Appendix C:
Benefits, Costs, Revenues, Capacity and Reliability

Sound Transit 2

A Mass Transit Guide

The Regional Transit System Plan
for Central Puget Sound

July 2008

SOUNDTRANSIT
RIDE THE WAVE

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Adopted by Sound Transit Board, 7/24/08

Link light rail • Sounder commuter rail • ST Express regional bus • Tacoma Link light rail

Easy connections to more places for more people.

—Sound Transit vision statement

Sound Transit plans, builds, and operates regional transit systems and services to improve mobility for Central Puget Sound.

—Sound Transit mission statement

Introduction

Voters in the Central Puget Sound region are being asked to make a major financial investment in transportation improvements proposed in the Sound Transit 2 Plan (ST2). This report provides the region's citizens with an assessment of various benefits the region can expect from the fully implemented ST2 Plan.

Transportation improvements are clearly linked to the growth, development, quality of life and economic vitality of a region. ST2 proposes a range of transit improvements building on the investments Sound Transit has already made, with major extensions of Link light rail to serve more of the Central Puget Sound region's urban centers, along with improvements in Sounder commuter rail and enhancements of ST Express bus. These improvements add major new capacity in the region's most congested corridors, to help serve the transportation demands of the people and businesses already here, as well as anticipated growth.

Since improved transportation is such an important part of maintaining the livability and vitality of the region – and because the ST2 Plan provides such a major extension of rail services throughout the region – this analysis goes a step beyond an ordinary approach to analyzing benefits.

In addition to looking at the travel benefits that can be thoroughly documented or conservatively projected, this report provides a broader discussion of the community and regional benefits that can be expected from the ST2 investment.

As with road and highway construction, transit investments create value within a community beyond where projects are built and how much concrete is poured. Personal mobility, regional connections, the availability of transportation alternatives, and impacts on growth patterns, quality of life and the economic wellbeing of the region are all tangible outcomes that must be considered in deciding on transit investments, as they typically are considered in decisions on road investments.

Table 1 shows a set of broad performance measures, some of which can be projected and measured, and others that are more difficult to quantify but which are important benefits of investing in transit infrastructure.

When the citizens of our region total both the direct and quantifiable benefits of transit investments, along with the indirect and qualitative benefits, and compare them to the costs of the plan, they will have the information necessary to make an informed decision. Already, the region is reaping the early benefits of the transit investments made as a part of *Sound Move*, Sound Transit's initial plan. Many benefits, however, such as the region's ability to achieve its land use vision and the shifting travel patterns that support dense, mixed-use development in walkable regional centers, will only be fully realized over the decades to come. Meanwhile, the direct and quantifiable benefits, such as more riders on transit, savings in travel time and travel costs, will continue to grow as more investments come on line and more people arrange where they live, work and shop, and how they travel, to take advantage of greatly expanded high-capacity transit options.

Data and methodology used to analyze direct benefits of the transportation improvements in ST2 have been prepared in accordance with nationally accepted standards and procedures, and have been subject to review by an independent Expert Review Panel appointed by and accountable to the state of Washington.

Table 1: Measures of performance by type

Transit measures	Other measures		
Transit ridership	Achievement of Vision 2040, the region's land-use plan	Permanent employment in operations and maintenance	Avoiding sprawl outside urban growth boundaries
Additional transit passenger trips	Development of dense, walkable urban centers	Increased rail freight mobility	Preserving rural and natural land
Time savings to transit riders in hours	New businesses attracted to the region	Attaining Commute Trip Reduction Act goals	Improved human health from increased walking and cycling
Value of travel time savings to transit riders in dollars	Increased economic activity	Vehicle miles reduced	Transportation benefits during special events (sports, fairs, etc.)
Subsidy per passenger trip and per passenger mile	Reduction in highway delay for private and commercial vehicles	Vehicle ownership and operating cost savings	Tourist spending
Farebox recovery ratios (operating revenue/operating expense)	Construction and related employment	Reduced parking demand and cost savings	
Transit system productivity		Improved connections between regional centers	
Transit system reliability			

Benefits of ST2 investments in the regional transit system

HIGHLIGHT **If the region's daily transit trips were all made by car, the line of cars would extend about 800 miles. The 2030 daily ridership represents a line of cars nearly 1,500 miles long.**

BACKGROUND

According to the Puget Sound Regional Council, between 1999 and 2005, transit ridership in the region grew over one and a half times as fast as daily vehicle miles traveled. These numbers cap a slow reversal of trends that started in the 1980s, when transit ridership could not keep pace with the explosive growth of travel by personal vehicle.

For a few years in the 1980s, as women entered the workforce in unprecedented numbers, employment in the region grew about twice as fast as population. At the same time, rising family incomes, the travel demands of two-worker families, and the continued patterns of suburban sprawl in the region fueled a growth in travel by personal vehicle that outpaced by four times the growth in population.

This imbalance, though somewhat less pronounced as the years passed, continued through the 1990s and became deeply embedded in people's expectations about traffic and gridlock, present and future. At the same time, even though transit ridership continued to grow, it did not keep pace with the overall increase in traffic.

Looking at the new century, transit ridership grew slightly in 2000 and 2001 but then, during the worst of the economic slowdown, actually declined in 2002 and 2003. As the economy picked up, however, people chose transit in increasing numbers and ridership rebounded sharply. At the same time, the trends of the previous decades reversed as more people decided to ride transit instead of drive.

In 1996, the year Sound Transit's *Sound Move* plan was approved by the voters, about 75 million individual trips were made on buses and trains in the Sound Transit service area. By 2006 that number had grown to 98 million trips.

By 2030, as a result of completed projects in *Sound Move* and ST2, along with continued growth in people riding local buses, public transit in the Sound Transit District will be carrying about 165 million trips a year, more than twice as many as in 1996.

Over 100 million of these trips will include Sound Transit. Most importantly, these new transit trips will be concentrated in the region's most congested corridors on bus routes and rail lines serving the region's densest downtowns and urban centers, adding critical capacity where it is most needed to support the region's economy and preserve its quality of life.

This section details the benefits to transit riders of ST2's major expansion in high-capacity transit throughout the region.

TRANSIT PASSENGER TRIPS

The most important measure of any transit investment is whether it attracts riders and serves them well. The most direct way to measure this factor is the number of people riding transit. With the ST2 Plan, transit ridership in the region is projected to grow by more than 60 percent over 2006.

Table 2 on the following page compares regional transit ridership today with ridership projections for 2030, with and without the ST2 investments.

Definitions

Transit passenger trips are counted with regard to *boardings, trips, transfers* and *passenger miles.* These terms are defined here.

- **Boardings** – Transit *boardings* are the number of times a passenger steps into any transit vehicle.
- **Transit trips (or passenger trips)** – *Trips* represent a completed journey made by a person from an origin to a destination (such as home to work). Because people may transfer from one route to another to complete such a journey, *trips* can consist of more than one transit *boarding*.
- **Transfer** – A *transfer* is when a passenger changes from one transit vehicle to another (bus-to-bus, or bus-to-train for example) to complete their trip. *Transfers* explain why the average transit trip consists of more than one *boarding,* and are a good measure of the effective integration of the individual routes that make up the overall transit system.
- **Transfer rate** – *Transfer rates* are an indication of how the individual elements of a transit system complement each other, that is how complete the coverage is, and the range of trips that can be made on the network. Nationwide and worldwide, higher *transfer rates* are strongly and positively correlated with higher transit ridership.

- **Passenger miles** – *Passenger miles* are a measure of service that a transit line, route or system is providing to its riders. For example, 100 passengers traveling ten miles each, results in 1,000 *passenger miles* of travel.

Table 2: Regional transit ridership and transfer rate

	Existing in 2006	2030 without ST2	2030 with ST2
Daily			
Transit trips	329,000	482,000	544,000
Transit boardings	424,000	661,000	808,000
Annual			
Transit trips	98 million	145 million	165 million
Transit boardings	127 million	199 million	246 million
Percent using Sound Transit	12%	40%	65%
Transfer rate*	1.29	1.37	1.49

*Transfer rate equals transit boardings divided by transit trips.

TRANSIT RIDERSHIP ON SOUND TRANSIT BY SERVICE TYPE

Table 3 summarizes the annual boardings and passenger miles projected for Link light rail, Sounder commuter rail and ST Express bus in 2030 with the ST2 Plan.

Table 3: Summary of projected Sound Transit ridership by mode in 2030

	Annual riders	Annual passenger miles
Link light rail	88.5 million	646 million
Sounder commuter rail	6.5 million	180 million
ST Express bus	14 million	164 million
Total	**109 million**	**990 million**

HIGHLIGHT In 2030, with the ST2 plan, the region's residents and visitors will travel nearly a billion miles a year on Link light rail, Sounder commuter rail and ST Express bus.

FORECAST METHODS

Sound Transit's ridership forecasts that form the basis for this report were prepared for the year 2030. The forecasts are based on:

- The Puget Sound Regional Council's adopted population and employment forecasts; and
- A well-documented modeling/forecasting methodology reviewed by local and national experts and approved by the Federal Transit Administration, specifically designed to avoid over-forecasts of transit ridership.

Sound Transit wants to ensure that its forecasts are appropriate and do not overstate system benefits. Accordingly, Sound Transit's forecasts do not consider other factors that have been shown to affect rail and overall transit ridership positively but which are not easily quantified. These include:

- **Rail bias** – *Rail bias* is the demonstrated willingness of people to make urban transit trips on trains that they would not make on equally fast buses. Researchers have documented this preference, and link it to passengers' perceptions of rail's speed and reliability, as well as a confidence factor related to the ease of understanding inherent in rail routes – passengers know trains can take them only where the tracks are laid and that if they go in the wrong direction backtracking is easy. Sound Transit's modeling does not take rail bias into account and assumes buses and trains with the same service characteristics would have the same ridership; and
- **Land use changes resulting from transit investments** – Sound Transit's modeling also does not assume that land use will change because of improvements in high-capacity transit. However, the experience of other cities confirms that rail, in particular, has the potential to shape land use both because of its ability to bring large numbers of people into dense urban centers without taking up the space required for freeways, streets and parking lots, and because developers have confidence in rail's permanence and so are willing to build their projects around rail stations.

The 2030 transit ridership forecast includes the effects of population and employment growth, and the transportation and transit projects included in the Puget Sound Regional Council's Metropolitan Transportation Plan. The ST2 projects assumed to be implemented by 2030 include:

- Light rail north from the University of Washington to Lynnwood, south from SeaTac to the Redondo/Star Lake area near Federal Way, and east to the Overlake Transit Center area of Redmond;
- Additional Sounder train service and capacity, including improved access at stations; and
- Additional ST Express bus service in all three counties on the most heavily used routes, plus redeployment of existing service as the rail system expands.

HIGHLIGHT **By 2030, the estimated combined annual travel time savings for drivers and transit riders is approximately 44 million hours.**

TRAVEL TIME SAVINGS

Table 4 and **Table 5** illustrate the expected travel time savings for the region's drivers and transit riders, achieved by the investments included in the ST2 plan.

Looking ahead to 2030, after ST2 investments are completed, the region's transit riders are projected to save 19 million hours a year.

This analysis is based on two scenarios for traffic in 2030: one with ST2 projects and one without ST2 projects. Accordingly, the numbers are estimates based on best practices. In the simplest terms, every car not driven because the driver chooses to travel by transit either reduces congestion or leaves space for another vehicle.

Table 4: Projected travel time savings for drivers and freight

	Drivers and freight 2030 with ST2
Reduction in annual vehicle miles traveled (switched to transit)	268 million
Annual highway delay reduced	25 million hours

Table 5: Projected travel time savings for transit riders

	Transit riders 2030 with ST2
Daily hours saved	60,000
Total annual hours saved	19 million

TRAVEL TIMES AND NUMBER OF TRANSFERS BETWEEN SELECTED CENTERS

Looking at specific trips between the region's centers is one way to understand how ST2 will benefit riders who are taking the bus today, as well as future riders who will be attracted to transit because of the improved speed and reliability they will experience on ST2 services.

Buses get slower every year: Within the Sound Transit District, bus travel times slow by about 1 percent per year, mostly due to more congestion on roads and increased pedestrian activity in centers. Without improvements in transit, therefore, existing bus travel times would be expected to be about 22 percent slower by 2030.

For example, the Bellevue-to-airport existing bus travel time is 53 minutes for ST Express Route 560 via I-405 and I-5. Without the light rail investment the bus travel time using Route 560 would be expected to increase from 53 minutes today to about 65 minutes by 2030. After light rail is extended across Lake Washington, however, the same trip is expected to take 55 minutes, with a transfer in Seattle. While that's two minutes longer than it takes today, it's a savings of 10 minutes over the time it would otherwise take to make the trip by bus in 2030.

Table 6 compares existing transit travel times to future transit travel times after implementation of ST2. The existing times are actual measured travel times, not the travel times shown on the bus schedules. Scheduled times cannot be relied on from hour to hour and day to day because of traffic congestion on the roads.

Shorter wait times are not included in travel time estimates shown in Table 6. These travel times *do not include* the effect of higher frequencies for rail systems. Typical light rail frequencies on all lines in 2030 will be at least every 10 minutes. Shorter wait times and transfer times also reduce total trip times for riders.

Table 6: Projected transit travel times and transfers between selected centers

	Existing transit time	Expected 2030 time without ST2*	2030 ST2 Plan time	Expected time savings
Lynnwood – University of Washington	39 min	49 min	21 min	28 min
Lynnwood – Seattle	42 min	45 min	28 min	17 min
Bellevue – Airport	53 min	65 min	55 min (1)	10 min
Bellevue – Seattle	31 min	34 min	20 min	14 min
University of Washington – Bellevue	32 min	37 min	31 min	6 min
Redmond/Overlake – Airport	80 min (1)	96 min (1)	66 min (1)	30 min
Capitol Hill – Redmond/Overlake	55 min (1)	63 min (1)	38 min	25 min

( ) = number of transfers

*Bus travel times can vary greatly. The times shown for 2030 are expected averages, after accounting for continuation of historic trends in bus speed degradation, as reflected in Pugest Sound Regional Council 2030 traffic forecasts.

TRANSIT TRIPS TO SELECTED CENTERS

Table 7 presents the percentage of commute trips made by transit riders to a selected set of regional centers.

The existing transit share data is from the 2000 U.S. Census Journey-to-Work survey as compiled by the Puget Sound Regional Council.

Percentages include ridership on fixed route, fixed schedule transit service. Excluded are paratransit, dial-a-ride, carpools and vanpools, etc.

Table 7: Projected activity center mode splits

	Existing transit share of commute trips	ST2 2030 share of commute trips	Percent change from existing to ST2 2030
Lynnwood	3%	4%	+33%
Northgate	6%	9%	+50%
University District	20%	33%	+65%
Downtown Bellevue	8%	12%	+50%
Downtown Seattle	40%	50%	+25%

Other benefits of ST2

COST SAVINGS FOR TRANSIT RIDERS

According to the U.S. Census Bureau, in 2003 the average family in our region spent 18 percent of its disposable income on transportation, more than any other expenditure except housing. The average household had 2.3 people, owned 2.4 cars, and spent $9,350 a year on transportation.

The most expensive cost of driving is the cost of owning and insuring a vehicle. A family that can own one less car because of better transit service can save thousands of dollars a year on transportation. Even a family that owns the same number of cars, but drives less, stands to save on vehicle operating costs – gas, oil, parking, tires and maintenance.

For those commuting by transit to places with high parking costs, the savings in parking alone are substantial. For example, a monthly Puget Pass good for unlimited $2.25 rides (the two-zone peak hour fare on King County Metro) costs $81. According to the Puget Sound Regional Council, the average cost of parking in the region's downtowns in 2006 was $138 a month. For the average transit commuter to Downtown Seattle, savings in parking alone would be approximately $700 a year, on top of the savings on gas and other vehicle operating costs.

Operations and maintenance costs, fare revenue and operating subsidies

OPERATING REVENUE/OPERATING EXPENSE RATIO

Table 8 shows the forecast ratio of operating revenue to operating expense by service in 2030. This ratio, also known as farebox recovery, is the operating revenue (primarily fares) divided by the costs of operating Sound Transit's services.

OPERATING COSTS AND RIDERSHIP ON EACH ST2 LIGHT RAIL EXTENSION

Map 1 on the following page illustrates the annual transit ridership volumes in 2030 on each of the three light rail extensions proposed in ST2. The annual system operating costs allocated to each of these ST2 extensions is also shown.

COST EFFECTIVENESS

Table 9 reflects the annual operations and maintenance cost of the ST2 plan per additional rider over the cost of the existing system.

Table 9: Annual projected cost per ST2 system rider and new rider (2007$)

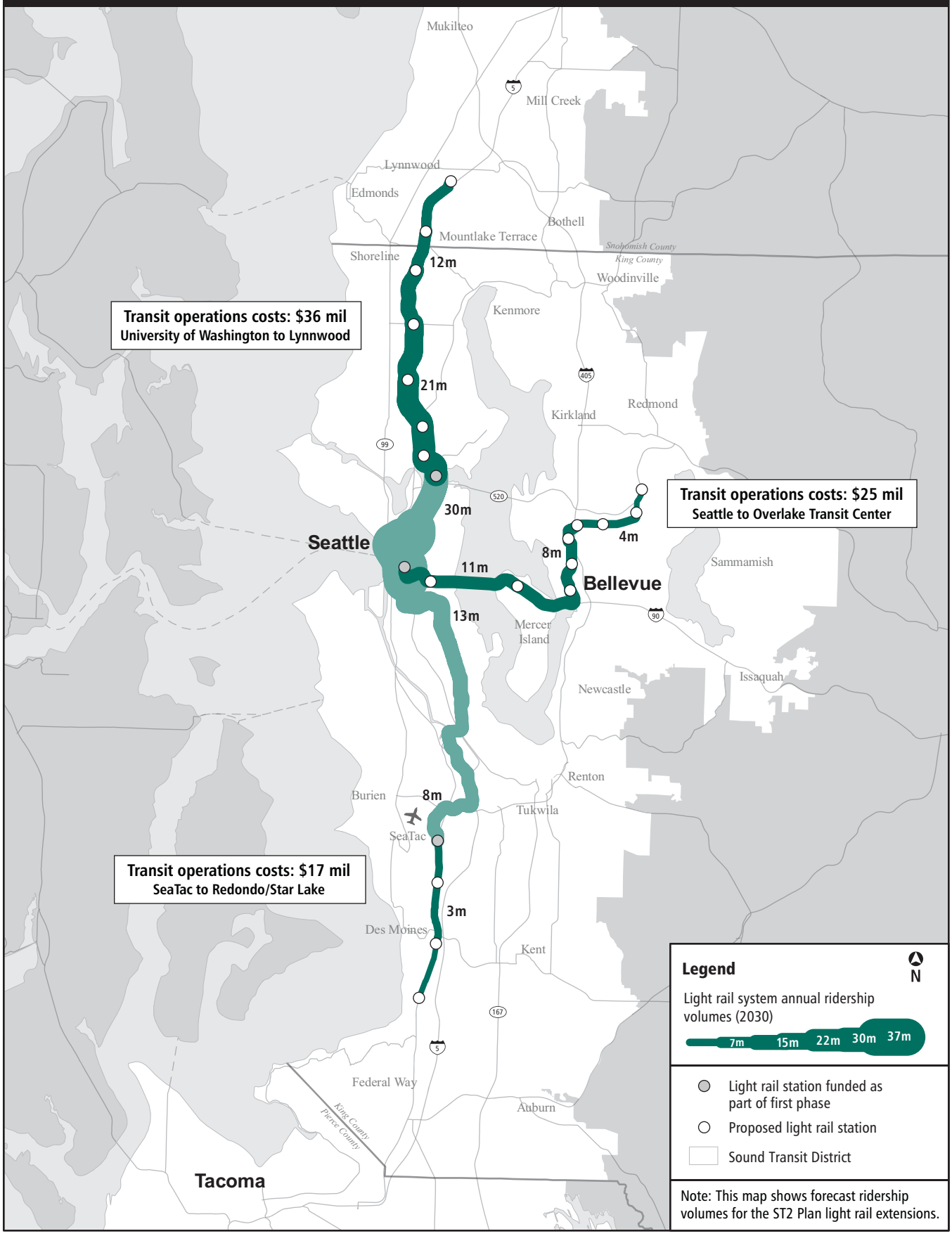
	With ST2 in 2030
Annual cost per ST2 system rider –	
ST2 transit operations	$1.96
ST2 capital	$8.38
Annual cost per new transit rider –	
ST2 transit operations	$4.60
ST2 capital	$19.70
Total annual cost and ridership	
ST2 transit operations cost (millions)	$92
ST2 capital cost (millions)*	$394
ST2 riders (millions)	47
New transit riders (millions)	20

* Note: Annualized ST2 capital cost is the $9.1 billion total capital cost (2007$) discounted at 3 percent over 40 years.

Table 8: Sound Transit's total forecasted operating revenue/operating expense ratio in 2030

	Annual riders (millions)	Transit operations cost (2007$ millions)	Operating revenue (2007$ millions)	OR/OE ratio (farebox recovery)
Link light rail	88.5	$127	$52	41%
Sounder commuter rail	6.5	$54	$15	28%
ST Express bus	14	$113	$16	14%
Sound Transit total	**109**	**$294**	**$83**	**28%**

MAP 1: ST2 PLAN LIGHT RAIL ANNUAL RIDERSHIP AND OPERATIONS COSTS (2007$)



Comparing the capacity of rail systems and highways

HIGHLIGHT For the first time, between 2003 and 2005, WSDOT found that on several freeways in the Central Puget Sound region, peak period vehicle volumes are dropping because the freeways are so congested and travel speeds are so slow that peak freeway capacity is declining.

HIGHWAY CAPACITY

The capacity of a single highway lane is defined as the highest number of vehicles that can pass a single point in an hour in a lane experiencing a stable flow of traffic.

Transportation planners calculate that maximum freeway capacity – up to 2,000 vehicles per hour per lane – is achieved at speeds of about 40-45 mph. When the speed falls to 30 mph, capacity can be reduced to as few as 700 vehicles per lane per hour.

Because the number of people per car is generally lower during commute hours than at other times, averaging about 1.1 people, the theoretical capacity of a single lane in the peak hour is 2,200 people. However, this assumes traffic moves at about 40-45 mph with perfect free flow conditions. At higher speeds the longer distances between vehicles reduce the capacity of the freeway, and at slower speeds the conflicts between vehicles – that is stop-and-go traffic – also reduce capacity.

Other factors affecting capacity include collisions, disabled vehicles, spills and other events that impede the normal flow of traffic, as well as poor weather conditions that reduce visibility.

The Washington State Department of Transportation tracks peak period highway performance in Central Puget Sound for 35 different city-to-city commutes. Between 2003 and 2005 travel times worsened for 33 of these 35 commutes. Ironically, the slower the travel speeds due to congestion, the lower the capacity of the freeway links on which the congestion occurs; that is, the greater the demand for travel, the more likely it is that fewer vehicles will be able to use the roadway. According to WSDOT annual system performance reports, particularly bad locations include:

- I-5 at I-90, which operates at less than 40% capacity for over 10 hours a day;
- I-5 near Northgate, which operates at about 70% capacity for almost 10 hours a day; and
- I-405 at SR 169 in Renton, which operates between about 50-60 percent capacity for 14 hours a day.

Bellevue-based commutes are the worst

The worst congestion problems in 2005 were for people commuting to and from Bellevue for work. During the average evening, the Bellevue-to-Tukwila commute experienced congestion and loss of capacity for five hours and 35 minutes, and the Bellevue-to-Seattle SR 520 commute experienced congestion and loss of capacity for four hours and 50 minutes.

LINK LIGHT RAIL CAPACITY

The capacity of rail transit is a combination of the size of the vehicles, how frequently they run and the level of crowding.

As with highway capacity, when speaking of rail capacity the important measure is the number of passengers that can be carried during the peak period, when the service is most in demand. This is usually referred to as "peak passengers per hour in the peak direction."

The per-hour and all-day passenger moving capacity of the ST2 light rail system is quite large, especially in comparison to a roadway of similar width with mixed traffic. While no rail transit system runs fully loaded 24 hours a day, the difference between the ultimate system capacity and the ridership forecast shortly after opening represents the reserve of capacity for accommodating a large amount of future ridership demand in the decades after the system is built. **Table 10** presents the hourly passenger capacity of the ST2 light rail

Table 10: Light rail system capacity (passengers per hour per direction)

Peak frequency (minutes)	4-car trains per hour	Seated capacity (74 per car)	Comfortable capacity (150 per car)	Crowded capacity (200 per car)
2	30	8,880	18,000	24,000
4	15	4,440	9,000	12,000
6	10	2,960	6,000	8,000
8	7.5	2,220	4,500	6,000

system at points in the system with varying frequencies of train service, at three different loading standards: all passengers seated, a comfortable level of standing passengers and a "crowded" load that might only be accommodated during peak times for short segments such as a major event.

Link light rail projected ridership in 2030 shows that the system has the capacity to meet future growing demand.

As Link is extended to Northgate, and then to Lynnwood, the number of riders adding to peak ridership will increase with each additional station served.

Leaving Downtown Seattle going south, half the trains will be routed east across Lake Washington to Bellevue and Overlake/ Redmond, and half the trains will be routed south to SeaTac and Redondo/Star Lake. The Downtown Seattle Transit Tunnel can support train headways as low as two minutes, but the 2030 ridership would only require headways in the three- to four-minute range. **Table 10** shows the capacity of the system, but ridership is not expected to reach that level until well beyond 2030.

System reliability

Reliability means arriving at the same time every time, regardless of gridlock on the roads or snow on the ground. Reliability is a critical factor in how people plan their travel and budget their time. Transportation system reliability has continued to decline in the Puget Sound region for several decades, both for car drivers and for transit riders. This is primarily related to increases in the severity of traffic congestion, and in the greater likelihood of congestion occurring at any time of day or on any day of the week.

When people need to arrive somewhere by a specified time, whether to be on time for work, or to catch a plane or to watch a child's soccer game, they know that if the trip involves one of the region's most congested corridors at peak hours they should allow a great deal of extra time to get there. **Table 11** shows WSDOT's estimates of how much time a driver needs to allow for travel between certain points in the regional system due to the unpredictability of highway travel in the region.

Table 11: Regional highway travel time reliability

Route description	Travel time at posted speeds	Average peak travel time	Time to ensure 95% on-time arrival	On-time arrival % increase
From Seattle	(in minutes)	(in minutes)	(in minutes)	
Seattle–Everett	24	43	60	40%
Seattle–Redmond via SR 520	15	30	44	47%
Seattle–Bellevue via I-90	11	18	32	78%
Seattle–Bellevue via SR 520	10	21	32	52%
Seattle–Issaquah	16	23	37	61%
Seattle–SeaTac	13	19	28	47%
Seattle–Federal Way	22	37	56	52%
From Bellevue				
Bellevue–Everett	23	44	62	41%
Bellevue–Seattle via I-90	11	28	46	64%
Bellevue–Seattle via SR 520	10	26	38	46%
Bellevue–Tukwila	13	33	45	36%
From other locations				
Renton–Auburn via SR 167	10	20	33	65%

Source: WSDOT Gray Notebook: Measures, Markers, and Mileposts 9/30/07 p.68

HIGHLIGHT **Between 2003 and 2005, the duration of afternoon peak period congestion stretched from 2 hours to 3 hours and 15 minutes between Seattle and Redmond. Between Bellevue and Redmond it grew from 1 hour and 45 minutes to 3 and half hours.**

Increasingly, the problem of congested peak hours has spread to all hours of the day and even to the weekends. Buses are caught in the same traffic as cars and trucks. Freeway HOV facilities speed buses, but even these ramps and lanes often break down in the crush of peak period traffic and bad weather. Sounder commuter rail and Link light rail, although they share some grade crossings with vehicles, operate on their own rights-of-way free from conflicts with other traffic.

HIGHWAY RELIABILITY

Reliability on streets and highways is affected by many things including crashes, stalled vehicles and weather conditions, but the most important factor in the Central Puget Sound region is the volume of traffic and delays caused by congestion.

As detailed in **Table 11**, WSDOT tracks reliability on the freeways for major commutes between pairs of cities, and calculates "95% reliable travel times," that is the amount of time a driver needs to plan for to be sure of arriving on time 19 times out of 20.

WSDOT data, compiled annually in major corridors, shows reliability on the regions highways to be steadily declining.

TRANSIT RELIABILITY

Transit reliability is related to a number of factors, but most significantly to the portion of the transit trip that occurs on a transit-only facility – that is, rail or bus operating in its own right-of-way – away from interference with other traffic. **Chart 1** illustrates the increased access to exclusive right-of-way that will be experienced by the region's transit riders with ST2.

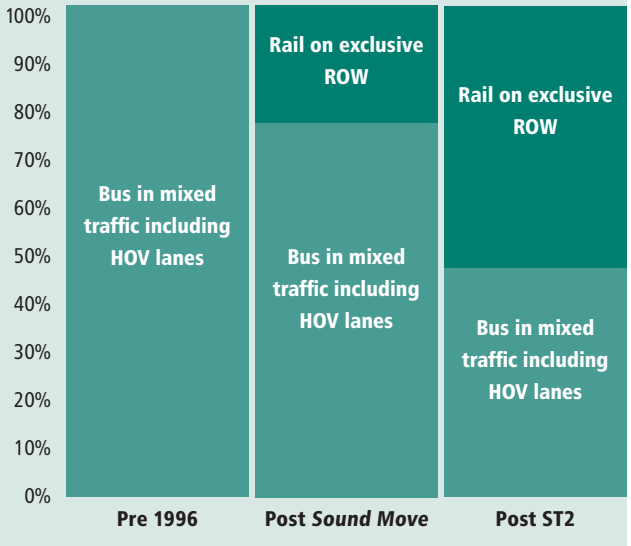
Sound Transit's Link light rail operates almost entirely on exclusive right-of-way. In addition, most of the right-of-way is grade separated with no interference from traffic. Even where there is no grade separation, Link light rail operates in exclusive right-of-way with signal preemption. This allows the service to maintain a very high level of reliability, at all times of the day.

Prior to *Sound Move,* 100 percent of the region's transit travel occurred on buses operating in mixed traffic. When the *Sound Move* investments are completed, 25 percent of the region's transit travel will occur on high-reliability rail lines.

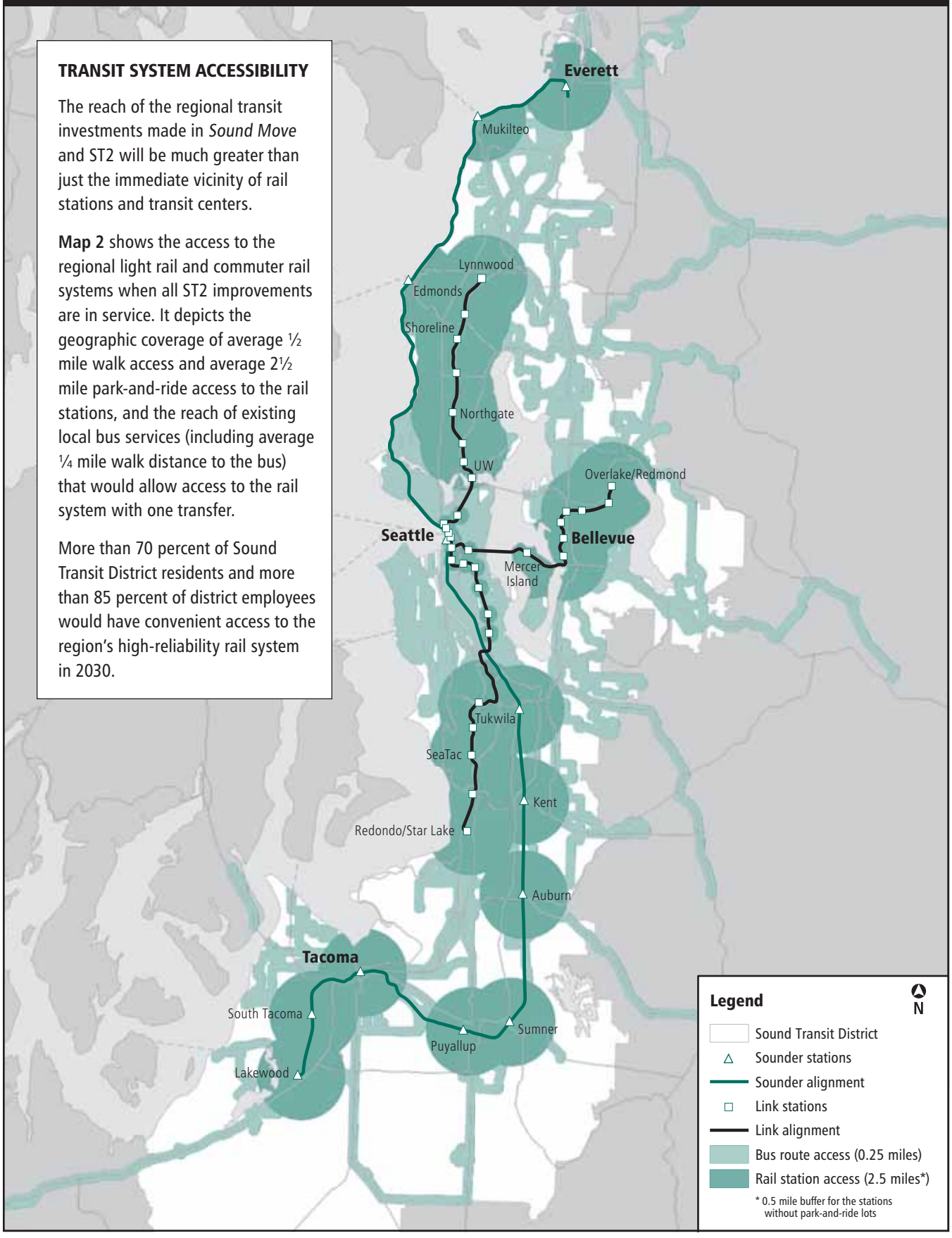
Looking ahead to the completion of ST2, the share of all transit riders in the region who are on Sound Transit services grows from 12 percent today to 65 percent in 2030. This means that over five times as many of the riders will travel on vehicles that don't get stuck in traffic, regardless of the time of day, day of the week, weather conditions, or other factors.

Chart 1: Percentage shares of passenger miles in mixed traffic vs. exclusive right-of-way

Transit reliability is related to the portion of the trip that occurs in exclusive right-of-way. As the percentage of rail trips increases, transit reliability will also increase.



MAP 2: COMBINED REGIONAL RAIL ACCESS



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