KING COUNTY

WATERBORNE TRANSIT POLICY STUDY

SUMMARY REPORT

AUGUST 2005

1. INTRODUCTION

The Puget Sound region has a long history of waterborne transportation, with waterways such as the Puget Sound and Lake Washington being the first major transportation routes in the area. In the early days of King County, hundreds of steamships, collectively described as the Mosquito Fleet, plied the waters transporting people, lumber, mail, and everything else. However, improvements in land-based transportation in the 1930s, including both highways and interurban rail transit, led to the rapid decline and termination of the Mosquito Fleet.

Seattle Central Waterfront

Seventy years later, King County is looking at whether or not waterborne transit has the potential to augment the existing infrastructure to help provide reliable and sustainable mobility for King County residents and visitors.

In response, King County Metro, as part of the 2004 update to the *Six-Year Transit Development Plan for 2002 to 2007*, developed Strategy S-14 to determine under what conditions and circumstances it may be appropriate for King County to invest and/or participate in passenger-only ferry service. The purpose of this study is to provide policy makers with information to help make informed decisions about potential county investment and potential participation in passenger-only ferry services.

2. POLICY CONSIDERATIONS FOR THE COUNTY

Key policy questions and considerations for the county include:

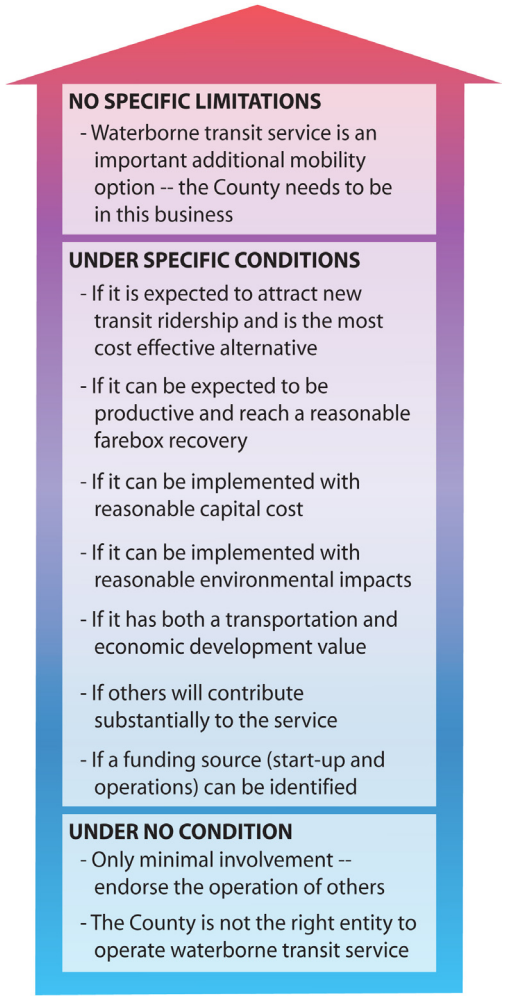
1. ***Should King County invest or participate in waterborne transit, and if so under what circumstances?***

2. ***If investment or participation is warranted, what funding approach or approaches could be considered?***

3. ***What operating approaches would best achieve county objectives and mitigate risk?***

SHOULD KING COUNTY INVEST OR PARTICIPATE?

Potential county participation levels ranging from no participation at all, through to potential inclusion of waterborne transit as a primary component of the public transportation network, are illustrated in the graphic to the left.



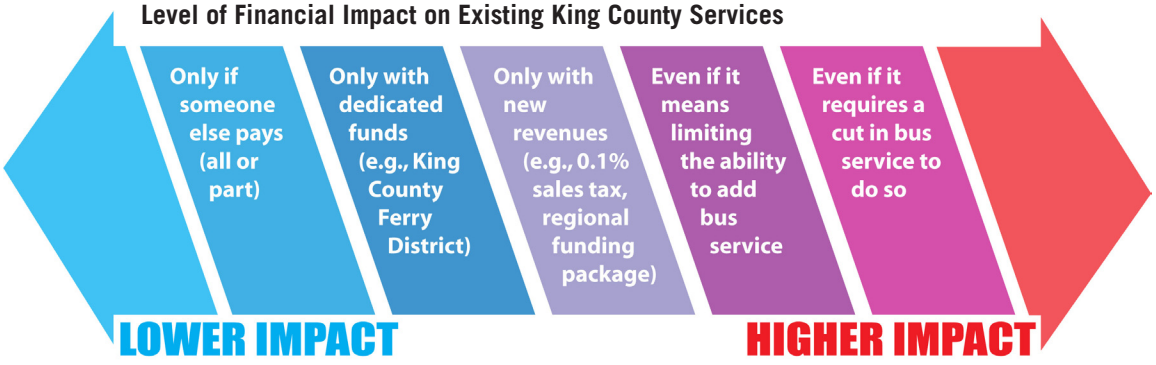
Range of King County Metro Participation Levels

Findings from this study suggest that if participation in waterborne transit is considered by the county, it should only be under specific conditions. The availability of alternative public transportation modes, coupled with limited waterborne transit ridership potential in most markets, does not support a strategy of widescale implementation of passenger-only ferry service by the county.

WHAT FUNDING APPROACHES COULD BE CONSIDERED?

If a decision were made to invest in waterborne transportation, the next key question would be how to fund it. A range of potential funding options are presented below, presented in terms of those with the least impact on other King County transit services (i.e., new funding or full funding by others), to those with the greatest (i.e., use existing funding).

Although one option is to have someone else pay completely for passenger-only ferry service (e.g., the private sector), the analysis of the sample routes suggests that some level of public subsidy would be required for operation. That subsidy could come from existing funds (cuts in existing bus services or redirection of future funds to waterborne transit), or from new revenues such as an increase in the sales tax, a regional funding initiative, or dedicated funds such as creation of a Ferry District with authority to collect revenue from property taxes. The primary trade-off to be considered by the county is potential reductions in bus service versus raising new revenue from some or all of the county residents.



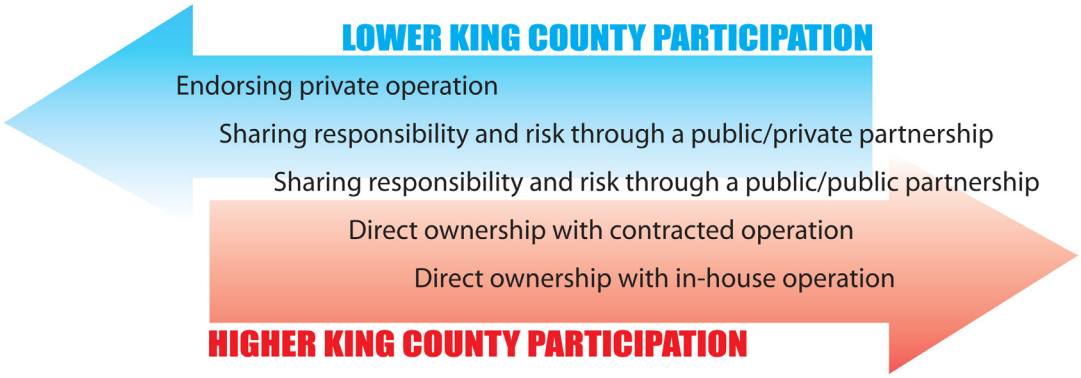
WHAT OPERATING APPROACHES COULD BE CONSIDERED?

Decisions about how to operate the service can be made on a system-wide basis, or on a route by route basis depending on county objectives and potential private and/or public partnership opportunities. The range of potential operating approaches are illustrated below, presented in terms of lowest to highest participation by the county.

The direct ownership approach would involve King County owning and operating the vessels, and possibly providing the terminals. This approach provides the highest level of control for the county, but raises questions about how to provide and retain skilled maritime labor (particularly if the service is seasonal), how to provide supporting infrastructure such as maintenance and refueling facilities, and what to do with the vessel if a route is found to be unproductive or is only seasonally operated.

If service is operated by a private company, options are available for the county to contract the work or undertake a public-private partnership. Contracting provides the county with a greater level of control (the county establishes all service and other parameters), but does not include incentives for the private provider to operate the service more efficiently or develop innovative ways of attracting customers. A public-private partnership provides opportunities for private sector incentive, but may require certain county guarantees such as guaranteed minimum cost recovery or exclusivity, and may reduce some of the county's control over operational aspects such as setting service levels or quality of service.

Potential Operating Approaches



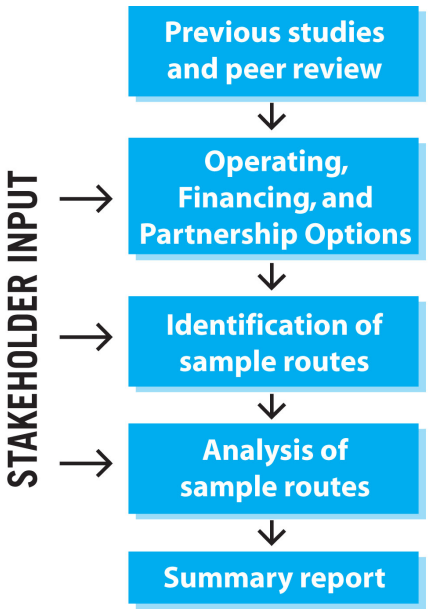
Under the public-public partnership approach, King County could consider partial funding of a passenger-only ferry service without direct operational involvement. An example is potentially supporting Washington State Ferries in its efforts to deliver passenger-only service to Vashon Island. Public-public approaches can also include partnerships with local cities to deliver terminal and dock infrastructure.

3. STUDY WORK ACTIVITIES

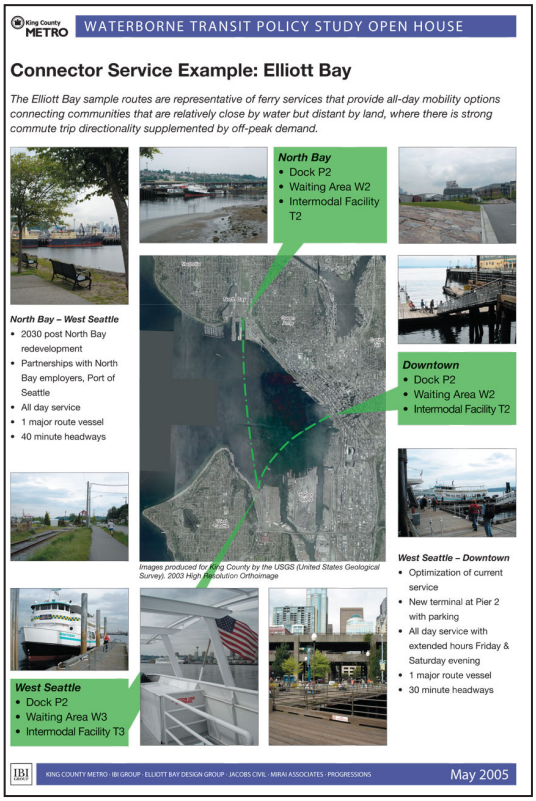
Work under this study included five primary activities:

1. A review of past studies relevant to waterborne transit in the Puget Sound region, and interviews with agencies having experience in waterborne transit. This provided a context for the study and valuable "lessons learned" from other agencies.
2. Identification of a range of potential options for delivering waterborne transit, including partnership strategies and associated advantages and disadvantages.
3. Identification of eight sample routes – two each in four potential waterborne transit market areas in the county – to illustrate potential operations, opportunities, and issues when considering, planning, or evaluating passenger-only ferry service.
4. An analysis of the sample routes to identify potential ridership, costs, and impacts to be considered by the county.
5. Preparation of this Summary Report

Project Work Activities



Example Open House Presentation Board



4. STAKEHOLDER CONSULTATION PROCESS

Stakeholder consultation was an integral part of this study. King County contains a broad group of residents and businesses with an interest in, and experience relevant to, waterborne transit. Stakeholders include neighbors of existing or potential routes, city governments, the Port of Seattle, private ferry operators, Washington State Ferries, ferry advocates, recreational water users, labor, and others.

Two stakeholder meetings with about 60 attendees were held at the project outset to identify key considerations for the study. Attendees included representatives from maritime industry, waterfront communities in King County, and agencies and organizations dealing with transportation issues.

Mid-way through the project, a half-day intensive workshop was held with a group of local city officials and private and public sector experts on waterborne transit to help identify specific technical and operational issues and considerations. Initial technical findings related to terminal design, vessel design, and potential route characteristics/performance. These were presented to the stakeholders in a follow-up open house and presentation.

The discussion of potential waterborne transit services with the stakeholders suggested some important considerations for the county:

- Decisions on where to offer waterborne transit services may be significantly constrained, or even driven by, the location of terminals. The waterfront areas on the major bodies of water within King County are generally highly developed, and attempting to site new terminals and facilities can be challenging from both a logistical and community impact perspective. The availability of terminals is perhaps the most important route planning criteria.
- Simplicity is a key to success. A recurring theme from both stakeholders and other agencies was to keep the service and infrastructure as simple as possible. Passengers are not expected to dwell at terminals for extended periods of time, and for the most part facilities equivalent to basic bus stops and platforms are sufficient for waterborne transit purposes.
- Partnerships are another key to success. Local stakeholders and other agencies with experience operating waterborne transit services highly recommend partnership models as ways to provide terminal infrastructure, deliver service, and share risk and reward. Partnerships can be public-private, or public-public.
- There is no single best approach for delivering waterborne transit services. Characteristics of the route, location and ownership of the terminals, opportunities for partnerships, risk, and route economics suggest that a model that might be applied to one route, may or may not be the best for other routes. This suggests that service planning may be very route specific, and that the county should make decisions at a route-level.

5. REGIONAL AND INDUSTRY EXPERIENCE

Over the past several decades, waterborne transit in the Puget Sound region has been extensively studied. Thirty previous studies were reviewed to ensure that the King County Waterborne Transit Policy study built upon the insights of earlier efforts.

This review of regional studies was complemented by interviews of eight private and public entities with passenger-only ferry systems in operation or design. The list of interviewees includes Washington State Ferries, Kitsap Transit, Coast Mountain Bus (operator of SeaBus in Vancouver, BC), Victoria Harbour Ferry, New York Water Taxi, San Francisco Bay Area Water Transit Authority, Vallejo BayLink Ferries, and Sydney Ferries (Australia).

The survey of other agencies and review of previous studies indicated that:

- There are a variety of different reasons for considering waterborne transit. In places like San Francisco, Vancouver (SeaBus), and New York, passenger-only ferries provide a link in the regional transit network and provide mobility options for users. In Victoria, BC, passenger-only ferries cater to tourists, ferrying them between different attractions around Victoria's Inner Harbor.
- The decision to implement passenger ferry service is sometimes founded on less traditional transportation goals that encompass a broader set of interests, such as economic development, tourism and recreation. Kitsap Transit and the New York Water Taxi are both examples of passenger-only ferry systems that are considered tools for economic development and revitalization.
- Waterborne transit has a unique appeal that people value. Information from the Elliott Bay Water Taxi and Vallejo BayLink Ferries, suggests that there is a segment of the traveling public that will choose to take waterborne transit over other modes because of its inherent appeal. Not surprisingly, this is most apparent in the summer where weather conditions create a pleasant overall experience.

6. OPERATING, FINANCING, AND PARTNERSHIP OPTIONS

The findings from the review of regional and industry experience were the starting points for the identification of key components of a waterborne transit system and a range of potential options for service delivery. Components and options were refined and expanded through input from the two Stakeholder Meetings held in early March 2005, and finalized using the knowledge of the consultant team.

In order to define potential service delivery options, five major components of waterborne transit were identified as follows:

1. **Participating entities.** This includes public and/or private entities that could potentially participate in the funding and/or operation of a waterborne transit service. Public entities include King County, Washington State, a Public Transportation Benefit Area, County Ferry District, or other public entity or construct. Private entities potentially include vessel operators, land or terminal owners/developers, and other private service providers.
2. **Facilities.** Terminals include the dock, gangway and passenger waiting area at each ferry stop. For larger terminals, there may also be upland facilities such as a parking area and bus stops.
3. **Vessels.** Vessels are classified in terms of elements such as passenger capacity, hull design, vessel speed, propulsion system, passenger amenities, etc. The optimal combination of characteristics varies depending on capacity and operational requirements, as well as an operating environment.
4. **Operational characteristics.** These include service characteristics such as headways, span of service, and number of stops; operational constraints such as speed limits, tidal issues, and congestion/local operational issues; crewing and vessel operational characteristics; and terminal operations and maintenance.
5. **Funding and financing.** Potential funding sources include fares, grant funds, new or increased taxes, contributions from public and private partners, developer fees, a ferry district, general operating funds, etc. Financing approaches include existing agency capital and operations funding, bond authority, leasing, and private financing.

6.1 Service Delivery Options

The following sections briefly describe four service delivery options identified in the study. Included is a general overview of each option, potential roles of relevant entities, and key potential advantages and disadvantages of each option.

PRIVATE OPERATION WITH PUBLIC ENDORSEMENT

Private operation with public endorsement would rely on the current regional maritime industry to define the route structure and level of service and to provide the full range of activities necessary for delivery of waterborne transit service. King County and other municipalities would have a limited role providing technical and political support to the privately operated service, but would assume no responsibility for the service offered and would not commit public funds to subsidize capital acquisition or operation of passenger ferry service.

ADVANTAGES	DISADVANTAGES
• The approach would minimize the financial impact to King County and would not divert current King County revenues from King County's transit commitments. • There would be little or no risk to King County because the private operator would assume all financial and operating risk. • This model of service (fee for service) would establish a principle of service provision that would enable transit and mobility service to be expanded in the region without general taxpayer involvement.	• Sustainability of the service is uncertain if not economically viable for the private provider. • King County's ability to influence development of the service and to coordinate service with overall King County transportation mission objectives would be limited. • Without access to public resources for landside infrastructure, the probability of a successful service would be reduced.

PUBLIC PRIVATE JOINT DEVELOPMENT

Public private joint development would combine the marine experience of a private sector operator with the transit experience of King County, who could provide a range of administrative and capital support. Both parties would need to be committed to the creation of a waterborne transit service. Other public entities, such as local cities or ports, could support the service by providing terminal facilities or funding.

ADVANTAGES	DISADVANTAGES
• This approach would allow King County to minimize financial and operating risk as the private operator would assume full responsibility for funding and managing the service. • King County would be afforded the opportunity to take full advantage of the private operator's waterborne transit experience, and would not need to develop in-house marine expertise. • King County could participate in service planning and have the ability to underwrite (potentially with other municipal partners) facilities and services consistent with county objectives.	• If King County were to make a commitment to the provision of waterborne transit, it may find itself locked into maintaining service if the private operator shut down due to financial hardship. • It may require a subsidy by the County to fund capital or operating costs. • King County may have limited ability to control the quality of service.

PUBLIC OWNERSHIP WITH CONTRACTED OPERATIONS

In this context, public ownership with contracted operations would expand the mission of King County Metro to include the provision of waterborne transit services. The role of the private sector, established through a contractual relationship with King County Metro, would be limited to vessel and terminal operations. This option would require public funding for part of the operational expenses and the capital components of the waterborne transit service.

Other public entities could partner with King County to assist with terminal provision and service funding. There is also a variation of this approach where another public agency manages the service, with King County as a funding partner.

ADVANTAGES	DISADVANTAGES
• By assuming ownership of the service, King County would control the level and quality of service, as well as determine cost recovery rates and set fares. • King County would be afforded the opportunity to take full advantage of the experience private operators bring to waterborne transit.	• King County would be committed to the provision of waterborne transit, and the county (potentially with other governmental partners) would assume full responsibility for all capital and operating costs. • New revenue sources would be required to fund capital investment and operations.

PUBLIC OWNERSHIP AND OPERATIONS

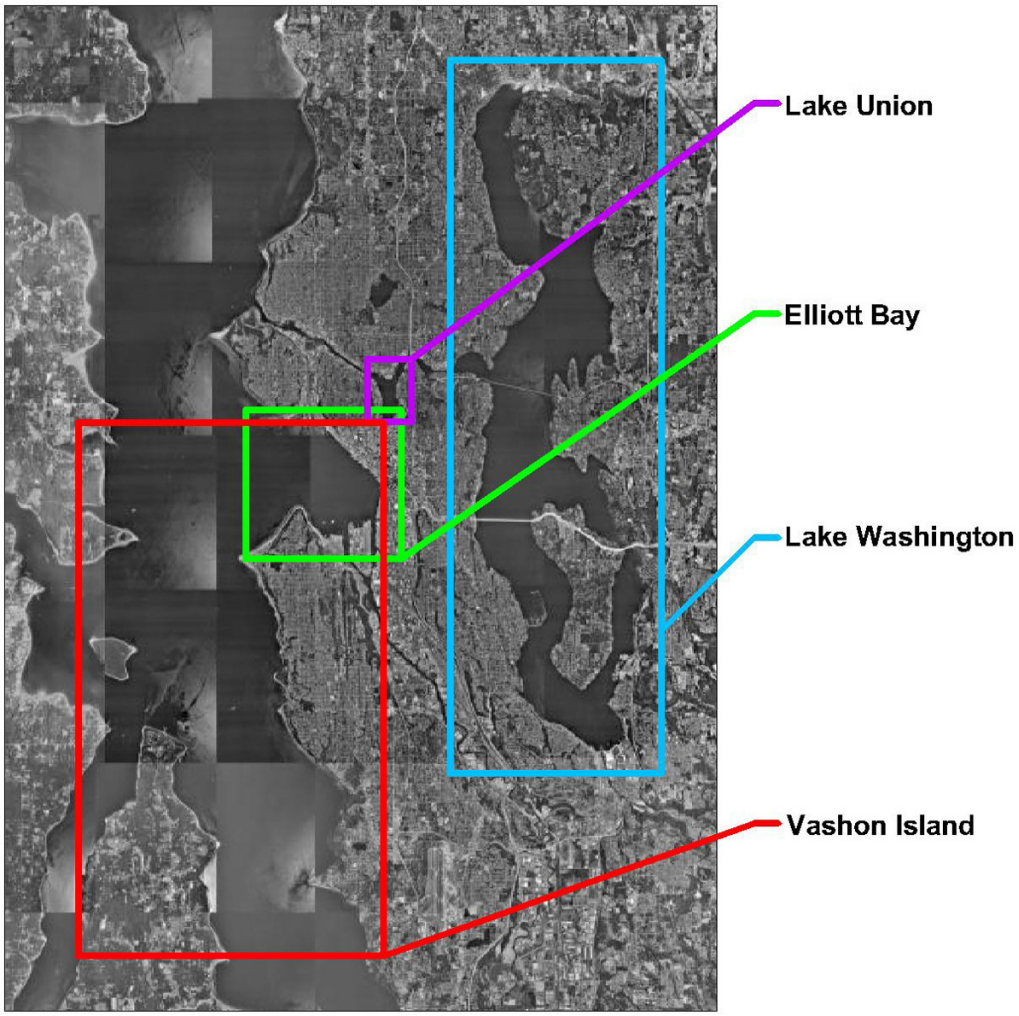
Public ownership and operations would increase the role of King County Metro to include the direct provision of waterborne transit service. King County Metro would utilize in-house staff to operate the vessels and terminals. Public partners could still potentially contribute terminal access or funding, but there would be little to no private involvement in service delivery.

ADVANTAGES	DISADVANTAGES
• By assuming ownership of the service, King County would control the level and quality of service. • King County would determine cost recovery rates and set fares. • King County could build partnership with other governmental entities to fund infrastructure and provide service.	• King County would increase its operating risk by taking full responsibility for a line of business that is outside of its current expertise. • King County may incur additional costs by assuming all program administration and management functions. • King County would assume full responsibility for all capital and operating costs including significant start-up cost for vessels, terminals, maintenance facilities, and other capital elements. • New revenue sources would be required to fund capital investment and operations.

7. SAMPLE ROUTES

The advantages, disadvantages, feasibility, and concerns regarding waterborne transit are highly route specific. In order to identify the range of issues and options that might be encountered, hypothetical sample routes were selected for analysis in four example market areas as identified below. Within each market, two sample routes were identified as described in the following sections.

Example Market Areas



7.1 Elliott Bay

The Elliott Bay sample routes are representative of ferry services that connect communities that are relatively close by water, where there is strong commute trip directionality supplemented by off-peak demand. The two sample routes include West Seattle to Downtown Seattle, and West Seattle to North Bay, as illustrated below.

Elliott Bay Sample Routes

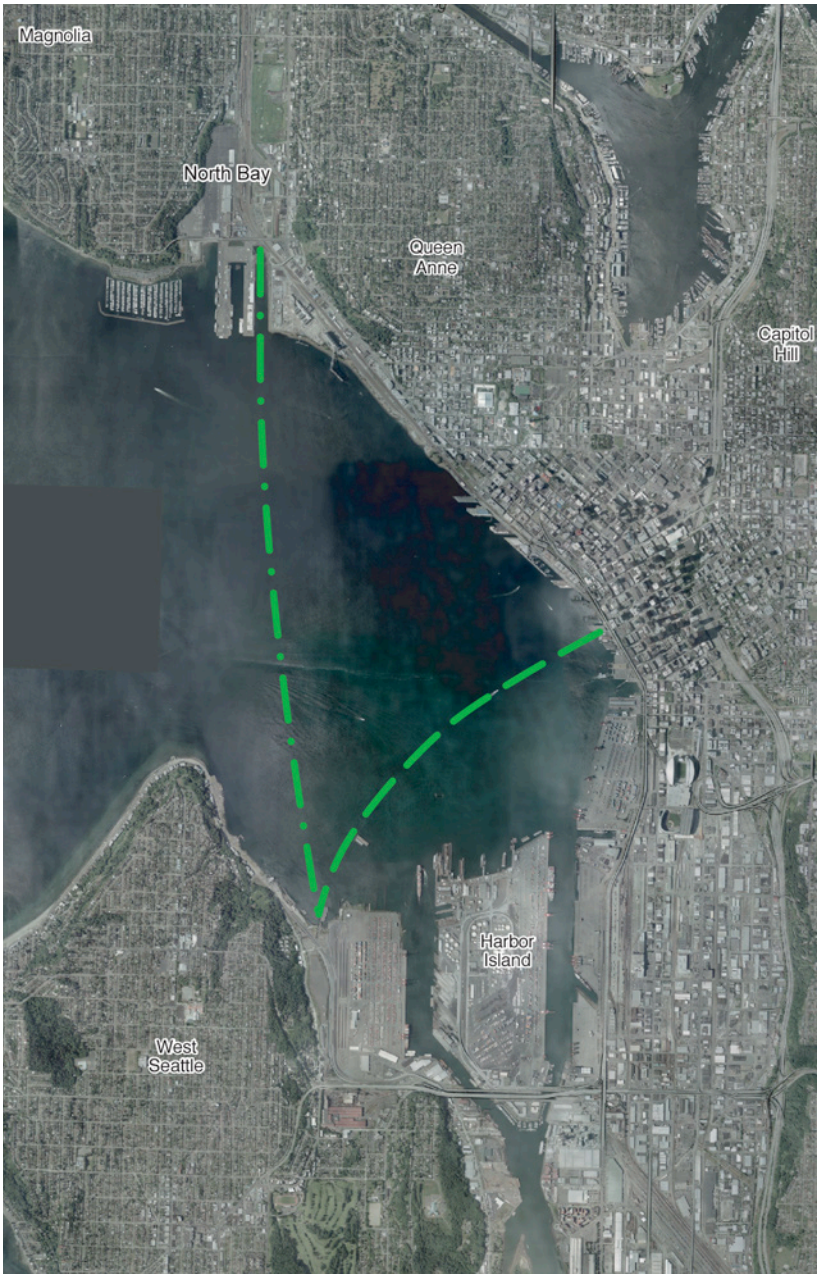


Image produced for King County by the United States Geological Survey. 2003 High Resolution Orthoimage

7.2 Lake Union

The Lake Union sample routes are representative of ferry services that provide mobility options – for recreation, business, and personal use – in an urban environment with multiple waterfront destinations and good land based connections. The two sample routes include a point-to-point service between the University of Washington and South Lake Union, and a circulator service that would potentially dock at multiple destinations around Lake Union, as illustrated below.

Lake Union Sample Routes

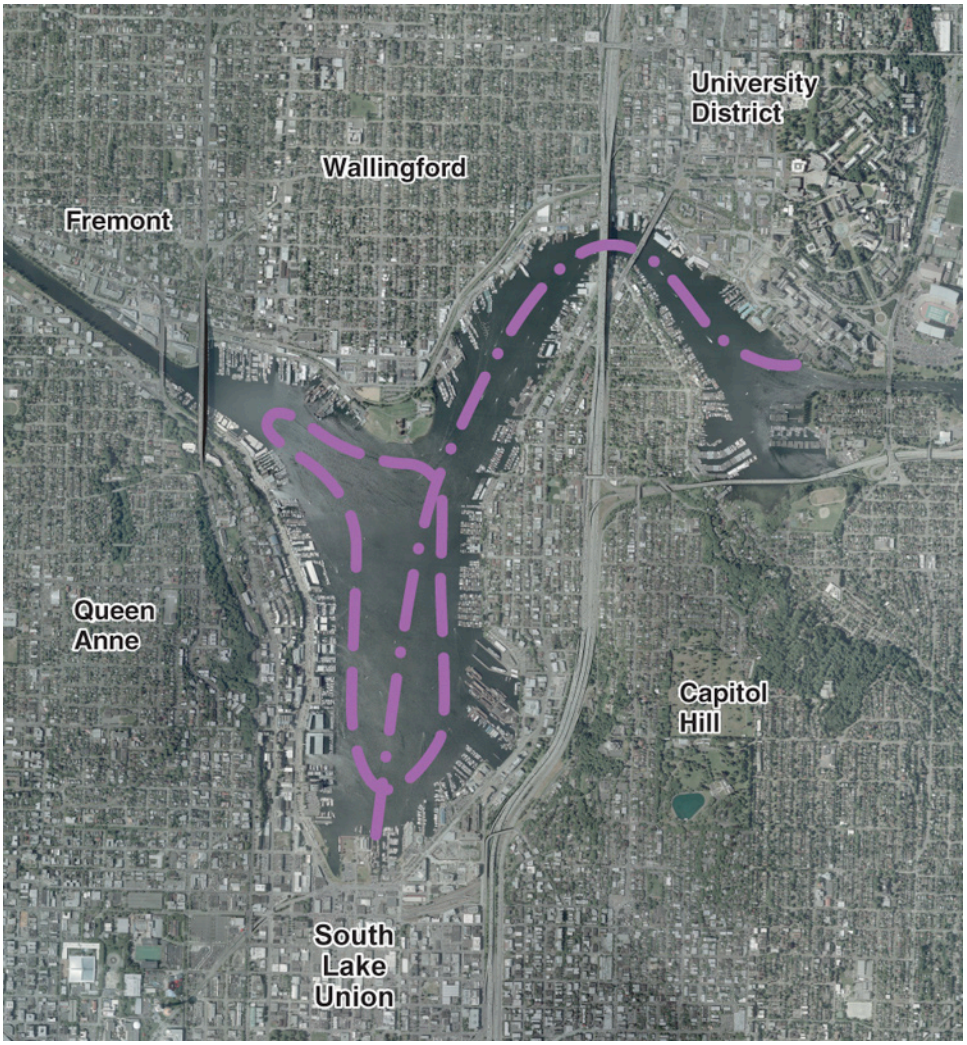
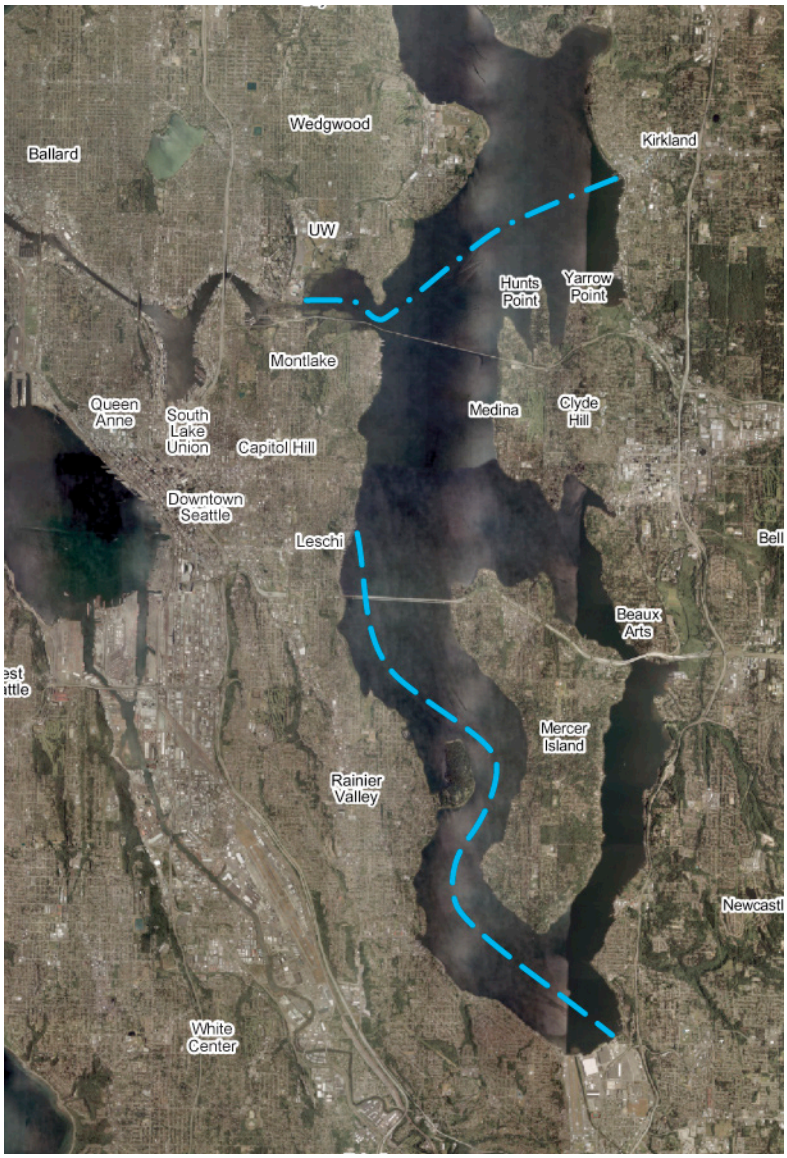


Image produced for King County by the United States Geological Survey. 2003 High Resolution Orthoimage

7.3 Lake Washington

The Lake Washington sample routes are representative of ferry services that are primarily focused on serving peak-period commute trips between surrounding lower density communities and a regional urban center, where viable land alternatives exist. The two sample routes identified include Kirkland to Seattle via the University of Washington, and North Renton to Seattle via Leschi, as illustrated below.

Lake Washington Sample Routes



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7.4 Vashon Island

The Vashon Island sample routes are representative of ferry services that are primarily focused on connecting surrounding communities with a regional urban center for peak-period commute trips where no direct land-based connection exists. The two sample routes are those identified in the Washington State Ferries *Ten-Year Passenger Strategy for Washington's Multimodal Ferry Transportation System*. They include a direct Vashon Island to Downtown Seattle route and a triangle route between Seattle, Vashon Island, and Southworth, as illustrated below.

Vashon Island Sample Routes

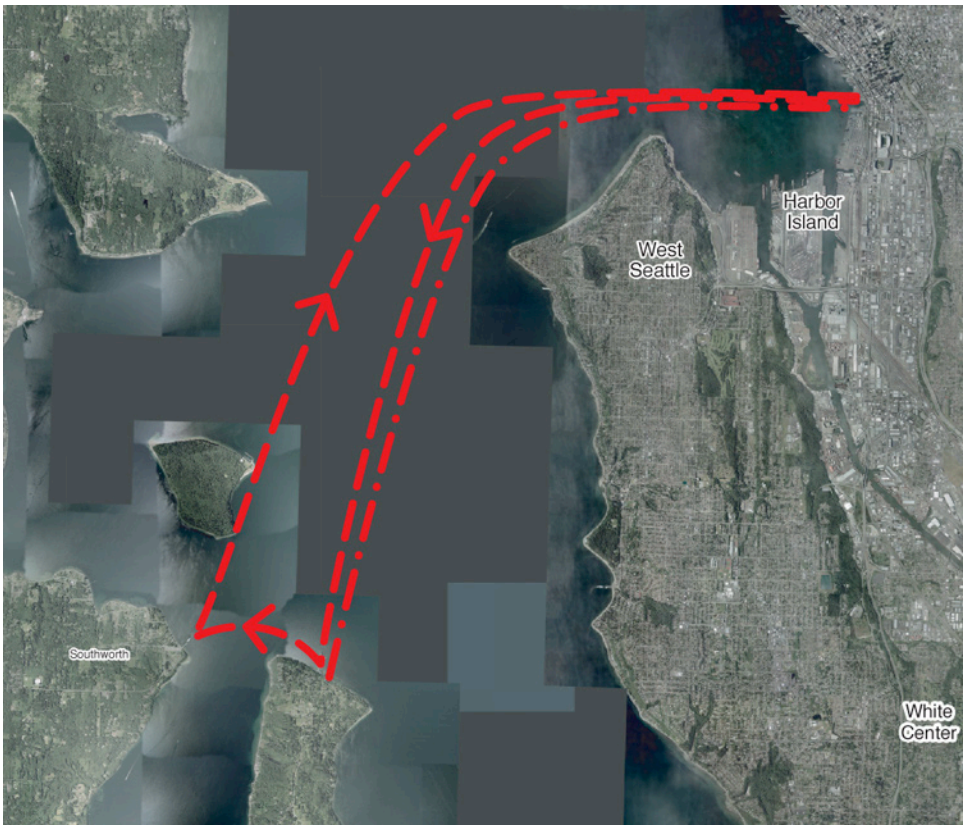


Image produced for King County by the United States Geological Survey. 2003 High Resolution Orthoimage

8. RELATIVE COSTS AND EFFECTIVENESS

In order to identify potential issues to be considered when evaluating potential passenger-only ferry services, hypothetical service, vessel, and terminal infrastructure scenarios were developed and analyzed for the sample routes. The analysis was designed to illustrate the magnitude and relative relationships between the sample routes in terms of potential ridership, vessels, types of terminal infrastructure, capital and operational costs, and revenue. Comparisons with King County bus operations are also provided to illustrate relative differences in various cost metrics.

For the purpose of this study, these scenarios assume procurement of all-new vessels and terminal infrastructure, and operation on a peak-period or all-day basis depending upon characteristics of the market and sample routes. The scenarios are not location-specific, and do not include site or land acquisition, maintenance facility, back-up vessel, or permitting costs; these would all need to be determined as part of any future route planning and design studies. The scenarios also assume labor rates and other baseline assumptions that are common to all of the sample routes. Actual costs may vary due to local considerations, and whether the service were provided by King County directly or through a private operator.

The analysis also does not identify cost reductions that might be realized by improving existing terminal or dock infrastructure, securing outside or private sector funding, or leasing a vessel. These would also need to be determined as part of any future route planning and design studies.

8.1 Service Assumptions

Sample route service assumptions – including service span and frequency – were developed based on a balance of the factors of vessel speed, number of vessels per route, competition from other modes, initial projected ridership demand, and anticipated passenger markets. Basic service assumptions included:

- Commuter services were assumed to have an eight hour service span, covering two four-hour peak periods (weekdays only).
- Connectors were assumed to operate for 12 hours a day (all-day service), five to seven days a week, with potentially four additional hours on Friday and Saturday evenings.
- Sailings were assumed every 30 to 60 minutes, depending on the route.

8.2 Ridership Projections

Potential waterborne transit ridership for the sample routes was estimated for the 2015 and 2030 planning horizons. For the Lake Union, West Seattle, and Lake Washington sample routes, ridership was modeled using the process described below. For Vashon Island, ridership projections from the Washington State Ferries report entitled *Ten-year Passenger Strategy for Washington's Multimodal Ferry Transportation System*, dated January 2005.

Forecasts were built up from three categories of riders:

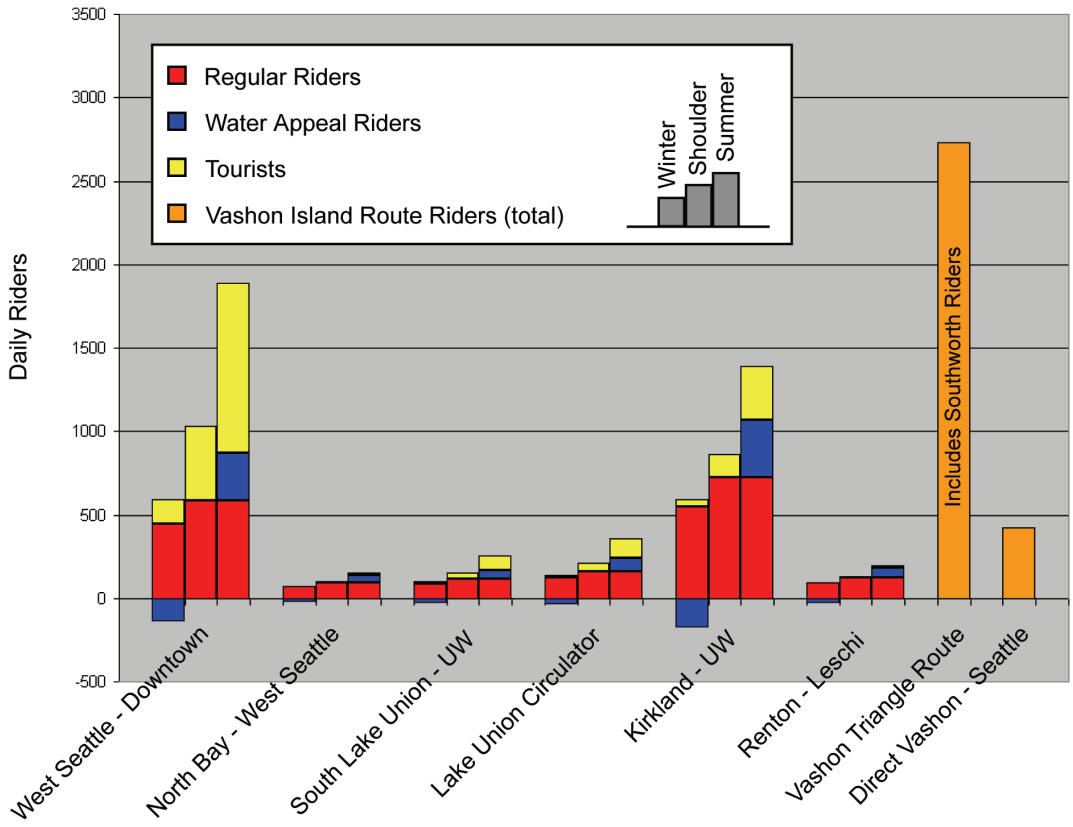
1. **Regular Riders**. Regular (non-recreational) riders were estimated using a version of the Puget Sound Regional Council's regional transportation model. This represents average non-recreational demand (home and work-based trips) with no seasonal variation.

2. **Water Appeal Adjustment**. To account for potential seasonal variations in regular ridership (the additional attractiveness of waterborne transit in the summer and the disutility of water travel in the winter), a "water appeal" factor was used to add or subtract from the modeled ridership estimates.
3. **Tourists**. The regional transportation model does not include tourist trips. In order to account for seasonal increases in potential waterborne transit services due to tourist demand, a "tourist demand" factor was used to further adjust the model estimates. The value of that factor depends on potential tourist attractions on either end of the route. For example, the West Seattle – Downtown Seattle route has high attractiveness as there are tourist activity centers on both ends.

In all cases, it was assumed that fares would be the same as comparable bus services. Premium fares could be charged for waterborne transit services, but this would reduce potential ridership.

The chart below highlights estimated waterborne transit ridership for 2015, broken down by sample route and ridership category. Daily ridership is projected for the winter season (November - March), shoulder season (April - May and September - October), and summer season (June - August). Vashon Island estimates are from the *Washington State Ferry Ten-Year Passenger Strategy* and are not broken down by season.

Projected Daily Ridership - Winter, Shoulder, and Summer 2015



For the modeled non-recreational trips – i.e. regular riders – approximately 75% of trips were projected to be from existing transit riders transferring to the passenger-only ferry, with the remaining 25% from new riders.

With respect to the tourist market, for the West Seattle – Downtown Seattle route it was estimated that up to half of the ridership would be comprised of tourists (based on data from the Elliott Bay Water Taxi). The West Seattle – North Bay, and Renton – Leschi sample routes were projected to have less than 10% tourist traffic. The other routes were estimated to have approximately 25-35% tourist riders.

Projected Total Annual Riders 2015 and 2030

Route	2015	2030
West Seattle – Downtown Seattle	387,300	245,600
North Bay – West Seattle	26,200	36,400
South Lake Union – UW	55,900	112,700
Lake Union Circulator	67,800 to 92,000	126,400 to 175,200
Kirkland – UW	223,700	285,200
Renton – Leschi	33,400	49,200
Triangle Route	709,790	841,400
Direct Vashon – Seattle	109,106	122,200

8.3 Cost Estimates

Cost estimates were prepared for each route, including vessel and terminal costs (all costs are in 2005 dollars). Vessel capital costs are based on shipyard costs for vessel construction (including labor and materials) plus an additional 15% to account for agency costs incurred during the purchase process. Costs for the Vashon Island sample routes are from the WSF study *Ten-Year Passenger Strategy for Washington's Multimodal Ferry Transportation System*. Costs for the other routes are for two basic vessel types:

1. A minor route vessel with a capacity of under 50 persons, designed for operation on Lake Union.
2. An 80-149 passenger vessel designed for operation on Lake Washington and/or Central Puget Sound.

The table below presents an estimate of total vessel capital costs. The number of vessels represents the number of vessels in service, and does not include potential spare vessels. Costs for the Vashon Island sample routes from the WSF study *Ten-Year Passenger Strategy* assume redeployment or sale of the WSF owned vessels CHINOOK and SNOHOMISH, as well as a spare vessel for the Direct Vashon - Seattle route, in their cost computations.

Estimated Vessel Capital Costs

Route	Number of Vessels	Capital Cost per Vessel	Total Vessel Cost
West Seattle - Downtown	1	$2,200,000	$2,200,000
North Bay - West Seattle	1	$625,000	$625,000
South Lake Union - UW	2	$625,000	$1,250,000
Lake Union Circulator	2	$625,000	$1,250,000
Kirkland - UW	2	$2,200,000	$4,400,000
Renton - Leschi	1	$2,200,000	$2,200,000
Triangle Route	2	Retrofit of existing vessels	$1,200,000
Direct Vashon - Seattle	1	$5,000,000	$3,080,0000

Terminal costs were estimated for different sizes of docks and waiting facilities as illustrated below. Route-level costs were determined by selecting terminal and facility sizes that were commensurate with projected demands.

Estimated Terminal Costs (by terminal size)

Category	Type	Capital Costs - Low	Capital Costs - High	Annual Maintenance Costs
	P1, Lake Pier	$133,000	$155,000	$3,700
	P2, Sound Pier	$2,633,000	$5,358,000	$16,600
	W1, Small Waiting Area	$60,500	$69,500	$6,500
	W2, Medium Waiting Area	$587,000	$978,000	$21,500
	W3, Large Waiting Area	$738,000	$1,141,000	$35,300
	T1, Pedestrian and Transit	$3,200	$5,200	$500
	T2, Non-motorized and Transit	$17,600	$22,100	$1,600
	T3, Integrated Facility	$471,000	$998,000	$19,000

8.4 Relative Cost Effectiveness

The following presents an estimate of the potential overall cost-effectiveness of each sample route. Costs for both Vashon Island services are per the *Ten-Year Passenger Strategy for Washington's Multimodal Ferry Transportation System.* The following costs do not assume any particular operating model, but instead represent a generic cost estimate using union labor rates. Depending on the operating model, actual costs may be higher or lower.

Estimated Cost Effectiveness (by route)

Route	Capital Costs	Annual Operating Costs	Annual Fare Revenue	Farebox Recovery
West Seattle – Downtown	$9.3 - $16.1 million	$1,063,100	$313,720	30%
North Bay – West Seattle	$7.7 - $14.5 million	$326,600	$21,230	7%
SLU – UW	$1.6 - $1.7 million	$624,400	$45,290	7%
Lake Union Circulator	$1.8 - $1.9 million	$696,600	$64,730	9%
Kirkland – UW	$6.2 - $7.0 million	$954,100	$181,190	19%
Renton – Leschi	$4.1 - $5.5 million	$507,500	$27,040	5%
Triangle Route	$3 million	$3,666,200	$2,697,200	74%
Direct Vashon – Seattle	$3.1 million	$1,062,800	$414,600	39%

Farebox recovery is based on the recovery of an average fare of $0.81[1], commensurate with the average fare collected on King County Metro buses considering the average of all cash, ticket, and pass fares. If a premium fare were charged, per person revenue would increase, but ridership would likely decrease. The Vashon Island services assume a recovery of $3.80 per one-way trip per the *Ten-Year Passenger Strategy for Washington's Multimodal Ferry Transportation System.*

To put this in context, a comparison was made between the passenger-only ferry routes and King County bus service.

Comparison with Bus Services

Operating Expense per Passenger Mile	
King County Bus Services	$0.69
West Seattle - Downtown	$1.75
North Bay - West Seattle	$4.78
South Lake Union - UW	$6.77
Lake Union Circulator	$4.10
Kirkland - UW	$1.21
Renton - Leschi	$2.43
Triangle Route	$0.62
Direct Vashon - Seattle	$1.30

Operating Expense per Boarding	
King County Bus Services	$3.50
West Seattle - Downtown	$2.74
North Bay - West Seattle	$12.47
South Lake Union - UW	$11.17
Lake Union Circulator	$8.72
Kirkland - UW	$4.27
Renton - Leschi	$15.19
Triangle Route	$5.17
Direct Vashon - Seattle	$9.74

On a per passenger-mile basis, King County bus services would in general be more operationally efficient. On a per-trip basis, the West Seattle – Downtown Seattle may have some efficiencies.

1 Source: King County fall 2004 revenue per boarding statistic.

8.5 Sample Route Analysis

The analysis of sample routes in the four market areas yielded the following overall findings:

- Ridership and revenue estimates assume that fares would be priced the same as for King County bus services, and that existing valid fare products such as Puget Passes, the U-PASS, and employer passes would be accepted for travel. Higher fares could potentially be charged for passenger ferry services, but would likely reduce ridership, particularly if existing bus passes were not accepted.
- Waterborne transit planning should consider three potential market groups: regular riders (traditional home, work, and school based trips), tourist and recreational riders, and riders who take passenger-only ferry service instead of other modes because of its inherent appeal and the overall experience.
- Vessels should be appropriately matched to the route. High performance (22-25 knot maximum speed), medium capacity (80-149 passengers) vessels appear to be best suited to routes across Lake Washington and Elliott Bay, and for service to Vashon Island. Larger capacity vessels (e.g., the 350-passenger class vessels operated by Washington State Ferries) may be appropriate for cross-sound routes with high demand.
- Smaller (under 50 passenger) vessels with a 10-13 knot maximum speed are best suited to routes such as Lake Union. Note that services on Lake Union and the west side of Lake Washington near the University of Washington have a seven knot speed limit.
- Alternative public transit options are available between the origins and destinations identified in the sample routes. For these routes, waterborne transit offers a mobility alternative to bus-based services, but does not appear to provide new, critical community connections.
- In almost all cases,[2] operating costs per vehicle mile and per passenger mile are higher for waterborne transit than for bus-based services.
- Depending on the route, operating expense per passenger boarding was estimated to be between $2.74 and $15.19. King County's average transit farebox recovery (considering all cash, pass and ticket uses) is approximately $0.81 per unlinked trip. Even if a premium fare could be charged for waterborne transit services, it is unlikely that a service could be operated without a subsidy.

9. NEXT STEPS

This study has identified important issues to be considered by the county when making policy decisions about waterborne transit. For a series of sample routes, it has also identified planning level cost and productivity parameters and trade-offs, and potential approaches to funding and operating waterborne transit should the county choose to move in this direction.

Suggested next steps include:

1. Use information in this study to make policy decisions in relation to the three key questions: deciding whether or not to participate, and if so under what circumstances; under what funding approaches; and under what operating approach(es). Decisions can be made system-wide, or on a route-by-route basis.
2. Use information contained within this study as input to any future discussions King County may have with Washington State Ferries with respect to the delivery of passenger-only service to Vashon Island.
3. For the Elliott Bay Water Taxi, consider the ridership projections and potential issues identified in this study in any decisions regarding continued operation of that service.
4. Use information contained within this study as input to any future route analysis or planning exercises.

2. Bus operating costs are estimated at $8.05 per vehicle revenue mile, and $0.69 per passenger mile. Operating costs for all ferry routes studied were higher than this, with the exception of the passenger mile cost for the Vashon Island triangle route which was estimated at $0.62 per passenger mile by WSF.