Pedestrian:	Poor. The development associated with Husky Stadium is not currently conducive to pedestrian movements. Sidewalks and pedestrian pathways do exist along the water and Montlake Boulevard, but quality connections are lacking across Montlake Boulevard and to the UW, adjacent housing, and commercial uses. The terminal's location on a university campus and along a bike path make it somewhat conducive to walk-on passengers, but the terminal is located uphill and involves at least a 1,200-foot walk across the large parking lot to Montlake Boulevard. The parking lot around the Water Activity Center will be largely torn out during construction for the LINK light rail terminal, and UW is also considering other capital expansion projects in this location, including adding a parking garage. Because this area will be under construction for many of the coming years, pedestrian access will not only present a physical problem and nuisance to walkers, but will also present a liability issue for the state.
Park & Rides:	Multiple park and rides throughout the Seattle region

Access and Proposed Improvements & Costs continued on the next page

University of Washington Terminal

Access *(continued)*

Transit from P&R:	Multiple regional transit routes connect to regional park and rides. These connections will be strengthened by LINK light rail.
Transit:	Good. The location is already well-served with transit along Montlake Boulevard, though again, this is quite a hike from the terminal. Future LINK light rail proximate to the terminal will also connect to many regional bus services.
Adjacent parking:	Kiss-and-ride and permit parking are already available at the stadium's parking lot. However, it is unclear whether the nearby university-owned lots could be used for POF terminal parking.

Proposed Improvements

Significant improvement will be necessary to provide POF service from this location. The scope of needed improvements will require additional study. A preliminary list of anticipated improvements includes:

- Replacement of the existing 110'x12' timber float with a slightly larger concrete float with fendering.
- A short 20'-30' gangway for float access
- Paving of the float access pathway
- Rider information
- Signage and wayfinding upgrades
- Seating and a covered waiting area
- Adequate lighting for the float and walkway
- Bike racks or lockers

Total Proposed Improvement Costs: $6-8 Million

The cost of the above improvements is estimated to be between $6 and 8 Million.

Kirkland - University of Washington

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:	$283,000
Labor:	$1.9 million
Maintenance & insurance:	$212,000
Annual operational costs: $2.4 Million	

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* This route would be operated by the King County Ferry District and funded by property taxes.
Promising funding sources	In addition to **fares**, **property taxes** and likely **FTA grants**, this route could be subsidized by potential **joint development** ventures at UW and downtown Kirkland. Given the ability for this route to reduce SOV travel across Lake Washington, it may qualify for **CMAQ funds**. When the 520 Bridge undergoes replacement, the route could qualify for **Transportation Mitigation Funding**. Additionally, future **toll revenues** collected on the 520 Bridge could potentially fund this route. If an emergency transportation authority were created, the route may qualify for **emergency/evacuation funds** as it would be a viable back-up option should the SR 520 bridge go out of service in an emergency.

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Long Term (beyond 10 years):
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). However, they would require demonstration testing, identification of feasible terminal locations, substantially enhanced markets, improved landside connections, significant capital investment or operating subsidy, and/or land use and development changes.

Potential Future Cross-Sound Route

- **Suquamish - Seattle** In the immediate and medium term, Suquamish markets would be served by Kington – 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 POF 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. Finally, If direct Suquamish-Seattle service were in place, it would draw some ridership from both the Kingston – Seattle POF and the Bainbridge – Seattle WSF auto ferry service, another reason this route has been recommended for the longer-term.

Potential Future King County Routes

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

All of these routes were identified by King County as potential demonstration routes for POF service, but have not yet undergone intensive market or feasibility analysis. According to the modeling results and analytical approach to this Regional Passenger-only Ferry Study, none of these routes would be viable in the immediate- or medium-terms. The study team set a threshold number of daily riders that would need to be reached in order to initiate POF service. None of the Lake Washington routes studied (other than Kirkland – University of Washington) met that set threshold.

It should be noted that these daily ridership numbers are based on model estimates. A number of factors combine to produce low ridership estimates on the Lake Washington routes, including weak markets, difficulty in siting terminals, lack of density, and competing landside transportation connections that offer competitive travel times. On the Seattle side especially, access and egress issues where landside destinations are far from the shore greatly impacted the low ridership estimates.

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. KCFD should undertake line-level analysis to determine demand, and would be well advised to focus on developing conceptual feeder and distribution routes as an integral part of their system planning.

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Suquamish - Downtown Seattle

Long-term: Cross-Sound Route that May Become Viable in the Future

Figure 3-20 Suquamish - Downtown Seattle Route Overview

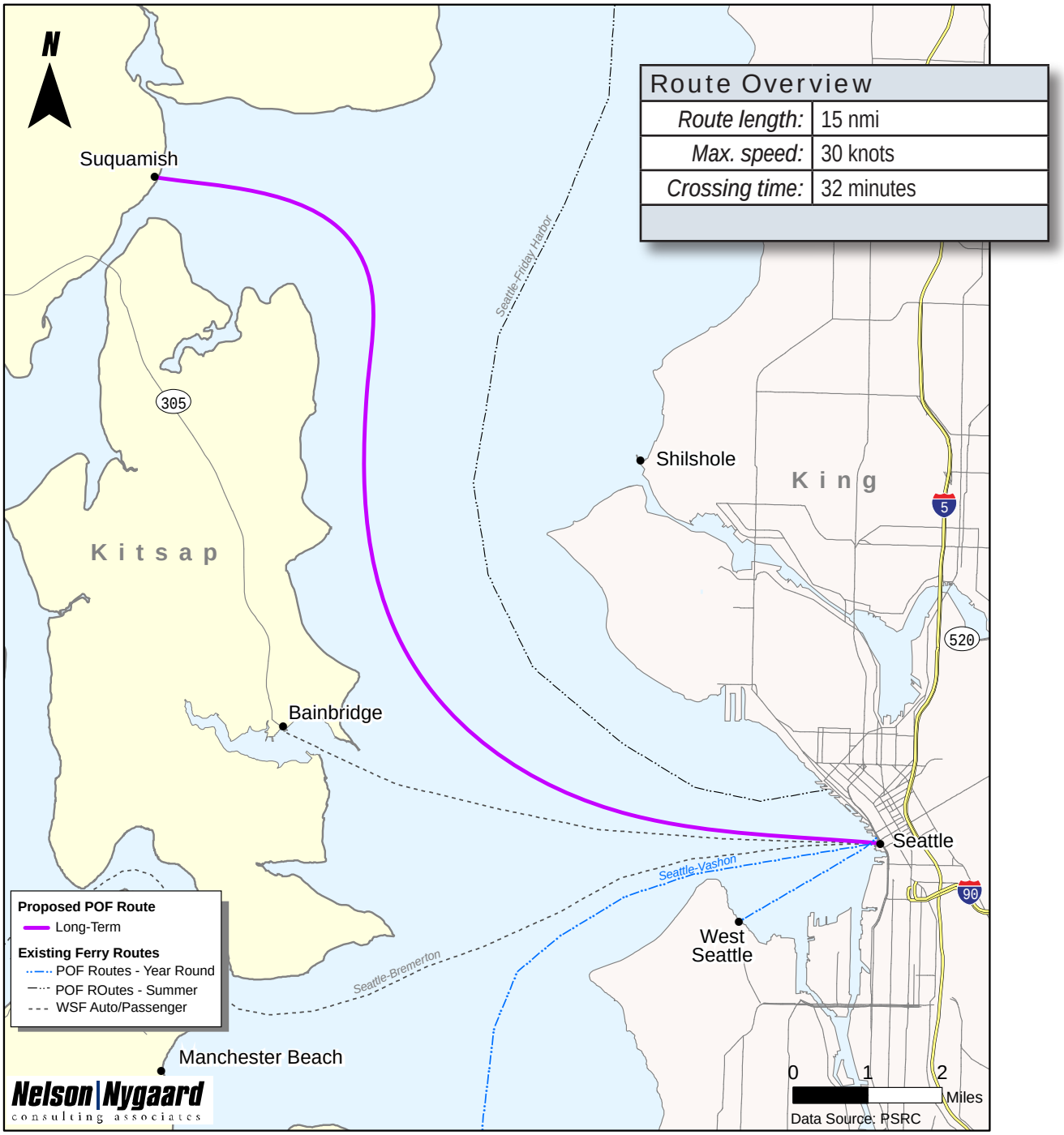
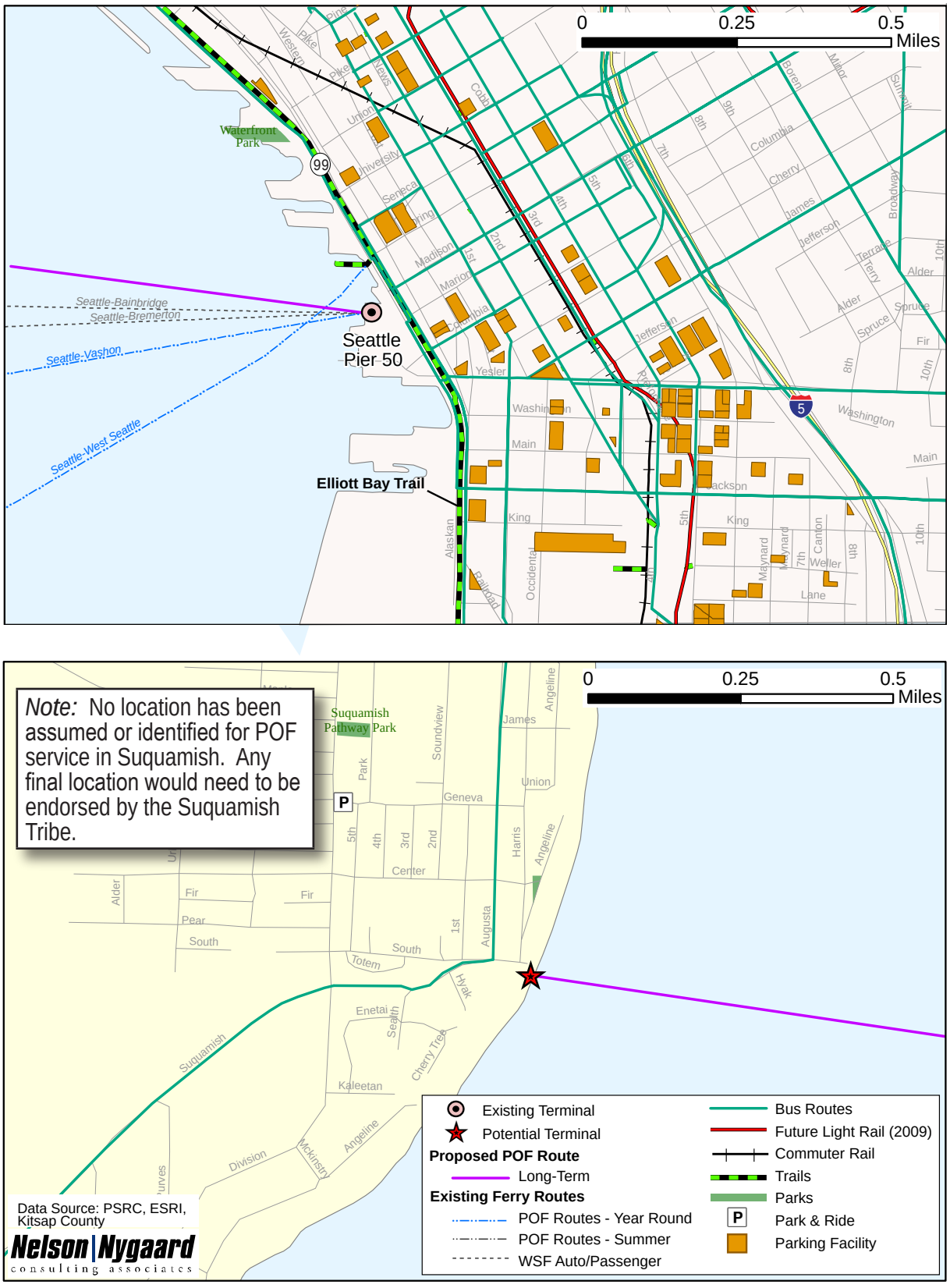


Figure 3-21 Suquamish - Downtown Seattle Terminal Details



For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Suquamish Terminal

Location: While this route has been deemed potentially viable in the long-term, no adequate site in Suquamish has yet been identified that would support POF service. If this route were to move forward, it would require finding a docking site in coordination with the Suquamish Tribe, and final endorsement by the Tribe.

Land Use

Existing:	Suquamish is characterized by low density rural development.
Planned:	Little likelihood of increased densities in the future.
*Potential **conflict:***	Additional study would be necessary to determine potential environmental conflicts at any docking location evaluated in the future.

Existing Facilities

Berths:	At least 1 berth will be necessary for POF service. However, because a standard terminal float would need to be installed, up to four berths may be provided (2 bow-loading, 2 side-loading).
Waiting areas:	If a new facility is constructed, passenger waiting areas would need to be included.
Dock and landside:	The dock and landside conditions would need to be considered when selecting a terminal site, should this route move forward.

Access

Bicycle:	Fair. There are recreational routes in the area, but these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. Bike facilities for novice riders are limited in this vicinity.
Pedestrian:	Fair. Suquamish lacks complete coverage of sidewalks and like many other more rural potential sites, the land uses are oriented toward vehicles rather than pedestrians.
Park & Rides:	n/a, as no docking site has been established.
Transit from P&R:	Kitsap Transit has a solid reputation for providing ferry-supportive transit connections via park-and-ride shuttles, service that would be beneficial if this route moves forward.
Transit:	n/a
Adjacent parking:	n/a

Proposed Improvements

Though no terminal location has been selected, any POF terminal would require:

- Standard terminal float and gangway
- Outdoor waiting area cover and seating
- Rider information, and signage and wayfinding upgrades
- Restroom and customer service space

Total Proposed Improvement Costs: Unknown

Because no docking site has been identified, it is impossible to estimate terminal costs at this time.

Suquamish - Downtown Seattle

Possible Future Governance and Implementation	
Organizational structure	Publicly operated and tax financed: One organizational option is for a new PTBA to be set up in Kitsap County, allowing Kitsap Transit to deliver service using new sales taxes, property taxes, and/or MVET funds. A second option under this model is for the service to be assumed by a Regional Transportation Authority. This would require legislative action and approval. Elements of service delivery and/or maintenance could be contracted out to a private entity.
Promising funding sources	Given one of the above proposed models for public operation, funding for this route would derive from some combination of **fares**, **sales taxes**, **property taxes**, MVET **funds**, **General Fund contributions**, and/or FTA **grants**. Depending on the strength and will of future congressional delegations, this route could receive **earmark funds**, or **State POF Grants**. This route could also be subsidized by potential **joint development** ventures in the vicinity of Colman Dock, **contributions from the Clearwater Casino** who would benefit substantially from the service, or even **toll revenues** from any future tolls leveraged on the Agate Pass Bridge.

University of Washington - Kenmore

Long Term - King County Routes That May Become Viable in the Future

Figure 3-22 University of Washington - Kenmore Route Overview

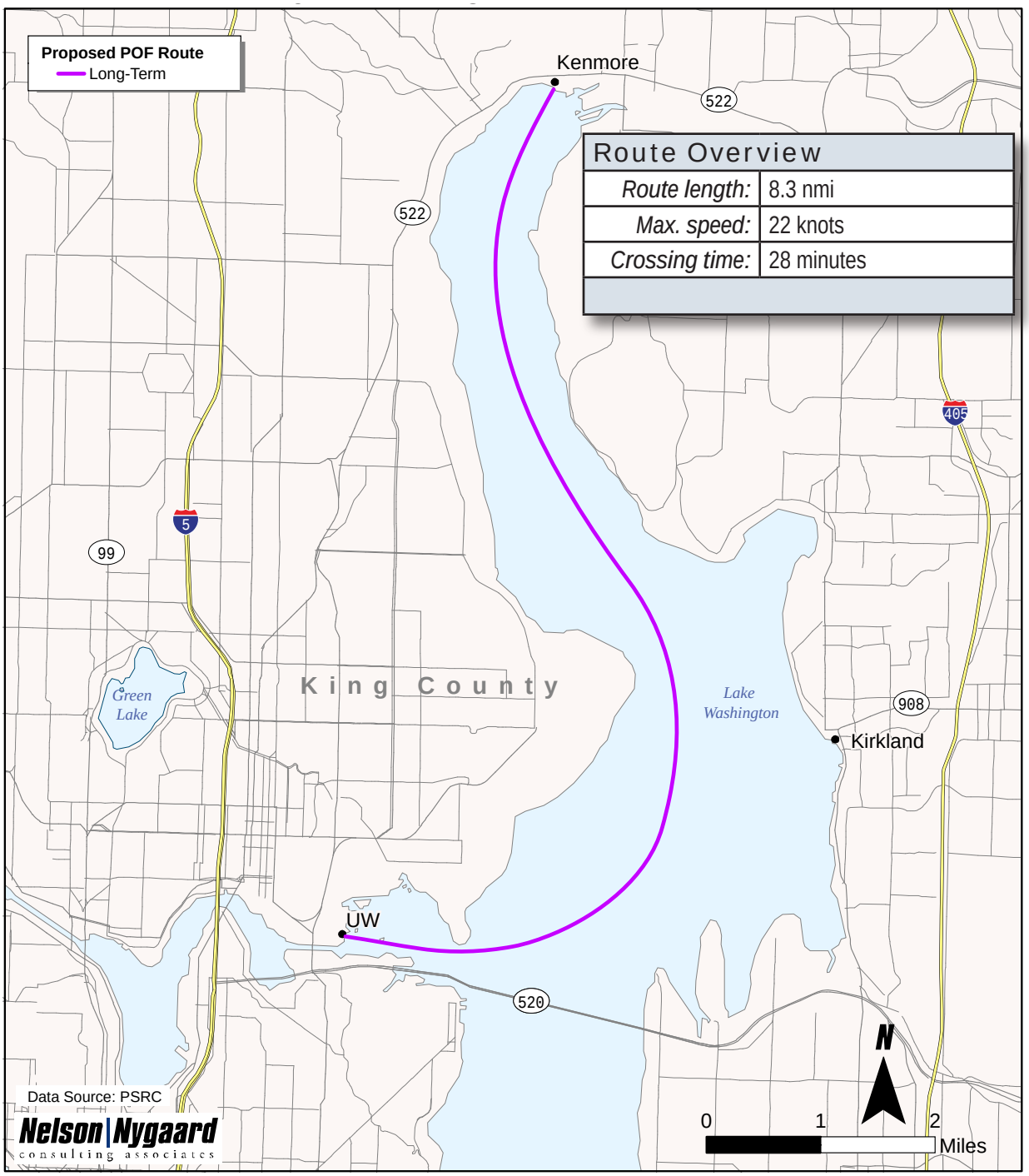
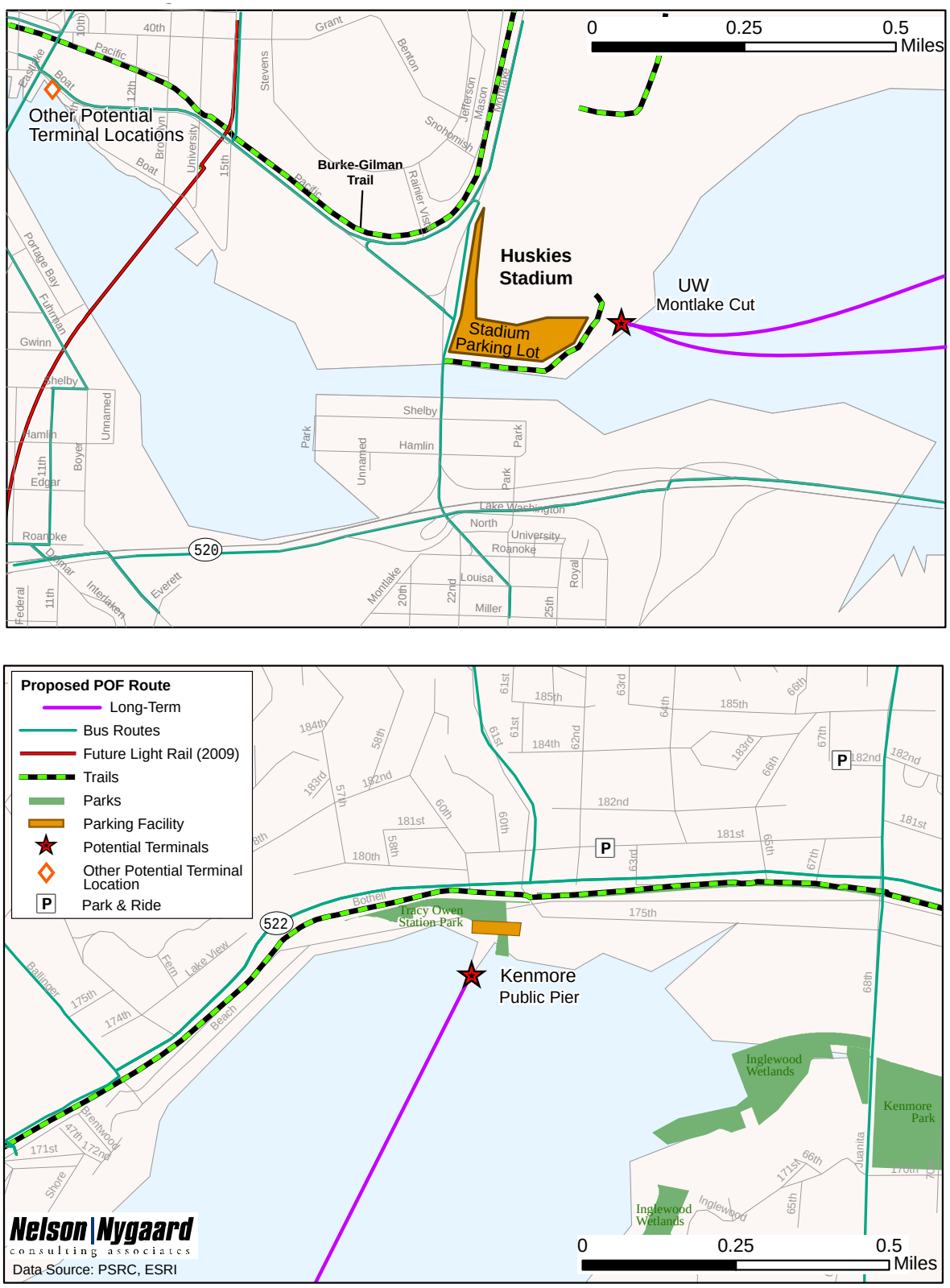


Figure 3-23 University of Washington - Kenmore Terminal Details



For a discussion of the University of Washington terminal, see Pages 3-49 – 3-50.

Kenmore Terminal	
Location: The most likely location for a Kenmore terminal is at the existing public pier at Tracy Owen Station Park.	
Land Use	
Existing:	Mostly low density development
Planned:	No changes are planned near the pier location. Kenmore is planning a town center development over 1/2 mile east of the dock.
*Potential **conflict:***	No serious land-use conflicts exist. That said, the constrained site does not allow for much in the way of POF-related services, such as parking.
Existing Facilities	
Berths:	The 550' pier has sufficient berthing space for multiple vessels.
Waiting areas:	Many passengers will choose to wait on the pier. However, park seating is available on land at the base of the pier.
Dock and landside:	The existing 550' concrete pier is in moderate condition and is suitable for POF use. Landside park facilities are in good condition. All facilities are ADA-accessible.
Access	
Bicycle:	Good. Tracy Owen Station Park is located on the Burke Gilman Trail, making it very accessible by bicycle and possibly some walkers. The Burke Gilman continues west along Lake Washington, and south through the University of Washington with connections to downtown Seattle. However, bike connections and intersection crossings across Bothell Way appear to be less than ideal.
Pedestrian:	Poor. Located in a suburban area, the terminal is not particularly conducive to walk-on passengers. Although some businesses and restaurants exist on nearby Bothell Way, the marina appears to be very disconnected from these housing/commercial uses across the street. There currently exists only one pedestrian crossing on this six-lane roadway. The proposed terminal has some pedestrian walkways through park areas and new multi-family development. Sidewalks exist, but they are not consistently applied.
Park & Rides:	Two connected by transit.
Transit from P&R:	Two connected by transit routes.
Transit:	Fair to good. The location is already well-served with transit on Bothell Way, although the road is up a short but steep hill.
Adjacent parking:	Kiss-and-ride and ample time-limited parking are already available at the park's parking lot.
Proposed Improvements	
	Minimal improvement would be necessary to provide POF service at this location. Needed terminal improvements include: • Installation of fendering on existing pier • Rider information • Signage and wayfinding upgrades Additional improvements may include: • Seating and a covered waiting area on the pier
Total Proposed Improvement Costs: less than $200,000 The cost of the above improvements is estimated at less than $200,000.	

University of Washington - Kenmore

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* This route would be operated by the King County Ferry District and funded by property taxes.
Promising funding sources	In addition to **fares, property taxes** and likely **FTA grants**, this route could be subsidized by potential **joint development** ventures at UW and downtown Kirkland. Given the ability for this route to reduce SOV travel across Lake Washington, it may qualify for **CMAQ funds**. When the 520 Bridge undergoes replacement, the route could qualify for **Transportation Mitigation Funding**. Additionally, future **toll revenues** collected on the 520 Bridge could potentially fund this route. If an emergency transportation authority were created, the route may qualify for **emergency/evacuation funds** as it would be a viable back-up option should the SR 520 bridge go out of service in an emergency.

Renton - Leschi

Long Term - King County Routes That May Become Viable in the Future

Figure 3-24 Renton - Leschi Route Overview

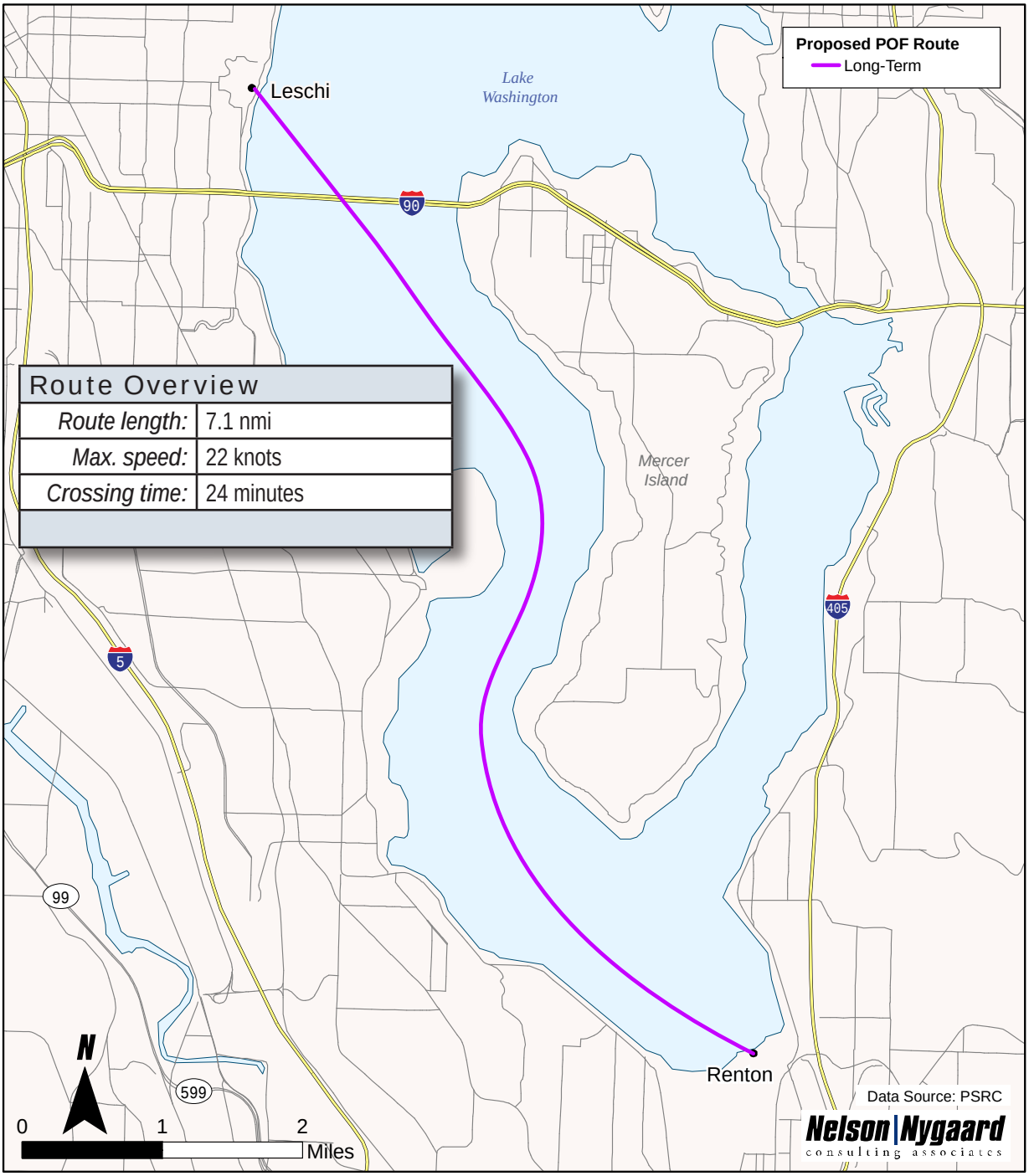
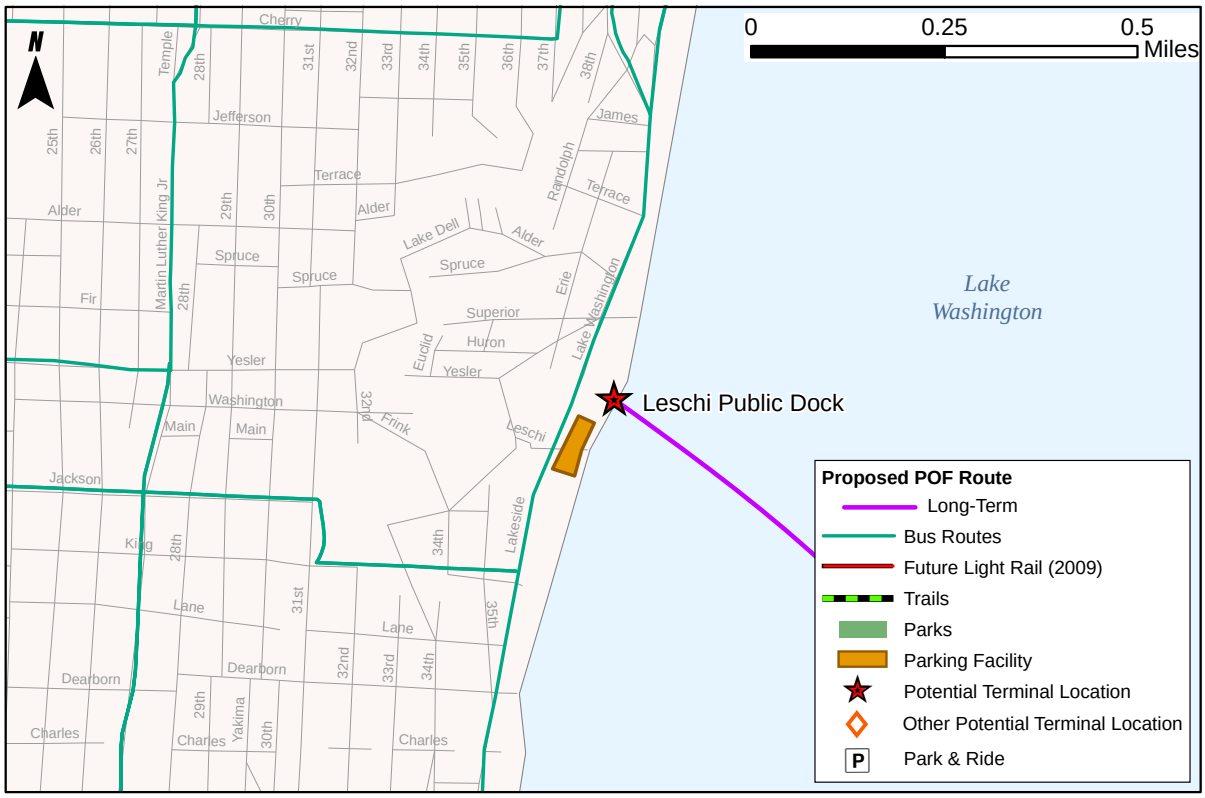
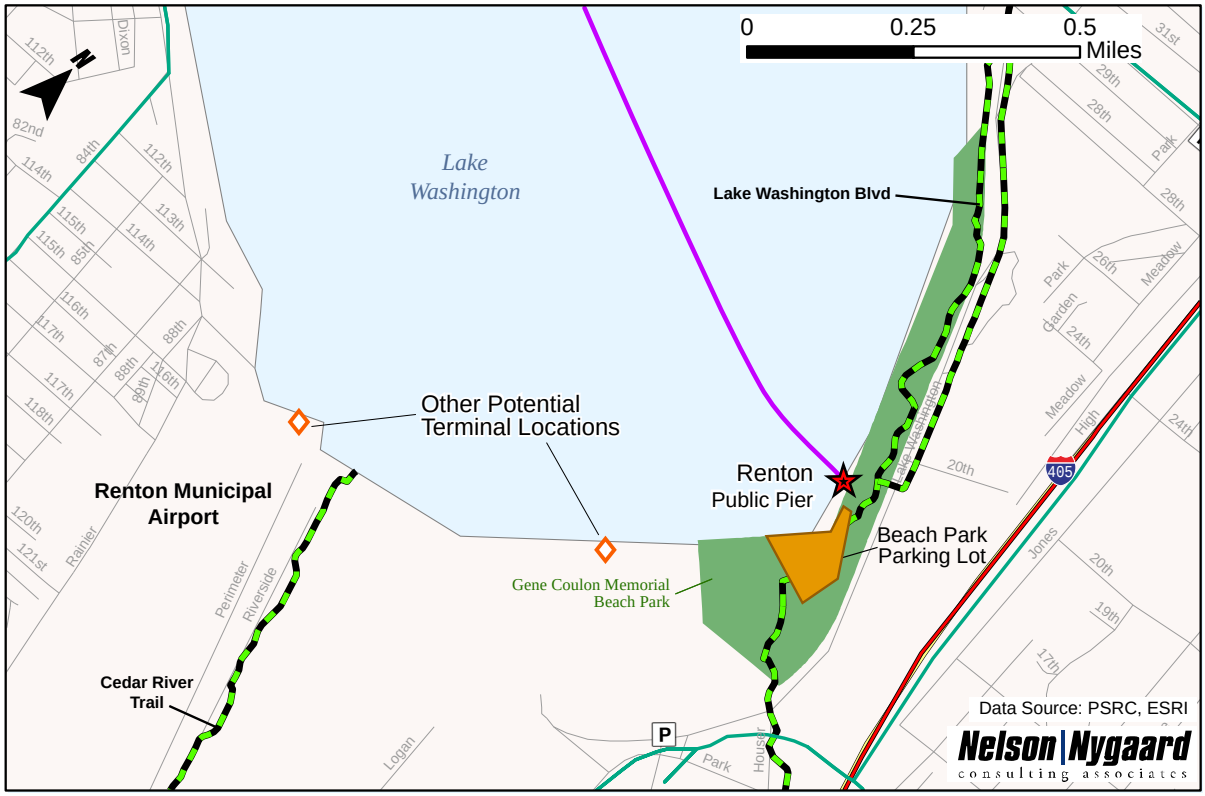


Figure 3-25 Leschi - Renton Terminal Details





Leschi Terminal

Location: The most likely location for a terminal at Leschi is at the public float at the north end of the small marina at Leschi Park on Lakeside Avenue.

Land Use

Existing:	Low- to medium-density housing, some commercial uses and multi-family housing on the lakefront
Planned:	Same
*Potential **conflict**:*	No serious land-use conflicts exist. However, ongoing use of the Leschi Park site is questionable, given that it is funded by state IAC recreational funds, which may not allow long term POF use. POF service may have a small effect on recreational boat traffic, though disruption to the small marina's operations is unlikely.

Existing Facilities

Berths:	The north side of the float has approximately 140' of side-loading berthing space. This is sufficient for at least one vessel.
Waiting areas:	Passengers will wait on the float.
Dock and landside:	The existing float is made of timber and is approximately 140'x50'. The float is in moderate-to-good condition and is currently used as the berthing location for a tour vessel in December. The float already has large cleats and some tire fendering. The float is connected to the landside via a wide, 60' timber ramp that appears to be ADA-accessible. On the landside, a small parking lot exists adjacent to a restaurant.

Access

Bicycle:	Fair. Lakeside Avenue is a major bike route, although no bike racks exist near the float. Cyclists can access the I-90 regional trail by traveling south 1/2 mile on a very low traffic street. The steep topography of the area may discourage some riders.
Pedestrian:	Good. Located in a small town center with multiple shops, restaurants and apartments, the terminal is highly conducive to walk-on passengers. Leschi's medium density housing, neighborhood commercial uses, relatively narrow streets and frequent pedestrian crossing create an attractive walking environment. The adjacent neighborhoods' non-traditional street layout and steep topography, however, will make pedestrian connections somewhat problematic for many residents. Access to Lakeside Avenue is via a narrow walkway.
Park & Rides:	n/a
Transit from P&R:	n/a
Transit:	Fair. Only two buses per hour, but the bus stop is located quite close to the terminal location.
Adjacent parking:	Kiss-and-ride and time-limited parking are already available at the park's large parking lot near the marina, and along Lakeside Avenue.

Proposed Improvements

Minimal improvement would be necessary to provide POF service at this location. Needed terminal improvements include:

- Installation of additional fendering on existing float
- Rider information
- Signage and wayfinding upgrades
- Seating and a covered waiting area on the float

Additional improvements that would help accessibility include:

- Reconfiguration of the north parking lot to accommodate wider pedestrian access from the float to Lakeside Avenue

Total Proposed Improvement Costs: less than $200,000

The cost of the above improvements is estimated at less than $200,000.

Renton Terminal

Location: A Renton POF terminal is most likely to be located at the public pier at the City of Renton's Gene Coulon Memorial Beach Park. Other potential sites exist; the following discussion addresses only the Coulon Park location.

Land Use

Existing:	High density, mixed use
Planned:	Same.
*Potential **conflict**:*	No serious land-use conflicts exist.

Existing Facilities

Berths:	The current pier has an approximately 80'-long side-loading berthing location along the northwest part of the pier. This provides sufficient berthing space for one vessel.
Waiting areas:	Passengers would most likely wait on the pier. Uncovered seating exists next to the anticipated berth. The southern corner of the pier provides a sheltered area with multiple benches. Additional covered waiting areas are available at the base of both ends of the pier. Multiple restaurants provide additional, heated shelter at the base of the southern pier. Restrooms are available at the base of the pier.
Dock and landside:	The existing fixed concrete pier is in good condition and is connected to the landside at two locations. At the northern end, a sheltered picnic area is present. The southern end features two restaurants, a picnic shelter and public restrooms. Existing facilities are ADA-accessible.

Access

Bicycle:	Good. There is good bicycle accessibility and bike racks are already provided. The proposed terminal is adjacent to the regional Lake Washington Trail (running north along the lake) and the Cedar River Trail (extending southeast 4.5mi, south of the airport and Boeing plant). Though currently, bike connections to central Renton appear to be very difficult, new projects will add bicycle facilities to help cyclists navigate the high volume traffic on adjacent roadways.
Pedestrian:	Good. The park is located near residential and commercial areas. The walking environment in the immediate vicinity appears to be favorable, with sidewalks, pedestrian pathways through pleasant green spaces, and some adjacent multifamily units. However, connections across I-405 appear to be unfeasible for pedestrians looking to walk to destinations farther away than 1/2 mile. Renton's dense downtown core is located almost a mile away from the site.
Park & Rides:	n/a
Transit from P&R:	n/a
Transit:	Very good service exists a little less than a mile away in downtown Renton. Though current transit service to the assumed terminal location is poor, this will improve with upcoming projects. A bus route exists on nearby Northeast Park Drive, although this is approximately a half-mile from the terminal.
Adjacent parking:	Plenty of parking exists throughout Coulon Park but is currently time-limited. Kiss-and-ride access is easily provided at the parking lot.

Proposed Improvements

Minimal improvement necessary to provide POF service at this location, including:

- Installation of fendering on existing pier
- Rider information
- Signage and wayfinding upgrades

Total Proposed Improvement Costs: less than $200,000

The cost of the above improvements is estimated at less than $200,000. This estimate reflects costs at the analyzed potential site at Coulon Park. Other locations may require different levels of investment.

Renton - Leschi

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* This route would be operated by the King County Ferry District and funded by property taxes.
Promising funding sources	In addition to fares, property taxes and likely FTA grants, this route could be subsidized by potential joint development ventures at UW and downtown Kirkland. Given the ability for this route to reduce SOV travel across Lake Washington, it may qualify for CMAQ funds. When the 520 Bridge undergoes replacement, the route could qualify for Transportation Mitigation Funding. Additionally, future toll revenues collected on the 520 Bridge could potentially fund this route. If an emergency transportation authority were created, the route may qualify for emergency/evacuation funds as it would be a viable back-up option should the SR 520 bridge go out of service in an emergency.

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Des Moines - Downtown Seattle

Long Term - King County Routes That May Become Viable in the Future

Figure 3-26 Des Moines - Downtown Seattle Route Overview

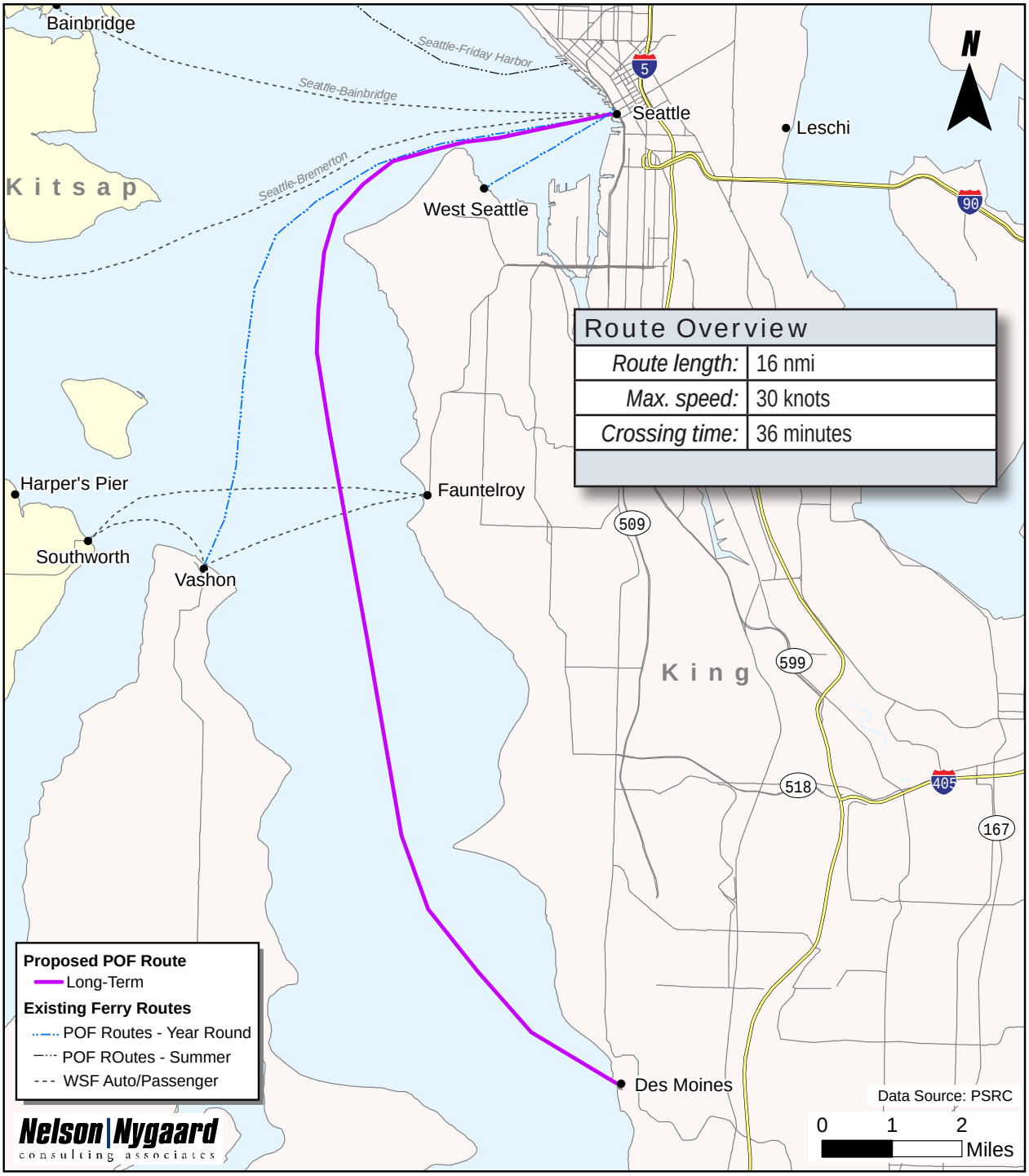
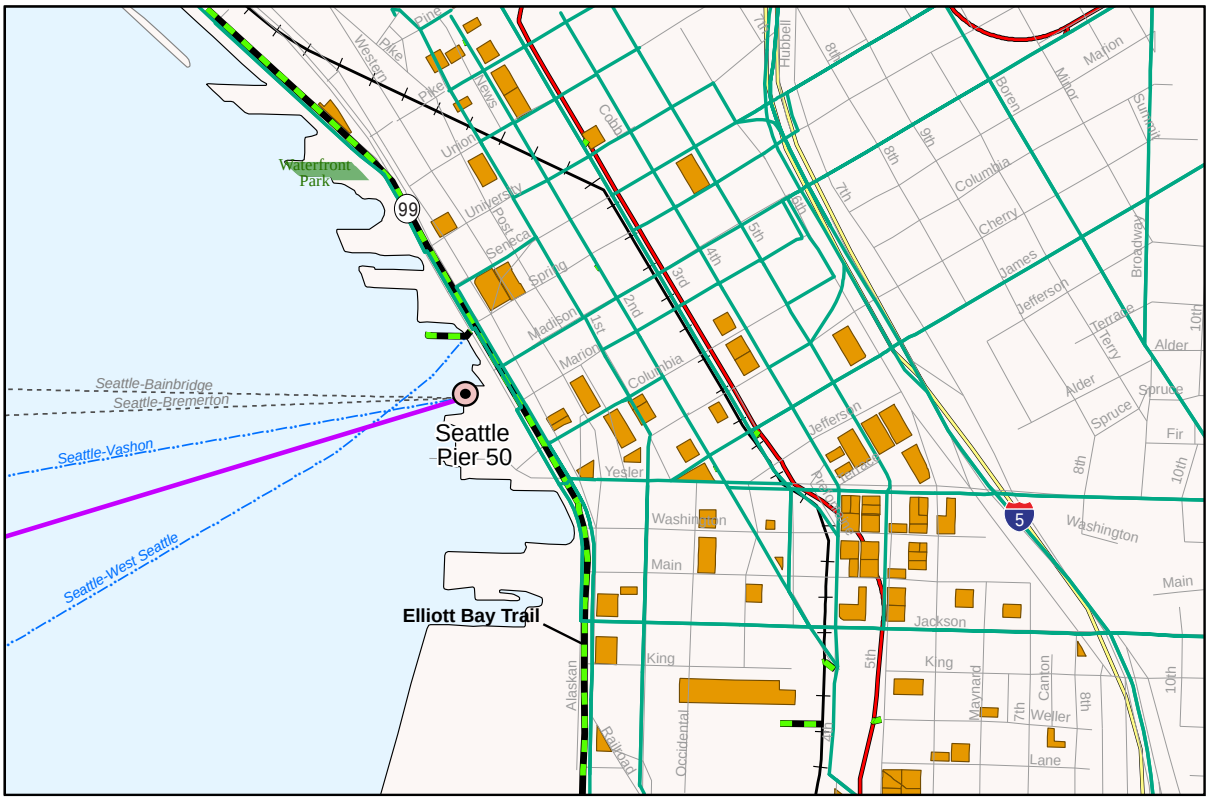
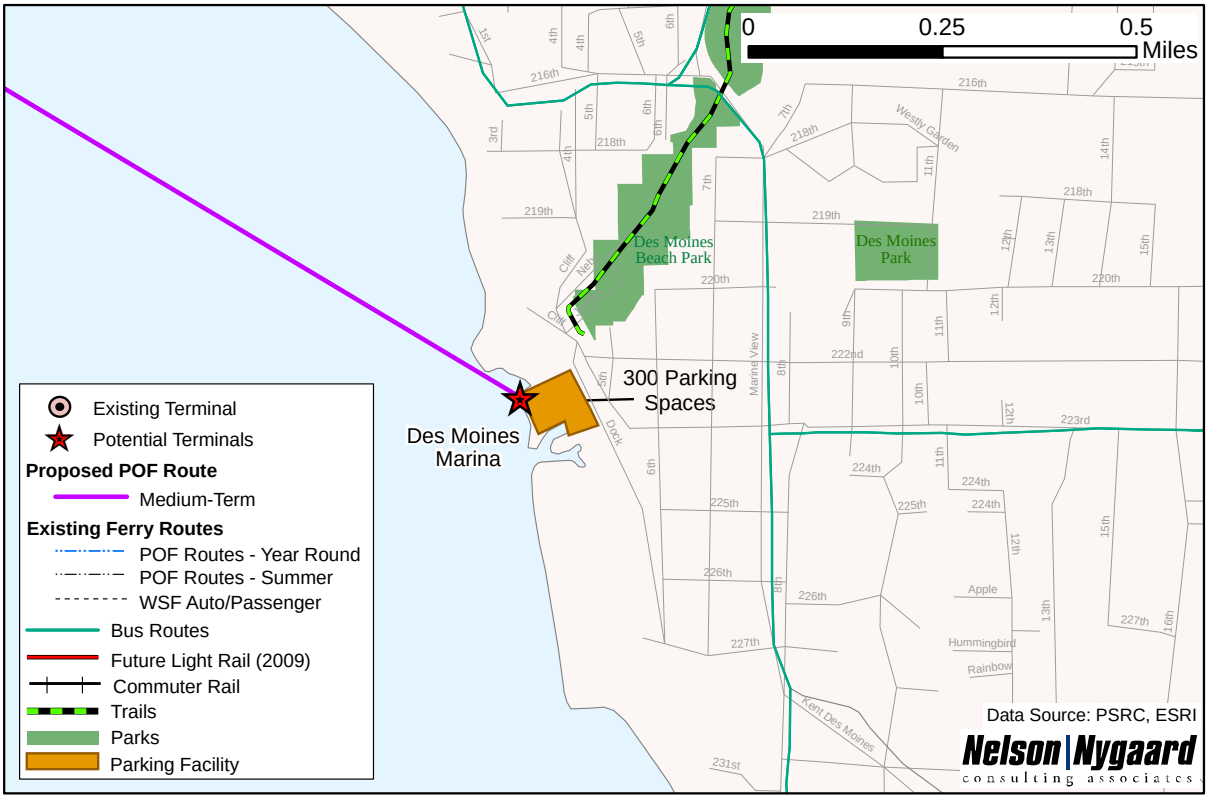


Figure 3-27 Des Moines - Downtown Seattle Terminal Details





For a discussion of the Des Moines terminal, see pp. 3-44.
For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Des Moines Terminal

Location: The most suitable location for a Des Moines POF terminal is along the fishing pier at the north end of the Des Moines marina.

Land Use

Existing:	Medium-density development, multi-family and commercial zoning.
Planned:	Good likelihood of increased densities in the future.
*Potential **conflict:***	The pier is currently used for fishing and other recreational uses. Significant recreational boat traffic exists south of the pier, and fishing occurs on the north side. While the boat traffic is a concern, sufficient space exists to the south of the pier for a float to be constructed and a POF to maneuver.

Existing Facilities

Berths:	Because no POF terminal location exists, the number of berths is dependent on the design of the float. It is anticipated that a reasonable float design would provide side-loading berths for up to two vessels.
Waiting areas:	Passengers would most likely wait at the base of or along the pier.
Dock and landside:	The Des Moines fishing pier is approximately 700' long and is made of concrete. The pier rises approximately 25' above the water line. Landside facilities include a small area with picnic tables, a bike rack, and a public restroom.

Access

Bicycle:	Good. There is good bicycle accessibility and bike racks available. Des Moines has a number of relatively low-traffic streets that are suitable for riding. Within three miles, cyclists have access to the Regional Green River Trail, although crossings of I-5 appear to be slightly difficult.
Pedestrian:	Good. The location is moderately conducive to walk-on passengers, although it is a significant walk uphill to the center of Des Moines. The Des Moines marina is surrounded by multi-family and commercial zoning, the appropriate set of land uses to encourage walking.
Park & Rides:	Kiss-and-ride access is available in the large parking lot east of the pier.
Transit from P&R:	n/a
Transit:	Poor. Transit service and access is poor, with only 2-3 buses per hour, and poor connections to key destinations such as the airport and Southcenter. Routes are distant, located almost half a mile from the end of the pier, uphill, along Marine View Drive.
Adjacent parking:	200 stalls at the north end of the marina; many other lots nearby. Parking is free, utilization is low-medium.

Proposed Improvements

Two King County Metro park-and-rides exist, one to the west and one to the south of Des Moines. An additional park and ride may be needed to the north of Des Moines in order to support POF service and accommodate passengers from the north. Any new park-and-ride would require more analysis by King County Metro to select a location. Significant improvement will be necessary to provide a POF terminal at this location. The height of the pier makes construction of an ADA-accessible gangway to the waterline a challenge. Assuming a 25' height, an accessible gangway would need to be at least 300', not including necessary landings. The pier would need to be modified to provide a side access to the gangway. It may be possible to secure a terminal float to the existing pier, but this would warrant additional study. If the float cannot be secured to the pier, pile driving will be necessary.

Total Proposed Improvement Costs: $6-10 Million

Construction of a terminal at this location will require significant engineering analysis that is outside the scope of this study. Because of the number of unknowns, significant variation from the estimate may occur. The cost of the above improvements is estimated to be between $6 and $10 Million.

Des Moines Terminal

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* This route would be operated by the King County Ferry District and funded by property taxes.
Promising funding sources	In addition to **fares**, **property taxes** and likely **FTA grants**, this route could be subsidized by potential **joint development** ventures at Colman Dock and downtown Des Moines. It could even be eligible for subsidy from the Port of Seattle, assuming targeted bus connections to Sea-Tac Airport.

Shilshole - Downtown Seattle

Long Term - King County Routes That May Become Viable in the Future

Figure 3-28 Shilshole - Downtown Seattle Route Overview

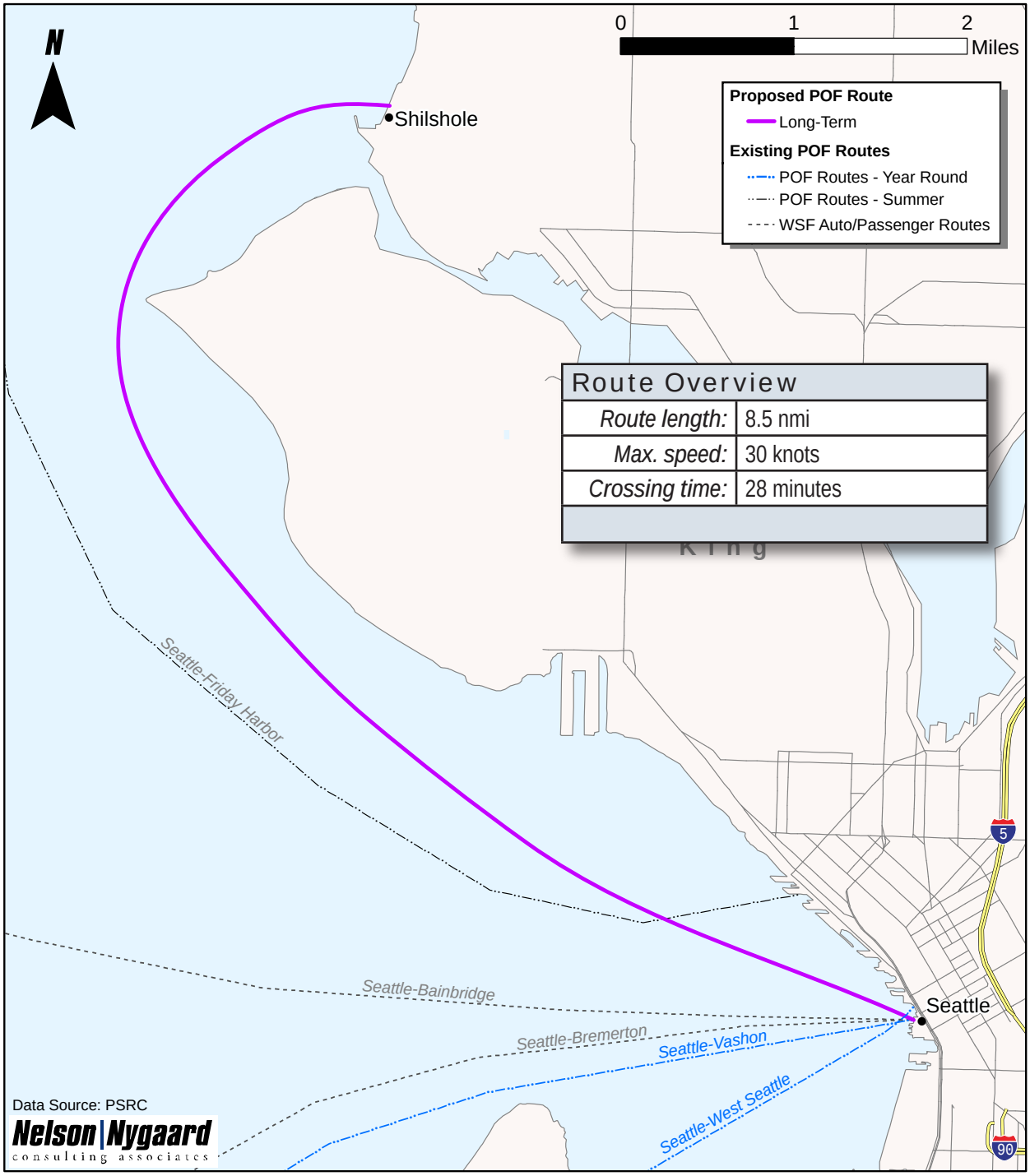
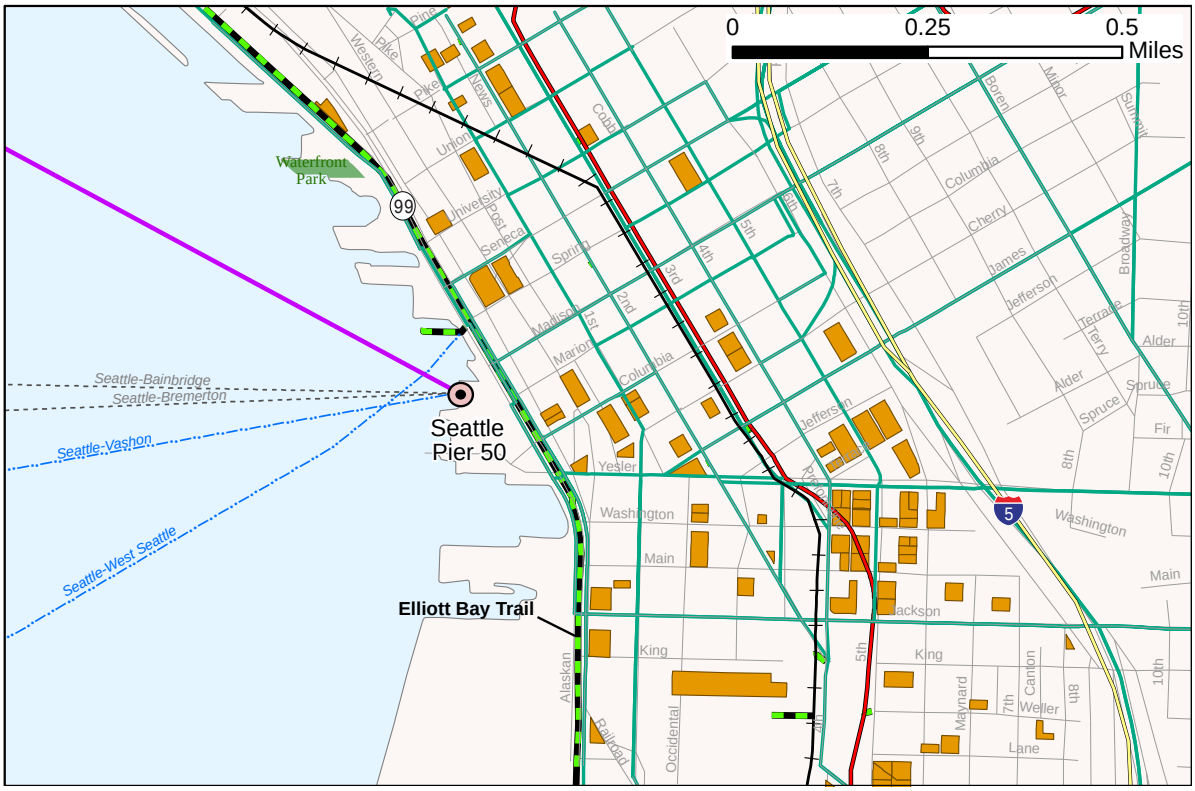
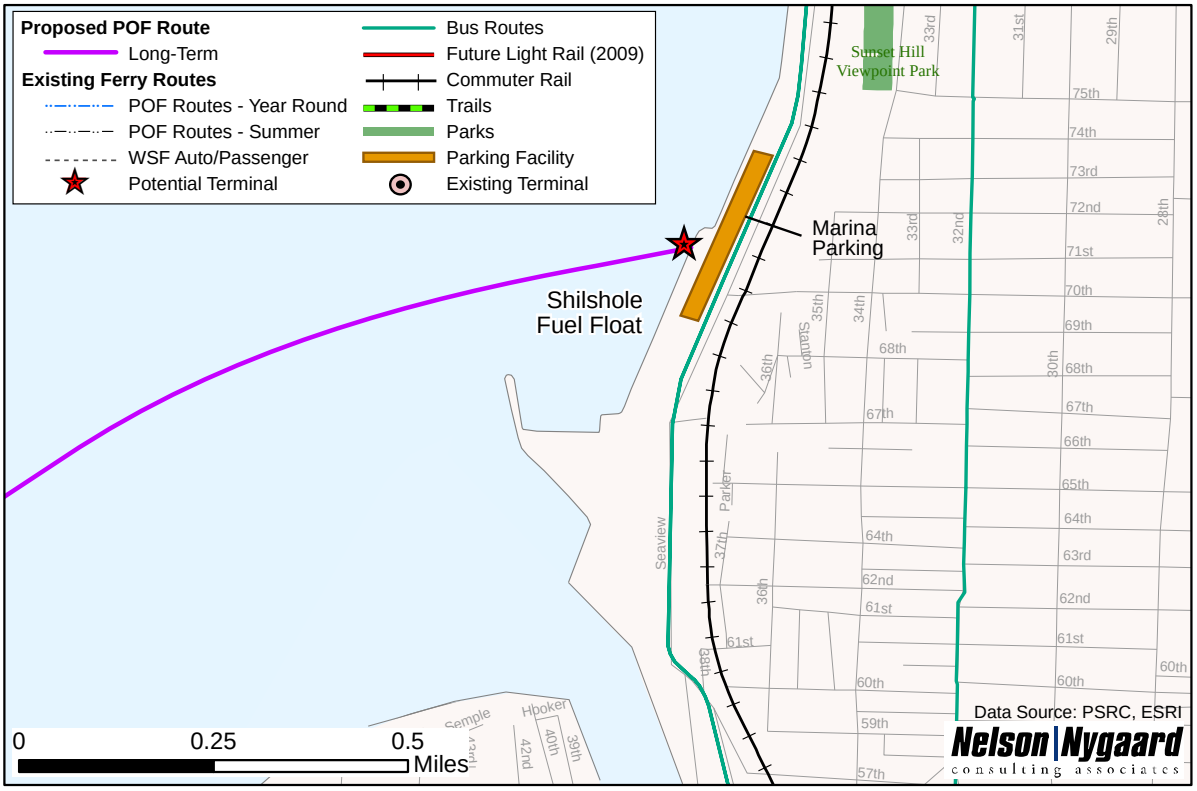


Figure 3-29 Shilshole - Downtown Seattle Terminal Details





For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Shilshole Terminal	
Location: A probable POF terminal location is at the base of the Shilshole Bay Marina I float, near the main marina office. Another possible location is in the north part of the marina near the small craft center. Further investigation and negotiation with the Port of Seattle will be necessary to secure a viable POF terminal location.	
Land Use	
Existing:	Low- to medium-density residential housing
Planned:	Same
Potential conflict:	Significant land use conflicts exist due to the large marina. Since there is no apparent terminal location near the marina harbor entrances, a POF would need to deal with significant recreational boat traffic as it goes through the marina. The newly-replaced/reconfigured floats do not provide a location that is clearly suitable for a POF landing, and it is likely that some slips would need to be reconfigured and designated for POF use. Negotiation would be required between a POF operator (likely King County) and the Port of Seattle, and additional study would need to take place to identify the most suitable location.
Existing Facilities	
Berths:	It is likely that wherever the final terminal location exists, it would only support a single vessel.
Waiting areas:	Passengers would likely wait on the landside, near the main marina building. It is unlikely that much space for passenger waiting could be provided on a float.
Dock and landside:	The Shilshole Marina is currently being renovated with new landside facilities and new marina floats. The new marina floats are in excellent condition, and are fully ADA-accessible via wide aluminum gangways. A new marina building has been completed and work is currently underway on the adjacent plaza.
Access	
Bicycle:	Good. A new bike trail is almost complete along Seaview Avenue that provides excellent bicycle accessibility and possibly some walkers. The Burke Gilman Trail, Myrtle Edwards Trail, and numerous bike lanes provide a good biking climate.
Pedestrian:	Poor. The location at Shilshole Marina is not particularly conducive to walk-on passengers. A large amount of low- to medium-density housing is located on the eastern side of Seaview Ave, a low-traffic volume street with sidewalks. Golden Gardens, a popular park, is located immediately to the north. However, there are very limited commercial and retail destinations nearby.
Park & Rides:	n/a
Transit from P&R:	n/a
Transit:	Poor. The location is served with transit on Seaview Avenue, but there is only one bus per hour during the peak, no mid-day or evening service, and limited weekend service.
Adjacent parking:	Kiss-and-ride and ample time-limited and permit parking are already available at the marina's parking lot.
Proposed Improvements	
	Because there is not an apparent location for a POF landing, the list of necessary improvements is not clear.
Total Proposed Improvement Costs: unknown Because the needed improvements are not clear, it is impossible to prepare a cost estimate.	

For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Shilshole - Seattle

Possible Future Governance and Implementation	
Organizational structure	*Publicly operated and tax financed:* This route would be operated by the King County Ferry District and funded by property taxes.
Promising funding sources	In addition to **fares, property taxes** and likely **FTA grants**, this route could be subsidized by potential **joint development** ventures at UW and downtown Kirkland. Given the ability for this route to reduce SOV travel across Lake Washington, it may qualify for **CMAQ funds**. When the 520 Bridge undergoes replacement, the route could qualify for **Transportation Mitigation Funding**. Additionally, future **toll revenues** collected on the 520 Bridge could potentially fund this route. If an emergency transportation authority were created, the route may qualify for **emergency/evacuation funds** as it would be a viable back-up option should the SR 520 bridge go out of service in an emergency.

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 would most likely require a private rather than public operator to deliver service. Both routes, however, do appear to have an existing market and could likely be feasible in the immediate- 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).

- **Port Townsend – Seattle**
- **Vancouver, B.C. – Seattle**

Port Townsend - Downtown Seattle

Tourism and Recreation-Focused Routes

Figure 3-30 Pt Townsend - Downtown Seattle Route Overview

Seattle - Port Townsend

Route Overview	
Route length:	42.3 nmi
Demand:	Daily: 600 weekday Annual: 66,240 (summer-only)
Schedule frequency:	Peak Season only, Fri-Sun: 4 runs per day
Max. speed:	35 knots
Crossing time:	75 minutes
Annual peak season operational costs: $1.7 Million	

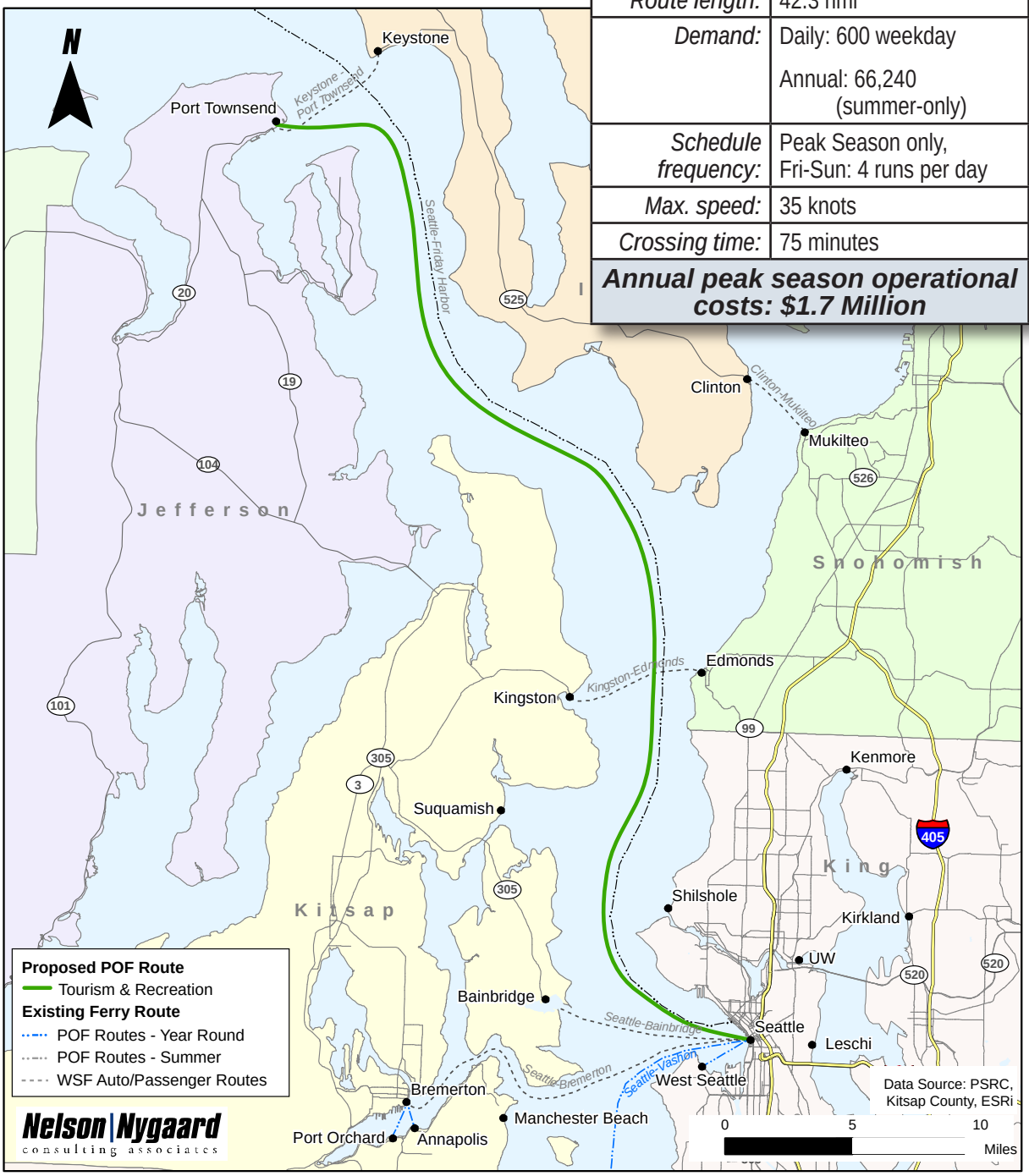
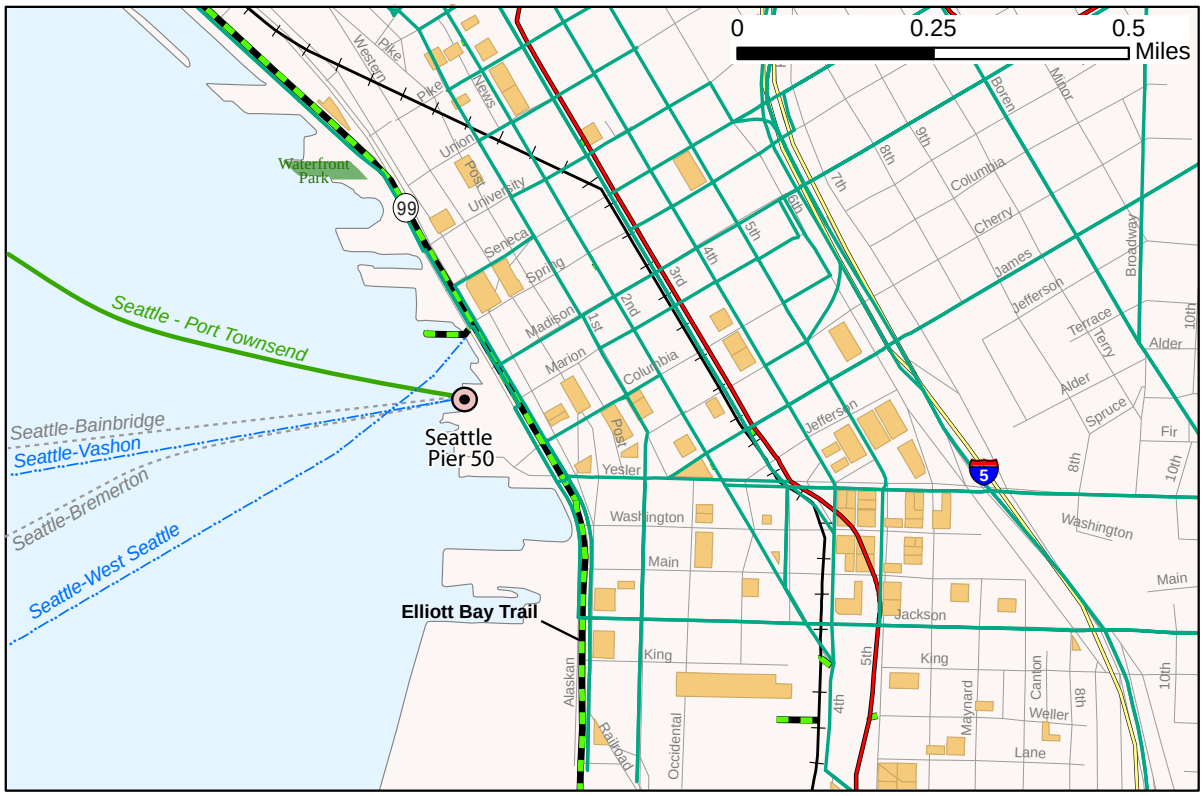
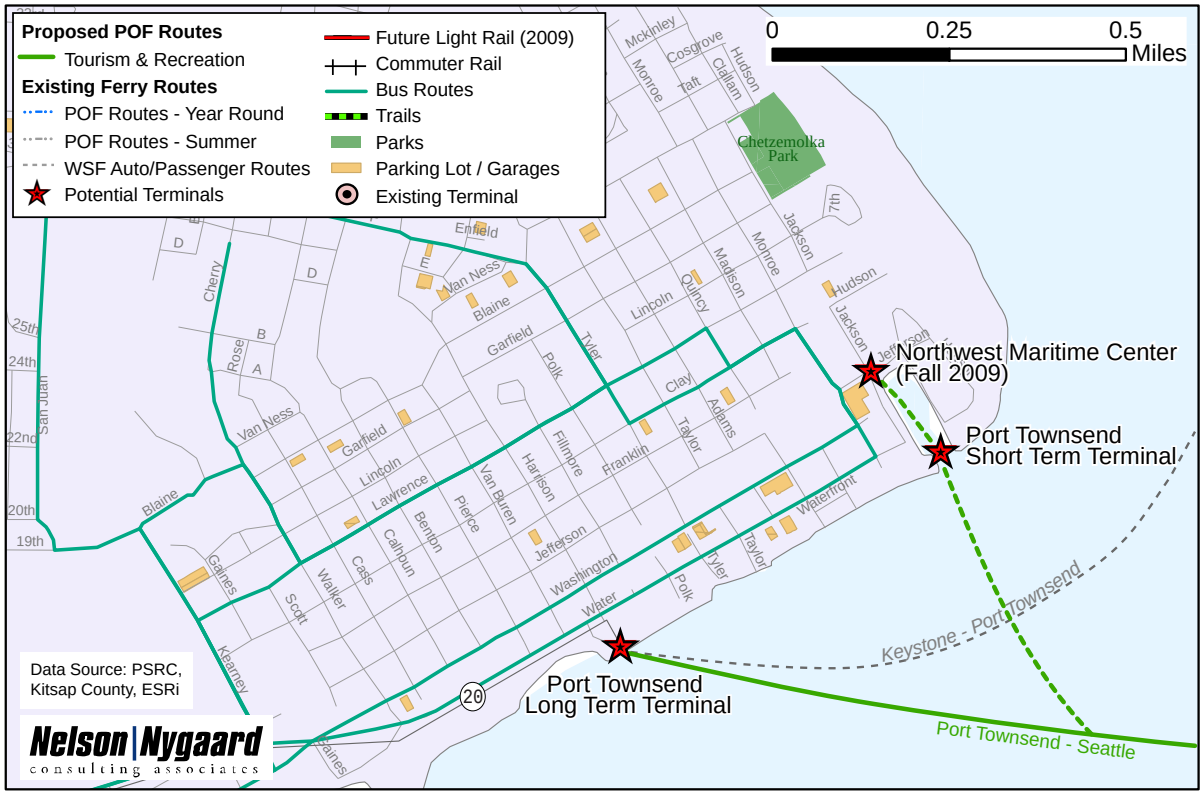


Figure 3-31 Pt Townsend - Downtown Seattle Terminal Details





For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Port Townsend Terminal

Location: Three potential locations exist for a Port Townsend POF terminal. The first is a near-term solution with minimal capital investment required to provide service. This location would be at the Point Hudson Marina, at the location where the Puget Sound Express tour vessels depart. A mid-term solution would be to provide service from the new Northwest Maritime Center, which is currently under construction adjacent to the Point Hudson Marina. A long-term POF terminal location would be constructed immediately east of the existing WSF ferry terminal.

Land Use

Existing: Low- to medium-density area of town

Planned: Some likelihood of increased densities in the future

*Potential **conflict:*** The Point Hudson Marina location is currently used by recreational boats, which may be impacted by ferry service. The entrance to the marina is constrained and there is a small amount of room to maneuver inside the harbor. The marina is run by the Port of Port Townsend and its use for POF service would need to be negotiated. The Northwest Maritime Center will be used primarily by recreational boats. Recreational boat traffic may be a concern, and ferry use will be impacted by occasional festivals. The pier and float will extend into Admiralty Inlet and will be easily accessible from the water side. Use of the facility for POF service would need to be negotiated with the Northwest Maritime Center. The WSF terminal location is better-suited for permanent service. Minimal traffic from the auto ferry will be encountered.

Existing Facilities

Berths: The Point Hudson Marina location provides berthing space for up to two vessels.

The Northwest Maritime Center location would provide berthing space for at least one vessel.

The location at the WSF terminal will include construction of a new terminal float, which with a standardized design would provide up to four berths (2 bow-loading, 2 side-loading).

Waiting areas: Minimal waiting areas exist at the Point Hudson Marina location. Passengers would most likely wait on land near the gangway at a timber deck overlooking the marina.

The Northwest Maritime Center will have an ample public commons space at the base of the pier, which will provide an excellent location for passengers to wait.

The WSF terminal location provides an indoor waiting area with restrooms for the auto ferry terminal. It is anticipated that this space could be shared with POF service.

Dock and landside: The Point Hudson Marina location features new floats and ADA-accessible aluminum gangways and is in excellent condition. POF service to Whidbey Island during the Steel-Electric crisis utilized this location. A lookout deck is situated above the marina that could function well for passenger staging.

The Northwest Maritime Center is currently under construction, and no infrastructure is yet in place.

The WSF ferry terminal is based on a large concrete pier. The pier provides vehicle staging for the Keystone ferry and some handicap parking. The terminal features an agent's office and passenger waiting building at the end of the pier. A small park is located at the base of the pier.

Access

Bicycle: Good. These locations are easily accessible to bicycles as well as walkers. Bike racks are available at the WSF location. Port Townsend is a relatively bikeable community without any major barriers. There is a significant biking community. Because it is immediately adjacent to the Point Hudson Marina, landside access to the Northwest Maritime Center is the same.

Proposed Improvements and Costs continued on the next page

Port Townsend Terminal

Pedestrian:	Good. Port Townsend has a relatively high percentage of streets with sidewalks and striped crosswalks. Local commercial and residential areas are well within 1/2 mile walking radius, and the traditional street grid reduces walking times. The Point Hudson location just northeast of the town center, and the WSF location just south, are both well-suited to walk-on passengers. Access to the marina float is ADA-compliant, but ADA access to board vessels is not expected to become available. Because it is immediately adjacent to the Point Hudson Marina, landside access to the Northwest Maritime Center is the same.
Park & Rides:	n/a
Transit:	At the Point Hudson location and Northwest Maritime Center, a transit route passes nearby on Monroe street, only a block from the marina. At the WSF location, transit routes pass along nearby Water Street, and a bus stop is located nearby. A downtown shuttle connects to the terminal in addition to the fixed route service that runs at frequencies appropriate for land uses and densities.
Adjacent parking:	Point Hudson and Northwest Maritime Center: Kiss-and-ride access is right next to the marina and some on-street and lot parking is available nearby. WSF: Kiss-and-ride access can be provided at the adjacent bank parking lot. Minimal parking is available nearby for ferry terminal use. Port Townsend has extremely limited parking in its downtown and near the ferry terminals.

Proposed Improvements

Minimal improvement will be necessary to provide near-term POF service from the Point Hudson Marina. These improvements include:

- Rider information
- Signage and wayfinding upgrades
- Seating and possibly a covered waiting area on the lookout deck

Minimal improvement will be necessary to provide POF service from the Northwest Maritime Center. These improvements include:

- Rider information
- Signage and wayfinding upgrades
- Seating and possibly a covered waiting area on the public commons

Provision of POF service from the WSF terminal location will require significant terminal construction. A small access walkway will need to be added alongside the terminal building, which would connect to the terminal float via a 120' gangway. Pile driving will need to take place to secure the terminal float. Necessary improvements at this location include:

- Standardized terminal float with piles
- 120' aluminum gangway
- Pier modifications for access walkway
- Rider information
- Signage and wayfinding upgrades

Total Proposed Improvement Costs: $7-10 Million or less than $100,000

The costs of the improvements to the Point Hudson Marina or to the Northwest Maritime Center are estimated at less than $100,000. Improvements at the WSF terminal are estimated between $7 and $10 Million.

Port Townsend - Downtown Seattle

Vessels	
Number needed:	1
Recommended Vessel Type:	149-pax operating at 35kts
Special needs:	Foil Assistance
Vessel capital costs: $3-5 Million	

Operating Summary	
Annual Operational Cost Components	
Fuel:	$542,000
Labor:	$835,000
Maintenance & insurance:	$274,000
Annual peak season operational costs: $1.7 Million	

Fare Options	
Fare	Recovery %
$3.35 (assumed)	13%
$10.20	40%
$15.30	60%

Possible Future Governance and Implementation	
Organizational structure	*Privately operated, privately financed, possibly with public subsidy:* Given it would serve largely tourists and recreational users, this route would most likely be operated by a private entity. Given the route would also partially serve the non-tourist market, and that it would help meet state mobility needs, there is a possibility it could receive public subsidy.
Promising funding sources	Fares would be the primary funding source to cover both capital and operating costs. If a partnership is formed with local jurisdictions and/or the state, the route could also become eligible for FTA Grants, State POF Grants, and federal earmarks. Business contributions could also subsidize the service to develop the tourist market.

Vancouver, BC - Downtown Seattle

Tourism and Recreation-Focused Routes

Figure 3-32 Vancouver - Downtown Seattle Route Overview

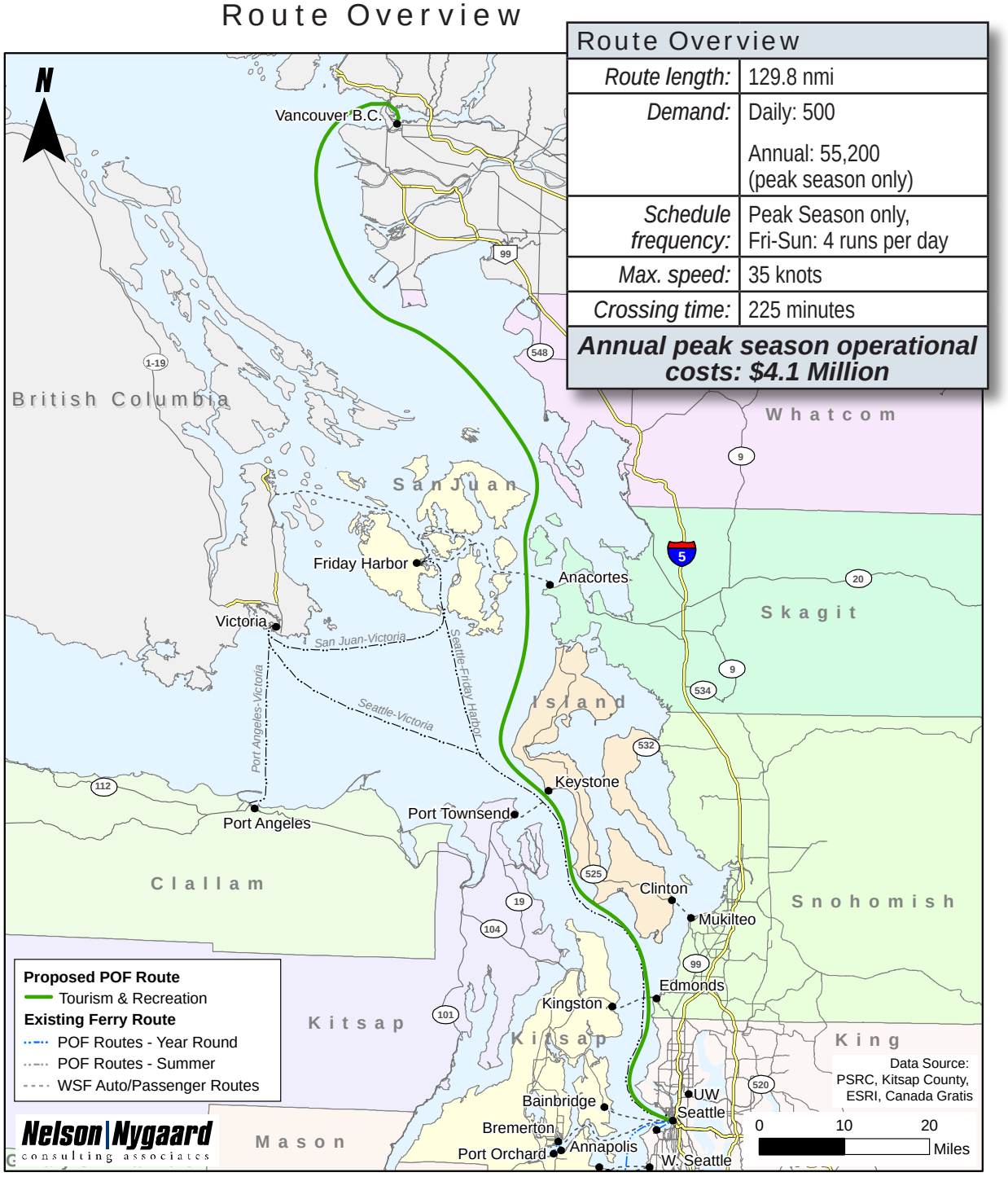
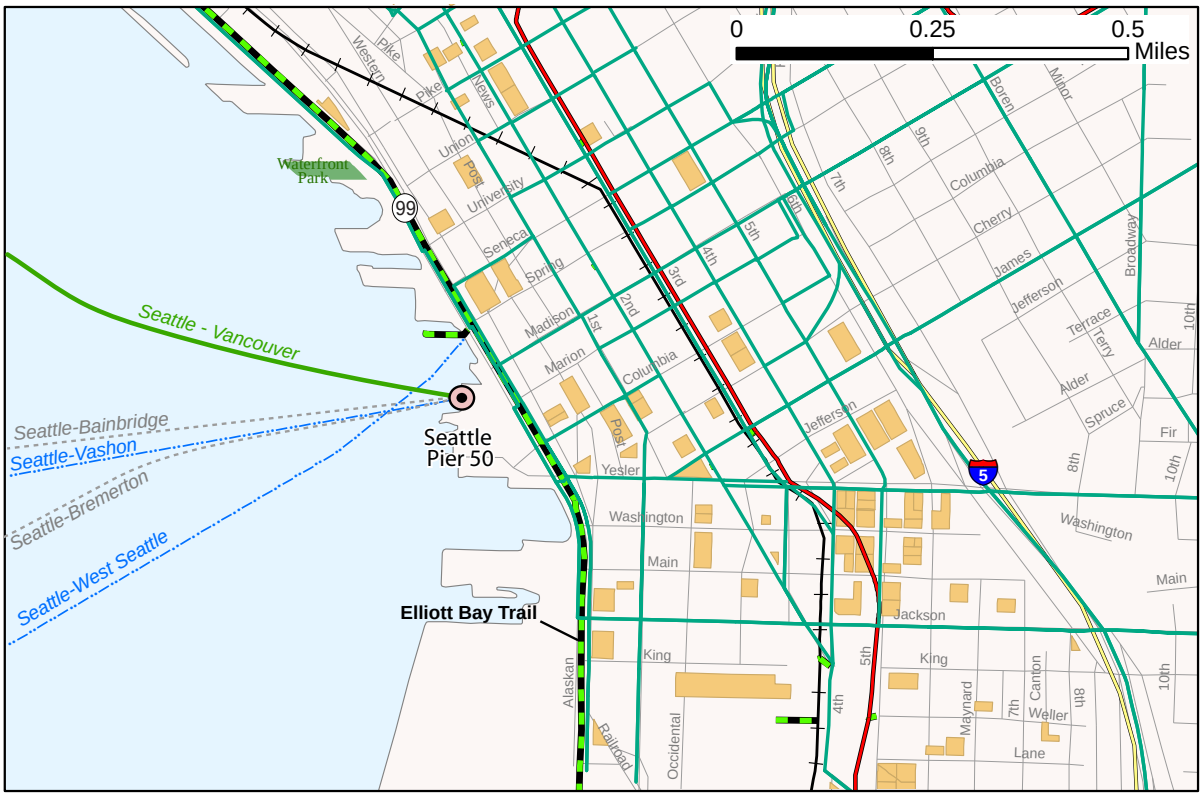
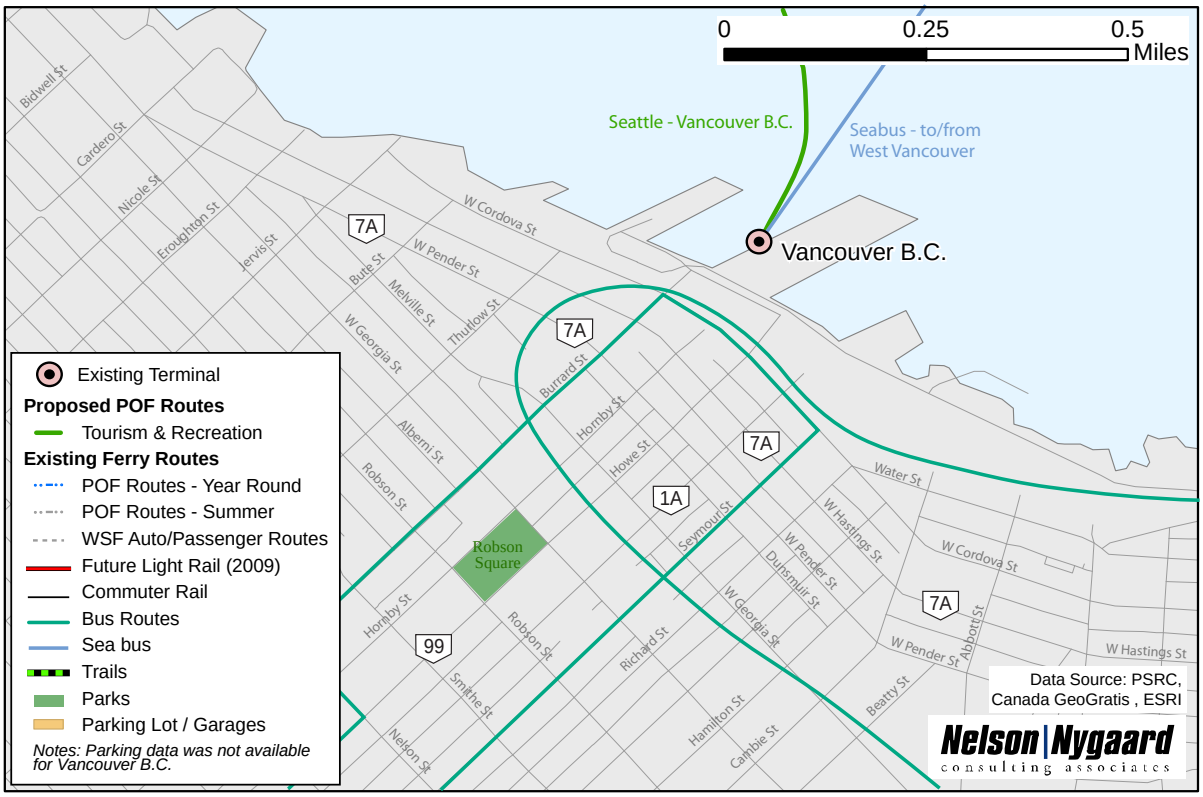


Figure 3-33 Vancouver - Downtown Seattle Terminal Details





For a discussion of downtown Seattle's Colman Dock, see pp. 3-8 – 3-9.

Vancouver, BC Terminal	
Location: For the purposes of this study, it is assumed that POF service from Seattle would terminate at the existing SeaBus terminal in downtown Vancouver.	
Land Use	
Existing:	Urban downtown, high density, mixed-use
Planned:	Same
*Potential **conflict:***	Already a ferry terminal. If this terminal were used, land use would not be an issue. Vessel traffic may be encountered from the SeaBus and the adjacent cruise terminal.
Existing Facilities	
Berths:	Two small floats exist just west of the main SeaBus terminal, which would provide side-loading berthing space for up to four vessels.
Waiting areas:	No passenger waiting areas exist at the immediate location. However, passengers could likely wait in the nearby SeaBus terminal.
Dock and landside:	Two small floats are present, with handicap-accessible gangways. The floats appear to be in good condition. The gangways open up onto the terminal parking lot. The main SeaBus terminal is across the lot from the gangways.
Access	
Bicycle:	Excellent. This location is easily accessible to bicycles as well as walkers. High number of destinations and attractions, with built out bicycle networks.
Pedestrian:	Excellent. Located in the downtown core of Vancouver, the location is highly conducive to walk-on passengers. A high number of destinations and attractions, with built out sidewalk networks and signaled crosswalks.
Park & Rides:	n/a
Transit:	Excellent. Significant intermodal connections exist nearby, including SeaBus, the waterfront SkyTrain, taxis, busses and even helicopters (the downtown heliport is next door). Vancouver has excellent transit service throughout its downtown and connecting to its downtown waterfront neighborhoods.
Adjacent parking:	Long term parking in downtown Vancouver is scarce. Some parking exists at the terminal, but it is expected that passengers will park in downtown garages. Kiss-and-ride access can be provided via West Waterfront Road.
Proposed Improvements	
	Minimal improvement will be necessary to provide POF service from this location. These improvements include: • Rider information • Signage and wayfinding upgrades • Installation of benches and/or a covered waiting area at the base of the gangplanks
Total Proposed Improvement Costs: limited	
It is assumed that improvement costs at the Vancouver terminal would be limited. The operator would need to pay use fees for docking is space at the SeaBus terminal were deemed available and approval were granted.	

Vancouver, BC - Downtown Seattle

Vessels	
Number needed:	2
Recommended Vessel Type:	149-pax operating at 35kts
Special needs:	Foil assistance Ride control system Vessel must meet Safety of Life at Sea (SOLAS) regulations for international travel.

Vessel capital costs:
$6.2 - $10.4 Million
(adding $200,000 per boat for Ride Control and SOLAS)

Operating Summary	
Annual Operational Cost Components	
Fuel:	$1.7 million
Labor:	$1.8 million
Maintenance & insurance:	$552,000

Annual operational costs:
$4.1 Million

Fare Options	
Fare	Recovery %
$5.00 (assumed)	5%
$28.10	40%
$42.20	60%

Possible Future Governance and Implementation	
Organizational structure	Privately operated, privately financed, possibly with public subsidy: Given it would serve largely tourists and recreational users, this route would most likely be operated by a private entity.
Promising funding sources	Fares would be the primary funding source to cover both capital and operating costs. Business contributions could also subsidize the service to develop the tourist market.

CHAPTER 4. CAPITAL PLANNING

This section presents a more comprehensive discussion of the factors influencing capital costs, including vessels, terminals and landside connections, and discusses cost-effective capital planning strategies for POF vessel acquisition and terminal construction.

Vessels

New vessels will be needed for expanded POF service in the region. This section describes existing Puget Sound POF vessel fleets and assets, and discusses vessel types that may be appropriate for the region and the prioritized routes.

Existing Vessel Assets

Puget Sound has one of the highest concentrations of ferries in the world. Many POF vessels exist in the region in varying conditions, capacities and configurations. These vessels range from smaller ferries such as the Kitsap Transit Foot Ferry up to the large, two-decked *Chinook*-class vessels. They include monohulls such as the *Skagit* and *Kalama* and catamarans such as the Victoria Clipper vessels.

While possibilities exist to use these vessels on existing and planned routes, particularly in the short-term, long-term efforts should be directed at new vessel procurement. Industry experience proves the importance of having the right vessels for the particular needs of a system. Local agencies recognize this fact. King County plans call for the phasing out of the vessels currently on the Vashon and Elliot Bay Water Taxi routes in favor of new designs. Kitsap Transit's new vessel program is currently underway. 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.

New Vessel Types

Vessel standardization is an important fleet management practice, which has been recognized in regional ferry plans, including those of King County and Kitsap Transit. Vessel standardization allows for economies of scale, not only in terms of procurement costs, but operational and maintenance costs as well. Standard classes will provide flexibility in route assignments, with a seamless transition to a backup in case of mechanical failure. Even across different agencies and operators, standardization allows shared use of resources and exchange of vessels. Terminals benefit as well by minimizing the design challenges of meeting the demands of 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. In our analysis, we assumed a two standard vessel classes for all routes.

The anticipated vessel classes are characterized as follows:

- **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. The vessel *Spirit* being wake tested in the Rich Passage Wake Study is a double-decked variety, and is

another type that might be considered for Puget Sound.

- **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)

Figure 4-1 The Spirit—An Example of a Double-Decked Catamaran

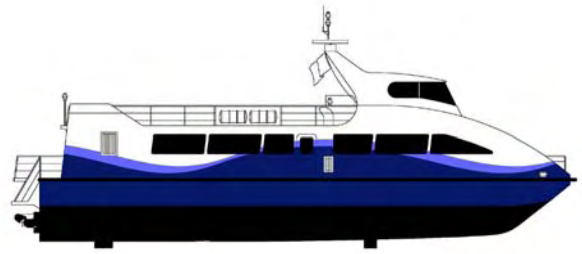
- **Catamaran hull form:** A catamaran hull form is very common among high speed ferries due to its superior ability to endure rough conditions at sea. It is also a more fuel-efficient design relative to the monohull. A catamaran hull form also allows for a wider beam, providing more flexibility in the configuration of internal spaces.
- **Aluminum hull:** An aluminum hull provides significant efficiency benefits. A lighter material than steel, an aluminum hull reduces the powering requirements necessary to meet a particular service speed. Furthermore, the Puget Sound region is home to multiple shipyards that specialize in aluminum hull construction.
- **3,000/1,400HP, 30-knot operating speed:** For vessels of this type without hydrofoil assistance, powering requirements increase as the cube of vessel speed beyond 30-knots or so. In other words, each additional knot of service speed beyond 30 knots requires significantly more engine power (and thus increases fuel consumption). This vessel power/service speed was selected to balance vessel power/fuel consumption with the need for high-speed service. A 149-passenger vessel should be able to meet a 30+ knot operating speed at 3,000HP, while an 80-passenger should be able to meet the same speed with a rating of 1,400HP. As vessel designs are developed, these powering requirements may change depending on hull form and engine selection.
- **Bow- and side-loading capability:** Providing both bow- and side-load capability will provide the greatest flexibility in docking operations. Most existing terminals are configured for side loading. However, modern POF terminal designs are moving towards bow loading due to the increased capacity for passenger loading and offloading. Typical side-loading vessels only allow passengers to load and unload 2 abreast, while bow-loading vessels of this size can achieve up to 4 abreast. The increased passenger throughput minimizes vessel turnaround time and increases system efficiency. A vessel design that features both configurations will be able to serve both legacy and modern terminals.
- **ADA accessibility:** While the Americans with Disabilities Act does not regulate passenger-carrying vessels, it would be prudent to accommodate the spirit of the act wherever possible. Vessel designs can provide for wide access ramps, a handicap-accessible restroom and other reasonable accommodations.
- **Low-emission, low-wake design:** The need to reduce environmental impacts from emissions and wake wash require that new vessels be designed to minimize emissions and wake wash. Modern marine diesel engines are produced with emissions in mind, and final vessel designs should select an engine that minimizes emissions while still being able to meet operational require-

ments. With regard to wake wash issues, efforts by Kitsap Transit and All American Marine to build a low-wake vessel are currently underway. Their project has demonstrated that a 149-passenger ferry can operate at full speed through wake-sensitive areas such as Rich Passage while maintaining acceptably low wakes. While only a few routes in the Puget Sound are in wake-sensitive areas, vessel standardization warrants the incorporation of low wake design into all vessel acquisitions.

A new 149-passenger vessel with these exact characteristics is not found in service anywhere today, but could be built to specification for approximately **$3-5 million.**

A new 80-passenger vessel with these characteristics could be built for approximately **$2-4 million**.

Figure 4-2 Single-Decked 149-passenger Vessel Prototype



The operations and service plans put forth in Chapter 3 do not account for any back-up vessels that may need to be acquired to fill in during regular vessel maintenance or emergencies. All of the vessels will require periodic maintenance. This includes oil changes and other maintenance that can be done during routine lay-up periods between operational requirements. In addition, vessels require about 2 weeks per year of shipyard maintenance. At least every two years, the maintenance will require placing the vessel in drydock. Cost assumptions in Chapter 3 include an estimate for routine maintenance such as engine overhaul but do not include such things as engine replacement. Vessel acquisition and major refurbishment cost are assumed to be capital costs not included in the operations cost estimate.

Vessel Sharing Opportunities

Many opportunities exist to share vessels to increase overall system efficiency. A primary goal in developing the service plan for a particular vessel is to get the most out of the capital investment by using it as much as possible.

The most obvious vessel sharing opportunity is related to commuter vs. recreational routes. Commuter routes only operate Monday-Friday, while recreational routes operate 7 days a week and typically see their biggest ridership on the weekend. To maximize utilization, a vessel assigned to a commuter route can shift over to a recreational route on the weekend in order to accommodate the increased demand.

Another vessel sharing opportunity is in the area of backup vessels. While this study anticipates multiple jurisdictions operating in Puget Sound, close partnership among these operators could allow for sharing of backup vessels. Typically, each operator would maintain their own backup vessels in case of emergency or planned maintenance. Instead, one or two agencies could own the backup vessels for the whole fleet, leasing to other operators as necessary. Such an arrangement would decrease the overall number of backup vessels needed for the system compared to each operator keeping their own backup fleet.

Vessel sharing could also take place in the course of a single day. A vessel being used for peak period service on one route can make midday or evening trips on another. This type of synergy with the state ferry system is also possible. An arrangement where passenger ferries supplement late-night auto ferry runs would 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.

Terminals

Many elements of terminal design impact capital costs, and this section of the report recommends an approach to the various factors related to terminal design.

Vessel Landings

Two primary approaches to vessel landings are recommended in this study. The first is for routes in Puget Sound waters, while the second applies to Lake Washington routes.

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. This is similar to the strategy being employed by the Bay Area Water Emergency Transit Authority (WETA), and has also been explored in Kitsap Transit's ferry plans. Exceptions could be made where existing facilities provide lower cost options to dock passenger vessels or environmental conditions require special design.

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 would provide two side-loading and two bow-loading berths. A standard float such as this, including construction and installation, would cost approximately $5-6 million.

The constant water level and less-extreme conditions on Lake Washington impose lower demands than Puget Sound-based terminals. In most cases, existing pier infrastructure can be used with a minimal degree of improvement necessary. These improvements include the addition of fenders and mooring cleats to provide side-loading access for at least a single vessel.

In all locations, existing infrastructure should be utilized wherever possible, and as that infrastructure nears the end of its service life, plans should be made to replace it with a standard design. Vessel landings should avoid locations where there are large amounts of vessel traffic. Interim solutions may use facilities such as marinas, but long-term plans should be geared towards solutions that minimize traffic issues.

Any overwater or in-water construction presents potential environmental issues. Terminal floats should be situated in deep enough water to avoid the intertidal habitat zone (-20 feet from mean-low-low-water). New piers should be narrow to avoid shading. Pile driving should be avoided where possible. New terminals should be designed to minimize their vertical profile in view corridors.

Passenger Loading and Unloading

Efficiency, accessibility and safety should be the chief concerns when dealing with passenger loading and unloading. The goal in this area should be to safely minimize the necessary turnaround time. In order to facilitate 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').

A 10'-wide path allows passengers to walk up to four abreast, significantly reducing the amount of time required to load and unload a vessel. "Turns" on access ramps and paths should be avoided if possible. The Kitsap Transit prototype terminal float design provides a solid approach to vessel loading and unloading, facilitating the smooth flow of passengers on and off the vessel and float.

On-shore Terminal Facilities

On-shore facilities should provide a safe, comfortable environment for passengers to wait. Ideally, a terminal will have an indoor, heated space with restrooms, food/beverage vendors and traveler information. An ideal terminal will have ticketing machines or vendors and will provide a secure, segregated area for paid passengers. Segregation of ticketed passengers at the terminal is one way of reducing turnaround time, because tickets do not need to be verified as passengers board.

While this is the ideal, it is unlikely this can be provided at all locations. In many cases, facilities can be shared with Washington State Ferries, which already provides many of these elements at its terminals.

A more austere but cost-effective approach to on-shore facilities is providing basic seating and a shelter from the elements in a well-lit area close to the terminal. In some cases, such an area can even be provided on the pier or float (e.g. Leschi, Port Orchard). Shelters should be heated wherever possible. Seating for at least 25% of the vessel capacity is usually sufficient for passenger comfort. Restrooms should be provided wherever possible, even if they are as simple as port-o-potties. All new facilities should be designed to meet ADA requirements for accessibility.

Landside Transportation Connections

Ferry terminals should always be designed to function as integral parts of a broader transportation network. Inherent in this idea is providing as much intermodal connectivity as possible. Transportation connections include pedestrian, bicycle, bus, taxi, rail, kiss-and-ride, vanpool parking and vehicle parking.

A good terminal design minimizes the walking distance from where the vessel unloads to other transportation connections. Terminals should be designed such that public transportation options are the closest to the terminal, with private parking the furthest away. Access pathways should be smooth, wide and well-lit, and should meet ADA slope 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. With GPS and computer technology, it is possible to provide up-to-the-minute rider information. 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.

While the service and operating plans discussed in Chapter 3 begin to identify some of these connectivity issues specific to potential future terminal locations, the next step of this study (Task 9) will look in finer detail at the issue of landside connections (including more detail on terminal siting), and to identify what specific transit, bicycle, pedestrian and parking improvements might be needed in each terminal location to support future POF service.

Seattle Terminal Requirements—Piers 48 & 50

Of the 17 routes evaluated in this portion of the study, eleven connect to downtown Seattle. Ideally, all POF routes connecting to downtown Seattle—with perhaps the exception of privately operated tourist routes—would connect through Colman Dock, the site of 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 easily choose to board the WSF auto boat instead).

Ridership estimates show that all the POF routes considered in this study could serve over 9,000 daily riders downtown 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 anywhere near the loads anticipated in this study, although it could accommodate near-term Kingston-Seattle service.

King County plans call for replacement of the passenger ferry terminal 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), the single new float will not be sufficient to meet anticipated future POF demand system-wide. It is very important that King County work jointly with other potential POF operators to plan for and share the cost of a new facility with sufficient capacity to serve new routes and grow as more come online.

Some strategies can be taken to mitigate vessel traffic. One approach is to develop coordinated schedules for Seattle-based routes that minimize the number of vessels using the Seattle terminal at a single time. This will not only aid in reducing the number of passengers passing through the terminal at once, but make it easier and safer for vessels to arrive and depart. However, this could make it more difficult to coordinate ferry schedules with connecting transit service.

Modern terminal design solutions can aid in terminal throughput. The Circular Quay Terminal in Sydney is one of the most prominent examples of a high-capacity POF terminal.[1] Color coded routes, designated slips and clear signage and wayfinding are important considerations.

1 See the Task 7 report from this study *Peer Assessment* (March 2008).

Figure 4-3 Circular Quay Terminal Sydney, Australia

Source: Alex Lau, accessed online at www.pbase.com/alex1030/image/60728743.

The use of bow-loading can aid greatly in reducing vessel turnaround and increasing passenger throughput. On the landside, a large terminal building at Colman Dock will be important not only to allow sufficient space for passenger staging, but to effectively manage the various passenger flows in and out of the terminal.

The area between Colman Dock to the north and Pier 48 to the south would likely be able to 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 also 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 City of Seattle, Washington State Ferries, King County Ferry District and any future POF operators operating out of downtown Seattle to determine a final design for an expanded POF terminal at Colman Dock. Also, see Chapter 3, Service and Operation Plans, for a discussion of Colman Dock specific issues.

CHAPTER 5. FUNDING & FARE POLICY OPTIONS

Funding Passenger Only Ferries

Regional governance and operation of passenger-only ferries is likely to remain divided among a number of agencies and organizations for the foreseeable future; as such it is impossible 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. Various proposed services will require differing approaches to raising operating and capital funds:

- Countywide ferry districts such as that recently formed in King County will play a key role in funding POF operations, capital and supporting landside transportation. The King County Ferry District (KCFD) has established a county-wide property tax to finance the majority of the ferry district's needs.
- The Legislature's authorization of public transit benefit areas (PTBA) to generate ferry funding presents opportunities for regional POF service provision.
- Port Districts are uniquely positioned to participate in or solely govern POF operations, although in most cases this will be for a very limited number of routes.
- Routes that primarily service recreational users or private interests will likely be operated by private or non-profit entities that can recover operating costs solely from fare revenue and private contributions.
- While WSF is not currently authorized to operate POF, the vast ferry resources (especially the many existing WSF terminals) held by the state suggest there should be continued consideration of state support for POF, even if operational funds are generated locally.

The following sections provide a more detailed summary of the types and sources of funding available for POF operations and capital development.

Summary of Funding Sources

This section details federal, state, county, local and other public and/or private funding sources that are used today to fund POF or could be available to support POF operations and/or capital programs in the future.

Federal

Federal earmark funds may provide funds for vessel purchases, terminal and landside capital improvements. Success in obtaining these funds will be reliant on the interest and success of Washington's Congressional delegation. A number of other federal funding sources are available to support POF system development and operations, but are either highly competitive or carry stringent project requirements. For example, SAFETEA-LU provided $38 million in fiscal year 2005 and an increasing amount in each of fiscal years 2006 through 2009 for the construction of ferryboats and ferry terminals through the Ferry Boat Discretionary Fund Program. However, each year $20 million is set aside for marine highway systems that are part of the National Highway System for use by the States of Alaska ($10 million), New Jersey ($5 million), and Washington ($5 million). In Washington, this portion of federal discretionary funds supports the operation of Washington State Ferries auto routes. Due in part to its selection for participation in the United States Department of Transportation (USDOT) Urban Partnership

Agreement congestion pricing program, which is aimed at reducing use of surface transportation modes, ferry transit investments supporting POF will receive $11.6 million.

The following sections highlight federal funding sources available for POF.

Ferry Boat Discretionary Funds (FHWA): This program provides special funding for the construction of ferry boats and ferry terminal facilities. Originally created under the Intermodal Surface Transportation Efficiency Act in 1991, it was first reauthorized under the Transportation Equity Act and then under SAFETEA-LU, which makes funding available through 2009. SAFETEA-LU authorized $65 million in funding for 2008 and $67 million in 2009. However, each year $20 million is set aside for marine highway systems that are part of the National Highway System for use by the States of Alaska ($10 million), New Jersey ($5 million), and Washington ($5 million). The remaining funds are available for funding other projects, but it is required that projects either carry passenger vehicles or be classified as part of the state highway system. This classification is typically given for areas that are not reachable by roadway.

In FY 2007 Washington State received $11.6 million of the remaining $40 million dollars allocated through this program. These monies, which were part of the Urban Partnership program, were allocated for a range of design, engineering and facility development activities, including:

Washington	*Mukilteo Multimodal Terminal* - preliminary engineering/NEPA for the multimodal terminal – Urban Partnership	$1,325,000
Washington	*High-Speed, Ultra Low-Wake Passenger-Only Ferry Design, Development, Procurement and Testing For Rich Passage, Puget Sound, Washington* - boat design, SEPA and NEPA activities – Urban Partnership	$2,000,000
Washington	*Vashon Island Passenger-Only Ferry Vessel* - purchase a new vessel to replace boat currently in service – Urban Partnership	$1,000,000
Washington	*Puget Sound New Vessel construction* - construction of four passenger-auto vessels to replace five vessels that are functionally obsolete – Urban Partnership	$1,039,000
Washington	*Kingston Express* - lease or buy an existing 80 passenger foot ferry – Urban Partnership	$3,500,000
Washington	*Pierce County Ferry System* - improvement of the Steilacoom Ferry landing by constructing a second ferry slip to include a short bridge trestle, transfer span, apron, pontoon, wing walls, dolphins, electrical, hydraulic, water & sewer work – Urban Partnership	$2,000,000
Washington	*Guemes Island Ferry Dock Repair* - remove and replace existing Guemes Island terminal dock; repair cap beam at channel end of the dock; remove and replace the existing concrete cap, form and place epoxy coated reinforcing steel, and pour new corrosion resistant concrete; and replace 118 feet of steel guard rail – Urban Partnership	$736,000

The Seattle (Lake Washington) Urban Partnership Agreement between U.S. Department of Transportation and the Seattle-Area Urban Partner (WSDOT, PSRC, and King County) was enacted to implement a number of joint transportation-related improvements for the Seattle Metropolitan Region. Under this agreement, the Urban Partner agrees to improve regional ferry boat service and to ensure that projects are in operation no later than September 30, 2009.

The Department of Transportation will devote $138.7 million in Federal grant funding for large regional highway projects (primarily the SR 520 bridge), plus has allocated $11.6 million for ferry service improvements. This $11.6 million was delivered through the Ferry Boat Discretionary program to the projects listed above.

Urbanized Area Formula Grants (FTA): These funds, administered by the Federal Transit Administration (FTA), are available to urbanized areas with a population of 50,000 inhabitants or more for transit capital and operating assistance and for transportation–related planning activities. Funding is apportioned by a legislative formula and given to designated recipients, which must be public bodies with the legal authority to receive and dispense Federal funds. Governors, responsible local officials and publicly owned operators of transit services are to designate a recipient to apply for, receive, and dispense funds for transportation management areas. A transportation management area is an urbanized area with a population of 200,000 or more. This is an important source of funding for existing surface transit operations, so it is unlikely to be a viable source of funding for POF service.

New/Small Starts Grants (FTA): The Small Starts is a relatively recent program, made available for the first time through the passage of the federal SAFETEA-LU legislation passed in 2005. It is modeled to some degree after the New Starts program and can be applied to capital projects. The Small Starts program is specifically intended to apply to "smaller" transit projects (with total project costs of less than $250 million and a federal match of less than $75 million. The Small Starts program is highly competitive and is likely to fund primarily bus rapid transit and streetcar projects. New Starts will continue to fund capital projects for bus, light rail and heavy rail, but ferry projects serving corridors with intensive demand could be viable candidates for funding.

Job Access and Reverse Commute Grants (JARC): The purpose of the JARC program is to fund local programs that offer job access services for low-income individuals. JARC funds are distributed by the FTA to states on a formula basis, depending on that state's rate of low-income population. This approach differs from previous funding cycles, when grants were awarded purely on an "earmark" basis. JARC funds will pay for up to 50% of operating costs and 80% of approved capital projects or purchases. The remaining funds are required to be provided through local match sources. Examples of eligible JARC projects include: late-night and weekend service, guaranteed ride home programs, vanpools or shuttle services to improve access to employment or training sites, car-share or other projects to improve access to autos, access to child care and training. Eligible applicants for JARC funds may include state or local governmental bodies, Metropolitan Planning Organizations (MPOs), Regional Transportation Planning Organizations (RTPOs), social services

agencies, tribal governments, private and public transportation operators, and non-profit organizations. It is possible that JARC funds could be used for fund additional late night runs or reverse commute service on established POF routes, but it would not be a primary funding source.

Community Development Financial Institutions Fund – New Market Tax Credits Program (NMTC): This program, administered by the U.S. Department of the Treasury, permits taxpayers to receive a credit against Federal income taxes for making qualified equity investments in designated Community Development Entities (CDEs). Substantially all of the qualified equity investment must in turn be used by the CDE to provide investments in low-income communities. The credit provided to the investor totals 39 percent of the cost of the investment and is claimed over a seven-year credit allowance period. Kitsap Transit, US Bank and the Marine Transportation Association of Kitsap (MTAK) are considering a partnership under this program that would raise invest $6 million to jumpstart Kitsap County POF service from Bremerton and Port Orchard to Seattle.[1]

Federal Legislative Appropriation: Appropriations (also known as earmarks) are funds set aside for a specific purpose during the legislative process and often included within a larger spending bill. Earmark funds are available for terminal and landside facility projects, vessel purchase/construction and system engineering, design and environmental review activities. Because they are approved directly by the U.S. Congress and/or Senate, the projects they fund are less likely to be required to pass through the most stringent standards set by the FTA or other federal agencies. Although the process is quite different than the pursuit of an FTA grant, appropriations are similarly unpredictable.

Surface Transportation Program Funds (STP): This program provides funding for highway projects that can be shifted to transit at the discretion of the state or MPO. Funding can be used for capital projects only. In order to receive the funds, the project would need to be supported through the regional TIP process. It is unlikely STP funds will be allocated to POF.

Congestion Mitigation & Air Quality Funds (CMAQ): The CMAQ program, which is jointly administered by the FHWA and the FTA, was created to support the United States in attaining National Ambient Air Quality Standards (NAAQS) under ISTEA in 1991. Amendments made to the Clean Air Act required further reductions in the amount of permissible tailpipe emissions and initiated stricter measures in areas that failed to attain the national air quality standards (called nonattainment areas). The program provides funding for surface transportation and other related projects that contribute to air quality improvements and reduce congestion.

Under SAFETEA-LU, the CMAQ program provides over $8.6 billion dollars in funds to state DOTs, MPOs, and transit agencies to invest in projects that reduce air pollutants from transportation-related sources over a period of five years (2005-2009). Funding is available for nonattainment areas as well as former nonattainment areas that are now in compliance (maintenance areas).

1 Kitsap Transit Board of Commissioners, Jan. 25, 2008 Meeting Minutes. (Accessed online at http://www.kingstonexpress.org/References_files/Kitsap%20Transit/KT_Feb192008_ferries.pdf on Apr. 4, 2008.

State

State funding for POF is limited. To generate additional revenue at the state level to fund POF routes of state-wide significance[2], or those that could otherwise help the state ferry system meet its operational goals, would require instituting new funding mechanisms or reviving previous sources such as the MVET. The following are potential sources of state funding for POF:

Motor Vehicle Excise Tax (MVET): Until 2000, Washington levied an annual excise tax of 2.2% on each motor vehicle, which was a steady source of funding for transit and ferry services. This cutback especially impacted POF service, which is not gas-tax eligible. This tax was repealed with Initiative 695 in 1999. Although the initiative was declared unconstitutional, the Legislature effectively repealed the state excise tax and established the $30 vehicle license fee. As a net result, the fiscal impact of I-695 on the state ferry system remains. In some locations, a motor vehicle excise tax can be levied at the local level (see below).

State Passenger Ferry Grant Account: The Washington Legislature passed Passenger Ferry Account legislation (RCW 47.60.645) with an effective date in 1995. The money in the account can be used for capital or operating grants to improve passenger ferry projects. Approximately $4.5 million in funds is expected to be raised when two WSF ferries are auctioned. The proceeds will be awarded as grants for other ferry systems to operate passenger-only service.

Washington State Ferries (WSF): The Washington State Ferry system is the nation's largest ferry system. In 2005, the system served 24 million passengers. The Washington State Legislature has directed WSF to cease all passenger-only ferry service. However, there may be opportunities for WSF to support POF services through shared use of facilities, joint capital improvements and other programs that promote share use of resources. Primary funding sources for WSF are the state gas tax and passenger and auto tariffs.

County/Local Funding

Given the challenges associated with obtaining federal funds and limited state funding, the success of existing and future POF services will likely need to rely, in large part, on funds raised at the county or local level. Funding sources available to fund POF include:

Property tax (via local ferry district or Transportation Benefit District): In 2006, the Washington Legislature passed ESSB-6787, enabling the creation of county ferry districts as an option for operating passenger-only ferries. The law stipulates that any county with a population greater than one million persons may create a passenger-only ferry district. The district may levy a property tax of up to 75 cents per $1,000 of assessed valuation for ferry district purposes. In 2007, the King County Ferry District was created to enable passenger-only ferry service. A ferry district is different from a Transportation Benefit District in that it is a special assessment district that receives benefits from ferry service in particular.

Sales and Use Tax/Motor Vehicle Tax (via Public Transportation Benefit District(PTBA)): PTBAs are the most common governing bodies for transit systems in Washington State and may be comprised of sub-county, countywide, and multi-county areas. They are responsible for

2 The *Passenger-Only Ferry Task Force's Report to the Joint Transportation Committee* identified Seattle to Bremerton, Seattle to Southworth, and Seattle to Kingston as routes of "statewide significance". (Washington State Legislature, 2006. Page 7).

constructing, improving, providing, and funding transportation improvements within the district. PTBAs have independent taxing authority to implement projects, including property taxes, sales taxes, tolls, annual vehicle fees and transportation impact fees. In 2003, HB 1853 amended state statutes to allow a PTBA with a boundary on the Puget Sound to provide passenger-only ferry service once a passenger-only ferry investment plan was developed. As part of the investment plan, the PTBA can use one or more revenue source including motor vehicle excise, sales and use tax, tolls and fees.

- Washington State law (RCW82.14.440) limits the amount of local sales and use tax that can be directed towards a transit agency to nine tenths of one percent, and all sales tax increases must be voter-approved. Up to fourth tenths of one percent of sales and use tax collected within the PTBA can be dedicated to passenger ferry services. The success of a sales tax vote will largely depend on the political leadership, clarity of vision, and voter mobilization that surround it.
- PTBAs are also provided authority to collect a motor vehicle excise tax (RCW 82.80.130) and can dedicate up to four tenths of one percent of motor vehicle excise tax collected to passenger ferry services. Levy of an MVET requires voter approval of the passenger ferry investment plan and the setting of a tax rate.

General Fund Contributions: Cities have wide authority on how to spend local general funds. These monies could be allocated to support POF capital or operations if the local government saw a significant benefit from the service. However, general funds are typically spent on basic public services such as police, fire protection and schools and are, therefore, an unlikely source for POF.

Port District Funds: The Port District Act authorizes citizens to form a port district and to levy taxes. Port Districts may levy $0.45 for every $1,000 of assessed value on taxable property. The funds provide the initial capital needed to construct and operate facilities and to establish a reserve of funds. Most ports use the funds generated through the tax levy to pay for capital development, such as marine terminals, airport facilities, etc. Businesses who lease port property pay a leasehold tax. These funds could potentially be used for capital improvements at the ports.

House Bill 2730 was signed into law on March 17, 2008. When this bill goes into effect in June 2008 it will allow port districts to take a key role in Puget Sound POF delivery. Specifically the bill:

- Expands the areas in which port districts may offer ferry service to include the Puget Sound.
- Expands eligibility for the ferry grant program to include passenger only ferry systems operated by port districts.
- Adds port districts to the passenger only ferry service providers with which the Washington State Ferries system must collaborate for terminal operations.

Bridge Tolls: The Tacoma Narrows Bridge has the state's first tolling program in nearly 20 years. The toll is estimated to generate $46 million in revenues in FY 2008/2009; however, all of the toll revenue and interest earnings are dedicated to paying the debt on bonds used to finance construction of the bridge and for paying ongoing operating and maintenance costs. Under the current bridge financing plan the toll will be removed when the bridge is paid off in 2030.

In the San Francisco Bay Area, toll revenues collected by the Bay Area Toll Authority were increased to help pay for infrastructure upgrades and transit, including ferry service. Tacoma Narrows toll revenues could be extended beyond the

predicted bond pay-off date (2030) to support transit and alternative transportation programs. There are a number of other regional bridges that might be considered for tolling and could provide dedicated revenue to POF operations or capital improvements. While these facilities might be potential sources of future toll revenues, there will be strong support for these revenues to be used on the same facilities (or corridors) where they were generated, thus making their use for cross-sound passenger ferries unlikely.

Motor Vehicle Excise Tax (local): A local MVET was approved by the State Legislature to benefit passenger-only ferry service. (RCW 82.80.130) A public transportation benefit area which borders on Puget Sound, but is not located within a regional transit authority is authorized to levy an excise tax of up to 0.4 % of the value of every motor vehicle owned by residents of the PTBA in order to finance passenger-only ferry service. The tax which was authorized in 2003, was meant for Kitsap County. The tax has not yet been authorized by the voters of the PTBA; therefore, the 0.4 percent MVET has not been implemented.

Congestion/Roadway Pricing: It is possible that major Puget Sound highways, such as SR 520, SR 99, I-90, I-405, and I-5, could implement roadway pricing in order to raise funds for solving congestion and transportation problems. Some of these revenues could be used to fund POF if a case could be made that it helped to alleviate traffic in those corridors.

Private/Partnership Funding

There are numerous opportunities for partnerships between the POF provider and the following public, private and non-profit entities:

Public-private partnerships (joint development of terminals): Transportation options and access to major employment/activity centers is a major driver of neighborhood and housing attractiveness. As waterfront communities develop at higher densities, developers may be interested in supporting transportation services that make their developments more attractive. Much like bus or rail transit-oriented development (TOD), passenger only ferry service could act as a catalyst for mixed-use, transportation efficient land uses around terminal locations. This relationship provides an opportunity for POF operators to work with enterprising developers on joint development of facilities that serve planned POF routes and boost the attractiveness of housing opportunities in the terminal area.

Public-private partnerships (Employer Commute Trip Reduction): The Commute Trip Reduction (CTR) Law, enacted in 1991 as part of Washington's Clean Air Act, requires that major employers provide employee transportation programs that encourage employees not to drive alone to work. Major employers are defined as a private or public employer with 100 or more employees at a work site. If a major employer has a particularly high percentage of employees commuting via POF, it is possible that they would be motivated to subsidize ferry service.

Public-private partnerships (business contributions to support development of tourist market): Businesses or communities with economies reliant on tourism and visitation may see reason to support improved access via POF. This could include a local business district or a single site, such as a casino, that hopes to attract more visitors from downtown Seattle or other areas around the region.

Transportation Mitigation Funding (i.e., Alaskan Way Viaduct (AWV) or SR 520): It is possible that funding for POF could be secured as part of a traffic congestion mitigation component of larger projects such as the AWV or SR 520. Supporting POF may help to alleviate congestion and reduce traffic impacts related to highway projects.

Sponsorships/Advertising: Sponsorship of terminals or vessels by private business could provide an opportunity to raise additional funds. Nationwide, most transit agencies use sponsorships and advertising as revenue sources, including in-vehicle and shelter advertisements, station naming, and other more creative marketing possibilities. Sponsorships are typically one-time payments, while advertising applies to ongoing revenues generated for operations. Sponsorships might include the sales of naming rights to a station, vehicle/vessel, the entire line, or other feature of the project. This has been particularly successful on Tampa's TECO trolley line, in which the naming rights to the line were sold to TECA Energy for $1 million; naming and limited branding of cars, stations, and individual seats were also sold to a variety of companies and individuals. The total revenues generated were in excess of $2.5 million.

Passenger ferries also create the opportunity for on-board or in-terminal advertisement. There are a number of advertising firms that sell transit advertising, providing turnkey sales and provision of on-board advertising in exchange for a percentage of the profits.

Concessions: On-board or in-terminal concessions represent an opportunity for additional revenue for the operator but also involve capital and operating costs. Generally, trips of greater than 45 minutes can justify the commitment of space, weight, and crew labor to provide on-board food service. Public or private operators who choose to provide food service will also have to deal with health inspections and additional crew training. Concession revenues can go directly to a public operator to support operations or to a private contract operator as part of their compensation package.

Charters: Publicly or privately operated POF services may chose to use a charter operator to provide boats and crew or just the boats (bare boat charter). Charter operations provide an opportunity for the operator to partner with the charter company to use the POF vessels for other purposes when they are not in passenger service. Revenue generated through vessel charters could help reduce the costs of the passenger ferry service. Casco Bay Lines (CBL) in Maine generates 24 percent of its operating revenue comes from charters, tours, and advertising. CBL provides tours for groups of between 50 and 100, and carries them to the scenic islands, and even organizes beachside lobster bakes.

Nonprofit or Philanthropic Grants: In recent years, many nonprofit foundations or other philanthropic organizations have begun to further their missions by investing in projects that benefit the environment and the public at large. Typically, they make one-time donations for capital improvements or for seed money to jumpstart projects. These sources can be competitive, but they are often less restrictive than public sector funds. This support can come in the form of grants and loans. There are a number of major corporate headquarters in the region, which could be approached for contributions.

Emergency/Evacuation Funds: In the San Francisco Bay Area, the Bay Area Water Emergency Transportation Authority (WETA) was created in order to consolidate ferry service and to build an emergency response and disaster recovery water transportation system for the region. In the event of a major disaster or earthquake, the regional ferry system will serve the region by providing water transportation. The Authority is eligible for California State Office of Emergency Services funds. There may be opportunities to position POF in the Puget Sound to receive state or federal grant funds aimed at emergency preparedness.

Fares

Passenger Fares: Passenger fare revenues will be an important element of any POF funding plan. It is unlikely that any POF service operating throughout the day will be able to return 100% of its annual operating cost from the farebox. However, it is reasonable to expect that fare revenues could cover 40% or more of the cost of annual operations on higher demand routes. On routes serving primarily commute trips farebox recovery rates may be higher. Peak season services that also cater to recreational trips may be able to charge premium fares and recover a higher percent of operating costs. On any route the rate of farebox recovery will vary based on the demand for the service, policy decisions about fare levels and basic service characteristics (route length, frequency, vessel type, etc).

Figure 5-1 Funding Options for Passenger Ferry Service

Source	Capital or Operating	Restrictions	Viability (L-low, M-medium, H-high)	Applicability to Service Type:		
				Cross-Sound	*King County Ferry District*	*Regional Tourism*
Federal Funding						
Urbanized Area Formula Grants (FTA)	Capital & Operating Assistance	Urban areas over 50k eligible for formula based grants. This is important source for existing transit operations and would be difficult to use for POF service.	L –M. Full allocation in use for other transit services/projects	✔	✔	
New/Small Starts Grants (FTA)	Capital	Proven transportation benefit and community economic benefit. Ranked competitively against criteria and will compete with many national projects.	L. Highly competitive	✔	✔	
Job Access and Reverse Commute Grants (FTA)	Operating	Proven benefit for job access or reverse commute potential	M. Allocated by formula through State DOT. Competitive with other local programs.	✔	✔	
Ferry Boat Discretionary Funds (FHWA) & Seattle (Lake Washington) Urban Partnership Agreement (UPA) (USDOT)	Operating & Capital	Typically only eligible where there is no roadway alternative, for ferries carrying automobiles or for passenger ferry routes that are classified as part of state highway system. $11.6 million in contract authority funds made available to POF for obligation for Fiscal Year 2007 via USDOT Urban Partnership Program based on local agreement to encourage use of alternative modes and adopt policies to support and implement variable tolling on the SR 520 Bridge	H. -Requires auto ferry or inability to construct alternative roadway. Could be used if route was classified as a state highway.	✔	✔	
Surface Transportation Program Funds (FHWA)	Capital	Available for a range of uses, including projects that reduce cold starts and support intercity transit	L–M. Available for priority capital projects. Would require project be supported through regional TIP process	✔	✔	

Source	Capital or Operating	Restrictions	Viability (L-low, M-medium, H-high)	Applicability to Service Type:		
				Cross-Sound	*King County Ferry District*	*Regional Tourism*
New Market Tax Credit Program (US Dept. of the Treasury)	Capital	Available for capital investment projects that specifically benefit low-income communities	L-M-The low income requirements would preclude application to some routes.	✔	✔	
Congestion Mitigation & Air Quality Funds (FHWA)	Capital & Operating	Available in air quality non-attainment areas. Gives priority to programs that have air quality/emissions reduction benefits	M. Vessel choice and ability to demonstrate air quality benefits are critical	✔	✔	
Earmark Funds	Capital	Earmark funds are available for transit capital projects and vehicles/vessels	M–H. Depends on interest and strength of congressional delegation	✔	✔	✔
State Funding						
Motor Vehicle Excise Tax	Capital	Initiative 695 effectively repealed the Motor Vehicle Excise Tax in 1999.	L. Would require voter approval.	✔	✔	
State Passenger Ferry Grant Account	Capital & Operating	Money in the account is used for passenger ferry projects.	M-H. Funds can be used for passenger ferry projects.	✔	✔	
Washington State Ferries – Support POF Capital Needs or Maintenance	Capital	Would require legislative change	L-M. Depends on interest and strength of congressional delegation.	✔	✔	✔
County/Local Funding						
Property Tax (via County Ferry District or Transportation Benefit District)	Capital & Operating	Legislature passed law enabling the creation of ferry districts (without voter approval in King County; other Puget Sound counties require voter approval). Transportation Benefit Districts may impose sales tax with voter approval as well as levy vehicle fees.	M-H. King County has already established a ferry district and other Puget Sound counties have legislative authority to establish with voter approval.	✔	✔	
Sales Tax (via PTBA)	Operating	PTBAs have independent taxing authority to implement projects, including sales and motor vehicle taxes.	M. Puget Sound Counties have established PTBAs with limited additional taxing increment	✔	✔	

Source	Capital or Operating	Restrictions	Viability (L-low, M-medium, H-high)	Applicability to Service Type:		
				Cross-Sound	*King County Ferry District*	*Regional Tourism*
Motor Vehicle Excise Tax (via PTBA)	Operating & Capital	Legislation authorized PTBAs near Puget Sound to dedicate up to 0.4% MVET to passenger ferry services	M. Would require support of voters. Kitsap County PTBA voted against it.	✔	✔	
General Fund Contributions	Capital	Local counties and cities may contribute if residents benefit from POF service.	L-M. Often difficult to solicit money from general funds due to competing interests (schools, fire, police, etc).	✔	✔	✔
Port District Funds	Capital & Operating	Ports levy money based on assessed valued of taxable property.	H. Effective June 12 2008, HB 2730 will allow Port Districts to operate Passenger Ferries and make Port Districts eligible for funds from the passenger ferry account.	✔		✔
Bridge Tolls	Capital & Operating	Bridge tolls could be a source of revenue for POF.	L-M. Revenues may be used to pay for bridge construction/ maintenance.	✔	✔	
Congestion/Roadway Pricing	Capital & Operating	Several regional agencies are studying roadway pricing and tolling schemes/alternatives for regional highways, portals and bridges.	L-M. .Will face opposition and require decision making about what portion of revenues are allocated to transit/ferries	✔	✔	
Private/Partnership Funding						
Public-private partnerships – *Joint Development of Terminals*	Capital	Private companies/developers may help to sponsor ferry service.	L-M. Would need to attract companies with substantial capital or significant benefit from new POF service.	✔	✔	✔
Public-private partnerships – *Employer Commute Trip Reduction*	Operating	Companies may choose to support POF as part of their efforts to reduce single-occupancy trips.	L. Would require employer location where POF provided service to significant number of employees.	✔	✔	

Source	Capital or Operating	Restrictions	Viability (L-low, M-medium, H-high)	Applicability to Service Type:		
				Cross-Sound	*King County Ferry District*	*Regional Tourism*
Public-private partnerships – *Business contributions to support development of tourist market*	Capital & Operating	Some companies may be motivated to support POF as a means of encouraging regional tourism or attracting visitors to their facilities (i.e. casino).	L-M. May be limited number that are willing to contribute.	✔	✔	
Transportation Mitigation Funding (i.e., AWV Viaduct or SR 520)	Capital & Operation	Financial support could come as part of mitigation effort related to large transportation projects.	L-M. May be limited to duration of project.		✔	
Emergency/ Evacuation Funds	Capital & Operating	Creation of emergency transportation authority may make ferries eligible for emergency funds.	L-M.	✔	✔	
Fares & Other Funding Sources						
Passenger Fares	Capital & Operating	Fares will be collected to help fund POF service.	H. All services are likely to charge fares, although fare recovery rates can vary significantly.	✔	✔	✔
Sponsorships/ advertising	Capital & Operating	Sponsorship of terminals or vessels by private business could provide a funding opportunity.	M. Sponsorships are typically one-time payments, while advertising generates ongoing operating revenues.	✔	✔	✔
Concessions	Operating	Generally viable for runs over 45 minutes. Revenues can be used to fund operations or to reduce cost of private operations.	M-H. Viable source of funding on longer POF runs.	✔	✔	✔
Charter Services	Operating	Use of charter vessels can provide additional revenue or reduce costs of private charter/operator.	M. Viability depends on operating model and willingness to take on risks.	✔	✔	✔

Fare Policy Options

Passenger only ferry fare levels and operator expectations regarding the amount of operating cost recovered through fare collection (farebox recovery) will vary from service-to-service depending on the operating structure and level of funding support through tax levies. A number of other factors should be considered in setting POF fare levels. While the Washington State Legislature mandates that tariff adjustments on Washington State Ferry auto routes account for many of these factors, there is no similar legislation for POF operators. However, operators and policy makers should consider the following factors in setting fares for specific services:

- The amount of long-term subsidy available to the system or run operator for maintenance and operation
- The time of day (i.e. peak or off-peak), season (summer vs. winter) and length of the runs
- The maintenance and operation costs for ferry routes
- The expected patronage of the system or route
- The desirability of reasonable rates for potential passengers
- The effect of proposed fares on passenger demand
- The desire to integrate fare media and rate structures with land side transit
- The estimated revenues that are projected to be earned by the system or run from commercial advertisements, parking, contracts, leases, and other sources
- The pre-purchase of multiple fares, whether for a single rider or multiple riders

Current and future POF services in the Puget Sounds are likely to fall into three basic categories that will require distinct approaches to fare policies:

1. Publicly Operated, Tax Financed

Passenger ferry services operated by King County Ferry district and any future county ferry district, public transit agency or PTBA will be expected to maintain a relatively high level of fare subsidy. There may even be expectations that POF fares will match landside public transit fares, which would require a very high level of subsidy from sources other than the farebox. Expectations will be driven by the fact that users are already paying for services through property or sales tax assessments.

Summary:

- Tax revenues provide primary source of operating funds
- Fares set in line with landside public transit or with comparable level of farebox recovery
- Capital costs covered through public grant sources

2. Publicly Operated, but not Tax Financed

Plans for the Kingston Passenger Only Ferry service include a business plan that relies on passenger fares to support the full cost of operations. However, because the service is operated by a public agency, the Kingston Port District, it is eligible to receive public funds, such as Federal Transit Administration grant funds for capital purchases and terminal improvements. Eligibility for capital grant support eases the burden of the fare paying public, since fares are not required to cover capital costs. However, a very high recovery rate or full recovery of operating cost through fares is needed as Port District revenues

are limited to capital expenses. Similar expectation will be set for other Port Districts that chose to enter the arena of POF operations or for small quasi-governmental organizations or non-profits that are eligible to receive public grant funds, but don't have dedicate tax revenue to support POF operations.

Summary:

- Passenger fares provide primary source of operating funds, but may be supplemented by tax revenues
- Fares set to achieve high level of (or full) farebox recovery
- Capital costs covered through public grant sources

3. Privately Operated, Privately Financed

The Victoria Clipper ferry service, which operates between Seattle and Victoria, B.C., is a privately operated business that relies primarily on revenue generated by passenger fares to support the cost of operating its vessels, providing capital, leasing dock space and managing its business operations. New POF services that focus entirely on the recreational/tourist market will be required to use a similar business plan, where customer fares pay not only for the cost of vessel operations, but also support capital purchases.

Summary:

- Passenger fares provide sole source of operating funds (may be supplemented by minor sources such as advertising, concessions, etc)
- Fares set to achieve 100% farebox recovery
- Capital may also be raised through passenger fares

Farebox Recovery for Peer Systems

The following table shows the level of farebox recovery for several peer POF systems and the three POF runs currently operating in the Puget Sound. Almost all peer POF routes evaluated in this study charged fares ranging between $0.50 and $2.00 per nautical mile operated. The most urban routes, including those operated by MBTA, Sydney Ferries and the West Seattle Water Taxi have the highest level of farebox recovery as well as the lowest level of subsidy per passenger mile.

Figure 5-2 Summary of Peer Systems' Operating Costs and Farebox Recovery Rates

POF System or Run	Annual Operating Costs	Annual Fare Revenue	Fare/Fare Structure (one-way)	Farebox Recovery Ratio (% of Operating Costs Recovered by Fares)
Sydney Ferries	N/A	N/A	$5.20 - $8.20, depending on route distance	42%
Casco Bay Ferries	$4,500,000	$2,070,000	$5.85 - $11.00 depending on season and route distance	46%
Vallejo Baylink	$13,600,000	$6,660,000	$12.50	49%
MBTA (Boston)	$8,974,225	$6,025,740	$1.70 - $12 based on route distance	67%
Elliott Bay Water Taxi	$386,400	$171,100	$3.00	45%
Kitsap Transit Foot Ferry	$1,446,134	$231,064	$1.25	16%
WSF Vashon-Seattle Route	$1,788,000	$513,000	$4.25	29%

Fare Levels and Impact on Demand

The scope of this study does not allow an in depth analysis of fare price elasticity on ridership demand in the identified service markets. Sensitivity to fare changes are certain to vary in current and potential POF communities. Markets that have high incomes and limited alternative travel options are likely to be relatively inelastic to tariff changes. However, in communities where other modal opportunities are available or access to existing auto ferry routes (with lower fares) are available, price elasticity will be greater. A 1997 study conducted by BC Transit to evaluate the impacts of rising operating costs due to increases in fuel costs on patronage estimated that BC Ferry recreational patronage would decrease by 3% to 5% percent for every 10% increase in fares.[3] It is logical to assume that commuters would be less likely to stop riding due to fare increases given the economic importance of their trips and higher value placed on time.

Travel time also plays an important role in trip decision-making and patrons will balance the cost and use of their time in transport. Ferry passengers in the Puget Sound region and San Francisco Bay Area have indicated through surveys that they highly value in-transit time, because it allows them an opportunity to work, read or relax. Washington State Ferries offers wireless Internet on all ferries, allowing people to conduct business during their commute. The ability to comfortably work on a laptop computer, something not possible on a bus, could decrease many commuters sensitivity to the fare premium.

3 Pritchard, Mark. 1997. Tourist price sensitivity and the elasticity of demand: The case of BC Ferries. University of Arizona.

Other Fare Categories

POF routes, particularly routes operated by public agencies, could provide discount fares to passengers with low incomes, fixed incomes, seniors, youth, and people with disabilities. Discount fares for passengers who commute daily or ride regularly have been used for attracting and maintaining a loyal customer base. However, this policy runs counter to current thinking relative to tolling and congestion pricing based on demand, which would typically charge higher fares during peak hours when most commuters use the system.

Most POF systems provide fare discounts to:

- **Seniors and disabled passengers**: It is common practice to provide discount fare levels for senior citizens 60 years of age or older. Likewise, disabled citizens and often Veterans can receive discount fares. On the WSF system, the fare discount for these groups is 50% of the standard fare.
- **Youth.** On the WSF system children under 6 travel free and children ranging from 6-18 travel at 80% of the standard fare. Youth discount rates vary from system to system, but most employ some level of discount for youth.
- **Regular Riders:** Fare discounts for regular riders can be provided through discount monthly passes good for unlimited rides, ticket books that provide multiple ride tickets at a discount or on prepaid fare media.
- **Regional Pass/Smart Card holders**: Seven Puget Sound transit agencies are working toward the implementation of a regional fare collection system, which will use a single smart card technology to collect fares on bus, rail and ferry systems. The project goal is to develop a coordinated fare system that allows various agencies to maintain variable fare levels (i.e., ST regional fares are higher than King County Metro local bus fares) and provides passengers various levels of discount based on the number and type of transfers made on any given trip. Integrating new POF services in the regional system will help to extend discounts to regional travelers that use POF and other landside transit services.

APPENDIX A. ROUTE EVALUATION SHEETS

Scoring Key

Evaluation Factor	
Demand	Forecasted Daily Riders (Weekday): *High* = 1000 and above *Medium* = 400 – 999 *Low* = 0 – 399
	Potential for Tourism and Recreational Use (qualitative): *High* = Many tourist and recreational destinations accessible by transit, bike or foot on both ends of the trip. *Medium* = Many tourist and recreational destinations accessible by transit, bike or foot on one end of the trip. *Low* = Few tourist and recreational destinations accessible by transit, bike or foot on either end of the trip.
	Potential for Off-peak Use (Non-Commute, Non-Tourism/Rec.): *High* = Many shopping, healthcare and other non-work destinations accessible by transit, bike or foot on both ends of the trip. *Medium* = Many shopping, healthcare and other non-work destinations accessible by transit, bike or foot on one end of the trip. *Low* = Few shopping, healthcare and other non-work destinations accessible by transit, bike or foot on either end of the trip. • *Note:* This complex category includes an assessment of the relative imbalance of services on each end of the trip, and whether destinations can be reached within a reasonable travel time. This category does not account for the degree of recreational and tourist travel that may occur in the off-peak hours.

Evaluation Factor	
Modal Advantage	Availability of Other Viable Modes: *High* = Three or more other modes are available to travel between the two points starting from the lower density end of the trip. *Medium* = Two other modes are available to travel between the two points starting from the lower density end of the trip. *Low* = Only one other mode is available for travel between the two points starting from the lower density end of the trip. • *Note:* This evaluation factor assesses what feasible modes other than POF (driving, rail, bus transit, auto ferry) people could reasonably use to travel between the two destinations. Although one could potentially bike or walk between some of the locations analyzed, biking and walking are not modes likely to be utilized by a significant proportion of the user market due to relatively long distances and travel times so are not included as "viable" modes.
	Travel Time Savings on POF Compared to Next Best Mode *: *High* = POF provides between a more than a 30% time savings compared to the next best mode *Medium* = POF provides between a 1% and 30% time savings compared to the next best mode *Low* = No or negative time savings compared to the next best mode. • *Note:* Travel time is calculated from terminal to terminal. Travel time to and from the terminal is widely variable depending on the mode of access and is therefore not included. When the next best mode is assumed to be auto, auto travel times are estimated under the assumption of *peak period traffic and delay.*

Evaluation Factor	
Land Use	Terminal Area Density and Planned Land Use: *High* = Both of the route's terminal areas are currently characterized by existing high density mixed-use development with anticipated further increased densities in the future based on what is allowable in comprehensive plans. *Medium* = At least one terminal area is currently characterized by existing high density mixed-use development while the second one is characterized by existing medium density development with anticipation of increased densities in the future based on what is allowable in comprehensive plans. *Low* = At least one of the two terminal areas is currently characterized by existing rural and/or low-density development with a low likelihood of increased densities in the future based on what is allowable in comprehensive plans.
	Viability of Terminal Siting: *High* = Terminal infrastructure already in place and/or only minor facility improvements necessary to provide service; Vessel ingress/egress to terminal has little or no obstructions and has sufficient space to maneuver; Minimal effort necessary to acquire or negotiate a lease for use of terminal facility; Minimal potential for environmental impact issues as a result of new construction (e.g. *where a terminal is already in place, no significant new impacts are anticipated due to new construction*). *Medium* = Waterfront infrastructure already in place but moderate facility improvement is necessary to provide a POF terminal; Vessel ingress/egress from terminal has some restrictions; Moderate effort necessary to acquire or negotiate a lease for terminal facility; Moderate potential for environmental impact issues as a result of needed new construction. *Low* = Minimal or no waterfront infrastructure in place and/or substantial facility improvement is necessary to provide a POF terminal; Significant restrictions to vessel ingress/egress from terminal; Significant effort necessary to acquire or negotiate a lease for terminal facility; High potential for environmental impact issues as a result of needed new construction.

Evaluation Factor	
OPERATIONS AND SYSTEM INTEGRATION	Navigability: *High* = Minimal restricted passages, minimal speed restrictions, minimal security restricted zones, low vessel traffic and little or no involvement with existing Vessel Traffic Separation Lanes, no vehicle ferry routes to cross. *Medium* = Short restricted passages, small fraction of the route with speed restrictions, minimal security restricted zones, moderate vessel traffic and/or moderate involvement with existing Vessel Traffic Separation Lanes, cross no more than one vehicle ferry route. *Low* = Significant restricted passages, significant fraction of the route with speed restrictions, significant security restricted zones, high vessel traffic and/or significant involvement with Vessel Traffic Separation Lanes, cross more than one vehicle ferry route.
	Transit Service Adequacy: *High* = Transit service frequency and access is good to excellent at both terminals, given land uses, densities, Park & Ride locations, and estimated POF ridership. Transit routes connect directly to common destinations and attractions. A relatively minor investment would be needed to make transit a viable mode of access. *Medium* = Transit service is fair at one terminal and good or excellent at the other, given land uses, densities, Park & Ride locations, and estimated POF ridership. Transit routes connect moderately well to common destinations and attractions. A relatively moderate level of investment would be needed to make transit a viable mode of access. *Low* = Transit service frequency and access is poor at one terminal or fair at both terminals, given land uses, densities, Park & Ride locations, and estimated POF ridership. Transit routes offer poor to no connection to common destinations and attractions. Significant investment would be needed to make transit a viable mode of access. • *Note:* "Adequacy" considers frequency of existing and planned 2030 routes, the distance between terminals and bus/transit/rail stops, and the operating model of the relevant transit agency (e.g. Kitsap Transit routinely schedules bus routes to meet ferries).
	Pedestrian Accessibility: *High* = Both terminal areas are characterized by a high percentage of adjacent housing as well as commercial/recreational destinations within ½ mile walking radius. *Medium* = At least one terminal area is characterized by a high percentage of adjacent housing as well as commercial/recreational destinations within ½ mile walking radius,. *Low* = At least one of the two terminal areas is characterized by a low percentage of adjacent housing as well as commercial/recreational destinations,. Routes with one or more terminals that lack immediately adjacent sidewalks will also be rated 'Low'. • *Note:* For any route to Seattle, the pedestrian score is based on the non-Seattle terminal.

Evaluation Factor	
OPERATIONS AND SYSTEM INTEGRATION	Bike Accessibility: *High* = Both of the route's terminal areas have nearby bicycle routes along low traffic streets or on-street facilities for those terminals with high traffic areas. The presence of a signed regional trail within 500 feet would improve the bike accessibility rating. *Medium* = At least one terminal area has nearby bicycle routes along low traffic streets or on-street facilities for those terminals with high traffic areas. The presence of a regional trail within 1 mile would improve the bike accessibility rating. *Low* = Both terminals are in areas with high traffic volume streets with no on-street bike lanes or bike route alternatives on low traffic roads.
	Available Terminal Area Parking: *High* = Ample long-term parking capacity exists immediately adjacent to both terminals to support anticipated future POF parking demand. *Medium* = Some long-term parking capacity exists immediately adjacent to both terminals to support anticipated future POF parking demand. *Low* = Little long-term parking capacity exists immediately adjacent at one or more of the terminals to support anticipated future POF parking demand. * *Note:* This evaluation factor considers whether or not there is existing long-term parking in lots or structures immediately next to the terminal area. This does not consider the ability to build parking, or how much drivers are charged for parking; this matrix highlights areas where there is a need for capital investments in order to support a POF route.
	Vulnerability to Traffic Impacts: *High* = The increased traffic volumes associated with POF service would create a large adverse impact in both terminal areas. *Medium* = The increased traffic volumes associated with POF service would create a large adverse impact in only one terminal area, or a medium impact in both terminal areas. *Low* = The increased traffic volumes associated with POF service would create a minimal impact in one or both terminal areas.

Evaluation Factor	
COST	Capital Cost: *High* = Significant property acquisition and/or construction cost necessary to develop POF terminal; need 2 or more 149-pax vessels (not counting spares) to provide anticipated LOS; Vessel requirements to service route include cost-adding features (e.g. ride control systems). *Medium* = Moderate property acquisition and/or construction cost necessary to develop POF terminal; 2 149-pax vessels needed (not counting spares) to provide anticipated level of service. *Low* = Minimal property acquisition and/or construction cost necessary to develop POF terminal; 1 or 2 149-pax vessels needed (not counting spares) to provide anticipated LOS.
	Cost Per Passenger Mile: *High* = Relatively low ridership on mostly-empty vessels, resulting in high per-passenger operating costs. Service profile has significant number of underutilized "deadhead" runs (e.g. empty return trips). *Medium* = Moderate ridership; Service profile has moderate number of underutilized runs. *Low* = Relatively high ridership on mostly-full vessels, resulting in low per-passenger operating costs; Service profile minimizes underutilized runs; Minimal number of "deadhead" runs.
	Capital Cost Avoidance: *High* = Presence of POF service defers or eliminates significant alternative transportation infrastructure investments that might otherwise be needed to meet demand. *Medium* = Presence of POF service has little to no effect on alternative transportation infrastructure investments. *Low* = POF service competes with alternative transportation modes that have available excess capacity or where capacity can be added in a more cost-effective manner.
ENVIRONMENT	Sensitivity to Wake Impacts: *High* = High preponderance of narrow or restricted channels on route. *Medium* = Route has some instances of nearshore travel. *Low* = Route is mostly open water with no or very little nearshore travel.
	Congestion Avoidance Value: *High* = The driving alternative is on frequently congested roadways. *Medium* = The driving alternative is on intermittently congested roadways, or on very congested roadways that comprise only part of the trip. *Low* = The driving alternative is on roadways that are not normally congested.

Figure A-1 Summary Route Evaluation Results Matrix

ROUTE	Est. Daily Riders (2030)	Pot. for Tourism and Rec. Use	Pot. for Off-Peak Use	Modal Advantage		Land Use Compatibility		Operations & System Integration						Cost			Environment	
				Avail. of Other Viable Modes	Travel Time Savings	Terminal Area Density and Planned Land Use	Viability of Terminal Siting	Navigability	Transit Access	Ped Access	Bike Access	Avail. Terminal Area Parking	Vulnerability to **Traffic** Impacts	Capital Cost	Cost Per Pass. Mile	Capital Cost Avoidance Value	Sensitivity to Wake Impacts	Congestion Avoidance Value
West Seattle - Downtown Seattle	M	H	M	M	M	M	H	M	M	M	H	L	M	L	M	M	L	M
Vashon Island-Seattle	M	M	M	L	M	L	H	H	M	L	L	M	M	L	M	L	L	L
Bremerton-Port Orchard	H	L	M	M	H	M	H	M	H	M	M	H	M	L	M	M	L	M
Annapolis - Bremerton	M	L	M	M	H	M	H	M	M	M	M	H	M	M	L	M	L	M
Bremerton-Seattle	H	M	H	H	H	H	H	M	M	H	M	M	M	M	L	M	H	M
Kingston-Seattle	M	M	M	H	H	M	H	H	L	M	M	M	M	L	L	H	L	M
Southworth/ Manchester-Seattle	H	M	M	H	H	L	L	H	L	L	M	M	M	H	M	H	L	M
Port Orchard-Seattle	H	M	M	H	H	M	H	M	M	M	M	M	M	M	M	M	H	M
Suquamish-Seattle	L	M	M	H	H	L	L	H	M	L	M	L	M	H	M	L	L	M
Bainbridge-Des Moines	L	L	M	H	H	M	M	M	L	M	M	M	M	M	M	L	L	M
Kirkland-Univ. of WA	M	M	M	M	M	H	M	M	H	M	H	L	H	M	M	M	M	H
Renton - Leschi	L	M	L	M	L	M	H	M	L	M	H	M	M	L	H	M	L	H
Kenmore - Univ. of WA	L	M	M	M	L	M	H	M	M	M	H	M	M	L	H	M	M	H
Shilshole-Seattle	L	M	M	M	L	M	M	M	L	M	H	M	M	L	H	L	L	L
Des Moines - Seattle	L	M	H	M	L	M	M	H	L	H	H	M	M	M	H	L	L	M
Port Townsend-Seattle	M	H	H	M	M	M	H	M	M	H	H	L	M	M	L	M	L	M
Seattle-Vancouver B.C.	M	H	L	H	L	H	H	L	M	H	H	L	M	H	M	L	L	M

West Seattle – Downtown Seattle (Elliott Bay Water Taxi)

	Evaluation Factor	Score (H, M, L)
Demand	Estimated Daily Ridership: 660	M
	Potential for Tourism and Recreational Use: Seattle is a major tourist destination with attractions accessible by foot, bike or transit, but there are few tourist attractions on the West Seattle side.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle is a dense, mixed-use urban center with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. The West Seattle side is proximate to highly popular Alki Beach, and also due to the relatively short travel time and affordable cost, this route sees considerable volumes of tourist traffic.	H
Modal Adv.	Availability of Other Viable Modes: Two other modes exist for travel between these points—auto and bus.	M
	Travel Time Savings Compared to Next Best Mode: POF provides about a 29% time savings compared to driving in peak hour conditions.	H
Land Use	Terminal Area Density and Planned Land Use: The Elliott Bay Water Taxi currently operates from the Argosy terminal on the downtown Seattle waterfront. The terminal is located in an urban downtown setting with high density mixed-use development. The West Seattle Seacrest Park Location is characterized by relatively low density residential and commercial development.	M
	Viability of Terminal Siting: Minimal to moderate terminal improvements would be necessary to support continued POF service on this route, and terminals currently exist on both sides.	H

West Seattle – Downtown Seattle (Elliott Bay Water Taxi)

	Evaluation Factor	Score (H, M, L)
Operations and System Integration	Navigability: The route crosses the southern part of Elliott Bay, which is a high-traffic area for the Harbor Island industrial area. Container ship, cruise ship and barge traffic and fog can create some challenges for navigation.	M
	Transit Service and Access: On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third -mile away up a steep hill. In West Seattle, shuttles connect to arrivals and departures, and circulate passengers to major West Seattle hubs.	M
	Pedestrian Accessibility: The downtown Seattle terminal is located in a dense urban center with a high number of destinations and attractions, with built out sidewalk networks and signaled crosswalks. The West Seattle side does have sidewalks, but there are a relatively small number of commercial destinations and housing within walking distance of the terminal.	M
	Bike Accessibility: Ferry terminals on both sides are connected to built out bicycle networks.	H
	Available Terminal Area Parking: No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. Very little parking exists at the West Seattle Elliott Bay location at Seacrest Park.	L
	Vulnerability to Traffic Impacts: The downtown Seattle terminal is located in a dense downtown with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay. On the West Seattle side, the largely residential community would be highly vulnerable to negative traffic impacts.	M
Cost	Capital Cost: Minimal property acquisition and/or construction cost would be necessary to develop POF terminals; one 149-pax vessel is needed (not counting spares) to provide anticipated LOS.	L
	Cost Per Passenger Mile: Assuming 660 daily riders aboard a 149-pax vessel, a moderate operating cost per mile (CPM) is anticipated.	M
	Capital Cost Avoidance: Direct POF service between West Seattle and downtown Seattle probably has a negligible impact on alternate transportation investments, but potentially could help alleviate the need to expand the West Seattle Bridge in the future.	M

West Seattle – Downtown Seattle (Elliott Bay Water Taxi)

	Evaluation Factor	Score (H, M, L)
Environment	Sensitivity to Wake Impacts: This route does not have any instances of near-shore travel at cruise speed. No wake impacts are anticipated.	L
	Congestion Avoidance Value: POF would allow drivers to avoid the drive on the West Seattle Bridge and SR 99, which experience moderate congestion during peak-periods.	M

Vashon Island - Seattle

Evaluation Factor		Score (H, M, L)
Demand	Estimated Daily Ridership: 520	M
	Potential for Tourism and Recreational Use: Seattle is a major tourist destination with attractions accessible by foot, bike or transit. Vashon Island has very few tourist attractions.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle is a dense, mixed-use urban center with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. Vashon has very few such services.	M
Modal Adv.	Availability of Other Viable Modes: One other mode exists for travel between these points—WSF auto ferry.	L
	Travel Time Savings Compared to Next Best Mode: POF provides about a 27% time savings compared to taking the WSF auto ferry to Fauntleroy and then driving to downtown Seattle in peak hour conditions.	M
Land Use	Terminal Area Density and Planned Land Use: Colman Dock in Seattle is located in an urban downtown setting with high density mixed-use development. Vashon is in a low-density, relatively rural setting.	L
	Viability of Terminal Siting: Minimal to moderate waterfront improvements would be necessary to support continued POF service on this route, and terminals already exist on both sides.	H

Vashon Island - Seattle

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: The route crosses the Puget Sound Vessel Traffic Separation (VTS) lanes and may encounter some Elliott Bay Harbor traffic. Fog is sometimes an issue.	H
	Transit Service and Access: Vashon is connected by good transit service given existing land use, POF frequencies and ridership. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	M
	Pedestrian Accessibility: The Colman Dock terminal is located in a dense urban center with a high number of destinations and attractions, with built out sidewalk networks and signaled crosswalks. In Vashon, walking facilities are sparse and there is a low percentage of adjacent housing, commercial or other destinations within walking distance.	L
	Bike Accessibility: The Colman Dock terminal is located in a dense urban center with a high number of destinations and attractions, with built out bicycle networks. The Vashon side has fair or poor bike connectivity, due to relatively high speed rural roads and steep geographies.	L
	Available Terminal Area Parking: No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, these are sometimes at or near capacity. In Vashon, limited parking is available about a block away from the terminal on the hill. There are Park and Ride lots available in the town of Vashon.	M
	Vulnerability to Traffic Impacts: The Seattle terminal is located in a dense downtown with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay. Increased POF service out of Vashon would generate traffic volumes that are higher than what is experienced today, which would could generate a noticeable impact on its terminal area and adjacent neighborhoods and road networks. Because of the limited opportunity for POF riders to walk or ride bicycles to and from the Vashon terminal, they would largely rely on transit or auto access to reach the passenger ferry.	M
Cost	Capital Cost: Minimal property acquisition and/or construction cost necessary to develop POF terminal; one 149-pax vessel is needed (not counting spares) to provide anticipated LOS.	L
	Cost Per Passenger Mile: Assuming 520 daily riders aboard a 149-pax vessel, a moderate operating cost per mile is anticipated.	M
	Capital Cost Avoidance: Increased POF service on this route is unlikely to have an effect on alternative transportation modes, and may even draw passengers off of WSF's current auto ferry service.	L
Environment	Sensitivity to Wake Impacts: This route does not have any instances of near-shore travel at cruise speed. No wake impacts are anticipated.	L
	Congestion Avoidance Value: POF does not allow drivers to avoid congested roadways.	L

Bremerton – Port Orchard

Evaluation Factor		Score (H, M, L)
Demand	Estimated Daily Ridership: 1,773	H
	Potential for Tourism and Recreational Use: Few tourist and recreational destinations are accessible by foot, bike, or transit in Bremerton and Port Orchard.	L
	Potential for Off-Peak Use (non-work, non-tourism/rec): Bremerton has many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. Port Orchard has fewer such destinations.	M
Modal Adv.	Availability of Other Viable Modes: Two other modes exist for travel between these points—auto and transit	M
	Travel Time Savings Compared to Next Best Mode: POF offers a 50% time savings compared to auto between Port Orchard and Bremerton.	H
Land Use	Terminal Area Density and Planned Land Use: The Bremerton terminal is located in an urban downtown setting with high density mixed-use development. The Port Orchard terminal is located in a low to medium density commercial area of town with fair to good anticipation of increased densities in the future.	M
	Viability of Terminal Siting: Bremerton and Port Orchard already have terminals for POF service.	H

Bremerton – Port Orchard

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: The route crosses Sinclair Inlet, with line of sight between both terminals. WSF ferry traffic occasionally impacts vessel arrival/departure in Bremerton. Navy vessel traffic also may impact the vessel's route. Poor visibility due to dense fog can cause navigation challenges especially for early morning runs.	M
	Transit Service and Access: On the Bremerton side, connecting transit service is excellent, with high frequencies, timed transfers and coaches stopping directly in front of the terminal. On the Port Orchard side, transit service is good, given current densities and land uses, with four buses per hour today. Existing park-and-rides are located in downtown Port Orchard, as well as to the south and east of downtown, although no park-and-rides are located west of downtown.	H
	Pedestrian Accessibility: The Bremerton ferry terminal is located in a dense urban center with a high number of destinations and attractions, with built out sidewalk networks and signaled crosswalks. There are some destinations within a ½ mile radius of the existing Port Orchard Transit Foot Ferry, located within a small walkable downtown.	M
	Bike Accessibility: On-street bike facilities have been installed in Bremerton as well as connections across to Manette. Some intersections have been designated as difficult for cyclists. Access does exist from the terminal to recreational routes. However, these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. Bike facilities for novice riders are limited in the vicinity of Port Orchard; however, it appears that traffic volumes are low. Access does exist from the terminal to recreational routes, but these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists.	M
	Available Terminal Area Parking: There are thirteen parking lots within 3.5 blocks of the Bremerton terminal. Port Orchard has some long-term parking located near its foot ferry terminal.	H
	Vulnerability to Traffic Impacts: The Bremerton terminal is located in a dense downtown with high existing traffic volumes. Traffic volumes in Port Orchard are generally low, but would increase with additional service.	M
Cost	Capital Cost: Terminal infrastructure is in place and operational. Vessels already serve this route.	L
	Cost Per Passenger Mile: Anticipated ridership figures and the corresponding operational profile indicate a well-utilized service that will be near-capacity during peak periods. However, midday and deadhead runs feature relatively low load factors, which increase this metric.	M
	Capital Cost Avoidance: Passenger ferry service across Sinclair Inlet mitigates the need for landside bus service, but no significant capital investment is avoided.	M
Environment	Sensitivity to Wake Impacts: This route does not have any instances of near-shore travel at cruise speed. No wake impacts are anticipated.	L
	Congestion Avoidance Value: The route between Port Orchard and Bremerton is not normally congested. This POF service would allow the user to avoid congestion in the Gorst area of SR 3/SR 16 at the west end of Sinclair Inlet experiences regular congestion.	M

Bremerton – Annapolis

Evaluation Factor		Score (H, M, L)
Demand	Estimated Daily Ridership: 717	M
	Potential for Tourism and Recreational Use: Few tourist and recreational destinations are accessible by foot, bike, or transit in Bremerton or Annapolis.	L
	Potential for Off-Peak Use (non-work, non-tourism/rec): Bremerton has many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. Annapolis has few destinations like this.	M
Modal Adv.	Availability of Other Viable Modes: Two other modes exist for travel between these points—auto and transit.	M
	Travel Time Savings Compared to Next Best Mode: POF offers a 74% time savings compared to auto between Annapolis and Bremerton.	H
Land Use	Terminal Area Density and Planned Land Use: The Bremerton terminal is located in an urban downtown setting with high density mixed-use development. The Annapolis terminal is located in a small town setting with low density development.	M
	Viability of Terminal Siting: Bremerton and Annapolis already have terminals for POF service.	H
Operations and System Integration	Navigability: The route crosses Sinclair Inlet, with line of sight between both terminals. WSF ferry traffic occasionally impacts vessel arrival/departure in Bremerton. Navy vessel traffic also may impact the vessel's route. Poor visibility due to dense fog can cause navigation challenges especially for early morning runs.	M
	Transit Service and Access: On the Bremerton side, connecting transit service is excellent, with high frequencies, timed transfers and coaches stopping directly in front of the terminal. On the Annapolis side, connecting transit service is adequate for a small town, with one bus route.	M
	Pedestrian Accessibility: The Bremerton terminal is located in dense urban centers with a high number of destinations and attractions, with built out sidewalk networks and signaled crosswalks. The Annapolis terminal does not have many destinations reachable by foot.	M
	Bike Accessibility: On-street bike facilities have been installed in Bremerton as well as connections across to Manette. Some intersections have been designated as difficult for cyclists. Access does exist from the terminal to recreational routes. However, these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. There are few bike facilities in Annapolis.	M
	Available Terminal Area Parking: There are thirteen parking lots within 3.5 blocks of the Bremerton terminal. Annapolis has a park-and-ride lot with 74 parking spots located near the terminal.	H
	Vulnerability to Traffic Impacts: The Bremerton terminal is located in dense downtowns with high existing traffic volumes. Annapolis does not currently have high traffic volumes, but they could increase with more service.	M

Bremerton – Annapolis

Evaluation Factor		Score (H, M, L)
Cost	Capital Cost: Terminal infrastructure is in place and operational. Vessels already serve this route. However, a new ADA-accessible facility at Annapolis is recommended for long term service.	M
	Cost Per Passenger Mile: Anticipated ridership figures and the corresponding operational profile indicate a well-utilized service that will be near-capacity during peak periods. As a result, this route should have low operating cost per passenger mile.	L
	Capital Cost Avoidance: Service across Sinclair Inlet mitigates the need for landside bus service, but no significant capital investment is avoided.	M
Environment	Sensitivity to Wake Impacts: This route does not have any instances of near-shore travel at cruise speed. No wake impacts are anticipated.	L
	Congestion Avoidance Value: This POF service would allow the user to avoid congestion in the Gorst area of SR 3/SR 16 at the west end of Sinclair Inlet experiences regular congestion.	M

Bremerton - Seattle

	Evaluation Factor	Score (H, M, L)
Demand	Estimated Daily Ridership: 3,460	H
	Potential for Tourism and Recreational Use: Many tourist and recreational attractions are accessible on the Seattle side via foot, bike or transit. Fewer attractions are accessible without a vehicle on the Bremerton side.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec): Both Seattle and Bremerton are dense, mixed-use urban centers with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit.	H
Modal Adv.	Availability of Other Viable Modes: Three other modes exist for travel between these points—auto, bus transit, and WSF auto ferry.	H
	Travel Time Savings Compared to Next Best Mode: POF offers a 48% time savings compared to WSF auto ferry.	H
Land Use	Terminal Area Density and Planned Land Use: Both Seattle and Bremerton terminals are located in urban downtown settings with high density mixed-use development.	H
	Viability of Terminal Siting: Bremerton, the site of previous POF service, currently has a fully-equipped terminal in place. Minimal effort would be required to equip this location to resume POF service from Bremerton to Seattle.	H

Bremerton - Seattle

	Evaluation Factor	Score (H, M, L)
Operations and System Integration	Navigability: This route will parallel the WSF Auto Ferry from Bremerton to Seattle. The route crosses the Vessel Traffic Separation (VTS) lanes. In Elliott Bay, there is a potential for speed restrictions during docking and to accommodate nearby barge traffic. US Navy vessels transit Rich Passage, there is a security restricted zone around the vessel which will preclude passing in the narrow section of the passage. Poor visibility due to dense fog can cause navigation challenges, especially for early morning runs.	M
	Transit Service and Access: On the Bremerton side, connecting transit service is excellent, with high frequencies, timed transfers and coaches stopping directly in front of the terminal. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	M
	Pedestrian Accessibility: Both the Bremerton ferry terminal and Colman Dock are located in dense urban centers with a high number of destinations and attractions, with built out sidewalk networks and signaled crosswalks.	H
	Bike Accessibility: On-street bike facilities have been installed in Bremerton as well as connections across to Manette. Some intersections have been designated as difficult for cyclists. Access does exist from the terminal to recreational routes. However, these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. Bike connections to Seattle's Colman Dock are planned as high priority projects after reconstruction of the terminal.	M
	Available Terminal Area Parking: There are thirteen parking lots within 3.5 blocks of the Bremerton terminal. No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, these are sometimes at or near capacity.	M
	Vulnerability to Traffic Impacts: Both terminals are located in dense downtowns with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay.	M
Cost	Capital Cost: Terminal improvements prior to POF service launch and their associated costs are negligible. Two 149-pax boats will be needed to meet service requirements during peak periods, and one 149-pax vessel will meet modeled off-peak demand. Vessels required to service this route would need to be designed with minimal wake wash at operating speed.	M
	Cost Per Passenger Mile: The Bremerton route is likely to have a high degree of service utilization, particularly during peak periods. Multiple trips will likely approach full capacity. There is likely to be a moderate degree of deadhead or underutilized return trips.	L
	Capital Cost Avoidance: Direct travel from Bremerton-Seattle currently exists via the WSF auto ferry. If ridership grows, it could strain the passenger capacity of the currently-operating auto ferry vessels during peak periods. Additional passenger capacity would entail operating a larger-capacity vessel on the route or providing more frequent auto ferry departures. However, the minimal need for terminal improvements help balance out this equation.	M

Bremerton - Seattle

	Evaluation Factor	Score (H, M, L)
Environment	Sensitivity to Wake Impacts: For almost half the route, the vessel is in Rich Passage, a wake wash-sensitive area. At least two lawsuits regarding wake wash in Rich Passage have been settled in favor of the plaintiff, and the vessels were ordered by the court to slow down while in the passage.	H
	Congestion Avoidance Value: POF would allow drivers to avoid the drive around the South Sound, including the often congested I-5 corridor.	M

Kingston - Seattle

Evaluation Factor		Score (H, M, L)
Demand	Daily Ridership: 920	M
	Potential for Tourism and Recreational Use: Many tourist and recreational attractions are accessible on the Seattle side via foot, bike or transit. Fewer attractions are accessible without a vehicle on the Kingston side.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle is a dense, mixed-use urban center with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. Kingston has a limited number of such destinations accessible by transit, bike or foot.	M
Modal Adv.	Availability of Other Viable Modes: Three other modes exist for travel between these points—auto, transit (including commuter rail on the west side) and WSF auto ferry.	H
	Travel Time Savings Compared to Next Best Mode: POF provides a 42% time savings compared to taking the WSF auto ferry to Edmonds and then Sound Transit's Sounder commuter rail from Edmonds to Seattle.	H
Land Use	Terminal Area Density and Planned Land Use: The Seattle terminal is located in an urban downtown setting characterized by high density mixed-use development. The Kingston terminal area is characterized by low to medium density development with a good anticipated likelihood of increased densities in the future.	M
	Viability of Terminal Siting: Kingston previously offered POF service to Seattle from a terminal located immediately south of the existing WSF terminal.	H

Kingston - Seattle

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: This route crosses the Vessel Traffic Separation (VTS) lanes and parallels the VTS lanes for an extended distance. In Elliott Bay, there is a potential for speed restrictions during docking and during nearby barge movements. Poor visibility due to dense fog can cause navigation challenges especially for early morning runs.	H
	Transit Service and Access: On the Kingston side transit service and access is fair, as transit frequencies are relatively low, and no routes or park-and-rides connect points west. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	L
	Pedestrian Accessibility: The existing Kingston ferry terminal is located in a walkable downtown core, but commercial and residential destinations and attractions within ½ mile are limited. In Seattle, the high number of destinations and employment centers make the Colman Dock terminal highly accessible for pedestrians.	M
	Bike Accessibility: Bike facilities appear to be minimal in this area. Roadways have relatively wide shoulders and recreational riding is popular; however, auto speeds are high, and local "bike routes" generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. Bike connectivity is high to local trail networks along the Seattle downtown waterfront. Further route connections to Seattle's Colman Dock are planned as high priority projects after reconstruction of the terminal.	M
	Available Terminal Area Parking: One paid parking lot exists at the Kingston terminal, with 76 spaces. No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, these are sometimes at or near capacity.	M
	Vulnerability to Traffic Impacts: POF service out of Kingston would generate traffic volumes that are higher than what is experienced today, which would likely generate a noticeable impact on Kingston's downtown and adjacent neighborhoods and road networks. Seattle's Colman Dock is located in a dense downtown setting with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay.	M
Cost	Capital Cost: Minimal capital investment will be necessary to equip the existing POF terminal for service. Two 149-pax vessels will be necessary to meet modeled peak demand, while one 149-pax vessel will be suitable for off-peak periods.	L
	Cost Per Passenger Mile: A moderate-to-high utilization is anticipated, with commute-oriented runs likely to be near capacity. There are likely to be a large percentage of deadhead runs.	L
	Capital Cost Avoidance: POF service from Kingston-Seattle is likely to relieve congestion in the SR-305 transportation corridor and at the Bainbridge Island ferry terminal. Further, less pressure will be placed on providing additional passenger capacity aboard WSF ferries that service the Bainbridge route.	H

Kingston - Seattle

Evaluation Factor		Score (H, M, L)
Environment	Sensitivity to Wake Impacts: The route runs through an open portion of Puget Sound, and wake wash impact will be low.	L
	Congestion Avoidance Value: Compared with the option of taking a vehicle on the Kingston-Edmonds auto ferry, POF would allow drivers to avoid high levels of congestion on I-5 between Edmonds and Seattle.	H

Southworth/Manchester Beach - Seattle

	Evaluation Factor	Score (H, M, L)
Demand	Daily Ridership: 1870	H
	Potential for Tourism and Recreational Use: Many tourist and recreational attractions are accessible on the Seattle side via foot, bike or transit. Few or no attractions on the Southworth/Manchester side are accessible without a vehicle.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle is a dense, mixed-use urban center with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. Southworth/Manchester has few or no such destinations accessible by transit, bike or foot.	M
Modal Adv.	Availability of Other Viable Modes: Three other modes exist for travel between these points—auto, bus and the WSF ferries.	H
	Travel Time Savings Compared to Next Best Mode: POF provides a 53% time savings compared to taking the auto ferry to Vashon Island and then the existing POF to downtown Seattle.	H
Land Use	Terminal Area Density and Planned Land Use: The Seattle terminal is located in an urban downtown setting characterized by high density mixed-use development. The Southworth/Manchester proposed terminal sites are characterized by low density rural development with little anticipated likelihood of much increased densities in the future.	L
	Viability of Terminal Siting: A POF terminal in the Southworth/Manchester vicinity has been explored in previous plans for service to Seattle. Significant planning and preliminary designs have been prepared for a terminal float and gangway access to be constructed as an extension of the existing WSF terminal to the southeast, although significant problems exist at this site. Minimal effort would be necessary to obtain a terminal lease. Environmental issues associated with new terminal construction are to be expected. Manchester and Harper's Landing have minimal waterfront infrastructure in place, and substantial property lease/acquisition and construction would be needed to provide a POF terminal and supporting facilities, which would likely pose environmental challenges.	L

Southworth/Manchester Beach - Seattle

	Evaluation Factor	Score (H, M, L)
Operations and System Integration	Navigability: This route parallels the WSF Auto Ferry route on departure from Southworth, then crosses the Vessel Traffic Separation (VTS) lanes. In Elliott Bay, there is a potential for speed restrictions during docking and nearby barge movements. Poor visibility due to dense fog can cause navigation challenges, especially for early morning runs.	H
	Transit Service and Access: On the Southworth/Manchester side, transit service is fair, given densities and projected ridership. Frequencies would need to be increased and park-and-rides would likely be needed at points west and northwest of the potential terminal sites. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	L
	Pedestrian Accessibility: The rural nature of this area and limited destinations make pedestrian movement in this area less attractive. Many streets in the immediate vicinity also lack sidewalks, and shoulders on roadways are intermittent. In Seattle, the high number of destinations and employment centers make the Colman Dock terminal highly accessible for pedestrians.	L
	Bike Accessibility: Bike facilities for novice riders are limited on the Kitsap side. However, there is access from the terminal to recreational routes. These generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. Bike connections to local trail networks along the Seattle downtown waterfront are also high. Further route connections to Seattle's Colman Dock are planned as high priority projects after reconstruction of the terminal.	M
	Available Terminal Area Parking: About 340 parking spaces are located at the Southworth terminal, and additional parking is located ½ mile away at a church and connected to the terminal via transit. Little or no parking exists at the Manchester and Harper's sites. No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, these are sometimes at or near capacity.	M
	Vulnerability to Traffic Impacts: POF service out of Southworth/Manchester would generate traffic volumes that are higher than what is experienced today, which would likely generate a noticeable impact on its terminal area and adjacent neighborhoods and road networks. Seattle's Colman Dock is located in a dense downtown setting with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay.	M
Cost	Capital Cost: Significant costs will be associated with POF terminal construction (float and gangway from the existing WSF terminal). Two 149-pax vessels would be needed to meet modeled peak ridership demand.	H
	Cost Per Passenger Mile: The Southworth/Manchester route is likely to have good ridership, with some highly-utilized peak runs. There is likely to be a significant number of deadhead runs.	M
	Capital Cost Avoidance: Direct POF service to Seattle would be a more cost-effective way to serve growing travel demand between South Kitsap and Seattle than adding new auto ferry service between Southworth and Seattle as proposed in WSF's long-range plan, and would avoid costly additional auto holding capacity at Colman Dock which may be needed to accommodate new direct Southworth-Seattle auto ferry service.	H

Southworth/Manchester Beach - Seattle

	Evaluation Factor	Score (H, M, L)
Environment	Sensitivity to Wake Impacts: The route runs through an open portion of Puget Sound, and wake wash impact will be low.	L
	Congestion Avoidance Value: POF would allow drivers to avoid the drive around the South Sound, including the often congested I-5 corridor.	M

Port Orchard – Seattle

Evaluation Factor		Score (H, M, L)
Demand	Daily Ridership: 1,740	H
	Potential for Tourism and Recreational Use: Many tourist and recreational attractions are accessible on the Seattle side via foot, bike or transit. Fewer attractions are accessible without a vehicle on the Port Orchard side.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle is a dense, mixed-use urban center with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. Port Orchard has a limited number of such destinations accessible by transit, bike or foot.	M
Modal Adv.	Availability of Other Viable Modes: Three other modes exist for travel between these points—auto, bus and ferry (Kitsap Transit Foot Ferry combined with WSF auto ferry).	H
	Travel Time Savings Compared to Next Best Mode: POF would provide a 52% time savings compared to travel by auto.	H
Land Use	Terminal Area Density and Planned Land Use: The Seattle terminal is located in an urban downtown setting with high density mixed-use development. The Port Orchard terminal is located in a low to medium density commercial area of town with fair to good anticipation of increased densities in the future.	M
	Viability of Terminal Siting: Port Orchard's existing POF terminal is one of the newest in the region, and already serves a route to Bremerton. The terminal is already well-served by transit and minimal effort would be needed to utilize the facility for service to Seattle.	H

Port Orchard – Seattle

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: The route will parallel the WSF Auto Ferry from shortly after departure from Port Orchard all the way into Seattle. The route crosses the Vessel Traffic Separation (VTS) lanes. In Elliott Bay, there is a potential for speed restrictions during docking and nearby barge movements. When US Navy vessels transit Rich Passage, there is a security restricted zone around the vessel, which will preclude passing in the narrow section of the passage. Poor visibility due to dense fog can cause navigation challenges, especially for early morning runs.	M
	Transit Service and Access: On the Port Orchard side, transit service is good, given current densities and land uses, with four buses per hour today. Existing park-and-rides are located in town, as well as to the south and east of town, although no park-and-rides are located west of town. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	M
	Pedestrian Accessibility: There are some destinations within a ½ mile radius of the existing Port Orchard Transit Foot Ferry, located within a small walkable downtown. Seattle's high number of destinations and employment centers make the Colman Dock highly accessible for pedestrians.	M
	Bike Accessibility: Bike facilities for novice riders are limited in the vicinity of Port Orchard; however, it appears that traffic volumes are low. Access does exist from the terminal to recreational routes, but these generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. Bike connections to local trail networks along the Seattle downtown waterfront are good. Further route connections to Seattle's Colman Dock are planned as high priority projects after reconstruction of the terminal.	M
	Available Terminal Area Parking: Port Orchard has some long-term parking located near its foot ferry terminal. No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, these garages are sometimes at or near capacity.	M
	Vulnerability to Traffic Impacts: POF service out of Port Orchard would generate traffic volumes significantly higher than what is experienced today. This would have a considerable impact on Port Orchard's downtown and the adjacent neighborhoods and road networks. Seattle's Colman Dock is located in a dense downtown setting with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay.	M
Cost	Capital Cost: Because the terminal infrastructure is already in place, minimal investment would be necessary to retrofit the Port Orchard POF terminal for service to Seattle. Two 149-pax vessels will likely be needed during peak periods, and only one 149-pax vessel during off-peak periods.	M
	Cost Per Passenger Mile: Anticipated ridership figures and the corresponding operational profile indicate a well-utilized service that will be near-capacity during peak periods. There will likely be a significant percentage of underutilized deadhead runs.	M
	Capital Cost Avoidance: Direct service from Port Orchard to Seattle will relieve pressure on the existing WSF Bremerton-Seattle route and anticipated Bremerton-Seattle POF service. However, additional capacity can be gained on the WSF route for little capital cost.	M

Port Orchard – Seattle

Evaluation Factor		Score (H, M, L)
Environment	Sensitivity to Wake Impacts: For almost half the route, the vessel is in Rich Passage, a wake wash-sensitive area. At least two lawsuits regarding wake wash in Rich Passage have been settled in favor of the plaintiff, and the vessels were ordered by the court to slow down while in the passage.	H
	Congestion Avoidance Value: POF would allow drivers to avoid the drive around the South Sound, including the often congested I-5 corridor.	M

Suquamish - Seattle

Evaluation Factor		Score (H, M, L)
Demand	Daily Ridership: 310	L
	Potential for Tourism and Recreational Use: Many tourist and recreational attractions are accessible on the Seattle side via foot, bike or transit. Tourist/recreational attractions on the Suquamish side potentially accessible without a car include the Clearwater Casino,Suquamish Community House, Old Man House State Park, Chief Sealth's grave, and the Suquamish Museum.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle is a dense, mixed-use urban center with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. Suquamish has few or no such destinations accessible by transit, bike or foot.	M
Modal Adv.	Availability of Other Viable Modes: Three other modes exist for travel between these points—transit, auto and WSF auto ferry.	H
	Travel Time Savings Compared to Next Best Mode: POF provides a 46% time savings compared to driving to the Bainbridge Island and then taking the WSF auto ferry to Seattle. This assumes no traffic and delay, so actual time savings could be higher depending on conditions.	H
Land Use	Terminal Area Density and Planned Land Use: The Seattle terminal is located in an urban downtown setting characterized by high density mixed-use development. The Suquamish terminal area is characterized by low density rural development with little anticipated likelihood of increased densities in the future.	L
	Viability of Terminal Siting: From a pure market analysis standpoint, the most viable location for a POF terminal in Suquamish along the waterront in the town center. However, based on early discussions with the Suquamish tribe, the viability of siting a POF terminal at the pier is extremely low given the Tribe's plans for improvements to its community pier and dock, which would not include or accommodate a passenger-only ferry docking site. Therefore, any future POF service in the vicinity of Suquamish would require the siting and construction of a new POF terminal, including a new pier, gangway, and terminal float. No viable terminal location has been identified or endorsed by the Tribe at this time, and approval of any future POF facilities would require negotiation with and endorsement by the Suquamish Tribe. Additionally, environmental mitigation would be required prior to construction of a terminal.	L

Suquamish - Seattle

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: The route crosses the Vessel Traffic Separation (VTS) lanes and parallels the VTS lanes for an extended portion of the route. In Elliott Bay, there is a potential for speed restrictions during docking and nearby barge movements. Poor visibility due to dense fog can cause navigation challenges especially for early morning runs.	H
	Transit Service and Access: On the Suquamish side, transit service is good, given population and land use densities, with park-and-rides connecting to the east and west. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	M
	Pedestrian Accessibility: The local vicinity surrounding the Suquamish town center lacks complete coverage of sidewalks, and, like many of the other more rural potential sites, the land uses are oriented to vehicles rather than pedestrians. Due to the rural location, there are limited commercial and residential uses within a ½ mile radius of the proposed terminal. However, the low traffic streets and adjacent recreational/park uses are pleasant for pedestrians. At the Seattle terminus, the high number of destinations and employment centers make the Colman Dock terminal highly accessible for pedestrians.	L
	Bike Accessibility: Bike facilities for novice riders are limited in this vicinity. However, there is access from the terminal to recreational routes. These generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists. Bike connections to local trail networks along the Seattle downtown waterfront are good. Further route connections to Colman Dock are planned as high priority projects after reconstruction of the terminal.	M
	Available Terminal Area Parking: In Suquamish, few or no parking lots exist near the town center. No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, they are sometimes at or near capacity.	L
	Vulnerability to Traffic Impacts: POF service from Suquamish would generate traffic volumes that are higher than what is experienced today, which would generate a noticeable impact on this relatively rural terminal area and adjacent neighborhoods and road networks. Seattle's Colman Dock is located in a dense downtown setting with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay.	M
Cost	Capital Cost: Construction of a terminal in Suquamish is likely to be costly. One 149-pax vessel will be necessary to meet the route's operational profile.	H
	Cost Per Passenger Mile: The Suquamish route is likely to have moderate ridership and utilization of vessel capacity, spread out throughout the day. Because of the nature of anticipated ridership, a low degree of deadhead runs is anticipated.	M
	Capital Cost Avoidance: Direct service to Suquamish and connecting transit service is likely to mitigate some of the passenger demand for the existing Bainbridge auto ferry route. It will also mitigate traffic congestion on SR-305.	L

Suquamish - Seattle

Evaluation Factor		Score (H, M, L)
Environment	Sensitivity to Wake Impacts: The route runs through an open portion of Puget Sound, and wake wash impact will be low.	L
	Congestion Mitigation Value: POF service would allow drivers to avoid SR 305 from Agate Pass to the Bainbridge ferry terminal, a corridor which is intermittently congested.	M

Bainbridge Island – Des Moines

Evaluation Factor		Score (H, M, L)
Demand	Daily Ridership: 270	L
	Potential for Tourism and Recreational Use: Few tourist or recreational attractions are accessible on either the Bainbridge or Des Moines side via foot, bike or transit, though Des Moines may provide a link to the airport via shuttle.	L
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Few shopping, healthcare or other non-work attractions are accessible on the Bainbridge side via foot, bike or transit. From the Des Moines side, there are transit connections to Sea-Tac airport and Southcenter shopping center.	M
Modal Adv.	Availability of Other Viable Modes: Three other modes exist for travel between these points—auto, bus and the WSF auto ferry.	H
	Travel Time Savings Compared to Next Best Mode: POF provides a 33% time savings compared to taking the WSF auto ferry from Bainbridge Island and then driving from Seattle to Des Moines.	H
Land Use	Terminal Area Density and Planned Land Use: Both terminal areas are characterized by medium density development, with good anticipated likelihood of densification in the future.	M
	Viability of Terminal Siting: The Bainbridge Island terminus is the location of an existing WSF ferry terminal and the location for WSF's Eagle Harbor Maintenance Facility. While waterfront infrastructure is already in place, there are currently no facilities capable of providing POF service. POF terminal construction would require a new float and gangway, along with corresponding landside access improvements. Negotiation for lease or property acquisition for a POF terminal will likely be difficult due to both environmental concerns and political challenges. 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 POF terminal. Because of exposure to the open sound, a terminal would likely need to find a home within the protected harbor, or be engineered to handle a more exposed siting. Location of a terminal within the harbor will present restrictions for vessel access.	M

Bainbridge Island – Des Moines

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: The route will parallel the WSF Auto Ferry route getting into and out of Eagle Harbor on Bainbridge Island, and cross the Vashon-Southworth-Fauntleroy Auto Ferry route. The route crosses the Vessel Traffic Separation (VTS) lanes and for a significant portion of the route runs parallel to the VTS lanes. In Eagle Harbor, there is a speed restriction, so the vessel will have to slow down for about a mile. Approach to Des Moines can be made at speed until very close to the breakwater. Poor visibility due to dense fog can cause navigation challenges, especially for early morning runs.	M
	Transit Service and Access: Transit connections on the Bainbridge side are very good, with local bus and shuttles serving the terminal at high frequencies. However, it is likely another park-and-ride would be needed north of the terminal adjacent to SR-305. On the Des Moines side, transit service and access is poor, with only 2-3 buses per hour and poor connections to key destinations such as the airport and South-center. Also, a park-and-ride would may be needed north of Des Moines, towards Normandy Park, to support POF service.	L
	Pedestrian Accessibility: Des Moines marina is surrounded by multi-family and commercial zoning, which is the appropriate set of land uses to encourage walking. Bainbridge Ferry Terminal, however, has been designed to transport vehicles, and thus pedestrians have been allocated few pedestrian crosswalks and virtually no landscaped barriers to separate walkers and bicyclists from the high volume of cars.	M
	Bike Accessibility: Des Moines has a number of relatively low traffic streets that are suitable for riding. Within three miles, cyclists have access to the Regional Green River Trail (although crossings of I-5 appear to be slightly difficult). Bainbridge Marina appears to be difficult to navigate; however, there is access from the terminal to recreational routes. These generally consist of the use of road shoulders, which may be more appropriate for experienced cyclists.	M
	Available Terminal Area Parking: There are three large lots within two blocks of the Bainbridge terminal with over 1,000 spaces. However, the lots are currently at capacity during the day. At Des Moines there are 200 stalls at the north end of the marina and many other lots nearby. Parking is free and utilization is low to moderate.	M
	Vulnerability to Traffic Impacts: Des Moines is a growing, relatively urban area with good road connections. Although POF service would bring more autos into Des Moines's downtown commercial core, it is not likely to generate volumes that would create a large noticeable negative community impact. Bainbridge already experiences high volumes of auto traffic due to WSF's auto ferry service, which during peak hours creates congestion on SR 305. As a result, Bainbridge is vulnerable to the additional auto traffic that POF service might generate during these times, although POF passengers would have a higher propensity to use transit on SR 305, which may negate congestion impacts.	M

Bainbridge Island – Des Moines

Evaluation Factor		Score (H, M, L)
Cost	Capital Cost: Construction of a POF terminal at Des Moines and Bainbridge Island will likely require new POF floats and gangway accesses. Furthermore, the Des Moines location could be more costly if a terminal location could not be secured within the protected marina harbor. Two 149-pax vessels during peak periods are likely to be needed to fit the route's operational profile. Only one 149-pax vessel is likely to be needed in off-peak periods.	M
	Cost Per Passenger Mile: The operational profile indicates low vessel utilization, even considering that the run operates with a smaller vessel size. The nature of the modeled ridership is unclear ,and thus it is difficult to determine the anticipated prevalence of deadhead runs.	M
	Capital Cost Avoidance: Bainbridge Island already has frequent and reliable auto ferry access to downtown Seattle. Downtown Seattle is already being connected to the Sea-Tac airport with light rail service, and King County Metro busses provide reliable access to South King County. While direct Bainbridge-Des Moines service would be convenient, available capacity exists via a Bainbridge-Seattle-Sea-Tac/ DesMoines travel plan. It is unlikely that the investment in POF service between these locations will be cost-effective when compared with existing or soon-to-be-online transportation options.	L
Environment	Sensitivity to Wake Impacts: The open-Sound route presents no potential challenges for wake impact.	L
	Congestion Mitigation Value: POF service would allow drivers to avoid the intermittently congested SR 99, SR 509, and I-5 corridors between Seattle and Des Moines.	M

Kirkland – University of Washington

Evaluation Factor		Score (H, M, L)
Demand	Daily Ridership: 420	M
	Potential for Tourism and Recreational Use: UW has relatively strong appeal as a tourist attraction and high accessibility by bike, foot and transit. Kirkland has less tourist appeal, although its walkable downtown, waterfront park, and marina make it somewhat attractive as a recreational destination.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Many shopping, healthcare and other non-work uses at UW are accessible without a car, and to a more limited degree in Kirkland.	M
Modal Adv.	Availability of Other Viable Modes: Two other modes exist for travel between these points—auto and bus.	M
	Travel Time Savings Compared to Next Best Mode: POF provides a 29% time savings compared to driving or taking transit across the 520 bridge..	M
Land Use	Terminal Area Density and Planned Land Use: The UW terminal area is characterized by high density mixed-use development. The Kirkland terminal area is in the heart of Kirkland's downtown, a mixed-use core with high levels of multi-family housing and plans for increased densification.	H
	Viability of Terminal Siting: 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 POF access, although there is potential that a small vessel could use the existing pier. Moderate efforts will be required to negotiate lease of a terminal location. The University of Washington has two potential sites for a POF terminal. The first is at or near the Waterfront Activities Center, directly behind Husky Stadium. The second is at Sacuma Point near the Oceanography Dock. Both locations feature existing waterfront infrastructure. Moderate efforts would be necessary to negotiate with the University for lease of a terminal location. 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.	M

Kirkland – University of Washington

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: This route crosses Lake Washington. The only navigation challenge is landing at UW, where the terminal will be sited in or at the mouth of the Ship Canal. If a terminal is located at Sacuma Point on Portage Bay, the Ship Canal presents some navigational restrictions including a speed restriction west of Webster Point which would negate some of the time savings advantage POF offers. The route is not currently expected to operate on weekend days when recreation vessel traffic is fairly high, but traffic from the UW yachting facility and WAC may present some challenges on weekdays since this predominant user group may take issue to the noise and safety hazards that would be presented by additional marine traffic.. Poor visibility due to dense fog can cause navigation challenges, especially for early morning runs.	M
	Transit Service and Access: On the UW side, transit service is good, given future LINK light rail proximate to the terminal, which will also connect to many regional bus services. On the Kirkland side, transit frequencies are excellent, with 15 inbound and 18 outbound buses per hour and at least two park-and-rides serving downtown Kirkland routes.	H
	Pedestrian Accessibility: Kirkland offers a pleasant pedestrian environment with numerous green open spaces, multifamily dwellings, and commercial destinations located immediately adjacent to the terminal. Parking also appears to be buffered by landscaping to improve pedestrian connections between the terminal and the main commercial area. However, at the University of Washington terminus, the development associated with Husky Stadium is not currently conducive to pedestrian movements. Sidewalks and pedestrian pathways do exist along the water and Montlake Avenue, but quality connections across Montlake Avenue to the UW, adjacent housing, and commercial uses are lacking. Also, the LINK light rail station is currently under construction and will be for the next several years directly adjacent to the WAC site, which presents accessibility and safety issues for pedestrians. At Sacuma Point the medical buildings lining the waterfront present a barrier to pedestrians.	M
	Bike Accessibility: Kirkland has relatively low volume streets with many alternative route options along quiet residential streets. Further, the city has developed a base biking network with 41 miles of bike facilities built as of 2001. Bike connections to the marina were indicated as high priority projects in the 2001 plan. At the UW terminus, cyclists can access the Burke Gilman regional trail as well as find connections to other Seattle neighborhoods.	H
	Available Terminal Area Parking: At UW, there are university-owned lots near the proposed terminal location, but it is unclear whether they could be used for POF terminal parking. In Kirkland, there is limited parking within a few blocks of the public marina.	L
	Vulnerability to Traffic Impacts: Montlake Avenue, which is immediately adjacent to the proposed terminal near Husky Stadium, already experiences extremely high levels of congestion and delay during peak-periods. Level of service on this important regional arterial would further deteriorate due to increased auto demand generated by POF service. The terminal area in Kirkland is not as vulnerable to traffic impacts as UW's, but would still see adverse effects on its downtown streets due to increased traffic, especially traffic circling looking for available parking.	H

Kirkland – University of Washington

Evaluation Factor		Score (H, M, L)
Cost	Capital Cost: Moderate capital investment may be associated with construction and installation of a terminal facility in Kirkland. Moderate investment will be necessary to provide a terminal at UW. Only one 149-pax vessel will be necessary to meet the route's operational profile.	M
	Cost Per Passenger Mile: Based on the operational profile, vessel capacity utilization is expected to be moderate. The number of deadhead or underutilized runs is unclear.	M
	Capital Cost Avoidance: Providing POF service from Kirkland to UW has significant potential to relieve demand in the 520 corridor. However, expected ridership is a "drop in the bucket" compared with the current capacity in this corridor, implying a minimal degree of capital investment deferment or avoidance.	M
Environment	Sensitivity to Wake Impacts: With a low wake boat, the vessel should be able to travel at the 22 knot navigation speed except when maneuvering to depart or arrive at the passenger terminal. If a terminal is situated west of the Ship Canal on Portage Bay, significant wake impacts would exist in that restricted channel. Otherwise, there would be only minor instances of nearshore travel.	M
	Congestion Mitigation Value: POF service would provide an alternative to the highly congested SR 520 floating bridge and I-405 corridor.	H

Kenmore - UW

Evaluation Factor		Score (H, M, L)
Demand	Estimated Daily Ridership: 10	L
	Potential for Tourism and Recreational Use: There is a marina in Kenmore, but not many tourist and recreational destinations. UW has relatively strong appeal as a tourist attraction.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Shopping, healthcare and other non-work uses are located at UW, but to a more limited degree in Kenmore.	M
Modal Adv.	Availability of Other Viable Modes: Two other modes exist for travel between these points—auto and transit.	M
	Travel Time Savings Compared to Next Best Mode: The trip via POF does not result in any time savings compared to driving or taking transit.	L
Land Use	Terminal Area Density and Planned Land Use: The UW terminal area is characterized by high density mixed-use development. The Kenmore terminal area is currently characterized by mostly low density development, but plans are underway to significantly increase the intensity of land uses here with the development of a future town center.	M
	Viability of Terminal Siting: The existing public pier at Tracy Owen Park is likely the most viable location for a Kenmore terminal. Minimal effort would be necessary to utilize the pier as a small POF terminal. Relatively minor effort would be necessary to negotiate a lease for use of the pier. The University of Washington has two potential sites for a POF terminal. The first is at or near the Waterfront Activities Center, directly behind Husky Stadium and adjacent to the future LINK light rail station. The second is at the Roosevelt Street end at Sacuma Point. Both locations feature existing waterfront infrastructure. Effort would be necessary to negotiate with the University for lease of a terminal location, but minimal facility improvement would be necessary to provide small POF service.	H

Kenmore - UW

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: This route crosses Lake Washington. The only navigation challenge is landing at UW, where the terminal will be sited in or at the mouth of the Ship Canal. If a terminal is located at Sacuma Point on Portage Bay, the Ship Canal presents some navigational restrictions including a speed restriction west of Webster Point which would negate some of the time savings advantage POF offers. The route is not currently expected to operate on weekend days when recreation vessel traffic is fairly high, but traffic from the UW yachting facility and WAC may present some challenges on weekdays since this predominant user group may take issue to the noise and safety hazards that would be presented by additional marine traffic. Poor visibility due to dense fog can cause navigation challenges, especially for early morning runs.	M
	Transit Service and Access: On the UW side, transit service is good given future LINK light rail proximate to the terminal, which also will connect to many regional bus services. At Kenmore, transit service is fair to good with two connecting park-and-rides.	M
	Pedestrian Accessibility: The Proposed terminal at Kenmore has some pedestrian walkways through park areas and new multifamily development. However, the marina appears to be very disconnected from the housing/commercial uses across Bothell Way, a six lane roadway, where there currently exists only one pedestrian crossing. Sidewalks exist, but are not continuous. At the University of Washington terminus, the development associated with Husky Stadium is not currently conducive to pedestrian movements. Sidewalks and pedestrian pathways do exist along the water and Montlake, but quality connections across Montlake Avenue and to the UW, adjacent housing, and commercial uses are lacking.	M
	Bike Accessibility: The proposed Kenmore terminal at the marina is adjacent to the regional Burke Gilman Trail, which continues west along Lake Washington, south through UW, with connections to downtown Seattle. However, bike connections and intersections crossing Bothell Way appear to be less than ideal. At the University of Washington terminus, cyclists can access the Burke Gilman regional trail as well as find connections to other Seattle neighborhoods.	H
	Available Terminal Area Parking: In Kenmore, there is ample parking supply near the proposed terminal site. At UW, there are university-owned lots near the proposed terminal location but it is unlikely much, if any, capacity would be given over to POF parking.	M
	Vulnerability to Traffic Impacts: Montlake Avenue, which is immediately adjacent to the proposed terminal near UW's Husky Stadium, already experiences extremely high levels of congestion and delay during peak periods. Level of service on this important regional arterial would further deteriorate due to increased auto demand generated by POF service. The Kenmore terminal area is located near Kenmore's planned town center, in an area with relatively low residential uses and good road connections. The Kenmore terminal area might be vulnerable during peak hours due to intermittent congestion already experienced on SR 522 during this time.	M

Kenmore - UW

Evaluation Factor		Score (H, M, L)
Cost	Capital Cost: Minimal investment will be necessary to allow a small POF to use existing public piers as ferry terminals. One 149-pax vessel will be necessary to meet the route's operational profile.	L
	Cost Per Passenger Mile: With modeled demand being low, most trips will be highly underutilized, resulting in high operating cost per passenger	H
	Capital Cost Avoidance: Both terminal locations on this route are already well-served by transit. However, the minimal investment necessary to provide service (essentially just the boats) implies a minimal capital cost differential between alternative options.	M
Environment	Sensitivity to Wake Impacts: With a low wash boat, the vessel should be able to travel at the 22 knot navigation speed except when maneuvering to depart or arrive at the passenger terminal. If a terminal is situated west of the Ship Canal on Portage Bay, significant wake impacts would exist in that restricted channel. Otherwise, there are only minor instances where nearshore travel may cause wake concerns.	M
	Congestion Mitigation Value: POF service would allow drivers to avoid heavy congestion on SR 522, I-5, and the Montlake bridge.	H

Renton - Leschi

Evaluation Factor		Score (H, M, L)
Demand	Estimated Daily Ridership: 10	L
	Potential for Tourism and Recreational Use: Leschi has an existing marina and has bus routes to tourist destinations in downtown Seattle. Renton has few tourist and recreational destinations.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Both Renton and Leschi have few shopping, healthcare and other non-work uses.	L
Modal Adv.	Availability of Other Viable Modes: Two other modes exist for travel between these points—auto and transit.	M
	Travel Time Savings Compared to Next Best Mode: The trip via POF does not result in any time savings compared to driving.	L
Land Use	Terminal Area Density and Planned Land Use: The Renton terminal area is characterized by medium to high density mixed-use development. Leschi is characterized by low to medium density housing, with some commercial uses and multi-family housing on the lakefront.	M
	Viability of Terminal Siting: The most likely location for a terminal at Leschi is the City-owned public moorage pier at Leschi Park. Minimal effort would be necessary to utilize the pier as a small POF terminal. Relatively minor effort would be necessary to negotiate a lease for use of the pier. The terminal location analyzed in Renton is the City-owned public pier at Gene Coulon Park. Minimal effort would be necessary to utilize the pier as a small POF terminal. Relatively minor effort would be necessary to negotiate a lease for use of the pier. An alternate site, preferred by the City of Renton, is at the new development just south of the park, at the end of Garden Ave. N., where developer interest exists to locate a POF dock.	H

Renton - Leschi

Evaluation Factor		Score (H, M, L)
Operations and System Integration	**Navigability:** This route is on Lake Washington, and requires POF boats to pass under the I-90 Lake Washington Bridge. The route is not expected to operate on weekend days when recreation vessel traffic is fairly high. With a low wash boat, the vessel should be able to travel at the 22 knot navigation speed except when maneuvering to depart or arrive at the passenger terminal, but may find the bridge transit challenging in high winds. Poor visibility due to dense fog can cause navigation challenges especially for early morning runs.	M
	Transit Service and Access: At Leschi, transit service is poor with only two buses per hour. At the assumed terminal location in Renton, transit service is currently fair, although very good service exists a little less than a mile away in downtown Renton. A future transit center will bring more bus connections to within a 10 minute walk of the Garden Street development.	L
	Pedestrian Accessibility: Leschi's medium density housing, neighborhood commercial uses, relatively narrow streets and frequent pedestrian crossing create an attractive pedestrian environment. The adjacent neighborhoods' non-traditional street layout and steep topography, however, will make pedestrian connections somewhat problematic for many residents. In Renton, the built environment in the immediate vicinity is favorable to walking, with sidewalks, pedestrian pathways through pleasant green spaces and some adjacent multifamily units. However, connections across I-405 appear to be unfeasible for walking further than ½ mile to destinations, and Renton's downtown core is located almost a mile away from the assumed terminal location.	M
	Bike Accessibility: From the Leschi terminal cyclists can access the I-90 regional trail by traveling south ½ mile on a very low traffic street. Lake Washington Blvd. is a well used city bike route and drivers are used to sharing the road with cyclists and in general courteous. Steep topography in the area may discourage some riders. The proposed Renton terminal is adjacent to the regional Lake Washington Trail (extends north along the lake) and the Cedar River Trail which is south of the airport and Boeing plant (extends southeast 4.5 miles). However bike connections to central Renton appear to be very difficult, with few bicycle facilities to navigate the high volume traffic on adjacent roadways.	H
	Available Terminal Area Parking: At Leschi, there is a large parking lot near the marina. In Renton, ample parking supply exists in the vicinity of Gene Coulon Memorial Beach Park, the site of the proposed terminal. It is unclear how much of the existing parking lots could be used for POF customers.	M
	Vulnerability to Traffic Impacts: The Leschi terminal area is located in a residential neighborhood that would likely be sensitive to the increased auto volumes that POF service would generate on its streets. The Renton terminal area is located near a town center in an area with medium density residential uses and good road connections. It is unlikely to be highly vulnerable to additional traffic from POF service.	M
Cost	**Capital Cost:** Minimal investment will be necessary to allow a small POF to use existing public piers as ferry terminals. One 149-pax vessel will be necessary to meet the route's operational profile.	L
	Cost Per Passenger Mile: With modeled demand being low, most trips will be highly underutilized.	H
	Capital Cost Avoidance: The minimal investment necessary to provide service (essentially just the boats) implies a minimal capital cost differential between alternative options.	M

Renton - Leschi

Evaluation Factor		Score (H, M, L)
Environment	Sensitivity to Wake Impacts: With a low wash boat, the vessel should be able to travel at the 22 knot navigation speed except when maneuvering to depart or arrive at the passenger terminal. There are only minor instances where nearshore travel may cause wake concerns.	L
	Congestion Mitigation Value: POF service would allow drivers to avoid heavy congestion on I-90, I-405, I-5, and SR 167.	H

Shilshole - Seattle

Evaluation Factor		Score (H, M, L)
Demand	Daily Ridership: 10	L
	Potential for Tourism and Recreational Use: Seattle is a major tourist destination with attractions accessible by foot, bike or transit. Shilshole has two attractions accessible without a car – the marina and Golden Gardens Park.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle is a dense, mixed-use urban center with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. Shilshole has no such destinations accessible by transit, bike or foot.	L
Modal Adv.	Availability of Other Viable Modes: Two other modes exist for travel between these points—auto and transit.	M
	Travel Time Savings Compared to Next Best Mode: POF would take about 14% longer than travel by car.	L
Land Use	Terminal Area Density and Planned Land Use: The Seattle terminal is located in an urban downtown setting with high density mixed-use development. The Shilshole terminal area is located in an area with low to medium density residential housing.	M
	Viability of Terminal Siting: The Port of Seattle-owned Shilshole Bay Marina features extensive waterfront infrastructure, but moderate facility improvement may be needed to provide POF service. Depending on where the terminal is situated, vessel ingress/egress may present some challenges. It is likely that a minimal degree of negotiation with the Port will be needed to lease a terminal location.	M

Shilshole - Seattle

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: The route is in a fairly high vessel traffic area. In Elliott Bay, there is a potential for speed restriction during docking and nearby barge movements. There is a fairly high volume of traffic around Shilshole and the Lake Washington Ship Canal. Poor visibility due to dense fog can cause navigation challenges especially for early morning runs.	M
	Transit Service and Access: On the Shilshole side, transit service is poor, with only one bus per hour during the peak, no mid-day or evening service, and limited weekend service. There is no direct bus connection to downtown Seattle, so getting there by bus would require a transfer. At Colman Dock, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	L
	Pedestrian Accessibility: A large amount of low to medium density housing is located on the eastern side of Seaview Avenue, a low traffic volume street with sidewalks. Golden Gardens, a popular park, is located immediately to the north. However, there are very limited commercial and retail destinations nearby. At the Seattle terminus, the high number of destinations and employment centers make the Colman Dock terminal highly accessible for pedestrians.	M
	Bike Accessibility: The Burke Gilman Trail, Myrtle Edwards Trail and numerous bike lanes provide a good biking climate. Further connections to Seattle's Colman Dock are planned as high priority projects after reconstruction of the terminal.	H
	Available Terminal Area Parking: No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, they sometimes are at or near capacity. At the Shilshole Bay Marina, there is ample parking.	M
	Vulnerability to Traffic Impacts: Shilshole is a residential neighborhood that would likely be sensitive to the traffic impacts of POF service. Seattle's Colman Dock is located in a dense downtown setting with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay.	M
Cost	Capital Cost: Minimal or moderate facility improvement may be required to provide a POF terminal. Only one 149-pax vessel will be needed to fit the operational profile.	L
	Cost Per Passenger Mile: Minimal ridership on this route and a high likelihood of "deadhead" runs indicates a high operating cost per passenger-mile.	H
	Capital Cost Avoidance: The area around the Shilshole Bay Marina is served by transit to downtown. POF is likely to compete for ridership with these less-costly options.	L

Shilshole - Seattle

Evaluation Factor		Score (H, M, L)
Environment	Sensitivity to Wake Impacts: The route runs through open waters of Puget Sound and Elliott Bay, and wake wash impact will be low.	L
	Congestion Mitigation Value: The roadways that POF service would allow drivers to avoid—Seaview Ave. NW, NW Market St, and Elliott Ave—are not normally congested.	L

Des Moines - Seattle

Evaluation Factor		Score (H, M, L)
Demand	Daily Ridership: 60	L
	Potential for Tourism and Recreational Use: Many tourist and recreational attractions are accessible on the Seattle side via foot, bike or transit. Few attractions are accessible without a vehicle on the Des Moines side.	M
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle is a dense, mixed-use urban center with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. From the Des Moines side, there are transit connections to Sea-Tac airport and Southcenter shopping center.	H
Modal Adv.	Availability of Other Viable Modes: Two other modes exist for travel between these points—auto and transit.	M
	Travel Time Savings Compared to Next Best Mode: POF would take about 44% longer than travel by car (via SR 99 and SR 509).	L
Land Use	Terminal Area Density and Planned Land Use: The Seattle terminal is located in an urban downtown setting with high density mixed-use development. The Des Moines terminal area is characterized by medium density development, with good anticipated likelihood of densification in the future.	M
	Viability of Terminal Siting: 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 POF terminal. Because of exposure to the open sound, a terminal would likely need to find a home within the protected harbor, or be engineered to handle a more exposed siting. Location of a terminal within the harbor will present restrictions for vessel access.	M

Des Moines - Seattle

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: The route will parallel the WSF Auto Ferry route getting into and out of the Seattle terminal, and will cross the Vashon-Southworth-Fauntleroy Auto Ferry route. A significant portion of the route runs parallel to the VTS lanes. In Elliott Bay, there is a potential for speed restriction during docking and nearby barge movements. Approach to Des Moines can be made at speed until very close to the breakwater. Poor visibility due to dense fog can cause navigation challenges especially for early morning runs.	H
	Transit Service and Access: On the Des Moines side, transit service and access is poor, with only 2-3 buses per hour and poor connections to key destinations such as the airport and Southcenter. Also, a park-and-ride would likely be needed north of Des Moines towards Normandy Park to support POF service. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	L
	Pedestrian Accessibility: Des Moines marina is surrounded by multi-family and commercial zoning, which is the appropriate set of land uses to encourage walking. At the Seattle terminus, the high number of destinations and employment centers make the Colman Dock terminal highly accessible for pedestrians.	H
	Bike Accessibility: Des Moines has a number of relatively low traffic streets that are suitable for riding. Within three miles, cyclists have access to the Regional Green River Trail (although crossings of I-5 appear to be slightly difficult). Bike connections to local trail networks along the Seattle downtown waterfront are good. Further route connections to Seattle's Colman Dock are planned as high priority projects after reconstruction of the terminal.	H
	Available Terminal Area Parking: No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, these are sometimes at or near capacity. At Des Moines there are 200 stalls at the north end of marina and many other lots nearby. Parking is free and utilization is low to moderate.	M
	Vulnerability to Traffic Impacts: Des Moines is a growing, relatively urban area with good road connections. Although POF service would bring more autos into Des Moines' downtown commercial core, it is not likely to generate volumes that create a large noticeable negative community impact. Seattle's Colman Dock is located in a dense downtown setting with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay.	M
Cost	Cost Per Passenger Mile: Low modeled demand means a minimal degree of vessel utilization, and therefore mostly-empty vessels, which will result in high operating cost per passenger.	H
	Capital Cost Avoidance: Downtown Seattle is already being connected to the Sea-Tac airport with light rail service, and King County Metro busses provide reliable access to South King County and the Des Moines area. While direct Seattle-Des Moines service would be convenient, available capacity exists via a landside Seattle-Sea-Tac/DesMoines travel plan. It is unlikely that the investment in POF service between these locations will be cost-effective when compared with existing or soon-to-be-online transportation options.	L
	Capital Cost: Construction of a POF terminal at the Des Moines location will likely require a new POF float and gangway access. Furthermore, the Des Moines location could be more costly if a terminal location could not be secured within the protected marina harbor. Peak period service is anticipated to require two 149-pax vessels. Off-peak service will likely require only one 149-pax vessel.	M

Des Moines - Seattle

Evaluation Factor		Score (H, M, L)
Environment	Sensitivity to Wake Impacts: The open-Sound route presents no potential challenges for wake impact.	L
	Congestion Mitigation Value: POF service would allow drivers to avoid the intermittently congested SR 99, SR 509, and I-5 corridors between Seattle and Des Moines.	M

Port Townsend - Seattle

Evaluation Factor		Score (H, M, L)
Demand	Daily Ridership: 600	M
	Potential for Tourism and Recreational Use: Both Seattle and Port Townsend are major tourist destinations with attractions accessible by foot, bike or transit.	H
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Seattle, and to a lesser degree Port Townsend, are mixed-use commercial centers with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit.	H
Modal Adv.	Availability of Other Viable Modes: There are two other modes available to travel between these points—auto and WSF auto ferry.	M
	Travel Time Savings Compared to Next Best Mode: POF provides a 15% time savings compared to driving to Bainbridge Island and then taking the WSF auto ferry to Seattle.	M
Land Use	Terminal Area Density and Planned Land Use: The Seattle terminal is located in an urban downtown setting characterized by high density mixed-use development. The Port Townsend terminal is located in a low to medium density area of town with some anticipated likelihood of increased densities in the future.	M
	Viability of Terminal Siting: During the short period in late 2007 and early 2008 in which WSF operated POF service to Seattle, the 350-passenger *Snohomish* used both the WSF ferry terminal and the Port of Port Townsend-owned Point Hudson Marina as its Port Townsend terminal. The *Snohomish* features a bow-loading system that is compatible with WSF auto slips. Therefore, the marina represents the most likely candidate for an initial terminal location. Were a permanent terminal to be constructed, the WSF terminal represents the most likely location. Minimal effort would be necessary to negotiate for either the marina or WSF terminal. There is moderate potential for environmental impact if a permanent terminal is constructed.	H

Port Townsend - Seattle

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: This route crosses the Vessel Traffic Separation (VTS) lanes and parallels the VTS lanes for an extended distance. In Elliott Bay, there is a potential for speed restriction during docking and nearby barge movements. In a 30 knot vessel, it will take about 1.25 hours to make the transit. This is more than twice as long as any other route in Puget Sound. There is significant potential for adverse weather that can cause passenger discomfort and/or run cancellation. Poor visibility due to dense fog can cause navigation challenges, especially for early morning runs.	M
	Transit Service and Access: On the Port Townsend side, transit service is good, with a downtown shuttle connecting to the terminal as well as fixed route service at frequencies appropriate for existing land uses and densities. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third -mile away up a steep hill.	M
	Pedestrian Accessibility: Port Townsend has a relatively high percentage of streets with sidewalks and striped crosswalks. Local commercial and residential areas are well within a ½ mile walking radius, and the traditional street grid reduces walking times. In Seattle, the high number of destinations and employment centers make the Colman Dock terminal highly accessible for pedestrians.	H
	Bike Accessibility: Port Townsend is a relatively bikeable area, without any major barriers and hosting a significant biking community. Bike connections to local trail networks along the Seattle downtown waterfront are also good. Further route connections to Seattle's Colman Dock are planned as high priority projects after reconstruction of the terminal.	H
	Available Terminal Area Parking: Port Townsend has extremely limited parking in its downtown and near the ferry terminal. No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, these are sometimes at or near capacity.	L
	Vulnerability to Traffic Impacts: Seattle's Colman Dock is located in a dense downtown setting with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay. Port Townsend, a historic town with a walkable downtown core near the ferry terminal, would see increased traffic volumes with cars seeking parking spaces near the POF terminal. This would likely have a noticeable negative impact.	M
Cost	Capital Cost: Minimal capital investment would be necessary to provide initial service, but a permanent POF terminal will entail a moderate degree of capital investment. Two full-time 149-pax vessels will be needed to meet the route's operational profile. These vessels should be equipped with additional ride control features to mitigate the sometimes-rough conditions.	M
	Cost Per Passenger Mile: The operational profile and modeled demand indicate a well-utilized service with a minimal number of deadhead runs. Operating cost per passenger is estimated to be low.	L
	Capital Cost Avoidance: POF service may mitigate auto/ferry trips via Kitsap County or Whidbey Island. However, it is unclear what effect POF service will have on alternative capital investments.	M

Port Townsend - Seattle

Evaluation Factor		Score (H, M, L)
Environment	Sensitivity to Wake Impacts: The route runs through an open portion of Puget Sound, and wake wash impact will be low.	L
	Congestion Avoidance Value: POF would allow drivers to avoid high levels of congestion on one portion of the trip—the stretch of I-5 between Edmonds and Seattle.	M

Vancouver B.C. - Seattle

Evaluation Factor		Score (H, M, L)
Demand	Estimated Daily Ridership: 500	H
	Potential for Tourism and Recreational Use: Both Seattle and Vancouver are major tourist destinations with attractions accessible by foot, bike or transit.	H
	Potential for Off-Peak Use (non-work, non-tourism/rec.): Both Seattle and Vancouver are dense, mixed-use urban centers with many shopping, healthcare and other non-work destinations accessible by foot, bike or transit. However, given the length of the trip, it is unlikely travel on this route would be for such utilitarian uses, but would rather be for tourism and recreation.	L
Modal Adv.	Availability of Other Viable Modes: Three other land modes exist for travel between these points—auto, bus and train. In this case air travel is a fourth viable option.	H
	Travel Time Savings Compared to Next Best Mode: POF would take about 50% longer than travel by car, assuming no traffic or delay at customs.	L
Land Use	Terminal Area Density and Planned Land Use: Both Seattle and Vancouver terminals are located in urban downtown settings with high density mixed-use development.	H
	Viability of Terminal Siting: Downtown Vancouver has significant waterfront infrastructure currently in place. Minimal to moderate waterfront improvements would be necessary to provide an adequate POF terminal. The area is well-served with transit, parking and kiss-and-ride access.	H

Vancouver B.C. - Seattle

Evaluation Factor		Score (H, M, L)
Operations and System Integration	Navigability: The route parallels the Vessel Traffic Separation (VTS) lanes for most of the route. In Elliott Bay, there is a potential for speed restriction during docking and nearby barge movements. In a 30 knot vessel, it will take about 4.75 hours to make the trip. Vessels on this route will require ride control, and even then there is significant potential for passenger discomfort and/or run cancellation because of the severity of the wind and waves that can be encountered in the Straights of Georgia. The potential for severe weather impact on the route is the principal reason for the Low rating in navigation. There are also speed restrictions in Vancouver Harbor. Poor visibility due to dense fog can cause navigation challenges, especially for early morning runs.	L
	Transit Service and Access: Vancouver B.C. has excellent transit service throughout its downtown and connecting to its downtown water-front neighborhoods. On the Seattle side, existing connecting transit service is fair for an urban employment and commercial center such as downtown Seattle, with relatively low frequencies connecting directly to the terminal, and the major bus corridor on Third Ave. is about a third –mile away up a steep hill.	M
	Pedestrian Accessibility: Ferry terminals in both cities are located in dense urban centers with a high number of destinations and attractions, with built out sidewalk networks and signaled crosswalks.	H
	Bike Accessibility: Ferry terminals in both locations are located in dense urban centers with a high number of destinations and attractions, with built out bicycle networks.	H
	Available Terminal Area Parking: No parking exists at Seattle's Colman Dock terminal, but many parking garages are located within a few blocks. However, these are sometimes at or near capacity. Long-term parking in downtown Vancouver is scarce.	L
	Vulnerability to Traffic Impacts: Both terminals are located in dense downtowns with high existing traffic volumes. Increased traffic due to POF service would increase the load on the adjacent street network, but probably would not cause extreme congestion or delay.	M
Cost	Capital Cost: While terminal development is likely to entail only a moderate cost, the vessel capital costs are likely to be very high. It would take up to five vessels to meet the operational profile, and it is unlikely 149-pax vessels would be of sufficient capacity. More likely, 350-pax vessels similar to the *Victoria Clipper IV* or *Chinook*-class would be needed. These vessels will likely need to be equipped with ride control features for passenger comfort in rough seas.	H
	Cost Per Passenger Mile: Assuming 500 daily riders a moderate cost per passenger mile is anticipated. However, many assumptions have been made in this analysis that may not be borne out with a more detailed approach.	M
	Capital Cost Avoidance: Direct POF service between Vancouver and Seattle is unlikely to have an effect on alternative transportation modes.	M

Vancouver B.C. - Seattle

Evaluation Factor		Score (H, M, L)
Environment	Sensitivity to Wake Impacts: The route runs through open waters, and wake wash impact will be low for 95% of the route. However, the transit into Vancouver Harbor will be wake-sensitive.	L
	Congestion Avoidance Value: POF would allow drivers to avoid the drive on the I-5 corridor, which is very congested in Snohomish and King counties.	M

APPENDIX B. DETAILED ROUTE INFORMATION

West Seattle-Downtown Seattle

Number of Vessels Needed

1

Special Requirements

None

Recommended Vessel Type

80-pax operating at 22kts.

Estimated Cost Summary Table

West Seattle

Annual Demand	240,900	
Weekday daily demand	660	From Service Assumptions
Weekend daily demand	660	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	50	
1-way trips per weekend/holiday	30	
Annual passengers carried	231,072	1-way trips
Weekday daily passengers carried	664	1-way trips
Weekend/holiday daily passengers carried	660	1-way trips
Passenger seats per year	968,000	vessel capacity x # runs
1-Way Trip Distance	1.8	nautical miles
1-Way Travel Time	7	minutes
1-Way Trip Time (Dep-Dep)	12	minutes
Fuel burned per year	44,248	gallons (includes 10% margin)
Fuel cost	$ 157,524	per year ($3.56/gallon)
Propulsion system maintenance	$ 18,379	per year
Other vessel machinery maintenance	$ 4,595	per year
Vessel electrical system maintenance	$ 389	per year
Vessel hull & outfit maintenance	$ 24,355	per year
Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 30,900	
Onboard labor (Master, Sr. DH, and DH)	$ 754,343	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15

West Seattle

Contractor Overhead	$ 166,519	12.5% of all costs
Contractor Profit	$ 99,911	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$1,670,391	
Cost per 1-way passenger	$ 7.23	
Cost per vessel hour	$ 546.59	

Route Summary

WEST SEATTLE - SEATTLE						
	Weekdays Schedules				Weekend	
	F1				F5	Totals
Sched Days/Year	254				111	
Weather Cancellations/Year	12				5	
In Service Days/Year	242				106	
1-Way Trips/Day	50				30	80
1-Way Trips/Year	12,100				3,180	15,280
Seats/Day	4,000				2,400	6,400
Seats/Year	968,000				254,400	1,222,400
Riders/Day	664				664	1,328
Riders/Year	160,688				70,384	231,072
Vessel Minutes/day	600				360	960
Vessel Hours/Year	2,420				636	3,056

Fare Options

One-Way Fare	Recovery %
$1.75 (Metro 1-Zone Fare)	24%
$2.90	40%
$4.40	60%

Vashon-Seattle

Number of Vessels Needed

1

Special Requirements

None

Recommended Vessel Type

149-pax operating at 30kts.

Estimated Cost Summary Table

Vashon

Annual Demand	155,168	
Weekday daily demand	520	From Service Assumptions
Weekend daily demand	208	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	18	
1-way trips per weekend/holiday	12	
Annual passengers carried	136,970	1-way trips
Weekday daily passengers carried	520	1-way trips
Weekend/holiday daily passengers carried	208	1-way trips
Passenger seats per year	2,569,356	vessel capacity x # runs
1-Way Trip Distance	9.6	nautical miles
1-Way Travel Time	22	minutes
1-Way Trip Time (Dep-Dep)	27	minutes
Fuel burned per year	256,942	gallons (includes 10% margin)
Fuel cost	$ 914,713	per year ($3.56/gallon)
Propulsion system maintenance	$ 106,722	per year
Other vessel machinery maintenance	$ 26,680	per year
Vessel electrical system maintenance	$ 2,261	per year

Vashon

Vessel hull & outfit maintenance	$ 14,437	per year
Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 57,500	
Onboard labor (Master, Sr. DH, and DH)	$ 598,982	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$ 257,870	12.5% of all costs
Contractor Profit	$ 154,722	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 2,547,363	
Cost per 1-way passenger	$ 18.60	
Cost per vessel hour	$ 1,049.77	

Route Summary

VASHON ISLAND - SEATTLE						
	Weekdays Schedules				Weekend	
	V1	V2	V3	V4	V5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	-	5	
In Service Days/Year	242	242	242	254	106	
1-Way Trips/Day	18	-	-	-	12	30
1-Way Trips/Year	4,356	-	-	-	1,272	5,628
Seats/Day	2,682	-	-	-	1,788	4,470
Seats/Year	649,044	-	-	-	189,528	838,572
Riders/Day	456	181	-	-	105	742
Riders/Year	110,352	43,802	-	-	11,130	165,284
Vessel Minutes/day	486	-	-	-	264	
Vessel Hours/Year	1,960	-	-	-	466	2,427

Fare Options

One-Way Fare	Recovery %
$3.35 (Cross-Sound Fare)	18%
$7.50	40%
$11.20	60%

Bremerton-Seattle

Number of Vessels Needed

4

Special Requirements

Low Wake Design

Recommended Vessel Type

149-pax operating at 30kts.

Estimated Cost Summary Table

Bremerton

Annual Demand	1,032,464	
Weekday daily demand	3,460	From Service Assumptions
Weekend daily demand	1,384	From Service Assumptions
Number of vessels	4	
1-way trips per weekday	66	
1-way trips per weekend/holiday	12	
Annual passengers carried	979,850	1-way trips
Weekday daily passengers carried	3,441	1-way trips
Weekend/holiday daily passengers carried	1,384	1-way trips
Passenger seats per year	2,569,356	vessel capacity x # runs
1-Way Trip Distance	13.8	nautical miles
1-Way Travel Time	30	minutes
1-Way Trip Time (Dep-Dep)	35	minutes
Fuel burned per year	1,137,045	gallons (includes 10% margin)
Fuel cost	$ 4,047,882	per year ($3.56/gallon)
Propulsion system maintenance	$ 472,276	per year
Other vessel machinery maintenance	$ 118,069	per year
Vessel electrical system maintenance	$ 10,006	per year

Bremerton

Vessel hull & outfit maintenance	$ 103,276	per year
Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 230,000	
Onboard labor (Master, Sr. DH, and DH)	$ 2,482,964	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$ 896,174	12.5% of all costs
Contractor Profit	$ 537,704	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 9,375,082	
Cost per 1-way passenger	$ 8.85	
Cost per vessel hour	$ 862.42	

Route Summary

BREMERTON - SEATTLE						
	Weekdays Schedules				Weekend	
	B1	B2	B3	B4	B5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	12	5	
In Service Days/Year	242	242	242	242	106	
1-Way Trips/Day	26	14	14	12	12	78
1-Way Trips/Year	6,292	3,388	3,388	2,904	1,272	17,244
Seats/Day	3,874	2,086	2,086	1,788	1,788	11,622
Seats/Year	937,508	504,812	504,812	432,696	189,528	2,569,356
Riders/Day	1,121	895	863	562	1,388	4,829
Riders/Year	271,282	216,590	208,846	136,004	147,128	979,850
Vessel Minutes/day	910	490	490	420	420	2,730
Vessel Hours/Year	3,670	1,976	1,976	1,694	742	10,059

Fare Options

One-Way Fare	Recovery %
$3.35 (Cross-Sound Fare)	38%
$3.60	40%
$5.40	60%

Kingston-Seattle

Number of Vessels Needed

2

Special Requirements

None

Recommended Vessel Type

149-pax operating at 30kts.

Estimated Cost Summary Table

Kingston

Annual Demand	233,680	
Weekday daily demand	920	From Service Assumptions
Weekend daily demand	-	From Service Assumptions
Number of vessels	2	
1-way trips per weekday	26	
1-way trips per weekend/holiday	-	
Annual passengers carried	221,430	1-way trips
Weekday daily passengers carried	915	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	937,508	vessel capacity x # runs
1-Way Trip Distance	17.4	nautical miles
1-Way Travel Time	37	minutes
1-Way Trip Time (Dep-Dep)	42	minutes
Fuel burned per year	524,283	gallons (includes 10% margin)
Fuel cost	$ 1,866,446	per year ($3.56/gallon)
Propulsion system maintenance	$ 217,763	per year
Other vessel machinery maintenance	$ 54,441	per year
Vessel electrical system maintenance	$ 4,614	per year

Kingston

Vessel hull & outfit maintenance	$ 23,339	per year
Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 115,000	
Onboard labor (Master, Sr. DH, and DH)	$ 1,087,182	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$ 427,106	12.5% of all costs
Contractor Profit	$ 256,264	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 4,472,032	
Cost per 1-way passenger	$ 18.84	
Cost per vessel hour	$ 947.24	

Route Summary

KINGSTON - SEATTLE						
	Weekdays Schedules				Weekend	
	K1	K2	K3	K4	K5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	12	5	
In Service Days/Year	242	242	242	242	106	
1-Way Trips/Day	18	8	-	-	-	26
1-Way Trips/Year	4,356	1,936	-	-	-	6,292
Seats/Day	2,682	1,192	-	-	-	3,874
Seats/Year	649,044	288,464	-	-	-	937,508
Riders/Day	523	392	-	-	-	915
Riders/Year	126,566	94,864	-	-	-	221,430
Vessel Minutes/day	756	336	-	-	-	1,092
Vessel Hours/Year	3,049	1,355	-	-	-	4,404

Fare Options

One-Way Fare	Recovery %
$3.35 (Cross-Sound Fare)	18%
$7.60	40%
$11.40	60%

Southworth/Manchester-Seattle

Number of Vessels Needed

2

Special Requirements

None

Recommended Vessel Type

149-pax operating at 30kts.

Estimated Cost Summary Table

Southworth

Annual Demand	474,980	
Weekday daily demand	1,870	From Service Assumptions
Weekend daily demand	-	From Service Assumptions
Number of vessels	2	
1-way trips per weekday	38	
1-way trips per weekend/holiday	-	
Annual passengers carried	452,540	1-way trips
Weekday daily passengers carried	1,870	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	937,508	vessel capacity x # runs
1-Way Trip Distance	9.7	nautical miles
1-Way Travel Time	22	minutes
1-Way Trip Time (Dep-Dep)	27	minutes
Fuel burned per year	424,277	gallons (includes 10% margin)
Fuel cost	$ 1,510,427	per year ($3.56/gallon)
Propulsion system maintenance	$ 176,225	per year
Other vessel machinery maintenance	$ 44,056	per year
Vessel electrical system maintenance	$ 3,734	per year

Southworth

Vessel hull & outfit maintenance	$ 47,698	per year
Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 115,000	
Onboard labor (Master, Sr. DH, and DH)	$ 1,021,473	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$ 377,835	12.5% of all costs
Contractor Profit	$ 226,701	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 3,899,030	
Cost per 1-way passenger	$ 8.17	
Cost per vessel hour	$ 893.87	

Route Summary

SOUTHWORTH - SEATTLE						
	Weekdays Schedules				Weekend	
	SW1	SW2	SW3	SW4	SW5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	-	5	
In Service Days/Year	242	242	242	254	106	
1-Way Trips/Day	22	16	-	-	-	38
1-Way Trips/Year	5,324	3,872	-	-	-	9,196
Seats/Day	3,278	2,384	-	-	-	5,662
Seats/Year	793,276	576,928	-	-	-	1,370,204
Riders/Day	1,007	863	-	-	-	1,870
Riders/Year	243,694	208,846	-	-	-	452,540
Vessel Minutes/day	594	432	-	-	-	1,026
Vessel Hours/Year	2,396	1,742	-	-	-	4,138

Fare Options

One-Way Fare	Recovery %
$3.35 (Cross-Sound Fare)	41%
$3.30	40%
$5.00	60%

Bremerton-Annapolis

Number of Vessels Needed

1

Special Requirements

None

Recommended Vessel Type

80-pax operating at 22kts.

Estimated Cost Summary Table

Bremerton-Annapolis

Annual Demand	182,118	
Weekday daily demand	717	From Service Assumptions
Weekend daily demand	-	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	32	
1-way trips per weekend/holiday	-	
Annual passengers carried	174,240	1-way trips
Weekday daily passengers carried	720	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	580,800	vessel capacity x # runs
1-Way Trip Distance	0.8	nautical miles
1-Way Travel Time	3	minutes
1-Way Trip Time (Dep-Dep)	5	minutes
Fuel burned per year	13,455	gallons (includes 10% margin)
Fuel cost	$ 47,901	per year ($3.56/gallon)
Propulsion system maintenance	$ 5,589	per year
Other vessel machinery maintenance	$ 1,397	per year
Vessel electrical system maintenance	$ 118	per year
Vessel hull & outfit maintenance	$ 18,365	per year
Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 57,500	

Bremerton-Annapolis

Onboard labor (Master, Sr. DH, and DH)	$ 103,419	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$ 71,994	12.5% of all costs
Contractor Profit	$ 43,197	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 762,956	
Cost per 1-way passenger	$ 4.38	
Cost per vessel hour	$1,261.08	

Route Summary

BREMERTON-ANNAPOLIS						
	Weekdays Schedules				Weekend	
	B1				B5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	12	5	
In Service Days/Year	242	242	242	242	106	
1-Way Trips/Day	30	-	-	-	-	30
1-Way Trips/Year	7,260	-	-	-	-	7,260
Seats/Day	2,400	-	-	-	-	2,400
Seats/Year	580,800	-	-	-	-	580,800
Riders/Day	720	-	-	-	-	720
Riders/Year	174,240	-	-	-	-	174,240
Vessel Minutes/day	150	-	-	-	-	150
Vessel Hours/Year	605	-	-	-	-	605

Fare Options

One-Way Fare	Recovery %
$1.50 (Kitsap Transit Fare*)	22%
$2.80	40%
$4.20	60%

*Assumed Kitsap Transit fare includes proposed fuel surcharge of $.25 above standard $1.25 fare.

Bremerton-Port Orchard

Number of Vessels Needed

1

Special Requirements

None

Recommended Vessel Type

80-pax operating at 22kts.

Estimated Cost Summary Table

Bremerton-Port Orchard

Annual Demand	470,022	
Weekday daily demand	1,773	From Service Assumptions
Weekend daily demand	177	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	65	
1-way trips per weekend/holiday	46	
Annual passengers carried	449,356	1-way trips
Weekday daily passengers carried	1,778	1-way trips
Weekend/holiday daily passengers carried	177	1-way trips
Passenger seats per year	1,684,800	vessel capacity x # runs
1-Way Trip Distance	4.8	nautical miles
1-Way Travel Time	14	minutes
1-Way Trip Time (Dep-Dep)	17	minutes
Fuel burned per year	260,948	gallons (includes 10% margin)
Fuel cost	$ 928,976	per year ($3.56/gallon)
Propulsion system maintenance	$ 108,386	per year
Other vessel machinery maintenance	$ 27,096	per year
Vessel electrical system maintenance	$ 2,296	per year

Bremerton-Port Orchard

Vessel hull & outfit maintenance	$ 47,362	per year
Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 57,500	
Onboard labor (Master, Sr. DH, and DH)	$ 1,019,999	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$ 316,660	12.5% of all costs
Contractor Profit	$ 189,996	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 3,111,748	
Cost per 1-way passenger	$ 6.92	
Cost per vessel hour	$ 521.49	

Route Summary

BREMERTON-PORT ORCHARD						
	Weekdays Schedules				Weekend	
	B1	B2	B3	B4	B5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	12	5	
In Service Days/Year	242	242	242	242	106	
1-Way Trips/Day	66	-	-	-	48	114
1-Way Trips/Year	15,972	-	-	-	5,088	21,060
Seats/Day	5,280	-	-	-	3,840	9,120
Seats/Year	1,277,760	-	-	-	407,040	1,684,800
Riders/Day	1,778				180	1,958
Riders/Year	430,276				19,080	449,356
Vessel Minutes/day	1,122	-	-	-	816	1,938
Vessel Hours/Year	4,525	-	-	-	1,442	5,967

Fare Options

One-Way Fare	Recovery %
$1.50 (Kitsap Transit Fare*)	34%
$1.80	40%
$2.70	60%

*Assumed Kitsap Transit fare includes proposed fuel surcharge of $.25 above standard $1.25 fare.

Port Orchard-Seattle

Number of Vessels Needed

3

Special Requirements

Low Wake Design

Recommended Vessel Type

149-pax operating at 30kts.

Estimated Cost Summary Table

Port Orchard

Annual Demand	441,960	
Weekday daily demand	1,740	From Service Assumptions
Weekend daily demand	-	From Service Assumptions
Number of vessels	3	
1-way trips per weekday	40	
1-way trips per weekend/holiday	-	
Annual passengers carried	415,272	1-way trips
Weekday daily passengers carried	1,716	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	1,442,320	vessel capacity x # runs
1-Way Trip Distance	14.8	nautical miles
1-Way Travel Time	32	minutes
1-Way Trip Time (Dep-Dep)	37	minutes
Fuel burned per year	685,037	gallons (includes 10% margin)
Fuel cost	$ 2,055,110	per year
Propulsion system maintenance	$ 284,532	per year
Other vessel machinery maintenance	$ 71,133	per year
Vessel electrical system maintenance	$ 6,028	per year
Vessel hull & outfit maintenance	$ 43,770	per year

Port Orchard

Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 172,500	
Onboard labor (Master, Sr. DH, and DH)	$ 1,473,470	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$ 556,026	12.5% of all costs
Contractor Profit	$ 333,616	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 5,409,661	
Cost per 1-way passenger	$ 13.03	
Cost per vessel hour	$ 906.24	

Route Summary

PORT ORCHARD- SEATTLE						
	Weekdays Schedules				Weekend	
	PO1	PO2	PO3	PO4	PO5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	12	5	
In Service Days/Year	242	242	242	242	106	
1-Way Trips/Day	16	12	12	-	-	40
1-Way Trips/Year	3,872	2,904	2,904	-	-	9,680
Seats/Day	2,384	1,788	1,788	-	-	5,960
Seats/Year	576,928	432,696	432,696	-	-	1,442,320
Riders/Day	666	525	525	-	-	1,716
Riders/Year	161,172	127,050	127,050	-	-	415,272
Vessel Minutes/day	592	444	444	-	-	1,480
Vessel Hours/Year	2,388	1,791	1,791	-	-	5,969

Fare Options

One-Way Fare	Recovery %
$3.35 (Cross-Sound Fare)	26%
$6.00	40%
$8.00	60%

Bainbridge-Des Moines

Number of Vessels Needed

2

Special Requirements

None

Recommended Vessel Type

80-pax operating at 30kts.

Estimated Cost Summary Table

Bainbridge-Des Moines

Annual Demand	80,568	
Weekday daily demand	270	From Service Assumptions
Weekend daily demand	108	From Service Assumptions
Number of vessels	2	
1-way trips per weekday	36	
1-way trips per weekend/holiday	10	
Annual passengers carried	75,064	1-way trips
Weekday daily passengers carried	372	1-way trips
Weekend/holiday daily passengers carried	108	1-way trips
Passenger seats per year	588,160	vessel capacity x # runs
1-Way Trip Distance	23.0	nautical miles
1-Way Travel Time	48	minutes
1-Way Trip Time (Dep-Dep)	53	minutes
Fuel burned per year	378,676	gallons (includes 10% margin)
Fuel cost	$ 1,348,088	per year ($3.56/gallon)
Propulsion system maintenance	$ 157,285	per year
Other vessel machinery maintenance	$ 39,321	per year
Vessel electrical system maintenance	$ 3,332	per year
Vessel hull & outfit maintenance	$ 7,912	per year

Bainbridge-Des Moines

Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 115,000	
Onboard labor (Master, Sr. DH, and DH)	$ 1,603,045	Vessel hours + 10%
Shoreside labor	$ 212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$ 451,956	12.5% of all costs
Contractor Profit	$ 271,174	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 4,510,589	
Cost per 1-way passenger	$ 58.76	
Cost per vessel hour	$ 679.15	

Route Summary

BAINBRIDGE - DES MOINES						
	Weekdays Schedules				Weekend	
	BD1	BD2	BD3	BD4	BD5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	12	5	
In Service Days/Year	242	242	242	242	106	
1-Way Trips/Day	14	12	-	-	10	36
1-Way Trips/Year	3,388	2,904	-	-	1,060	7,352
Seats/Day	2,086	1,788	-	-	1,490	5,364
Seats/Year	504,812	432,696	-	-	157,940	1,095,448
Riders/Day	145	117	-	-	110	372
Riders/Year	35,090	28,314	-	-	11,660	75,064
Vessel Minutes/day	742	636	-	-	530	1,908
Vessel Hours/Year	2,993	2,565	-	-	936	6,494

Fare Options

One-Way Fare	Recovery %
$3.35 (Cross-Sound Fare)	6%
$23.60	40%
$35.30	60%

Suquamish-Seattle

Number of Vessels Needed

1

Special Requirements

None

Recommended Vessel Type

149-pax operating at 30kts.

Estimated Cost Summary Table

Suquamish

Annual Demand	92,504	
Weekday daily demand	310	From Service Assumptions
Weekend daily demand	124	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	14	
1-way trips per weekend/holiday	12	
Annual passengers carried	86,046	1-way trips
Weekday daily passengers carried	303	1-way trips
Weekend/holiday daily passengers carried	120	1-way trips
Passenger seats per year	694,340	vessel capacity x # runs
1-Way Trip Distance	15.0	nautical miles
1-Way Travel Time	32	minutes
1-Way Trip Time (Dep-Dep)	37	minutes
Fuel burned per year	334,281	gallons (includes 10% margin)
Fuel cost	$ 1,002,844	per year
Propulsion system maintenance	$ 138,845	per year
Other vessel machinery maintenance	$ 34,711	per year
Vessel electrical system maintenance	$ 2,942	per year

Suquamish

Vessel hull & outfit maintenance	$	9,069	per year
Floats & docks annual repair & maintenance	$	128,797	per year
Other facilities R&M			
Insurance	$	57,500	
Onboard labor (Master, Sr. DH, and DH)	$	709,336	Vessel hours + 10%
Shoreside labor	$	212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$	287,114	12.5% of all costs
Contractor Profit	$	172,268	7.5% on all costs
Security	$	71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$	2,828,105	
Cost per 1-way passenger	$	32.87	
Cost per vessel hour	$	984.15	

Route Summary

SUQUAMISH - SEATTLE						
	Weekdays Schedules				Weekend	
	B1	B2	B3	B4	B5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	12	5	
In Service Days/Year	242	242	242	242	106	
1-Way Trips/Day	14	-	-	-	12	26
1-Way Trips/Year	3,388	-	-	-	1,272	4,660
Seats/Day	2,086	-	-	-	1,788	3,874
Seats/Year	504,812	-	-	-	189,528	694,340
Riders/Day	303	-	-	-	120	423
Riders/Year	73,326	-	-	-	12,720	86,046
Vessel Minutes/day	518	-	-	-	444	962
Vessel Hours/Year	2,089	-	-	-	784	2,874

Fare Options

One-Way Fare	Recovery %
$3.35 (Cross-Sound Fare)	10%
$14.00	40%
$20.00	60%

Kirkland-UW

Number of Vessels Needed

1

Special Requirements

None

Recommended Vessel Type

80-pax operating at 22kts.

Estimated Cost Summary Table

Kirkland-UW

Annual Demand	106,680	
Weekday daily demand	420	From Service Assumptions
Weekend daily demand	-	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	18	
1-way trips per weekend/holiday	-	
Annual passengers carried	100,914	1-way trips
Weekday daily passengers carried	417	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	348,480	vessel capacity x # runs
1-Way Trip Distance	6.0	nautical miles
1-Way Travel Time	20	minutes
1-Way Trip Time (Dep-Dep)	25	minutes
Fuel burned per year	79,591	gallons (includes 10% margin)
Fuel cost	$ 283,346	per year ($3.56/gallon)
Propulsion system maintenance	$ 33,059	per year
Other vessel machinery maintenance	$ 8,265	per year
Vessel electrical system maintenance	$ 700	per year
Vessel hull & outfit maintenance	$ 10,636	per year

Kirkland-UW

Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 30,900	
Onboard labor (Master, Sr. DH, and DH)	$ 344,596	Vessel hours + 10%
Shoreside labor	$ 1,064,340	From David Hill 3/03 report*1.15
Contractor Overhead	$ 238,080	12.5% of all costs
Contractor Profit	$ 142,848	7.5% on all costs
Security	$ 71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 2,357,378	
Cost per 1-way passenger	$ 23.36	
Cost per vessel hour	$ 1,298.83	

Route Summary

KIRKLAND - UW						
	Weekdays Schedules			Weekend		
	F1	F2	F3	F4	F5	Totals
Sched Days/Year	254				111	
Weather Cancellations/Year	12				5	
In Service Days/Year	242				106	
1-Way Trips/Day	18				-	18
1-Way Trips/Year	4,356				-	4,356
Seats/Day	1,440				-	1,440
Seats/Year	348,480				-	348,480
Riders/Day	417				-	417
Riders/Year	100,914				-	100,914
Vessel Minutes/day	450				-	450
Vessel Hours/Year	1,815				-	1,815

Fare Options

One-Way Fare	Recovery %
$2.25 (Metro 2-Zone Fare)	10%
$9.40	40%
$14.10	60%

Kenmore-UW

Vessel hull & outfit maintenance	$	255	per year
Floats & docks annual repair & maintenance	$	128,797	per year
Other facilities R&M			
Insurance	$	30,872	
Onboard labor (Master, Sr. DH, and DH)	$	227,521	Vessel hours + 10%
Shoreside labor	$	-	From David Hill 3/03 report*1.15
Contractor Overhead	$	80,043	12.5% of all costs
Contractor Profit	$	48,026	7.5% on all costs
Security	$	17,953	Assume 1 FT deckhand/terminal
Total Annual Cost	$	786,366	
Cost per 1-way passenger	$	324.94	
Cost per vessel hour	$	590.81	

Route Summary

KENMORE - UW						
	Weekdays Schedules			Weekend		
	F1	F2	F3	F4	F5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	-	5	
In Service Days/Year	242	242	242	254	106	
1-Way Trips/Day	10	-	-	-	-	10
1-Way Trips/Year	2,420	-	-	-	-	2,420
Seats/Day	800	-	-	-	-	800
Seats/Year	193,600	-	-	-	-	193,600
Riders/Day	10	-	-	-	-	10
Riders/Year	2,420	-	-	-	-	2,420
Vessel Minutes/day	330	-	-	-	-	330
Vessel Hours/Year	1,331	-	-	-	-	1,331

Fare Options

One-Way Fare	Recovery %
$2.25 (Metro 2-Zone Fare)	1%
$130.00	40%
$195.00	60%

Renton-Leschi

Number of Vessels Needed

1

Special Requirements

None

Recommended Vessel Type

80-pax operating at 22kts.

Estimated Cost Summary Table

Renton-Leschi

Annual Demand	2,540	
Weekday daily demand	10	From Service Assumptions
Weekend daily demand	-	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	10	
1-way trips per weekend/holiday	-	
Annual passengers carried	2,420	1-way trips
Weekday daily passengers carried	10	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	96,800	vessel capacity x # runs
1-Way Trip Distance	7.1	nautical miles
1-Way Travel Time	24	minutes
1-Way Trip Time (Dep-Dep)	29	minutes
Fuel burned per year	52,938	gallons (includes 10% margin)
Fuel cost	$ 188,461	per year ($3.56/gallon)
Propulsion system maintenance	$ 21,989	per year
Other vessel machinery maintenance	$ 5,497	per year
Vessel electrical system maintenance	$ 466	per year
Vessel hull & outfit maintenance	$ 255	per year

Renton-Leschi

Floats & docks annual repair & maintenance	$	128,797	per year
Other facilities R&M			
Insurance	$	30,872	
Onboard labor (Master, Sr. DH, and DH)	$	199,943	Vessel hours + 10%
Shoreside labor	$	-	From David Hill 3/03 report*1.15
Contractor Overhead	$	72,035	12.5% of all costs
Contractor Profit	$	43,221	7.5% on all costs
Security	$	17,953	Assume 1 FT deckhand/terminal
Total Annual Cost	$	709,488	
Cost per 1-way passenger	$	293.18	
Cost per vessel hour	$	606.57	

Route Summary

RENTON-LESCHI						
	Weekdays Schedules			Weekend		
	F1	F2	F3	F4	F5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	12	5	
In Service Days/Year	242	242	242	242	106	
1-Way Trips/Day	10	-	-	-	-	10
1-Way Trips/Year	2,420	-	-	-	-	2,420
Seats/Day	800	-	-	-	-	800
Seats/Year	193,600	-	-	-	-	193,600
Riders/Day	10	-	-	-	-	10
Riders/Year	2,420	-	-	-	-	2,420
Vessel Minutes/day	290	-	-	-	-	290
Vessel Hours/Year	1,170	-	-	-	-	1,170

Fare Options

One-Way Fare	Recovery %
$2.25 (Metro 2-Zone Fare)	1%
$117.00	40%
$176.00	60%

Shilshole Marina-Downtown Seattle

Number of Vessels Needed

1

Special Requirements

None

Recommended Vessel Type

80-pax operating at 30kts.

Estimated Cost Summary Table

Shilshole Marina-Seattle

Annual Demand	2,540	
Weekday daily demand	10	From Service Assumptions
Weekend daily demand	-	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	8	
1-way trips per weekend/holiday	-	
Annual passengers carried	4,840	1-way trips
Weekday daily passengers carried	20	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	96,800	vessel capacity x # runs
1-Way Trip Distance	8.5	nautical miles
1-Way Travel Time	28	minutes
1-Way Trip Time (Dep-Dep)	33	minutes
Fuel burned per year	50,681	gallons (includes 10% margin)
Fuel cost	$ 180,424	per year ($3.56/gallon)
Propulsion system maintenance	$ 21,051	per year
Other vessel machinery maintenance	$ 5,263	per year
Vessel electrical system maintenance	$ 446	per year
Vessel hull & outfit maintenance	$ 510	per year

Shilshole Marina-Seattle

Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 30,872	
Onboard labor (Master, Sr. DH, and DH)	$ 182,017	Vessel hours + 10%
Shoreside labor	$ -	From David Hill 3/03 report*1.15
Contractor Overhead	$ 68,672	12.5% of all costs
Contractor Profit	$ 41,203	7.5% on all costs
Security	$ 17,953	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 677,208	
Cost per 1-way passenger	$ 139.92	
Cost per vessel hour	$ 636.00	

Route Summary

SHILSHOLE-SEATTLE						
	Weekdays Schedules				Weekend	
	V1	V2	V3	V4	V5	Totals
Sched Days/Year	254	254	254	254	111	
Weather Cancellations/Year	12	12	12	-	5	
In Service Days/Year	242	242	242	254	106	
1-Way Trips/Day	8	-	-	-	-	8
1-Way Trips/Year	1,936	-	-	-	-	1,936
Seats/Day	640	-	-	-	-	640
Seats/Year	154,880	-	-	-	-	154,880
Riders/Day	20	-	-	-	-	20
Riders/Year	4,840	-	-	-	-	4,840
Vessel Minutes/day	216	-	-	-	-	
Vessel Hours/Year	871	-	-	-	-	871

Fare Options

One-Way Fare	Recovery %
$1.75 (Metro 1-Zone Fare)	2%
$56.00	40%
$84.00	60%

Des Moines-Seattle

Number of Vessels Needed

2

Special Requirements

None

Recommended Vessel Type

80-pax operating at 30kts.

Estimated Cost Summary Table

Des Moines-Seattle

Annual Demand	15,240	
Weekday daily demand	60	From Service Assumptions
Weekend daily demand	-	From Service Assumptions
Number of vessels	2	
1-way trips per weekday	24	
1-way trips per weekend/holiday	-	
Annual passengers carried	14,520	1-way trips
Weekday daily passengers carried	60	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	232,320	vessel capacity x # runs
1-Way Trip Distance	16.0	nautical miles
1-Way Travel Time	36	minutes
1-Way Trip Time (Dep-Dep)	41	minutes
Fuel burned per year	210,599	gallons (includes 10% margin)
Fuel cost	$ 749,731	per year ($3.56/gallon)
Propulsion system maintenance	$ 87,473	per year
Other vessel machinery maintenance	$ 21,868	per year
Vessel electrical system maintenance	$ 1,853	per year

Des Moines-Seattle

Vessel hull & outfit maintenance	$ 1,530	per year
Floats & docks annual repair & maintenance	$ 128,797	per year
Other facilities R&M		
Insurance	$ 86,250	
Onboard labor (Master, Sr. DH, and DH)	$ 452,284	Vessel hours + 10%
Shoreside labor	$ -	From David Hill 3/03 report*1.15
Contractor Overhead	$ 191,223	12.5% of all costs
Contractor Profit	$ 114,734	7.5% on all costs
Security	$ 17,953	Assume 1 FT deckhand/terminal
Total Annual Cost	$ 1,853,697	
Cost per 1-way passenger	$ 127.67	
Cost per vessel hour	$ 467.07	

Route Summary

DES MOINES-SEATTLE						
	Weekdays Schedules				Weekend	
	F1	F2			F5	Totals
Sched Days/Year	254	254			111	
Weather Cancellations/Year	12	12			5	
In Service Days/Year	242	242			106	
1-Way Trips/Day	12	12			-	24
1-Way Trips/Year	2,904	2,904			-	5,808
Seats/Day	960	960			-	3,576
Seats/Year	232,320	232,320			-	865,392
Riders/Day	30	30			-	270
Riders/Year	7,260	7,260			-	65,340
Vessel Minutes/day	492	492			-	984
Vessel Hours/Year	1,984	1,984			-	3,969

Fare Options

One-Way Fare	Recovery %
$2.25 (Metro 2-Zone Fare)	2%
$51.10	40%
$76.70	60%

Port Townsend-Seattle

Number of Vessels Needed

1

Special Requirements

Foil Assistance

Recommended Vessel Type

149-pax operating at 35kts.

Estimated Cost Summary Table

PT-Seattle

Annual Demand	66,240	
Weekday daily demand	600	From Service Assumptions
Weekend daily demand	480	From Service Assumptions
Number of vessels	1	
1-way trips per weekday	8	
1-way trips per weekend/holiday	8	
Annual passengers carried	65,040	1-way trips
Weekday daily passengers carried	600	1-way trips
Weekend/holiday daily passengers carried	480	1-way trips
Passenger seats per year	129,928	vessel capacity x # runs
1-Way Trip Distance	42.3	nautical miles
1-Way Travel Time	75	minutes
1-Way Trip Time (Dep-Dep)	80	minutes
Fuel burned per year	152,376	gallons (includes 10% margin)
Fuel cost	$ 542,459	per year ($3.56/gallon)
Propulsion system maintenance	$ 63,290	per year
Other vessel machinery maintenance	$ 15,822	per year
Vessel electrical system maintenance	$ 1,341	per year

PT-Seattle

Vessel hull & outfit maintenance	$	6,855	per year
Floats & docks annual repair & maintenance	$	128,797	per year
Other facilities R&M			
Insurance	$	57,500	
Onboard labor (Master, Sr. DH, and DH)	$	286,993	Vessel hours + 10%
Shoreside labor	$	212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$	164,491	12.5% of all costs
Contractor Profit	$	98,694	7.5% on all costs
Security	$	71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$	1,650,921	
Cost per 1-way passenger	$	25.38	
Cost per vessel hour	$	1,419.94	

Route Summary

PT-Seattle						
	Weekdays Schedules				Weekend	
	B1	B2	B3	B4	B5	Totals
Sched Days/Year	108	108	108	108	3	
Weather Cancellations/Year	2	2	2	2	-	
In Service Days/Year	106	106	106	106	3	
1-Way Trips/Day	8	-	-	-	8	16
1-Way Trips/Year	848	-	-	-	24	872
Seats/Day	1,192	-	-	-	1,192	2,384
Seats/Year	126,352	-	-	-	3,576	129,928
Riders/Day	600	-	-	-	480	1,080
Riders/Year	63,600	-	-	-	1,440	65,040
Vessel Minutes/day	640	-	-	-	640	1,280
Vessel Hours/Year	1,131	-	-	-	32	1,163

Fare Options

One-Way Fare	Recovery %
$3.35 (Cross-Sound Fare)	13%
$10.20	40%
$15.30	60%

Vancouver, BC-Seattle

Number of Vessels Needed

2

Special Requirements

Foil Assistance, Ride Control System, Must meet SOLAS (Safety of Life at Sea) regulations.

Recommended Vessel Type

149-pax operating at 35kts.

Estimated Cost Summary Table

Vancouver-Seattle

Annual Demand	55,200	
Weekday daily demand	500	From Service Assumptions
Weekend daily demand	400	From Service Assumptions
Number of vessels	2	
1-way trips per weekday	8	
1-way trips per weekend/holiday	-	
Annual passengers carried	56,680	1-way trips
Weekday daily passengers carried	520	1-way trips
Weekend/holiday daily passengers carried	-	1-way trips
Passenger seats per year	129,928	vessel capacity x # runs
1-Way Trip Distance	129.8	nautical miles
1-Way Travel Time	225	minutes
1-Way Trip Time (Dep-Dep)	230	minutes
Fuel burned per year	468,234	gallons (includes 10% margin)
Fuel cost	$ 1,666,912	per year ($3.56/gallon)
Propulsion system maintenance	$ 213,931	per year
Other vessel machinery maintenance	$ 53,483	per year
Vessel electrical system maintenance	$ 4,532	per year

Vancouver-Seattle

Vessel hull & outfit maintenance	$	7,169	per year
Floats & docks annual repair & maintenance	$	128,797	per year
Other facilities R&M			
Insurance	$	143,750	
Onboard labor (Master, Sr. DH, and DH)	$	825,104	Vessel hours + 10%
Shoreside labor	$	212,868	From David Hill 3/03 report*1.15
Contractor Overhead	$	407,068	12.5% of all costs
Contractor Profit	$	244,241	7.5% on all costs
Security	$	71,811	Assume 1 FT deckhand/terminal
Total Annual Cost	$	3,979,666	
Cost per 1-way passenger	$	70.21	
Cost per vessel hour	$	1,190.57	

Route Summary

VANCOUVER BC - SEATTLE						
	Weekdays Schedules				Weekend	
	PO1	PO2	PO3	PO4	PO5	Totals
Sched Days/Year	111	111	108	108	3	
Weather Cancellations/Year	2	2	2	2	-	
In Service Days/Year	109	109	106	106	3	
1-Way Trips/Day	4	4	-	-	-	8
1-Way Trips/Year	436	436	-	-	-	872
Seats/Day	596	596	-	-	-	1,192
Seats/Year	64,964	64,964	-	-	-	129,928
Riders/Day	260	260	-	-	-	520
Riders/Year	28,340	28,340	-	-	-	56,680
Vessel Minutes/day	920	920	-	-	-	1,840
Vessel Hours/Year	1,671	1,671	-	-	-	3,343

Fare Options

One-Way Fare	Recovery %
$5.00 (Translink 3-Zone Fare)	5%
$28.10	40%
$42.20	60%