Washington State

Amtrak *Cascades* Ridership and Revenue Forecasts Technical Report

VOLUME 5

Washington State Department of Transportation

February 2006

Prepared by the Freight Systems Division
Washington State Department of Transportation

February 2006

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Prepared for the

Washington State Department of Transportation

By

AECOM Consult, Inc

in association with

HDR Engineering, Inc.
The Resource Group Consultants, Inc.
Transit Safety Management, Inc.

February 2006

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Executive Summary

The purpose of this report is to provide detailed, technical ridership and revenue analyses which were performed as part of the Amtrak *Cascades* twenty-year planning effort. The information contained in this report is geared towards the transportation professional and not the general public. The results of the analyses contained in this report are summarized and presented in the *Washington State's Long-Range Plan for Amtrak Cascades*.

These ridership and revenue forecasts were developed to analyze the expanded service of the Amtrak *Cascades* passenger rail service along the Pacific Northwest Rail Corridor (PNWRC). The forecasts were developed using information assembled for previous rail studies in the Pacific Northwest. Additionally, updated travel models and new socioeconomic data, prepared by the state of Washington Office of Financial Management and other sources, were combined to develop a comprehensive representation of the existing travel market for Amtrak *Cascades* rail service.

The model used for this analysis is an adaptation of a spreadsheet model that has been used in many applications for Amtrak in California and other corridors, as well as for the Georgia, Virginia, and North Carolina Departments of Transportations to evaluate intercity rail alternatives. The spreadsheet models were developed based on market research and physical data such as highway networks, existing and projected socioeconomic variables and service characteristics of public modes. The modes considered in this model are rail, auto and air. The model was calibrated to existing Amtrak *Cascades* ridership and market totals.

The study team examined service scenarios for 2008 and 2023 in addition to sensitivity analyses for station location in Vancouver, BC and future fare increases. The station location analysis was conducted based on Timetable F, as well as Timetable F, Revision A (as presented in the Operating Plan for the Amtrak *Cascades*) and examined the impact of moving the Vancouver, BC station south of the Fraser River to the Scott Road SkyTrain station in Surrey, BC. The 2008 service scenario includes the *Coast Starlight* as a long distance train, but does not provide service in the Seattle, WA to Portland, OR and intermediate markets, only trips to and from Oregon south of Portland. For the purposes of this model, the 2023 schedule includes the same frequency to Eugene, OR as the 2008 scenarios, but the *Coast Starlight* is replaced with non-Washington supported train service to Eugene.

Exhibit ES-1
Alternative Specification Summary

							FARE SENSITIVITY ANALYSIS		
	2002 Base	2008 Build	2023 Build	2023 Build Scott Road	2023 Rev A	2023 Rev A-Scott Road	2008 Build (23% Fare Increase)	2023 Build (46% Fare Increase)	2023 Rev. A (46% Fare Increase)
FREQUENCY (ROUND TRIPS PER DAY)									
SEATTLE – PORTLAND, OR	4	8	13	13	14	14	8	13	14
SEATTLE- VANCOUVER, BC	1	3	4	4	5	5	3	4	5
VANCOUVER, BC – PORTLAND, OR	0	2	3	3	4	4	2	3	4
TRAVEL TIME (MINUTES)									
SEATTLE – PORTLAND, OR	222	195	147	147	150	150	195	147	150
SEATTLE- VANCOUVER, BC	235	205	165	145	156	136	205	165	156
VANCOUVER, BC – PORTLAND, OR	-	400	331	311	322	302	400	331	322
FARES									
SEATTLE – PORTLAND, OR	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28	$ 34	$ 40	$ 40
SEATTLE- VANCOUVER, BC	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 32	$ 38	$ 38
VANCOUVER, BC – PORTLAND, OR	-	$ 44	$ 44	$ 44	$ 44	$ 44	$ 54	$ 64	$ 64

Ridership and revenue projections for all future scenarios were forecast assuming fares remain at recent levels (expressed in constant 2002 dollars, that is, no inflation). In order to assess the impacts of increased fares in conjunction with improved services, fare sensitivity analyses were conducted. The fare sensitivity analyses were preformed on the 2008 (Timetable C) and 2023 Build and Revision A Build (Timetable F) scenarios. The fare increases of twenty-three percent for the 2008 scenario and forty-six percent for the 2023 scenarios. **Exhibit ES-1** summarizes the alternative specifications by major market.

Ridership and revenue forecasts were prepared for each of the alternatives. **Exhibit ES-2** on the following page summarizes the results of the forecasts for the Amtrak *Cascades*. This table includes the ridership and revenue associated with non-Washington supported trains, including the *Coast Starlight*, between Eugene, OR and Vancouver, BC. All revenues are displayed in 2002 dollars.

The service improvements including travel time, frequency and through trips from Vancouver, BC and north of Seattle to Portland, OR and Central Oregon, progressively increase the average length of trips creating more ridership, revenue and passenger miles per train-mile in the future scenarios.

Exhibit ES-2
Summary of Forecast Results

Alternative	Total Riders	Total Revenue	Passenger Miles	Train Miles	Revenue/ Train Mile	Revenue/ Pass Mile
Existing (actual)	659,100	$14,900,000	99,481,000	1,000,100	$14.90	$0.15
2008 Build	1,488,100	$34,280,000	225,460,000	1,835,220	$18.68	$0.15
2023 Build	3,191,500	$74,568,000	493,930,000	2,492,220	$29.92	$0.15
2023 Scott Road	3,244,200	$75,675,000	490,500,000	2,483,820	$31.09	$0.15
2023 Rev A	3,397,800	$79,064,000	520,804,000	2,606,100	$30.34	$0.15
2023 Rev A - Scott Road	3,488,900	$80,985,000	531,800,000	2,533,100	$31.97	$0.15
2008 Fare Increase	1,316,500	$37,391,000	199,997,000	1,835,220	$20.37	$0.19
2023 Build Fare Increase	2,680,300	$91,883,000	416,612,000	2,492,220	$36.87	$0.22
2023 Rev A Fare Increase	2,858,700	$97,645,000	440,225,000	2,606,100	$37.47	$0.22

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Chapter One: Introduction

The purpose of this report is to provide detailed, technical ridership and revenue analyses which were performed as part of the Amtrak *Cascades* twenty-year planning effort. The information contained in this report is geared towards the transportation professional and not the general public. The results of the analyses contained in this report are summarized and presented in the *Washington State's Long-Range Plan for Amtrak Cascades*.

This report describes the methodology used in the ridership and revenue analysis conducted as part of the 2003-2023 Amtrak *Cascades* Plan for Washington State. The forecasts provided in the Amtrak *Cascades* Plan include estimates of all rail travel in the corridor including the *Coast Starlight* and other non-Washington state-supported trains between Eugene, OR and Vancouver, BC.

The ridership and revenue forecasts for expanded rail service in the Pacific Northwest Rail Corridor (PNWRC) were developed using information assembled for previous rail studies in the Pacific Northwest in addition to new socioeconomic data prepared by the state of Washington Office of Financial Management and other sources. These data were used to create a comprehensive depiction of the existing travel market for Amtrak *Cascades* rail service.

This report describes the geographic area of the corridor, socioeconomic projections and assumptions, travel market analysis and estimates, basic description of the travel demand model, basic assumptions and inputs to the model, and a summary of ridership and revenue estimates for future scenarios.

Were target years used for this analysis?

The Amtrak *Cascades* program was designed to be implemented within a twenty year timeframe. Although analysis and research data are based on specific years of operation, the purpose of an incremental program is to be able to implement service as funding becomes available. As such, specific years of implementation may change, but the specific projects needed to achieve each service level will not.

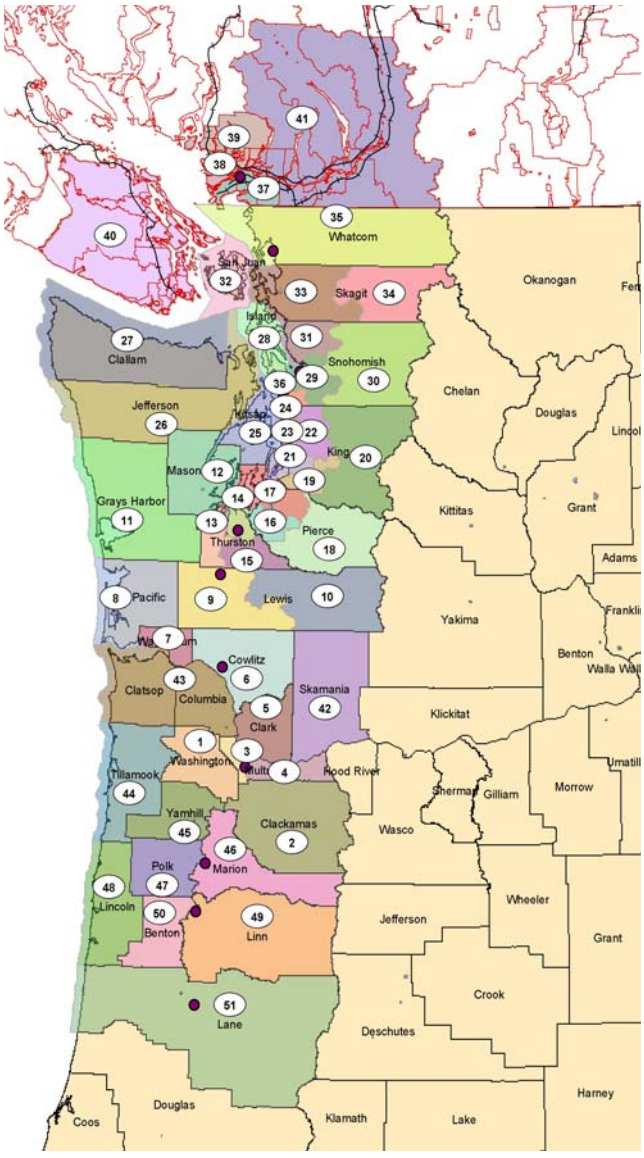
The travel times and train frequencies presented in this discussion focus on years 2008 and 2023. Year 2023 represents WSDOT's twenty year build-out plan. Year 2008 was chosen as an intermediate year to represent a "midpoint" in service and infrastructure development. WSDOT selected year 2008 as the

interim year based on the assumption that full funding for all projects targeted for implementation between 2003 and 2008 would be available.

Since the initial decision was made to use 2008 as the mid point for this analysis, WSDOT has recognized that funding levels necessary to meet the program's goals, will not be available. Therefore, the implementation years (and associated service levels) identified throughout this document are placeholders. Implementation of projects (and therefore achievement of service levels) could take longer than anticipated, or could feasibly be expedited, depending upon funding availability. From the inception of the Amtrak *Cascades* program, implementation goals have always been based on market demand as well as funding.

Chapter Two: Geographic Area

Exhibit 2-1
Geographic Area System Map



The Travel Analysis Zones (TAZs) taken from the *Travel Market Analysis and Demand Forecasts Report* were modified slightly for use in this study. Changes were minimized for easier conversion of the 1992 survey data, but were required for detail in areas with multiple station locations especially Vancouver, BC for the analysis of the Scott Road Station, and the Seattle area to facilitate the station choice between Edmonds, Seattle and Tukwila.[1] **Exhibit 2-1** displays a map of the zones and counties used in this analysis and **Exhibit 2-2 (**on the following page) display the definitions of the geographic area.

[1] *Traveler surveys were performed for the High Speed Ground Transportation Study (1992).*

Exhibit 2-2
Geographic Area Definitions

ZONE	NAME	ZONE	NAME
1	Washington, OR	27	Clallum, OR
2	Clackamas, OR	28	Island, WA
3	Multnomah, OR – West of Willamette River	29	Snohomish, WA - Everett, Marysville, Monroe
4	Multnomah, OR - East of Willamette River	30	Snohomish, WA - Non-Urban East
5	Clark, WA	31	Snohomish, WA - Arlington & Urban North
6	Cowlitz, WA	32	San Juan, WA
7	Wahkiakum, WA	33	Skagit, WA - Mt. Vernon, Sedro Woolley
8	Pacific, WA	34	Skagit, WA - Non-Urban East
9	Lewis, WA - West – Centralia	35	Whatcom, WA
10	Lewis, WA – East – Glenoma	36	Snohomish, WA - Edmonds, Lynnwood, Bothell
11	Grays Harbor, WA	37	Surrey, Delta, White Rock, BC
12	Mason, WA	38	Vancouver BC, Burnaby, Richmond BC
13	Thurston, WA - West Olympia	39	North & West Vancouver BC, Greater Vancouver
14	Thurston, WA - Olympia, Lacy, & Urban East	40	Victoria and Vancouver Island, BC
15	Thurston, WA - Non-Urban Southeast	41	Coquitlam, Anmore, Port Moody, Maple Ridge, BC
16	Pierce, WA - Ft. Lewis, Steilacoom & West	42	Skamania, WA
17	Pierce, WA - Tacoma, Fife, Puyallup	43	Clatsop & Columbia, OR
18	Pierce, WA - Non-Urban Southeast	44	Tillamook, OR
19	King, WA - Federal Way, Auburn, Far South Urban	45	Yamhill, OR
20	King, WA - Non-Urban Far East	46	Marion, OR
21	King, WA - South Seattle, SeaTac, Des Moines, Kent	47	Polk, OR
22	King, WA - Bellevue, Urban NE of Lake Washington	48	Lincoln, OR
23	King, WA - Downtown Seattle	49	Linn, OR
24	King, WA - N Seattle, NW of Lake Washington	50	Benton, OR
25	Kitsap, WA	51	Lane, OR
26	Jefferson, WA		

Chapter Three: Socioeconomic Data

Socioeconomic data used to develop the market growth for the Amtrak *Cascades* plan were obtained through official Washington State published sources where available. The data concepts used in this model include:

- population;
- employment; and
- per capita income (in constant year dollars).

Population projections by county were obtained from the Washington State Office of Financial Management's intermediate forecast for the Growth Management Act, released January 2002. Employment data forecasts by county were developed by the Washington State Employment Security Department, last updated December 2002. These data contained year 2000 estimates for non-agricultural employment along with 2005 and 2010 forecasts. For years beyond 2010, growth rates were calculated from Economy.com and their county employment data, and were applied to grow the official State employment projections. In counties with multiple zones, the county population and employment estimates were applied to each zone by the 2000 population in each census tract. Economy.com real per capita income data were used for the counties.

Exhibit 3-1 on the following page shows a snapshot of the population, employment and per capita income for the counties in the heart of the corridor for the years 2000, 2010, and 2025. **Exhibit 3-2,** also on the following page, displays the average annual growth rate for the three metrics between 2000 and 2025.

Exhibit 3-1
Population, Employment, and per Capita Income Estimates

	2000			2010			2025		
County/ Area	Population	Employment	Per Capita Income	Population	Employment	Per Capita Income	Population	Employment	Per Capita Income
GREATER VANCOUVER, BC	1,971,583	969,805	$17,616	2,293,959	1,114,086	$20,834	2,764,035	1,311,508	$29,411
WHATCOM, WA	166,814	67,600	$21,861	195,504	76,600	$24,960	246,636	96,189	$34,818
SKAGIT, WA	102,979	41,950	$24,956	123,807	47,790	$26,124	164,797	64,928	$34,940
SNOHOMISH, WA	606,024	215,300	$26,714	728,957	236,200	$25,674	929,314	291,898	$29,277
KING, WA	1,737,034	1,189,700	$42,950	1,861,042	1,363,600	$53,917	2,092,390	1,651,726	$78,741
KITSAP, WA	231,969	73,900	$24,081	257,841	83,300	$28,937	331,571	100,348	$37,071
PIERCE, WA	700,820	243,700	$24,116	788,580	277,600	$26,377	942,157	347,869	$34,177
THURSTON, WA	207,355	85,500	$24,951	258,687	97,400	$28,593	336,825	118,389	$39,466
LEWIS, WA	68,600	24,520	$20,097	77,493	27,410	$22,222	90,678	35,664	$29,632
COWLITZ, WA	92,948	38,960	$22,114	107,903	42,880	$25,250	136,114	57,406	$35,423
CLARK, WA	345,238	116,500	$27,411	432,479	134,100	$26,267	544,809	184,572	$29,890
WASHINGTON, OR	448,120	222,477	$29,443	560,975	264,491	$33,180	683,285	331,509	$45,979
MULTNOMAH, OR	660,767	456,803	$30,779	741,088	477,223	$34,455	869,922	551,880	$47,448
CLACKAMAS, OR	339,472	131,431	$32,352	410,740	151,345	$30,990	499,857	188,075	$34,584

Exhibit 3-2
Average Annual Growth Rates 2000-2025

	AVERAGE ANNUAL GROWTH RATES (2000-2025)		
COUNTY/AREA	POPULATION	EMPLOYMENT	PER CAPITA INCOME
Greater Vancouver, BC	1.36%	1.21%	2.07%
Whatcom, WA	1.58%	1.42%	1.88%
Skagit, WA	1.90%	1.76%	1.36%
Snohomish, WA	1.72%	1.22%	0.37%
King, WA	0.75%	1.32%	2.45%
Kitsap, WA	1.44%	1.23%	1.74%
Pierce, WA	1.19%	1.43%	1.40%
Thurston, WA	1.96%	1.31%	1.85%
Lewis, WA	1.12%	1.51%	1.57%
Cowlitz, WA	1.54%	1.56%	1.90%
Clark, WA	1.84%	1.86%	0.35%
Washington, OR	1.70%	1.61%	1.80%
Multnomah, OR	1.11%	0.76%	1.75%
Clackamas, OR	1.56%	1.44%	0.27%

Chapter Four: Travel Markets

The existing travel market estimate was created using a combination of the survey results from the *1992 High Speed Ground Transportation Study*[2] the Whatcom Council of Government's *IMTC Border Crossing Study*,[3] and existing air data in the major markets in the Pacific Northwest Rail Corridor (PNWRC).

The *1992 High Speed Ground Transportation Study* was not corridor specific and focused on the entire state of Washington. Data from two survey sites were used from this study -- a northbound survey on I-5 at the Thurston/Pierce County line between Olympia and Tacoma and the southbound I-5 survey in Skagit County between Bellingham and Burlington. Survey results from the IMTC Cross-Border Trade and Travel Study Database collected in the summer and fall of 2000 at the Peace Arch and Pacific Highway crossings in Blaine/ Douglas, at the Lynden/Aldergrove border crossing, and Sumas/Huntingdon border crossing were incorporated into the creation of the existing market estimate as well. The surveys were normalized to 2002 values using socioeconomic growth estimates in the area. Additionally, air data were obtained from Federal Aviation Administration (FAA) sources for the major market pairs in the corridor and distributed to surrounding zones. **Exhibit 4-1** displays a summary of the major market trips.

Exhibit 4-1
Existing Travel Market Size Estimates

ESTIMATED 2002 TRAVEL MARKET SIZE				
MAJOR TRAVEL MARKETS		BUSINESS	NON-BUSINESS	TOTAL
Seattle	Portland, OR	1,440,638	5,018,949	6,459,587
Seattle	Vancouver, BC	203,449	1,248,331	1,451,780
Vancouver, BC	Portland, OR	14,287	111,234	125,521

[2]*KPMG Peat Marwick, "Travel Market Analysis and Demand Forecasts Report." August 1992.*

[3]*Cambridge Systematics, Inc., "Cross-Border Trade and Travel Study: Final Report and Analysis Results." September 2001.*

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Chapter Five: Model and Inputs

The model used for this analysis is an adaptation of a spreadsheet model that has been used in many applications for Amtrak in California and other rail corridors, and for the Georgia, Virginia, and North Carolina Departments of Transportation to evaluate intercity rail alternatives. The spreadsheet models were developed based on market research and physical data such as highway networks, existing and projected socioeconomic variables, and service characteristics of public modes. The modes considered in this model are rail, auto and air. The model was calibrated to existing Amtrak *Cascades* ridership and market totals.

The forecasting approach utilizes a two-stage model system. The first stage forecasts the total number of trips by all modes for each origin-destination pair. The second stage predicts the market share of each mode available to each origin-destination pair. Both stages are dependent on the service characteristics and availability of each mode and the characteristics of the traveling population.

A number of different functional forms of travel characteristics were developed for the model, including:

- damped frequency of public modes;
- a non-linear transformation of travel time and cost; and
- time-of-day weighting.

"Damped" frequency refers to the incrementally smaller benefit to an additional frequency. For example, one additional frequency when the base is only one frequency is a much larger utility contribution than one additional frequency on a base of ten frequencies.

The model includes a number of different non-linear, distance-based transformations of travel cost and travel time. These transformations help counter the trip length scaling of cost and time elasticities in the model. For example, a simple linear representation of time and cost would yield elasticities that are perfectly correlated with distance, i.e. a two hundred mile trip will have twice the sensitivity to time and cost as compared to a one hundred mile trip.

Total time, access, egress, and terminal time were included in a second variable to account for the added valuation of this time to travelers. Most intercity choice models exhibit greater sensitivity to access and terminal times than to line haul times. This sensitivity has distinct variations as follows:

- As access and terminal times increase, the disutility increases at an increasing rate.
- As overall trip length increases, access and terminal time disutility decreases.

Finally, total market-to-market frequencies were scaled based on arrival and departure times of each train serving the market. Prior research studies have allowed the project team to create time-of-day factors for arrival and departure time. A train's utility and market share is determined by the combination of arrival and departure factors along with the time to the previous and subsequent trains, travel time, cost, and access and egress times.

Networks and Service Characteristics

Service characteristics for each mode are the key independent variables for modeling and forecasting the market shares captured by each competing mode of travel. The mode choice models in this study use the following characteristics:

- travel time (minutes);
- travel cost (dollars); and
- frequency and time-of-day of service (number of air or train departures per day and when they occur in the day).

These travel characteristics are developed using an intercity highway network representing interstate highways, primary arterials and other highway facilities connecting all zones in the study area to all other zones and intercity passenger terminals (airports and rail stations). This highway network was developed for this study based on the Oak Ridge National Laboratory's existing highway network and using a combination of facility type assigned free flow speeds and congested interstate travel times from the Washington State Department of Transportation (WSDOT).

Public transportation service (air and rail) travel characteristics are based on existing services provided by each mode and consist of the following two major components: (1) line haul characteristics and (2) access and egress characteristics. Line haul characteristics reflect the portion or the trip spent in the public mode (for example on the airplane between airports). Key line haul characteristics include:

- travel time including flying or running times and any transfer time;
- service frequency and time-of-day; and
- fares.

Access and egress characteristics reflect the part of the trip spent getting from the starting location to the ultimate destination not on a public mode, including characteristics associated with the terminals. Access and egress characteristics include travel time and cost associated with getting to and from the terminal, parking costs, and terminal times. **Exhibit 5-1** displays sample highway, air, and rail characteristics for a trip between downtown Seattle and downtown Portland, OR.

Exhibit 5-1
Sample Base Travel Characteristics between Seattle and Portland, OR

	AUTO	AIR	RAIL
LINE HAUL			
Airports/Stations/Terminals		SEA-PDX	SEA-PDX
Distance (miles)	179	129	186
Highway Cost (full/incr)*	$48 / $18		
Travel Time (minutes)	183	51	222
Fare		$103	$27
Frequency (departures/day)		24.8	4
ACCESS			
Distance (miles)		12.3	1
Highway Cost (full/incr)*		$3.35 / $1.25	$0.18 / $0.10
Travel Time (minutes)		13	2
Terminal Time (minutes)		45	10
EGRESS			
Distance (miles)		11.5	5
Highway Cost (full/incr)*		$3.10 / $1.15	$1.35 / $0.50
Travel Time (minutes)		16	5
Terminal Time (minutes)		45	10

*Incremental (incr) costs include the cost of gas, oil, etc. that have a direct relationship to the number of miles driven. Full costs include the incremental costs as well as the allocated per mile costs of depreciation, insurance, etc. that are included in the full cost figure that the IRS lets businesses deduct.

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Chapter Six: Alternatives

For this paper, the project team modeled three basic future scenarios, one in 2008 (Timetable C) and two in 2023 (Timetable F and Timetable F Revision A). Each alternative included increased frequency and speeds of the services in the major markets.

Exhibit 6-1 on the following page provides a brief summary of the frequency, travel time and fare for each alternative for the major markets in the corridor. Fares and revenue projections were kept in constant 2002 dollars. The 2008 service scenario includes the *Coast Starlight* as a long distance train, but does not provide service in the Seattle to Portland, OR and intermediate markets, only trips to and from Oregon south of Portland. For the purposes of this model, the 2023 schedule includes the same frequency to Eugene, OR as the 2008 scenarios, but the *Coast Starlight* is replaced with non-Washington supported train service to Eugene. **Appendix A** contains the schedules used in the base and alternative runs in a user timetable format.

In addition to the basic three alternatives, a scenario examining only the movement of the Vancouver, BC station to Scott Road was modeled. Also, three fare sensitivity analyses were completed, one for each of the base alternatives.

Exhibit 6-1
Alternative Summary

							FARE SENSITIVITY ANALYSIS		
	2002 Base	2008 Build	2023 Build	2023 Build Scott Road	2023 Rev A	2023 Rev A-Scott Road	2008 Build (23% Fare Increase)	2023 Build (46% Fare Increase)	2023 Rev. A (46% Fare Increase)
FREQUENCY (ROUND TRIPS PER DAY)									
SEATTLE – PORTLAND, OR	4	8	13	13	14	14	8	13	14
SEATTLE- VANCOUVER, BC	1	3	4	4	5	5	3	4	5
VANCOUVER, BC – PORTLAND, OR	0	2	3	3	4	4	2	3	4
TRAVEL TIME (MINUTES)									
SEATTLE – PORTLAND, OR	222	195	147	147	150	150	195	147	150
SEATTLE- VANCOUVER, BC	235	205	165	145	156	136	205	165	156
VANCOUVER, BC – PORTLAND, OR	-	400	331	311	322	302	400	331	322
FARES									
SEATTLE – PORTLAND, OR	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28	$ 34	$ 40	$ 40
SEATTLE- VANCOUVER, BC	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ 32	$ 38	$ 38
VANCOUVER, BC – PORTLAND, OR	-	$ 44	$ 44	$ 44	$ 44	$ 44	$ 54	$ 64	$ 64

Chapter Seven: Forecast Results

Ridership and revenue forecasts were prepared for each of the build alternatives. A summary of forecast results is included in **Exhibit 7-1**[4] on the following page. A more detailed station-to-station ridership summary for fiscal year 2002 actual and estimated ridership, and the forecast and sensitivity analysis results can be found in **Appendix B**. In addition, **Appendix C** displays the results (for each scenario) by train.

The largest existing market in the Pacific Northwest Rail Corridor (PNWRC) is the Seattle to Portland, OR market, currently served by four daily round trips. The proposed 2008 schedule more than doubles the frequency to nine round trips and the 2023 Revision A plan increases the number of round trip trains to fourteen. The existing ridership and revenue in this market is over 240,000 riders and $6.5 million in ticket revenue. The increases in frequency and travel time savings increase the ridership and ticket revenue to over 556,000 and $15.2 million (current dollars) in 2008, and 1.1 million riders and $30.2 million in ticket revenue in the 2023 Revision A timetable.

The ridership and revenue also grows significantly in the Vancouver, BC to Seattle market (and Vancouver, BC to other Washington markets) as the frequency is increased by three hundred percent from 2002 to 2008 and thirty-three percent (sixty-six percent for Revision A) from 2008 to 2023. The frequency increases are combined with travel time savings of thirty minutes to Seattle (thirteen percent) from the existing condition to 2008 and another fifty minutes (twenty-four percent) in the 2023 build. Overall, the change from the existing condition to the 2023 proposed build scenario increases the Seattle to Vancouver, BC frequency from one daily frequency (each direction) to five daily frequencies, and reduces the travel time from under four hours to just over 2.5 hours. Additionally the new frequencies are scheduled during more attractive times of the day, and allow for through trips to Portland, OR that are not possible in the base.

Information contained in the Amtrak *Cascades* Long Range Plan

Ridership and revenue data presented in this technical paper includes trips south of Portland, OR, as well as trips which originated between Vancouver, BC and Portland, OR and continued south of Portland, OR. For the purposes

[4] ***Exhibit 7-1*** *presents information regarding linked and unlinked trips. A simple way of explaining these terms is by using the following example: when a person gets on the train in Vancouver, BC and gets off in Seattle, and then gets on another train (in Seattle) to go to Portland, OR – this entire trip can be viewed as one LINKED trip. Or, it can be viewed as two UNLINKED trips.*

of the *Washington State Long Range Plan for Amtrak Cascades*, any trips (and passenger miles) which extended south of Portland, OR (regardless of their origination), were extracted from the data presented in the plan. Ridership information presented in the plan contains only trips (and passenger miles) which originated or stayed within the corridor between Vancouver, BC and Portland, OR.

Exhibit 7-1
Summary of Forecast Results by Market

		FY 2002 Actual (Unlinked Trips)			FY 02 Estimated (Linked Trips)			FY 08 Build Estimate (Linked Trips)		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
Vancouver, BC	NW Washington	18,500	1,765,000	$322,000	17,800	1,695,000	$310,000	49,000	4,638,000	$850,000
Vancouver, BC	Seattle	76,000	11,646,000	$1,978,000	76,700	11,746,000	$1,995,000	241,800	37,308,000	$6,270,000
Vancouver, BC	SW Washington	0	0	$0	0	0	$0	1,400	289,000	$40,000
Vancouver, BC	Portland	0	0	$0	0	0	$0	1,500	494,000	$64,000
Vancouver, BC	Central Oregon	0	0	$9	0	0	$0	200	77,000	$10,000
NW Washington	NW Washington	1,900	99,000	$21,000	1,800	97,000	$20,000	3,800	202,000	$43,000
NW Washington	Seattle	53,700	4,582,000	$771,000	52,900	4,500,000	$757,000	123,500	10,810,000	$1,807,000
NW Washington	SW Washington	0	0	$0	2,900	382,000	$57,000	34,000	4,319,000	$655,000
NW Washington	Portland	0	0	$0	2,800	679,000	$91,000	19,900	4,755,000	$639,000
NW Washington	Central Oregon	0	0	$0	1,400	446,000	$58,000	2,900	947,000	$122,000
Seattle	Seattle	2,800	50,000	$18,000	2,900	51,000	$18,000	5,500	116,000	$37,000
Seattle	SW Washington	39,200	3,496,000	$595,000	38,100	3,406,000	$580,000	104,400	9,646,000	$1,620,000
Seattle	Portland	243,400	44,830,000	$6,654,000	240,500	44,302,000	$6,576,000	556,700	102,758,000	$15,222,000
Seattle	Central Oregon	40,200	11,127,000	$1,415,000	41,200	11,402,000	$1,450,000	46,500	12,906,000	$1,643,000
SW Washington	SW Washington	7,500	467,000	$85,000	7,500	467,000	$85,000	18,700	1,189,000	$216,000
SW Washington	Portland	87,000	11,353,000	$1,687,000	87,000	11,352,000	$1,687,000	186,300	24,688,000	$3,651,000
SW Washington	Central Oregon	14,400	3,057,000	$404,000	14,400	3,055,000	$404,000	14,000	3,006,000	$398,000
Portland	Portland	1,500	15,000	$9,000	1,500	15,000	$9,000	2,200	22,000	$14,000
Portland	Central Oregon	67,900	6,687,000	$898,000	67,400	6,637,000	$891,000	70,700	6,972,000	$936,000
Central Oregon	Central Oregon	5,200	308,000	$42,000	5,100	306,000	$42,000	5,300	317,000	$43,000
	Total	659,100	99,481,000	$14,900,000	661,900	100,538,000	$15,031,000	1,488,100	225,460,000	$34,280,000

Note: FY02 is Amtrak's Fiscal Year 2002 (Oct 2001- Sept 2002) ***Stations:*** Vancouver = VAC; NW Washington = BEL, MVW, EVR; Seattle = EDM, SEA, TUK; SW Washington = TAC,OLW,CTL,KEL; Portland = VAN, PDX; Central Oregon = SLM, ALY, EUG

Exhibit 7-1 (Continued)
Summary of Forecast Results by Market

		FY 23 Build Estimate (Linked Trips)			FY 23 Rev A Build Estimate (Linked Trips)			FY 23 Rev A-Scott Rd Build Estimate (Linked Trips)			FY 23 Build Scott Rd (Linked trips)		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
Vancouver, BC	NW Washington	142,600	13,227,000	$2,441,000	188,100	17,327,000	$3,205,000	231,400	20,813,000	$3,882,000	167,300	13,022,00	$2,824,000
Vancouver, BC	Seattle	559,700	86,730,000	$14,482,000	662,800	102,707,000	$17,150,000	709,500	109,945,000	$18,358,000	587,200	83,454,000	$15,182,000
Vancouver, BC	SW Washington	4,100	848,000	$116,000	5,200	1,078,000	$148,000	5,800	1,202,000	$165,000	4,400	862,000	$126,000
Vancouver, BC	Portland	3,900	1,321,000	$170,000	4,500	1,544,000	$199,000	5,000	1,688,000	$217,000	4,200	1,365,000	$183,000
Vancouver, BC	Central Oregon	400	161,000	$20,000	400	160,000	$20,000	400	163,000	$21,000	400	155,000	$20,000
NW Washington	NW Washington	7,500	404,000	$85,000	8,700	471,000	$99,000	8,700	471,000	$99,000	7,500	404,000	$85,000
NW Washington	Seattle	235,900	21,356,000	$3,547,000	264,100	24,033,000	$3,990,000	264,100	24,033,000	$3,990,000	235,900	21,356,000	$3,547,000
NW Washington	SW Washington	65,000	8,570,000	$1,288,000	74,300	9,809,000	$1,474,000	74,300	9,809,000	$1,474,000	65,000	8,570,000	$1,288,000
NW Washington	Portland	44,200	10,602,000	$1,425,000	48,700	11,663,000	$1,568,000	48,700	11,663,000	$1,568,000	44,200	10,602,000	$1,425,000
NW Washington	Central Oregon	15,600	5,188,000	$669,000	15,900	5,265,000	$679,000	15,900	5,265,000	$679,000	15,600	5,188,000	$669,000
Seattle	Seattle	6,700	143,000	$46,000	8,300	177,000	$57,000	8,300	177,000	$57,000	6,700	143,000	$46,000
Seattle	SW Washington	201,600	19,059,000	$3,179,000	200,100	18,910,000	$3,154,000	200,100	18,910,000	$3,154,000	201,600	19,959,000	$3,179,000
Seattle	Portland	1,102,400	203,980,000	$30,158,000	1,106,100	204,669,000	$30,260,000	1,106,100	204,669,000	$30,260,000	1,102,400	203,980,000	$30,158,000
Seattle	Central Oregon	145,500	40,829,000	$5,221,000	142,100	39,880,000	$5,099,000	142,100	39,880,000	$5,099,000	145,500	40,829,000	$5,221,000
SW Washington	SW Washington	33,700	2,188,000	$399,000	35,500	2,297,000	$419,000	35,500	2,297,000	$419,000	33,700	2,188,000	$399,000
SW Washington	Portland	380,500	50,691,000	$7,481,000	393,000	52,414,000	$7,734,000	393,000	52,414,000	$7,734,000	380,500	50,691,000	$7,481,000
SW Washington	Central Oregon	46,000	9,841,000	$1,301,000	46,100	9,850,000	$1,302,000	46,100	9,850,000	$1,302,000	46,000	9,841,000	$1,301,000
Portland	Portland	3,400	34,000	$22,000	3,500	35,000	$22,000	3,500	35,000	$22,000	3,400	34,000	$22,000
Portland	Central Oregon	181,500	18,047,000	$2,423,000	179,100	17,811,000	$2,392,000	179,100	17,811,000	$2,392,000	181,500	18,047,000	$2,423,000
Central Oregon	Central Oregon	11,400	709,000	$95,000	11,400	704,000	$94,000	11,400	704,000	$94,000	11,400	709,000	$95,000
	Total	3,191,500	493,930,000	$74,568,000	3,397,800	520,804,000	$79,064,000	3,488,900	531,800,000	$80,985,000	3,244,200	490,500,000	$75,675,000

Note: FY02 is Amtrak's Fiscal Year 2002 (Oct 2001- Sept 2002)
Stations: Vancouver = VAC; NW Washington = BEL, MVW, EVR; Seattle = EDM, SEA, TUK; SW Washington = TAC,OLW,CTL,KEL; Portland = VAN, PDX; Central Oregon = SLM, ALY, EUG

Exhibit 7-1 (Continued)
Summary of Forecast Results by Market

		FY 08- Fare Increase Estimate (Linked Trips)			FY 23Build Fare Incr. Estimate (Linked Trips)			FY 23 Rev A Fare Incr. Estimate (Linked Trips)		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
Vancouver, BC	NW Washington	39,800	3,778,000	$851,000	105,700	9,853,000	$2,653,000	141,100	13,086,000	$3,529,000
Vancouver, BC	Seattle	208,900	32,245,000	$6,670,000	472,500	73,213,000	$17,867,000	567,600	87,958,000	$21,465,000
Vancouver, BC	SW Washington	1,100	235,000	$40,000	3,000	621,000	$125,000	3,800	790,000	$159,000
Vancouver, BC	Portland	1,200	409,000	$65,000	2,900	996,000	$187,000	3,400	1,167,000	$219,000
Vancouver, BC	Central Oregon	200	77,000	$12,000	400	151,000	$28,000	400	160,000	$29,000
NW Washington	NW Washington	3,300	174,000	$45,000	5,900	318,000	$98,000	6,900	371,000	$114,000
NW Washington	Seattle	109,500	9,566,000	$1,968,000	197,600	17,851,000	$4,334,000	221,500	20,116,000	$4,882,000
NW Washington	SW Washington	28,700	3,642,000	$679,000	49,900	6,575,000	$1,444,000	57,100	7,542,000	$1,656,000
NW Washington	Portland	17,200	4,110,000	$680,000	34,900	8,367,000	$1,643,000	38,400	9,218,000	$1,810,000
NW Washington	Central Oregon	2,400	791,000	$126,000	11,900	3,958,000	$746,000	12,100	4,023,000	$758,000
Seattle	Seattle	5,100	108,000	$43,000	6,100	130,000	$61,000	7,500	160,000	$75,000
Seattle	SW Washington	91,900	8,453,000	$1,749,000	167,700	15,767,000	$3,849,000	166,400	15,640,000	$3,818,000
Seattle	Portland	505,200	93,247,000	$17,001,000	961,800	177,970,000	$38,457,000	965,200	178,591,000	$38,591,000
Seattle	Central Oregon	41,200	11,442,000	$1,793,000	121,800	34,201,000	$6,392,000	119,000	33,394,000	$6,241,000
SW Washington	SW Washington	16,300	1,025,000	$229,000	27,100	1,730,000	$460,000	28,600	1,816,000	$482,000
SW Washington	Portland	163,100	21,662,000	$3,939,000	311,600	41,644,000	$8,973,000	322,200	43,103,000	$9,285,000
SW Washington	Central Oregon	11,800	2,545,000	$414,000	35,700	7,628,000	$1,474,000	35,700	7,635,000	$1,475,000
Portland	Portland	2,100	21,000	$16,000	3,000	30,000	$28,000	3,100	31,000	$29,000
Portland	Central Oregon	62,700	6,186,000	$1,022,000	151,200	15,040,000	$2,952,000	149,200	14,840,000	$2,912,000
Central Oregon	Central Oregon	4,800	281,000	$47,000	9,500	568,000	$113,000	9,400	583,000	$114,000
	Total		1,316,500	199,997,000	$37,391,000	2,680,300	416,612,000	$91,883,000	2,858,700	440,225,000

Note: FY02 is Amtrak's Fiscal Year 2002 (Oct 2001- Sept 2002)
Stations: Vancouver = VAC; NW Washington = BEL, MVW,EVR; Seattle = EDM, SEA, TUK; SW Washington = TAC,OLW,CTL,KEL; Portland = VAN, PDX; Central Oregon = SLM, ALY, EUG

Chapter Eight: Additional Analysis

Four additional analyses were conducted with respect to station location and fare sensitivity. The station location analysis examined the impacts of moving the Vancouver, BC station from its existing location in downtown Vancouver, to south of the Frasier River to the Scott Road area of Surrey, BC. Two fare sensitivity analyses were conducted to determine the impact of increasing the ticket fares as the service in the corridor is improved. The sensitivity analyses were conducted in each of the future build forecast years. The existing Vancouver, BC station is located in the area near the intersection of Quebec Street and Terminal Avenue near Science World and the Main Street/Science World Sky Train station. An analysis was conducted to assess the impacts of moving the station south of the Frasier River to Surrey with direct access to the Scott Road Sky Train station.

The movement of the station shortens the intercity train portion of the trip to Vancouver, BC by twenty minutes. The difference causes increased access times to and from downtown Vancouver, but reduces the back-tracking required for trips from Surrey, Delta, Richmond, and New Westminster. Downtown Vancouver is still assumed to be accessible via Sky Train and the existing travel time on Sky Train between Scott Road and the Main Street/Science World station is twenty-seven minutes with frequent headways (2 to 4 minutes in the peak and eight minutes late night), which is slower than the twenty minute direct rail time. The overall increase in ridership and revenue for the system caused by the new station is about 2.5 percent. The increase in ridership and revenue at the station is more dramatic as shown in **Exhibit 8-1,** on the following page. It should also be noted, however, that due to the unreliability of rail travel over the Fraser River Bridge (as discussed in the *Amtrak Cascades Operating and Infrastructure Plan*), travel between Scott Road and downtown Vancouver could result in shorter travel times via SkyTrain.

The fare sensitivity analysis estimates the affect of increasing rail fares on the passengers travel choice. It is expected that as service frequency and quality in the corridor are improved, fares would be increased to reflect the improved service levels. The base runs were all estimated assuming no change in fares (constant in real dollars) despite the fact that real income is forecast to increase up to 2.5 percent per year and the increase in service frequency and speed make rail a more appealing option than in the base. Sensitivity analyses were performed on the 2008 and 2023 Build and Revision A scenarios. The 2008 analysis assumed a 23 percent increase in fares over the base run and the 2023 analyses assumed a 46 percent increase over the base.

Exhibit 8-1
Ridership and Revenue for Vancouver, BC Station Location Analysis

	Existing Station		Scott Road Station		% Increase	
YEAR	Riders	Revenue	Riders	Revenue	Riders	Revenue
2023	711,000	$17,229,000	763,000	$18,336,000	7.3%	6.4%
2023A	861,000	$20,721,000	952,100	$22,643,000	10.6%	9.3%

Exhibit 8-2 displays the results of the sensitivity analysis in a more concise format along with the fare elasticity. Fare elasticity can be interpreted as the percentage change in ridership with respect to the percentage change in the fare.

The decrease in fare sensitivity between 2008 and 2023 is caused by the strong increase in real per capita income in the study area. Initial reaction that the growth rate in real per capita income is too high is set aside by historical data obtained from the Bureau of Economic Analysis. These data show national average per capita income increased by 2.1 percent per year from 1970 to 2000.

Exhibit 8-2
Sensitivity Analysis Results

	Base Results		Increased Fare Results		
	Riders	Revenue (million $)	Riders	Revenue (million $)	Fare Elasticity
2008 Analysis	1,488,100	$ 34.280	1,316,500	$ 37.391	-0.50
2023 Build Analysis	3,191,500	$ 74.568	2,680,300	$ 91.883	-0.34
2023 Rev A Analysis	3,397,800	$ 79.064	2,858,700	$ 97.645	-0.34

Appendices

Appendix A
Timetables

Appendix A
Base Year 2002

760	750	552	752	762	14	754	Train #				751	757	11	761	753	755	763
Daily	Daily	Daily	Daily	Daily	Daily	Daily		Station Name	Mile		Mon-Sat	Sun	Daily	Daily	Daily	Daily	Daily
11:40 AM							Arr	Vancouver, BC	0	Dep							6:00 PM
9:52 AM				8:00 PM				Bellingham, WA	58					10:20 AM			7:30 PM
9:21 AM				6:56 PM				Mt. Vernon, WA	84					10:46 AM			7:56 PM
8:37 AM				6:22 PM				Everett, WA	123					11:33 AM			8:43 PM
8:13 AM				5:58 PM				Edmonds, WA	138					11:55 AM			9:05 PM
7:45 AM				5:30 PM				Seattle, WA	156					12:45 PM			9:55 PM
	12:15 PM		4:00 PM		8:25 PM	9:45 PM		Seattle, WA	156		7:30 AM	8:00 AM	9:45 AM		1:45 PM	5:25 PM	
	11:47 AM		3:32 PM			9:17 PM		Tukwila, WA	171		7:44 AM	8:14 AM			1:59 PM	5:39 PM	
	11:17 AM		3:02 PM		7:00 PM	8:47 PM		Tacoma, WA	196		8:18 AM	8:48 AM	10:43 AM		2:33 PM	6:13 PM	
	10:37 AM		2:22 PM		6:12 PM	8:07 PM		Olympia-Lacy, WA	228		8:55 AM	9:25 AM	11:29 AM		3:10 PM	6:50 PM	
	10:17 AM		2:02 PM		5:50 PM	7:47 PM		Centralia, WA	250		9:18 AM	9:48 AM	11:52 AM		3:33 PM	7:13 PM	
	9:36 AM		1:21 PM		5:04 PM	7:06 PM		Kelso-Longview, WA	293		9:57 AM	10:27 AM	12:38 PM		4:12 PM	7:52 PM	
	9:03 AM		12:48 PM		4:23 PM	6:33 PM		Vancouver, WA	332		10:32 AM	11:02 AM	1:19 PM		4:47 PM	8:27 PM	
	8:45 AM		12:30 PM		4:00 PM	6:15 PM		Portland, WA	342		11:00 AM	11:30 AM	1:55 PM		5:15 PM	8:52 PM	
	8:20 AM	12:05 PM			3:40 PM			Portland, OR	342				2:15 PM		5:30 PM	9:00 PM	
								Oregon City, OR	358								
	6:57 AM	10:42 AM			2:03 PM			Salem, OR	395				3:27 PM		6:37 PM	10:07 PM	
	6:28 AM	10:13 AM			1:30 PM			Albany, WA	423				4:00 PM		7:06 PM	10:36 PM	
	5:45 AM	9:30 AM			12:44 PM		Dep	Eugene-Springfield, OR	466	Arr			5:00 PM		8:05 PM	11:35 PM	

Appendix A
Timetable C

115	111	117	109	113	105	103	107	101		Train #	
Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily		Station Name	Mile
		6:10 PM		12:25 PM			7:30 AM		Dep	Vancouver, BC	0
		7:36 PM		1:48 PM			8:53 AM			Bellingham, WA	58
		8:04 PM		2:18 PM			9:23 AM			Mt. Vernon, WA	84
		8:36 PM		2:51 PM			9:56 AM			Everett, WA	123
		8:57 PM		3:12 PM			10:17 AM			Edmonds, WA	138
		9:19 PM		3:50 PM			10:55 AM			Seattle, WA	156
7:40 PM	6:20 PM		4:10 PM	4:05 PM	9:55 AM	8:10 AM	11:10 AM	6:30 AM		Seattle, WA	156
7:50 PM	6:30 PM		2:20 PM	4:15 PM	10:05 AM	8:20 AM	1:20 AM	6:40 AM		Tukwila, WA	171
8:16 PM	6:56 PM		2:46 PM	4:41 PM	10:31 AM	8:46 AM	11:46 AM	7:06 AM		Tacoma, WA	196
8:41 PM	7:21 PM		3:11 PM	5:06 PM	10:56 AM	9:11 AM	12:11 PM	7:31 AM		Olympia-Lacy, WA	228
9:00 PM	7:40 PM		3:30 PM	5:25 PM	11:15 AM	9:30 AM	12:30 PM	7:50 AM		Centralia, WA	250
9:40 PM	8:19 PM		4:09 PM	6:04 PM	11:54 AM	10:09 AM	1:09 PM	8:29 AM		Kelso-Longview, WA	293
10:11 PM	8:51 PM		4:41 PM	6:36 PM	12:26 PM	10:41 AM	1:41 PM	9:01 AM		Vancouver, WA	332
10:23 PM	9:03 PM		4:53 PM	6:48 PM	12:38 PM	10:53 AM	1:53 PM	9:13 AM	Arr	Portland, OR	342

118	116	114	112	110	108	106	102	104	Train #		
Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily		Station Name	Mile
			9:01 PM		4:51 PM		10:56 AM		Arr	Vancouver, BC	0
			7:33 PM		3:23 PM		9:28 AM			Bellingham, WA	58
			7:04 PM		2:54 PM		8:59 AM			Mt. Vernon, WA	84
			6:30 PM		2:20 PM		8:25 AM			Everett, WA	123
			6:11 PM		2:01 PM		8:06 AM			Edmonds, WA	138
			5:35 PM		1:25 PM		7:45 AM			Seattle, WA	156
10:28 PM	8:58 PM	6:38 PM	5:18 PM	2:53 PM	1:08 PM	11:23 AM		9:30 AM		Seattle, WA	156
10:16 PM	8:46 PM	6:26 PM	5:06 PM	2:41 PM	12:56 PM	11:11 AM		9:01 AM		Tukwila, WA	171
9:48 PM	8:18 PM	5:58 PM	4:38 PM	2:13 PM	12:28 PM	10:46 AM		8:36 AM		Tacoma, WA	196
9:25 PM	7:55 PM	5:35 PM	4:15 PM	1:50 PM	12:05 PM	10:21 AM		8:11 AM		Olympia-Lacy, WA	228
9:04 PM	7:34 PM	5:14 PM	3:54 PM	1:29 PM	11:44 AM	10:02 AM		7:52 AM		Centralia, WA	250
8:28 PM	6:58 PM	4:38 PM	3:18 PM	12:53 PM	11:08 AM	9:24 AM		7:14 AM		Kelso-Longview, WA	293
7:56 PM	6:26 PM	4:06 PM	2:46 PM	12:21 PM	10:36 AM	8:52 AM		6:42 AM		Vancouver, WA	332
7:45 PM	6:15 PM	3:55 PM	2:35 PM	12:10 PM	10:25 AM	8:40 AM		6:30 AM	Dep	Portland, OR	342

Appendix A
Timetable F

127	125	121	119	123	117	113	115	111	107	105	109	103	101	Train #		
Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily		Station Name	Mile
8:14 PM				4:14 PM			12:14 PM				8:14 AM			Dep	Vancouver, BC	0
9:07 PM				5:07 PM			1:07 PM				9:07 AM				Bellingham, WA	58
9:27 PM				5:27 PM			1:27 PM				9:27 AM				Mt. Vernon, WA	84
9:59 PM				5:59 PM			1:59 PM				9:59 AM				Everett, WA	123
10:17 PM				6:17 PM			2:17 AM				10:17 AM				Edmonds, WA	138
10:51 PM				6:51 PM			2:51 AM				10:51 AM				Seattle, WA	156
	8:06 PM	6:06 PM	5:06 PM	7:06 PM	4:06 PM	2:06 PM	3:06 PM	12:06 PM	10:06 AM	9:06 AM	11:06 AM	8:06 AM	6:06 AM		Seattle, WA	156
	8:18 PM	6:18 PM	5:18 PM	7:18 PM	4:18 PM	2:18 PM	3:18 PM	12:18 PM	10:18 AM	9:18 AM	11:18 AM	8:18 AM	6:18 AM		Tukwila, WA	171
	8:46 PM	6:46 PM	5:46 PM	7:46 PM	4:46 PM	2:46 PM	3:46 PM	12:46 PM	10:46 AM	9:46 AM	11:46 AM	8:46 AM	6:46 AM		Tacoma, WA	196
	9:05 PM	7:05 PM	6:05 PM	8:05 PM	5:05 PM	3:05 PM	4:05 PM	1:05 PM	11:05 AM	10:05 AM	12:05 PM	9:05 AM	7:05 AM		Olympia-Lacy, WA	228
	9:22 PM	7:22 PM	6:22 PM	8:22 PM	5:22 PM	3:22 PM	4:22 PM	1:22 PM	11:22 AM	10:22 AM	12:22 PM	9:22 AM	7:22 AM		Centralia, WA	250
	9:49 PM	7:49 PM	6:49 PM	8:49 PM	5:49 PM	3:49 PM	4:49 PM	1:49 PM	11:49 AM	10:49 AM	12:49 PM	9:49 AM	7:49 AM		Kelso-Longview, WA	293
	10:15 PM	8:15 PM	7:15 PM	9:15 PM	6:15 PM	4:15 PM	5:15 PM	2:15 PM	12:15 PM	11:15 AM	1:15 PM	10:15 AM	8:15 AM		Vancouver, WA	332
	10:36 PM	8:36 PM	7:36 PM	9:36 PM	6:36 PM	4:36 PM	5:36 PM	2:36 PM	12:36 PM	11:36 AM	1:36 PM	10:36 AM	8:36 AM	Arr	Portland, OR	342

128	126	124	122	120	118	116	114	112	110	108	106	102	104	Train #		
Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily		Station Name	Mile
					8:09 PM		5:09 PM			1:22 PM		9:22 AM		Arr	Vancouver, BC	0
					7:16 PM		4:16 PM			12:16 PM		8:16 AM			Bellingham, WA	58
					6:56 PM		3:55 PM			11:55 AM		7:55 AM			Mt. Vernon, WA	84
					6:24 PM		3:24 PM			11:24 AM		7:24 AM			Everett, WA	123
					6:06 PM		3:06 PM			11:06 AM		7:06 AM			Edmonds, WA	138
					5:30 PM		2:30 PM			10:30 AM		6:45 AM			Seattle, WA	156
10:19 PM	9:19 PM	8:19 PM	7:19 PM	6:19 PM	5:19 PM	4:19 PM	2:19 PM	12:19 PM	11:19 AM	10:19 AM	9:19 AM		8:19 AM		Seattle, WA	156
10:06 PM	9:06 PM	8:06 PM	7:06 PM	6:06 PM	5:06 PM	4:06 PM	2:06 PM	12:06 PM	11:06 AM	10:06 AM	9:06 AM		8:06 AM		Tukwila, WA	171
9:39 PM	8:39 PM	7:39 PM	6:39 PM	5:39 PM	4:39 PM	3:39 PM	1:39 PM	11:39 AM	10:39 AM	9:39 AM	8:39 AM		7:39 AM		Tacoma, WA	196
9:19 PM	8:19 PM	7:19 PM	6:19 PM	5:19 PM	4:19 PM	3:19 PM	1:19 PM	11:19 AM	10:19 AM	9:19 AM	8:19 AM		7:19 AM		Olympia-Lacy, WA	228
9:03 PM	8:03 PM	7:03 PM	6:03 PM	5:03 PM	4:03 PM	3:03 PM	1:03 PM	11:03 AM	10:03 AM	9:03 AM	8:03 AM		7:03 AM		Centralia, WA	250
8:36 PM	7:36 PM	6:36 PM	5:36 PM	4:36 PM	3:36 PM	2:36 PM	12:36 PM	10:36 AM	9:36 AM	8:36 AM	7:36 AM		6:36 AM		Kelso-Longview, WA	293
8:10 PM	7:10 PM	6:10 PM	5:10 PM	3:10 PM	3:10 PM	2:10 PM	12:10 PM	10:10 AM	9:10 AM	8:10 AM	7:10 AM		6:10 AM		Vancouver, WA	332
8:00 PM	7:00 PM	6:00 PM	5:00 PM	4:00 PM	3:00 PM	2:00 PM	12:00 PM	10:00 AM	9:00 AM	8:00 AM	7:00 AM		6:00 AM	Dep	Portland, OR	342

102	104	106	108	110	112	114	116	118	120	122	124	126	128	126	Train #		
Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily		Station Name	Mile
9:22 AM	11:22 AM		1:22 PM				5:22 PM	7:22 PM							Arr	Vancouver, BC	0
8:19 AM	10:19 AM		12:19 PM				4:19 PM	6:19 PM								Bellingham, WA	58
7:56 AM	9:56 AM		11:56 AM				3:56 PM	5:56 PM								Mt. Vernon, WA	84
7:27 AM	9:27 AM		11:27 AM				3:27 PM	5:27 PM								Everett, WA	123
7:07 AM	9:07 AM		11:07 AM				3:07 PM	5:07 PM								Edmonds, WA	138
6:45 AM	8:45 AM		10:45 AM				2:45 PM	4:45 PM								Seattle, WA	156
	8:30 AM	9:30 AM	10:30 AM	11:30 AM	12:30 PM	1:30 PM	2:30 PM	4:30 PM	5:30 PM	6:30 PM	7:30 PM	8:30 PM	9:30 PM	10:30 PM		Seattle, WA	156
	8:07 AM	9:07 AM	10:07 AM	11:07 AM	12:07 PM	1:07 PM	2:07 PM	4:07 PM	5:07 PM	6:07 PM	7:07 PM	8:07 PM	9:07 PM	10:07 PM		Tukwila, WA	171
	7:42 AM	8:42 AM	9:42 AM	10:42 AM	11:42 AM	12:42 PM	1:42 PM	3:42 PM	4:42 PM	5:42 PM	6:42 PM	7:42 PM	8:42 PM	9:42 PM		Tacoma, WA	196
	7:20 AM	8:20 AM	9:20 AM	10:20 AM	11:20 AM	12:20 PM	1:20 PM	3:20 PM	4:20 PM	5:20 PM	6:20 PM	7:20 PM	8:20 PM	9:20 PM		Olympia-Lacy, WA	228
	7:06 AM	8:06 AM	9:06 AM	10:06 AM	11:06 AM	12:06 PM	1:06 PM	3:06 PM	4:06 PM	5:06 PM	6:06 PM	7:06 PM	8:06 PM	9:06 PM		Centralia, WA	250
	6:37 AM	7:37 AM	8:37 AM	9:37 AM	10:37 AM	11:37 AM	12:37 PM	2:37 PM	3:37 PM	4:37 PM	5:37 PM	6:37 PM	7:37 PM	8:37 PM		Kelso-Longview, WA	293
	6:11 AM	7:11 AM	8:11 AM	9:11 AM	10:11 AM	11:11 AM	12:11 PM	2:11 PM	3:11 PM	4:11 PM	5:11 PM	6:11 PM	7:11 PM	8:11 PM		Vancouver, WA	332
	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	Dep	Portland, OR	342

101	103	105	107	109	111	113	115	117	119	121	123	125	127	125	Train #		
Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily	Daily		Station Name	Mile
					8:14 AM			12:14 PM		2:14 PM		4:14 PM		8:14 PM	Dep	Vancouver, BC	0
					9:07 AM			1:07 PM		3:07 PM		5:07 PM		9:07 PM		Bellingham, WA	58
					9:27 AM			1:27 PM		3:27 PM		5:27 PM		9:27 PM		Mt. Vernon, WA	84
					9:59 AM			1:59 PM		3:59 PM		5:59 PM		9:59 PM		Everett, WA	123
					10:17 AM			2:17 PM		4:17 PM		6:17 PM		10:17 PM		Edmonds, WA	138
					10:50 AM			2:50 PM		4:50 PM		6:50 PM		10:50 PM		Seattle, WA	156
6:06 AM	7:07 AM	8:06 AM	9:06 AM	10:06 AM	11:06 AM	12:06 PM	2:06 PM	3:06 PM	4:06 PM	5:06 PM	6:06 PM	7:06 PM	8:06 PM			Seattle, WA	156
6:18 AM	7:19 AM	8:18 AM	9:18 AM	10:18 AM	11:18 AM	12:18 PM	2:18 PM	3:18 PM	4:18 PM	5:18 PM	6:18 PM	7:18 PM	8:18 PM			Tukwila, WA	171
6:46 AM	7:47 AM	8:46 AM	9:46 AM	10:46 AM	11:46 AM	12:46 PM	2:46 PM	3:46 PM	4:46 PM	5:46 PM	6:46 PM	7:46 PM	8:46 PM			Tacoma, WA	196
7:05 AM	8:06 AM	9:05 AM	10:05 AM	11:05 AM	12:05 PM	1:05 PM	3:05 PM	4:05 PM	5:05 PM	6:05 PM	7:05 PM	8:05 PM	9:05 PM			Olympia-Lacy, WA	228
7:22 AM	8:23 AM	9:22 AM	10:22 AM	11:22 AM	12:22 PM	1:22 PM	3:22 PM	4:22 PM	5:22 PM	6:22 PM	7:22 PM	8:22 PM	9:22 PM			Centralia, WA	250
7:49 AM	8:50 AM	9:49 AM	10:49 AM	11:49 AM	12:49 PM	1:49 PM	3:49 PM	4:49 PM	5:49 PM	6:49 PM	7:49 PM	8:49 PM	9:49 PM			Kelso-Longview, WA	293
8:15 AM	9:16 AM	10:15 AM	11:15 AM	12:15 PM	1:15 PM	2:15 PM	4:15 PM	5:15 PM	6:15 PM	7:15 PM	8:15 PM	9:15 PM	10:15 PM			Vancouver, WA	332
8:36 AM	9:37 AM	10:36 AM	11:36 AM	12:36 PM	1:36 PM	2:36 PM	4:36 PM	5:36 PM	6:36 PM	7:36 PM	8:36 PM	9:36 PM	10:36 PM		Arr	Portland, OR	342

Appendix B
Station Pair Forecast Summary

Appendix B
Station Pair Forecast Summary

Station Pairs		FY 2002 Actual (Unlinked Trips)			FY 02 Estimated (Linked Trips)			FY 08 Build Estimate			FY 23 Build Estimate			FY 23 Rev A Build Estimate		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
VAC	BEL	5,203	301,764	$67,135	5,203	301,764	$67,135	14,674	851,078	$189,343	47,971	2,782,340	$619,001	65,504	3,799,221	$845,231
VAC	MVW	4,355	365,813	$69,713	4,145	348,206	$66,358	11,126	934,582	$178,104	30,683	2,577,387	$491,176	39,740	3,338,163	$636,158
VAC	EVR	8,923	1,097,577	$185,626	8,494	1,044,750	$176,692	23,193	2,852,717	$482,461	63,961	7,867,214	$1,330,530	82,841	10,189,406	$1,723,267
VAC	EDM	11,725	1,618,067	$277,689	11,826	1,631,966	$280,074	34,170	4,715,461	$809,255	76,212	10,517,269	$1,804,947	90,251	12,454,665	$2,137,438
VAC	SEA	64,279	10,027,533	$1,700,191	64,831	10,113,664	$1,714,794	193,622	30,205,014	$5,121,328	431,113	67,253,584	$11,402,996	510,528	79,642,426	$13,503,552
VAC	TUK	0	0	$0	0	0	$0	13,961	2,387,393	$339,471	52,393	8,959,169	$1,273,931	62,044	10,609,546	$1,508,603
VAC	TAC	0	0	$0	0	0	$0	977	191,462	$26,560	2,945	577,151	$80,065	3,762	737,305	$102,282
VAC	OLW	0	0	$0	0	0	$0	227	51,658	$6,994	659	150,158	$20,331	845	192,679	$26,088
VAC	CTL	0	0	$0	0	0	$0	121	30,225	$4,038	308	76,981	$10,285	379	94,749	$12,658
VAC	KEL	0	0	$0	0	0	$0	53	15,637	$2,046	151	44,178	$5,782	183	53,525	$7,005
VAC	VAN	0	0	$0	0	0	$0	208	69,186	$8,925	596	197,863	$25,526	702	233,212	$30,086
VAC	PDX	0	0	$0	0	0	$0	1,242	424,720	$54,617	3,284	1,123,022	$144,417	3,834	1,311,137	$168,608
VAC	SLM	0	0	$0	0	0	$0	66	26,084	$3,307	134	52,741	$6,686	142	56,169	$7,121
VAC	ALY	0	0	$0	0	0	$0	38	16,037	$2,021	80	33,663	$4,241	89	37,455	$4,719
VAC	EUG	0	0	$0	0	0	$0	75	35,048	$4,380	161	74,805	$9,349	142	66,265	$8,282
BEL	MVW	396	10,302	$3,199	387	10,066	$3,126	836	21,744	$6,753	1,691	43,969	$13,655	1,992	51,792	$16,085
BEL	EVR	1,199	77,951	$15,094	1,172	76,169	$14,749	2,489	161,801	$31,331	5,073	329,728	$63,849	5,975	388,398	$75,210
BEL	EDM	4,351	348,074	$61,249	4,129	330,307	$58,123	8,811	704,880	$124,035	16,470	1,317,593	$231,851	18,777	1,502,173	$264,331
BEL	SEA	33,321	3,265,494	$544,406	31,620	3,098,806	$516,617	62,928	6,166,981	$1,028,127	119,950	11,755,130	$1,959,754	136,754	13,401,896	$2,234,294
BEL	TUK	0	0	$0	678	76,638	$11,967	12,997	1,468,640	$229,329	37,924	4,285,359	$669,161	43,236	4,885,691	$762,903
BEL	TAC	0	0	$0	467	64,433	$9,581	5,916	816,465	$121,405	12,879	1,777,352	$264,285	15,107	2,084,811	$310,002
BEL	OLW	0	0	$0	188	31,895	$4,540	2,376	403,947	$57,503	5,304	901,616	$128,348	6,321	1,074,621	$152,975
BEL	CTL	0	0	$0	96	18,337	$2,553	803	154,267	$21,477	1,689	324,243	$45,141	1,940	372,525	$51,863
BEL	KEL	0	0	$0	75	17,566	$2,368	708	166,458	$22,436	1,680	394,819	$53,217	1,923	451,962	$60,919
BEL	VAN	0	0	$0	64	17,565	$2,318	488	133,689	$17,643	1,143	313,069	$41,316	1,284	351,752	$46,421
BEL	PDX	0	0	$0	581	165,102	$21,690	4,233	1,202,142	$157,929	9,872	2,803,768	$368,340	10,855	3,082,858	$405,005
BEL	SLM	0	0	$0	118	39,766	$5,122	271	91,209	$11,748	1,409	474,711	$61,142	1,444	486,510	$62,662
BEL	ALY	0	0	$0	69	25,185	$3,217	158	57,624	$7,361	843	307,848	$39,324	869	317,004	$40,494
BEL	EUG	0	0	$0	136	55,488	$7,014	323	131,775	$16,656	1,739	709,373	$89,663	1,800	734,343	$92,819
MVW	EVR	271	10,584	$2,583	271	10,562	$2,577	476	18,561	$4,529	766	29,871	$7,289	777	30,322	$7,399
MVW	EDM	444	23,997	$4,061	456	24,642	$4,170	912	49,267	$8,337	1,372	74,085	$12,536	1,456	78,639	$13,307
MVW	SEA	11,078	797,630	$127,367	11,376	819,081	$130,792	21,235	1,528,919	$244,141	32,762	2,358,857	$376,667	34,776	2,503,842	$399,818
MVW	TUK	0	0	$0	0	0	$0	5,778	502,659	$84,672	11,292	982,411	$165,485	11,986	1,042,794	$175,657
MVW	TAC	0	0	$0	830	92,960	$14,550	8,317	931,472	$145,792	13,812	1,546,928	$242,122	14,711	1,647,591	$257,877
MVW	OLW	0	0	$0	132	19,029	$2,803	1,469	211,540	$31,158	3,286	473,118	$69,686	3,647	525,117	$77,345
MVW	CTL	0	0	$0	168	27,807	$3,977	1,429	237,136	$33,913	3,090	512,940	$73,357	3,359	557,596	$79,743
MVW	KEL	0	0	$0	63	13,262	$1,820	538	112,411	$15,428	1,284	268,309	$36,825	1,397	291,871	$40,059
MVW	VAN	0	0	$0	112	27,795	$3,718	721	178,840	$23,920	1,746	432,949	$57,907	1,925	477,312	$63,841
MVW	PDX	0	0	$0	382	98,486	$13,101	2,555	659,068	$87,671	5,996	1,547,060	$205,795	6,344	1,636,860	$217,740
MVW	SLM	0	0	$0	82	25,502	$3,314	170	52,950	$6,881	925	287,737	$37,392	913	283,956	$36,901
MVW	ALY	0	0	$0	48	16,272	$2,094	99	33,640	$4,330	549	186,199	$23,967	546	185,140	$23,831
MVW	EUG	0	0	$0	96	36,672	$4,664	203	77,679	$9,879	1,127	430,521	$54,751	1,130	431,785	$54,911

Appendix B
Station Pair Forecast Summary

Station Pairs		FY 2002 Actual (Unlinked Trips)			FY 02 Estimated (Linked Trips)			FY 08 Build Estimate			FY 23 Build Estimate			FY 23 Rev A Build Estimate		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
EVR	EDM	188	2,814	$842	193	2,890	$865	368	5,521	$1,652	518	7,768	$2,324	550	8,245	$2,467
EVR	SEA	4,367	144,095	$33,326	4,484	147,970	$34,223	8,043	265,415	$61,386	11,626	383,653	$88,732	12,340	407,234	$94,186
EVR	TUK	0	0	$0	0	0	$0	2,446	117,405	$24,875	3,983	191,182	$40,507	4,228	202,932	$42,996
EVR	TAC	0	0	$0	325	23,725	$4,240	4,884	356,549	$63,715	7,008	511,557	$91,415	8,051	587,710	$105,023
EVR	OLW	0	0	$0	241	25,345	$4,037	4,377	459,587	$73,206	8,502	892,742	$142,201	10,423	1,094,419	$174,325
EVR	CTL	0	0	$0	157	19,972	$3,028	1,535	194,888	$29,548	2,950	374,656	$56,803	3,417	433,985	$65,798
EVR	KEL	0	0	$0	163	27,686	$3,941	1,616	274,740	$39,110	3,483	592,066	$84,282	4,040	686,816	$97,770
EVR	VAN	0	0	$0	428	89,361	$12,265	3,087	645,173	$88,549	6,623	1,384,210	$189,981	7,486	1,564,664	$214,748
EVR	PDX	0	0	$0	1,281	280,587	$38,225	8,839	1,935,677	$263,703	18,819	4,121,310	$561,458	20,775	4,549,802	$619,833
EVR	SLM	0	0	$0	287	78,064	$10,312	581	158,100	$20,884	3,230	878,627	$116,063	3,249	883,671	$116,729
EVR	ALY	0	0	$0	171	51,300	$6,695	344	103,191	$13,466	1,927	578,136	$75,447	1,949	584,571	$76,286
EVR	EUG	0	0	$0	344	117,992	$15,169	702	240,798	$30,956	3,892	1,335,089	$171,635	3,959	1,358,097	$174,593
EDM	SEA	2,724	49,029	$17,302	2,799	50,382	$17,780	4,144	74,591	$26,323	4,960	89,272	$31,503	6,130	110,337	$38,937
EDM	TUK	0	0	$0	0	0	$0	1,171	38,645	$9,890	1,548	51,091	$13,075	1,914	63,146	$16,160
EDM	TAC	0	0	$0	0	0	$0	2,520	146,136	$28,522	4,809	278,904	$54,434	4,718	273,660	$53,411
EDM	OLW	0	0	$0	0	0	$0	556	50,023	$8,337	1,709	153,841	$25,640	1,718	154,622	$25,770
EDM	CTL	0	0	$0	0	0	$0	425	47,566	$7,445	1,418	158,795	$24,854	1,402	156,968	$24,568
EDM	KEL	0	0	$0	0	0	$0	627	97,123	$14,083	2,341	362,859	$52,615	2,314	358,685	$52,009
EDM	VAN	0	0	$0	0	0	$0	2,891	560,888	$77,946	15,670	3,039,963	$422,461	15,723	3,050,239	$423,889
EDM	PDX	0	0	$0	0	0	$0	12,988	2,649,630	$365,103	44,993	9,178,475	$1,264,740	45,145	9,209,502	$1,269,015
EDM	SLM	0	0	$0	0	0	$0	745	191,488	$25,486	9,805	2,520,005	$335,396	9,577	2,461,391	$327,595
EDM	ALY	0	0	$0	0	0	$0	445	126,771	$16,647	5,868	1,672,461	$219,620	5,732	1,633,560	$214,512
EDM	EUG	0	0	$0	0	0	$0	913	299,616	$38,703	11,837	3,882,515	$501,531	11,562	3,792,210	$489,866
SEA	TUK	59	889	$394	61	914	$405	166	2,490	$1,104	202	3,034	$1,345	250	3,750	$1,662
SEA	TAC	8,398	335,903	$80,665	8,601	344,043	$82,620	14,593	583,716	$140,176	23,784	951,376	$228,468	23,337	933,489	$224,172
SEA	OLW	11,738	845,170	$147,427	10,589	762,441	$132,996	33,824	2,435,351	$424,810	63,831	4,595,808	$801,669	64,155	4,619,156	$805,742
SEA	CTL	6,292	591,451	$104,499	6,251	587,592	$103,817	17,114	1,608,704	$284,229	34,427	3,236,097	$571,760	34,031	3,198,873	$565,183
SEA	KEL	12,205	1,672,114	$251,413	12,126	1,661,203	$249,772	32,869	4,503,114	$677,070	65,505	8,974,160	$1,349,319	64,751	8,870,932	$1,333,798
SEA	VAN	35,887	6,316,197	$921,678	35,465	6,241,776	$910,818	80,155	14,107,366	$2,058,587	153,135	26,951,720	$3,932,872	153,652	27,042,827	$3,946,167
SEA	PDX	202,595	37,682,694	$5,602,405	200,208	37,238,698	$5,536,394	446,661	83,079,019	$12,351,619	861,276	160,197,249	$23,817,029	864,187	160,738,779	$23,897,540
SEA	SLM	13,395	3,201,442	$418,888	13,727	3,280,664	$429,254	14,692	3,511,479	$459,454	37,656	8,999,787	$1,177,564	36,780	8,790,458	$1,150,175
SEA	ALY	8,295	2,214,651	$286,979	8,500	2,269,455	$294,080	9,207	2,458,264	$318,546	24,280	6,482,857	$840,060	23,716	6,332,069	$820,521
SEA	EUG	18,117	5,616,395	$696,433	18,566	5,755,377	$713,667	20,031	6,209,669	$769,999	54,189	16,798,602	$2,083,027	52,929	16,407,876	$2,034,577
TUK	TAC	61	1,535	$594	63	1,572	$608	128	3,207	$1,240	208	5,203	$2,012	204	5,106	$1,974
TUK	OLW	103	5,889	$1,408	93	5,313	$1,270	362	20,607	$4,927	682	38,857	$9,291	685	39,054	$9,338
TUK	CTL	155	12,267	$2,630	154	12,187	$2,613	523	41,304	$8,857	1,054	83,228	$17,847	1,041	82,271	$17,641
TUK	KEL	259	31,544	$5,875	257	31,338	$5,836	891	108,665	$20,238	1,801	219,702	$40,917	1,780	217,174	$40,446
TUK	VAN	1,005	161,796	$24,785	993	159,889	$24,493	2,888	464,982	$71,229	5,614	903,910	$138,467	5,633	906,966	$138,935
TUK	PDX	3,917	669,726	$105,210	3,870	661,835	$103,971	11,091	1,896,549	$297,937	21,685	3,708,206	$582,539	21,759	3,720,741	$584,508
TUK	SLM	123	27,597	$3,641	126	28,279	$3,731	139	31,205	$4,117	561	125,567	$16,566	548	122,646	$16,180
TUK	ALY	114	28,788	$3,714	117	29,500	$3,806	132	33,226	$4,286	558	140,672	$18,148	545	137,400	$17,726
TUK	EUG	129	38,146	$5,298	133	39,090	$5,430	150	44,168	$6,135	701	206,825	$28,727	685	202,015	$28,059

Appendix B
Station Pair Forecast Summary

Station Pairs		FY 2002 Actual (Unlinked Trips)			FY 02 Estimated (Linked Trips)			FY 08 Build Estimate			FY 23 Build Estimate			FY 23 Rev A Build Estimate		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
TAC	OLW	1,564	50,035	$7,060	1,562	49,974	$7,052	4,115	131,687	$18,581	6,528	208,905	$29,477	7,123	227,951	$32,164
TAC	CTL	1,853	100,080	$18,559	1,854	100,125	$18,568	5,077	274,143	$50,838	9,668	522,094	$96,819	10,132	547,153	$101,466
TAC	KEL	2,405	233,265	$43,481	2,406	233,369	$43,500	6,575	637,747	$118,877	12,462	1,208,793	$225,320	13,060	1,266,812	$236,135
TAC	VAN	10,797	1,468,356	$212,178	10,796	1,468,314	$212,172	24,907	3,387,349	$489,473	51,184	6,961,007	$1,005,867	53,173	7,231,565	$1,044,963
TAC	PDX	48,592	7,094,454	$1,021,733	48,591	7,094,249	$1,021,704	110,721	16,165,256	$2,328,097	230,198	33,608,839	$4,840,297	239,145	34,915,136	$5,028,428
TAC	SLM	3,377	672,050	$90,293	3,375	671,539	$90,224	3,560	708,459	$95,185	10,654	2,120,087	$284,843	10,695	2,128,324	$285,950
TAC	ALY	1,770	401,840	$51,968	1,769	401,535	$51,928	1,882	427,110	$55,236	5,807	1,318,275	$170,485	5,830	1,323,397	$171,147
TAC	EUG	3,056	825,106	$109,604	3,054	824,479	$109,521	3,215	868,103	$115,315	10,166	2,744,928	$364,625	10,206	2,755,593	$366,042
OLW	CTL	463	10,182	$3,466	463	10,182	$3,466	811	17,840	$6,074	1,411	31,031	$10,564	1,437	31,609	$10,761
OLW	KEL	936	60,813	$9,617	936	60,814	$9,617	1,635	106,276	$16,806	2,829	183,910	$29,084	2,882	187,333	$29,625
OLW	VAN	3,954	411,241	$52,620	3,954	411,222	$52,617	7,358	765,243	$97,915	14,663	1,524,939	$195,121	14,815	1,540,772	$197,147
OLW	PDX	15,898	1,812,323	$289,183	15,897	1,812,241	$289,170	29,303	3,340,589	$533,041	59,168	6,745,168	$1,076,293	59,782	6,815,202	$1,087,468
OLW	SLM	1,239	206,994	$27,624	1,239	206,871	$27,607	1,110	185,418	$24,744	3,757	627,342	$83,720	3,721	621,325	$82,917
OLW	ALY	817	159,297	$21,299	816	159,202	$21,286	738	143,999	$19,253	2,583	503,603	$67,334	2,558	498,773	$66,689
OLW	EUG	1,638	389,830	$48,718	1,637	389,598	$48,689	1,466	348,913	$43,605	5,269	1,254,126	$156,731	5,219	1,242,097	$155,228
CTL	KEL	295	12,664	$3,090	294	12,663	$3,090	506	21,739	$5,304	770	33,102	$8,076	829	35,663	$8,701
CTL	VAN	532	43,636	$8,272	532	43,626	$8,270	981	80,427	$15,246	1,743	142,946	$27,098	1,800	147,606	$27,981
CTL	PDX	4,027	370,453	$64,704	4,026	370,374	$64,690	7,362	677,312	$118,301	13,255	1,219,477	$212,996	13,687	1,259,238	$219,941
CTL	SLM	423	61,343	$8,739	423	61,310	$8,734	344	49,825	$7,098	1,272	184,462	$26,279	1,280	185,670	$26,451
CTL	ALY	271	46,842	$6,254	271	46,817	$6,250	222	38,377	$5,123	851	147,199	$19,652	856	148,163	$19,781
CTL	EUG	519	112,199	$14,245	519	112,140	$14,237	421	91,004	$11,554	1,669	360,423	$45,760	1,680	362,783	$46,060
KEL	VAN	408	15,915	$4,610	408	15,912	$4,609	735	28,654	$8,299	1,306	50,953	$14,757	1,349	52,615	$15,239
KEL	PDX	2,785	136,480	$33,922	2,785	136,451	$33,915	4,964	243,235	$60,456	8,940	438,072	$108,882	9,232	452,355	$112,432
KEL	SLM	370	37,778	$5,511	370	37,758	$5,509	296	30,148	$4,398	1,120	114,196	$16,660	1,127	114,944	$16,769
KEL	ALY	236	30,653	$4,841	236	30,637	$4,839	190	24,681	$3,898	747	97,151	$15,344	752	97,788	$15,444
KEL	EUG	653	112,961	$15,162	653	112,901	$15,154	522	90,235	$12,112	2,134	369,181	$49,553	2,148	371,598	$49,877
VAN	PDX	1,452	14,517	$9,278	1,452	14,517	$9,278	2,243	22,426	$14,333	3,408	34,083	$21,782	3,519	35,193	$22,492
VAN	SLM	336	21,188	$4,090	334	21,030	$4,059	344	21,654	$4,180	873	54,968	$10,610	861	54,248	$10,471
VAN	ALY	311	28,345	$4,892	309	28,134	$4,855	321	29,233	$5,045	850	77,392	$13,355	839	76,378	$13,180
VAN	EUG	802	107,535	$16,122	796	106,731	$16,001	823	110,273	$16,532	2,273	304,638	$45,671	2,244	300,646	$45,073
PDX	SLM	17,840	945,497	$130,957	17,706	938,426	$129,978	18,457	978,202	$135,487	45,349	2,403,518	$332,901	44,755	2,372,025	$328,539
PDX	ALY	10,271	831,911	$107,513	10,194	825,689	$106,709	10,713	867,761	$112,146	27,374	2,217,280	$286,553	27,015	2,188,227	$282,798
PDX	EUG	38,325	4,752,250	$634,501	38,038	4,716,711	$629,756	40,036	4,964,492	$662,839	104,753	12,989,344	$1,734,285	103,380	12,819,145	$1,711,561
SLM	ALY	993	27,813	$4,877	989	27,699	$4,857	1,042	29,173	$5,115	1,687	47,224	$8,280	1,668	46,690	$8,187
SLM	EUG	3,589	254,795	$31,869	3,566	253,192	$31,668	3,692	262,165	$32,791	8,661	614,924	$76,912	8,599	610,554	$76,366
ALY	EUG	594	25,530	$5,367	589	25,335	$5,326	608	26,128	$5,493	1,098	47,219	$9,927	1,086	46,704	$9,819
Total		659,064	99,481,090	$14,899,935	661,904	100,537,952	$15,030,881	1,488,150	225,459,949	$34,280,123	3,191,468	493,929,930	$74,568,346	3,397,787	520,804,411	$79,063,634

Station Pairs		FY 23 Rev A-Scott Rd Build Estimate			FY 08- Fare Increase Estimate			FY 23 Rev A Fare Incr. Estimate		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
VAC	BEL	90,255	5,234,780	$1,164,607	11,734	680,567	$186,350	47,467	2,753,062	$895,173
VAC	MVW	45,765	3,844,276	$732,608	9,099	764,292	$179,264	30,355	2,549,828	$710,196
VAC	EVR	95,401	11,734,267	$1,984,539	18,967	2,332,924	$485,602	63,277	7,783,095	$1,923,828
VAC	EDM	96,612	13,332,408	$2,288,074	29,533	4,075,608	$860,856	77,291	10,666,161	$2,675,345
VAC	SEA	546,508	85,255,234	$14,455,216	167,349	26,106,416	$5,447,879	437,216	68,205,686	$16,901,855
VAC	TUK	66,417	11,357,255	$1,614,922	12,067	2,063,442	$361,116	53,135	9,086,003	$1,888,258
VAC	TAC	4,230	829,133	$115,021	792	155,262	$26,509	2,744	537,824	$109,045
VAC	OLW	967	220,404	$29,842	184	41,923	$6,986	624	142,253	$28,150
VAC	CTL	396	99,012	$13,228	100	24,939	$4,101	286	71,419	$13,945
VAC	KEL	181	53,016	$6,938	43	12,477	$2,010	132	38,660	$7,395
VAC	VAN	799	265,340	$34,230	169	56,087	$8,905	499	165,762	$31,254
VAC	PDX	4,160	1,422,556	$182,936	1,031	352,531	$55,796	2,927	1,001,089	$188,153
VAC	SLM	145	57,413	$7,278	66	26,084	$4,070	142	56,169	$10,407
VAC	ALY	90	38,277	$4,823	38	16,037	$2,487	89	37,455	$6,897
VAC	EUG	145	67,715	$8,463	75	35,048	$5,391	142	66,265	$12,104
BEL	MVW	1,992	51,792	$16,085	721	18,738	$7,162	1,571	40,844	$18,540
BEL	EVR	5,975	388,398	$75,210	2,145	139,431	$33,230	4,712	306,298	$86,687
BEL	EDM	18,777	1,502,173	$264,331	7,758	620,616	$134,409	15,635	1,250,798	$321,681
BEL	SEA	136,754	13,401,896	$2,234,294	55,406	5,429,758	$1,114,118	113,870	11,159,212	$2,719,054
BEL	TUK	43,236	4,885,691	$762,903	11,443	1,293,074	$248,510	36,001	4,068,116	$928,425
BEL	TAC	15,107	2,084,811	$310,002	4,971	685,939	$125,534	11,628	1,604,637	$348,727
BEL	OLW	6,321	1,074,621	$152,975	1,989	338,211	$59,256	4,888	830,876	$172,867
BEL	CTL	1,940	372,525	$51,863	679	130,393	$22,342	1,510	289,971	$59,001
BEL	KEL	1,923	451,962	$60,919	589	138,497	$22,975	1,475	346,620	$68,283
BEL	VAN	1,284	351,752	$46,421	414	113,453	$18,428	986	270,039	$52,085
BEL	PDX	10,855	3,082,858	$405,005	3,640	1,033,812	$167,157	8,676	2,463,862	$473,079
BEL	SLM	1,444	486,510	$62,662	225	75,663	$11,994	1,111	374,518	$70,501
BEL	ALY	869	317,004	$40,494	129	46,930	$7,378	651	237,484	$44,338
BEL	EUG	1,800	734,343	$92,819	269	109,706	$17,067	1,404	572,800	$105,816
MVW	EVR	777	30,322	$7,399	416	16,228	$4,874	620	24,189	$8,627
MVW	EDM	1,456	78,639	$13,307	821	44,349	$9,236	1,248	67,415	$16,673
MVW	SEA	34,776	2,503,842	$399,818	19,115	1,376,283	$270,483	29,812	2,146,486	$500,949
MVW	TUK	11,986	1,042,794	$175,657	5,201	452,478	$93,808	10,275	893,963	$220,088
MVW	TAC	14,711	1,647,591	$257,877	7,092	794,250	$153,002	11,616	1,300,945	$297,600
MVW	OLW	3,647	525,117	$77,345	1,254	180,628	$32,745	2,867	412,904	$88,887
MVW	CTL	3,359	557,596	$79,743	1,213	201,279	$35,428	2,609	433,071	$90,520
MVW	KEL	1,397	291,871	$40,059	449	93,873	$15,857	1,065	222,553	$44,643
MVW	VAN	1,925	477,312	$63,841	638	158,230	$26,047	1,567	388,680	$75,979
MVW	PDX	6,344	1,636,860	$217,740	2,212	570,798	$93,452	5,086	1,312,212	$255,118
MVW	SLM	913	283,956	$36,901	143	44,350	$7,093	704	218,948	$41,585
MVW	ALY	546	185,140	$23,831	82	27,695	$4,387	410	138,953	$26,140
MVW	EUG	1,130	431,785	$54,911	171	65,303	$10,221	883	337,156	$62,666

Station Pairs		FY 23 Rev A-Scott Rd Build Estimate			FY 08- Fare Increase Estimate			FY 23 Rev A Fare Incr. Estimate		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
EVR	EDM	550	8,245	$2,467	331	4,970	$1,830	471	7,068	$3,091
EVR	SEA	12,340	407,234	$94,186	7,240	238,918	$68,009	10,579	349,113	$118,009
EVR	TUK	4,228	202,932	$42,996	2,202	105,684	$27,559	3,624	173,969	$53,872
EVR	TAC	8,051	587,710	$105,023	4,148	302,817	$66,600	6,222	454,175	$118,619
EVR	OLW	10,423	1,094,419	$174,325	3,625	380,597	$74,614	7,647	802,984	$186,937
EVR	CTL	3,417	433,985	$65,798	1,307	165,930	$30,963	2,613	331,799	$73,523
EVR	KEL	4,040	686,816	$97,770	1,349	229,279	$40,170	3,007	511,181	$106,353
EVR	VAN	7,486	1,564,664	$214,748	2,652	554,350	$93,642	5,699	1,191,162	$238,941
EVR	PDX	20,775	4,549,802	$619,833	7,670	1,679,819	$281,657	16,401	3,591,835	$715,169
EVR	SLM	3,249	883,671	$116,729	488	132,727	$21,579	2,462	669,558	$129,267
EVR	ALY	1,949	584,571	$76,286	284	85,210	$13,686	1,435	430,391	$82,089
EVR	EUG	3,959	1,358,097	$174,593	592	203,053	$32,128	3,042	1,043,248	$196,017
EDM	SEA	6,130	110,337	$38,937	3,885	69,922	$30,369	5,548	99,869	$51,509
EDM	TUK	1,914	63,146	$16,160	1,098	36,226	$11,410	1,732	57,156	$21,378
EDM	TAC	4,718	273,660	$53,411	2,272	131,799	$31,660	4,051	234,937	$67,016
EDM	OLW	1,718	154,622	$25,770	491	44,205	$9,068	1,441	129,686	$31,590
EDM	CTL	1,402	156,968	$24,568	370	41,409	$7,977	1,149	128,680	$29,437
EDM	KEL	2,314	358,685	$52,009	545	84,551	$15,089	1,897	294,045	$62,315
EDM	VAN	15,723	3,050,239	$423,889	2,624	508,973	$87,054	13,720	2,661,592	$540,592
EDM	PDX	45,145	9,209,502	$1,269,015	11,786	2,404,383	$407,766	39,393	8,036,070	$1,618,395
EDM	SLM	9,577	2,461,391	$327,595	661	169,766	$27,809	8,020	2,061,115	$400,930
EDM	ALY	5,732	1,633,560	$214,512	394	112,391	$18,165	4,800	1,367,908	$262,533
EDM	EUG	11,562	3,792,210	$489,866	810	265,629	$42,231	9,681	3,175,514	$599,527
SEA	TUK	250	3,750	$1,662	156	2,334	$1,274	226	3,394	$2,199
SEA	TAC	23,337	933,489	$224,172	13,161	526,452	$155,600	20,035	801,399	$281,275
SEA	OLW	64,155	4,619,156	$805,742	29,890	2,152,110	$462,035	53,809	3,874,215	$987,705
SEA	CTL	34,031	3,198,873	$565,183	14,898	1,400,458	$304,536	27,898	2,622,392	$677,174
SEA	KEL	64,751	8,870,932	$1,333,798	28,615	3,920,189	$725,445	53,082	7,272,268	$1,598,089
SEA	VAN	153,652	27,042,827	$3,946,167	72,736	12,801,602	$2,299,134	134,075	23,597,157	$5,032,610
SEA	PDX	864,187	160,738,779	$23,897,540	405,319	75,389,309	$13,794,912	754,076	140,258,195	$30,476,916
SEA	SLM	36,780	8,790,458	$1,150,175	13,026	3,113,153	$501,337	30,799	7,360,937	$1,407,653
SEA	ALY	23,716	6,332,069	$820,521	8,163	2,179,410	$347,584	19,859	5,302,336	$1,004,203
SEA	EUG	52,929	16,407,876	$2,034,577	17,759	5,505,272	$840,190	44,321	13,739,597	$2,490,039
TUK	TAC	204	5,106	$1,974	116	2,893	$1,376	175	4,383	$2,477
TUK	OLW	685	39,054	$9,338	319	18,211	$5,359	575	32,756	$11,447
TUK	CTL	1,041	82,271	$17,641	455	35,957	$9,490	854	67,444	$21,137
TUK	KEL	1,780	217,174	$40,446	775	94,599	$21,684	1,459	178,037	$48,461
TUK	VAN	5,633	906,966	$138,935	2,621	421,943	$79,552	4,916	791,404	$177,186
TUK	PDX	21,759	3,720,741	$584,508	10,064	1,721,006	$332,751	18,986	3,246,662	$745,432
TUK	SLM	548	122,646	$16,180	124	27,665	$4,492	458	102,701	$19,803
TUK	ALY	545	137,400	$17,726	117	29,457	$4,677	457	115,056	$21,694
TUK	EUG	685	202,015	$28,059	133	39,157	$6,694	573	169,163	$34,341

Appendix B
Station Pair Forecast Summary

Station Pairs		FY 23 Rev A-Scott Rd Build Estimate			FY 08- Fare Increase Estimate			FY 23 Rev A Fare Incr. Estimate		
		Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue	Riders	Pas Mi	Revenue
TAC	OLW	7,123	227,951	$32,164	3,874	123,963	$21,528	6,507	208,220	$42,941
TAC	CTL	10,132	547,153	$101,466	4,308	232,654	$53,101	7,823	422,439	$114,495
TAC	KEL	13,060	1,266,812	$236,135	5,580	541,230	$124,167	10,083	978,065	$266,457
TAC	VAN	53,173	7,231,565	$1,044,963	21,978	2,989,003	$531,584	44,049	5,990,636	$1,265,178
TAC	PDX	239,145	34,915,136	$5,028,428	97,700	14,264,254	$2,528,391	198,108	28,923,736	$6,088,119
TAC	SLM	10,695	2,128,324	$285,950	3,006	598,146	$98,909	8,226	1,636,934	$321,435
TAC	ALY	5,830	1,323,397	$171,147	1,589	360,606	$57,397	4,484	1,017,850	$192,386
TAC	EUG	10,206	2,755,593	$366,042	2,715	732,932	$119,828	7,850	2,119,378	$411,467
OLW	CTL	1,437	31,609	$10,761	709	15,607	$6,539	1,180	25,951	$12,912
OLW	KEL	2,882	187,333	$29,625	1,430	92,972	$18,096	2,366	153,799	$35,547
OLW	VAN	14,815	1,540,772	$197,147	6,352	660,622	$104,035	11,919	1,239,541	$231,805
OLW	PDX	59,782	6,815,202	$1,087,468	25,297	2,883,877	$566,358	48,095	5,482,783	$1,278,642
OLW	SLM	3,721	621,325	$82,917	951	158,736	$26,072	2,953	493,116	$96,180
OLW	ALY	2,558	498,773	$66,689	632	123,278	$20,287	2,030	395,852	$77,356
OLW	EUG	5,219	1,242,097	$155,228	1,255	298,704	$45,944	4,142	985,794	$180,058
CTL	KEL	829	35,663	$8,701	428	18,400	$5,525	646	27,778	$9,906
CTL	VAN	1,800	147,606	$27,981	823	67,509	$15,751	1,381	113,232	$31,372
CTL	PDX	13,687	1,259,238	$219,941	6,180	568,528	$122,216	10,500	965,992	$246,594
CTL	SLM	1,280	185,670	$26,451	289	41,894	$7,346	985	142,896	$29,753
CTL	ALY	856	148,163	$19,781	187	32,268	$5,302	659	114,030	$22,250
CTL	EUG	1,680	362,783	$46,060	354	76,518	$11,957	1,293	279,206	$51,809
KEL	VAN	1,349	52,615	$15,239	617	24,052	$8,573	1,035	40,362	$17,085
KEL	PDX	9,232	452,355	$112,432	4,167	204,169	$62,457	7,082	347,012	$126,057
KEL	SLM	1,127	114,944	$16,769	249	25,349	$4,552	867	88,464	$18,863
KEL	ALY	752	97,788	$15,444	160	20,753	$4,034	579	75,259	$17,372
KEL	EUG	2,148	371,598	$49,877	439	75,872	$12,534	1,653	285,990	$56,104
VAN	PDX	3,519	35,193	$22,492	2,075	20,755	$16,325	3,102	31,023	$28,978
VAN	SLM	861	54,248	$10,471	305	19,213	$4,564	717	45,199	$12,751
VAN	ALY	839	76,378	$13,180	285	25,937	$5,509	699	63,638	$16,051
VAN	EUG	2,244	300,646	$45,073	730	97,840	$18,053	1,869	250,501	$54,888
PDX	SLM	44,755	2,372,025	$328,539	16,376	867,907	$147,951	37,290	1,976,387	$400,083
PDX	ALY	27,015	2,188,227	$282,798	9,505	769,919	$122,463	22,509	1,823,246	$344,381
PDX	EUG	103,380	12,819,145	$1,711,561	35,522	4,404,734	$723,818	86,137	10,681,000	$2,084,277
SLM	ALY	1,668	46,690	$8,187	964	26,983	$5,823	1,475	41,301	$10,584
SLM	EUG	8,599	610,554	$76,366	3,258	231,350	$35,614	7,097	503,870	$92,109
ALY	EUG	1,086	46,704	$9,819	530	22,776	$5,893	877	37,720	$11,590
Total		3,488,871	531,799,576	$80,985,262	1,316,517	199,996,699	$37,391,168	2,858,737	440,225,034	$97,645,348

Appendix B

Station Pairs		FY 23 Build Estimate- Scott Road Riders	Pas Mi	Revenue
VAC	BEL	62,350	2,805,737	$804,532
VAC	MVW	34,021	2,415,479	$544,605
VAC	EVR	70,919	7,801,050	$1,475,262
VAC	EDM	79,078	9,884,767	$1,872,824
VAC	SEA	447,325	63,967,500	$11,831,818
VAC	TUK	60,768	9,601,374	$1,477,579
VAC	TAC	3,218	588,942	$87,505
VAC	OLW	734	157,785	$22,655
VAC	CTL	315	74,761	$10,536
VAC	KEL	146	40,981	$5,612
VAC	VAN	666	212,519	$28,533
VAC	PDX	3,503	1,152,473	$154,060
VAC	SLM	143	54,535	$7,149
VAC	ALY	88	36,261	$4,713
VAC	EUG	141	63,967	$8,224
BEL	MVW	1,691	43,969	$13,655
BEL	EVR	5,073	329,728	$63,849
BEL	EDM	16,470	1,317,593	$231,851
BEL	SEA	119,950	11,755,130	$1,959,754
BEL	TUK	37,924	4,285,359	$669,161
BEL	TAC	12,879	1,777,352	$264,285
BEL	OLW	5,304	901,616	$128,348
BEL	CTL	1,689	324,243	$45,141
BEL	KEL	1,680	394,819	$53,217
BEL	VAN	1,143	313,069	$41,316
BEL	PDX	9,872	2,803,768	$368,340
BEL	SLM	1,409	474,711	$61,142
BEL	ALY	843	307,848	$39,324
BEL	EUG	1,739	709,373	$89,663
MVW	EVR	766	29,871	$7,289
MVW	EDM	1,372	74,085	$12,536
MVW	SEA	32,762	2,358,857	$376,667
MVW	TUK	11,292	982,411	$165,485
MVW	TAC	13,812	1,546,928	$242,122
MVW	OLW	3,286	473,118	$69,686
MVW	CTL	3,090	512,940	$73,357
MVW	KEL	1,284	268,309	$36,825
MVW	VAN	1,746	432,949	$57,907
MVW	PDX	5,996	1,547,060	$205,795
MVW	SLM	925	287,737	$37,392
MVW	ALY	549	186,199	$23,967
MVW	EUG	1,127	430,521	$54,751

Appendix B

Station Pairs		FY 23 Build Estimate- Scott Road Riders	Pas Mi	Revenue
EVR	EDM	518	7,768	$2,324
EVR	SEA	11,626	383,653	$88,732
EVR	TUK	3,983	191,182	$40,507
EVR	TAC	7,008	511,557	$91,415
EVR	OLW	8,502	892,742	$142,201
EVR	CTL	2,950	374,656	$56,803
EVR	KEL	3,483	592,066	$84,282
EVR	VAN	6,623	1,384,210	$189,981
EVR	PDX	18,819	4,121,310	$561,458
EVR	SLM	3,230	878,627	$116,063
EVR	ALY	1,927	578,136	$75,447
EVR	EUG	3,892	1,335,089	$171,635
EDM	SEA	4,960	89,272	$31,503
EDM	TUK	1,548	51,091	$13,075
EDM	TAC	4,809	278,904	$54,434
EDM	OLW	1,709	153,841	$25,640
EDM	CTL	1,418	158,795	$24,854
EDM	KEL	2,341	362,859	$52,615
EDM	VAN	15,670	3,039,963	$422,461
EDM	PDX	44,993	9,178,475	$1,264,740
EDM	SLM	9,805	2,520,005	$335,396
EDM	ALY	5,868	1,672,461	$219,620
EDM	EUG	11,837	3,882,515	$501,531
SEA	TUK	202	3,034	$1,345
SEA	TAC	23,784	951,376	$228,468
SEA	OLW	63,831	4,595,808	$801,669
SEA	CTL	34,427	3,236,097	$571,760
SEA	KEL	65,505	8,974,160	$1,349,319
SEA	VAN	153,135	26,951,720	$3,932,872
SEA	PDX	861,276	160,197,249	$23,817,029
SEA	SLM	37,656	8,999,787	$1,177,564
SEA	ALY	24,280	6,482,857	$840,060
SEA	EUG	54,189	16,798,602	$2,083,027
TUK	TAC	208	5,203	$2,012
TUK	OLW	682	38,857	$9,291
TUK	CTL	1,054	83,228	$17,847
TUK	KEL	1,801	219,702	$40,917
TUK	VAN	5,614	903,910	$138,467
TUK	PDX	21,685	3,708,206	$582,539
TUK	SLM	561	125,567	$16,566
TUK	ALY	558	140,672	$18,148
TUK	EUG	701	206,825	$28,727

Appendix B

Station Pairs		FY 23 Build Estimate- Scott Road Riders	Pas Mi	Revenue
TAC	OLW	6,528	208,905	$29,477
TAC	CTL	9,668	522,094	$96,819
TAC	KEL	12,462	1,208,793	$225,320
TAC	VAN	51,184	6,961,007	$1,005,867
TAC	PDX	230,198	33,608,839	$4,840,297
TAC	SLM	10,654	2,120,087	$284,843
TAC	ALY	5,807	1,318,275	$170,485
TAC	EUG	10,166	2,744,928	$364,625
OLW	CTL	1,411	31,031	$10,564
OLW	KEL	2,829	183,910	$29,084
OLW	VAN	14,663	1,524,939	$195,121
OLW	PDX	59,168	6,745,168	$1,076,293
OLW	SLM	3,757	627,342	$83,720
OLW	ALY	2,583	503,603	$67,334
OLW	EUG	5,269	1,254,126	$156,731
CTL	KEL	770	33,102	$8,076
CTL	VAN	1,743	142,946	$27,098
CTL	PDX	13,255	1,219,477	$212,996
CTL	SLM	1,272	184,462	$26,279
CTL	ALY	851	147,199	$19,652
CTL	EUG	1,669	360,423	$45,760
KEL	VAN	1,306	50,953	$14,757
KEL	PDX	8,940	438,072	$108,882
KEL	SLM	1,120	114,196	$16,660
KEL	ALY	747	97,151	$15,344
KEL	EUG	2,134	369,181	$49,553
VAN	PDX	3,408	34,083	$21,782
VAN	SLM	873	54,968	$10,610
VAN	ALY	850	77,392	$13,355
VAN	EUG	2,273	304,638	$45,671
PDX	SLM	45,349	2,403,518	$332,901
PDX	ALY	27,374	2,217,280	$286,553
PDX	EUG	104,753	12,989,344	$1,734,285
SLM	ALY	1,687	47,224	$8,280
SLM	EUG	8,661	614,924	$76,912
ALY	EUG	1,098	47,219	$9,927
Total		3,244,236	490,500,534	$75,674,692

Appendix C
Ridership and Revenue by Train

Appendix C
Ridership and Revenue by Train

Base- Amtrak Fiscal Year 2002 Actual

Train #	Dir	Rank	Actual Riders	Revenue	End Markets	End Times	Annual Train Miles
751/757	SB	5	40,132	$909,749	SEA-PDX	0730-1100	67,890
11	*SB*	*3*	*57,802*	*$1,358,427*	*SEA-EUG*	*0945-1700*	*113,150*
761	SB	9	25,879	$343,432	BEL-SEA	1020-1245	35,770
753	SB	1	80,221	$1,950,714	SEA-EUG	1345-2005	113,150
755	SB	2	72,151	$1,727,119	SEA-EUG	1725-2235	113,150
763	SB	4	49,304	$1,170,314	VAC-SEA	1800-2155	56,940
750	NB	1	80,158	$1,922,223	EUG-SEA	0545-1215	113,150
760	NB	3	55,292	$1,296,571	SEA-VAC	0745-1140	56,940
552	NB	5	27,195	$375,388	EUG-PDX	0930-2025	45,260
752	NB	2	72,748	$1,688,038	PDX-SEA	1230-1600	67,890
14	*NB*	*7*	*21,616*	*$537,758*	*EUG-SEA*	*1244-1740*	*113,150*
762	NB	6	22,350	$299,466	SEA-BEL	1730-2000	35,770
754	NB	4	54,216	$1,320,737	PDX-SEA	1815-2145	67,890
Total			659,064	$14,899,935			

Appendix C
Ridership and Revenue by Train

2008 Build Estimate

Train #	Dir	Rank	Riders	Revenue	End Markets	End Times	Annual Train Miles
117	SB	6	54,743	$1,211,391	VAC-SEA	1810-2135	56,940
115	SB	9	31,786	$752,193	SEA-PDX	1940-2240	67,890
111	SB	8	48,088	$1,102,561	SEA-EUG	1820-0005	113,150
113	SB	1	171,258	$3,930,440	VAC-PDX	1225-1905	124,830
109	SB	3	90,659	$2,071,656	SEA-EUG	1410-2000	113,150
107	SB	2	152,188	$3,508,349	VAC-PDX	0730-1410	124,830
11	*SB*	*10*	*26,737*	*$592,394*	*SEA-EUG*	*0955-1646*	*113,150*
105	SB	5	56,116	$1,365,499	SEA-PDX	0950-1250	67,890
103	SB	4	59,640	$1,373,734	SEA-PDX	0805-1105	67,890
101	SB	7	52,860	$1,231,844	SEA-PDX	0630-0930	67,890
102	NB	3	76,652	$1,619,938	SEA-VAC	0745-1110	56,940
104	NB	7	57,904	$1,311,907	PDX-SEA	0630-0930	67,890
106	NB	4	75,014	$1,698,471	EUG-SEA	0545-1140	113,150
108	NB	1	150,024	$3,549,730	PDX-VAC	1025-1705	124,830
552	NB	11	13,519	$181,085	EUG-PDX	0930-1205	45,260
110	NB	6	58,154	$1,453,207	PDX-SEA	1210-1510	67,890
112	NB	2	146,460	$3,404,187	PDX-VAC	1435-2115	124,830
114	NB	5	69,796	$1,647,832	PDX-SEA	1555-1855	67,890
14	*NB*	*10*	*26,726*	*$620,029*	*EUG-SEA*	*1244-1956*	*113,150*
116	NB	8	37,869	$898,574	PDX-SEA	1815-2115	67,890
118	NB	9	31,958	$755,103	PDX-SEA	1945-2245	67,890
Total			1,488,150	$34,280,123			

Appendix C
Ridership and Revenue by Train

2023 Build Estimate

Train #	Dir	Rank	Riders	Revenue	End Markets	End Times	Annual Train Miles
101	SB	7	75,482	$1,788,860	SEA-PDX	0605-0832	67,890
103	SB	5	90,215	$2,082,224	SEA-PDX	0805-1032	67,890
105	SB	9	65,311	$1,554,482	SEA-PDX	0905-1132	67,890
107	SB	12	59,841	$1,450,381	SEA-PDX	1005-1232	67,890
109	SB	1	297,424	$7,062,806	VAC-EUG	0805-1530	170,090
111	SB	11	64,834	$1,556,359	SEA-PDX	1205-1432	67,890
113	SB	4	156,727	$3,586,186	SEA-EUG	1405-1830	113,150
115	SB	3	215,632	$5,025,205	VAC-PDX	1205-1732	124,830
117	SB	6	88,810	$2,105,711	SEA-PDX	1605-1832	67,890
119	SB	8	75,267	$1,776,719	SEA-PDX	1705-1932	67,890
121	SB	13	46,074	$1,082,772	SEA-PDX	1805-2032	67,890
123	SB	2	250,766	$5,732,692	VAC-EUG	1605-2320	170,090
125	SB	14	44,171	$1,046,396	SEA-PDX	2000-2227	67,890
127	SB	10	65,181	$1,433,380	VAC-SEA	2005-2250	56,940
102	NB	5	114,736	$2,443,503	SEA-VAC	0640-0925	56,940
104	NB	11	57,954	$1,347,532	PDX-SEA	0600-0827	67,890
106	NB	8	72,748	$1,676,299	PDX-SEA	0700-0927	67,890
108	NB	3	213,484	$4,946,053	PDX-VAC	0800-1335	124,830
110	NB	4	130,167	$2,907,188	EUG-SEA	0705-1127	113,150
112	NB	10	69,652	$1,690,618	PDX-SEA	1000-1227	67,890
114	NB	1	302,565	$7,250,123	EUG-VAC	1005-1735	170,090
116	NB	9	69,803	$1,659,046	PDX-SEA	1400-1627	67,890
118	NB	2	269,735	$6,343,101	EUG-VAC	1305-2035	170,090
120	NB	6	88,500	$2,102,525	PDX-SEA	1600-1827	67,890
122	NB	7	78,089	$1,866,970	PDX-SEA	1700-1927	67,890
124	NB	12	47,507	$1,129,514	PDX-SEA	1800-2027	67,890
126	NB	14	36,021	$858,696	PDX-SEA	1900-2127	67,890
128	NB	13	44,772	$1,063,005	PDX-SEA	2000-2227	67,890
Total			3,191,468	$74,568,346			

Appendix C
Ridership and Revenue by Train

2023 Revision A Estimate

Train #	Dire	Rank	Riders	Revenue	End Markets	End Times	Annual Train Miles
101	SB	12	61,341	$1,439,543	SEA-PDX	0606-0836	67,890
103	SB	7	70,836	$1,618,035	SEA-PDX	0707-0837	67,890
105	SB	8	70,366	$1,607,806	SEA-PDX	0806-1036	67,890
107	SB	11	62,131	$1,468,766	SEA-PDX	0906-1136	67,890
109	SB	13	58,362	$1,401,531	SEA-PDX	1006-1236	67,890
111	SB	1	293,915	$6,894,700	VAC-EUG	0814-1530	170,090
113	SB	10	62,203	$1,478,826	SEA-PDX	1206-1436	67,890
115	SB	5	153,287	$3,467,944	SEA-EUG	1406-1830	113,150
117	SB	4	197,422	$4,558,970	VAC-SEA	1214-1736	56,940
119	SB	6	84,983	$1,992,682	SEA-PDX	1606-1836	67,890
121	SB	3	200,082	$4,504,081	VAC-SEA	1414-1936	56,940
123	SB	14	42,997	$1,000,146	SEA-PDX	1806-2036	67,890
125	SB	2	234,115	$5,306,738	VAC-EUG	1614-2330	170,090
127	SB	15	42,228	$989,073	SEA-PDX	2006-2236	67,890
129	SB	9	64,626	$1,404,685	VAC-SEA	2014-2250	56,940
102	NB	6	104,552	$2,201,589	SEA-VAC	0645-0922	56,940
104	NB	4	174,436	$3,856,821	PDX-VAC	0600-1122	124,830
106	NB	10	70,316	$1,599,070	PDX-SEA	0700-0930	67,890
108	NB	3	191,601	$4,405,311	PDX-VAC	0800-1322	124,830
110	NB	5	130,259	$2,870,467	EUG-SEA	0705-1130	113,150
112	NB	12	57,312	$1,375,006	PDX-SEA	1000-1230	67,890
114	NB	11	58,427	$1,397,674	PDX-SEA	1100-1330	67,890
116	NB	2	268,709	$6,392,115	EUG-VAC	1005-1722	170,090
118	NB	1	284,536	$6,594,795	EUG-VAC	1205-1922	170,090
120	NB	8	76,319	$1,803,493	PDX-SEA	1500-1730	67,890
122	NB	7	84,717	$1,987,330	PDX-SEA	1600-1830	67,890
124	NB	9	74,575	$1,759,367	PDX-SEA	1700-1930	67,890
126	NB	13	45,565	$1,069,182	PDX-SEA	1800-2030	67,890
128	NB	15	34,665	$815,876	PDX-SEA	1900-2130	67,890
130	NB	14	42,906	$1,005,429	PDX-SEA	2000-2230	67,890
Total			3,397,787	$78,267,050			

Appendix C
Ridership and Revenue by Train

2023 Build Estimate- Scott Road

Train #	Dire	Rank	Riders	Revenue	End Markets	End Times	Annual Train Miles
101	SB	#N/A	75,482	$1,788,860	SEA-PDX	0605-0832	67,890
103	SB	#N/A	90,215	$2,082,224	SEA-PDX	0805-1032	67,890
105	SB	#N/A	65,311	$1,554,482	SEA-PDX	0905-1132	67,890
107	SB	#N/A	59,841	$1,450,381	SEA-PDX	1005-1232	67,890
11T	SB	#N/A	309,870	$7,332,120	SCT-EUG	0825-1530	162,790
109	SB	#N/A	64,834	$1,556,359	SEA-PDX	1205-1432	67,890
111	SB	#N/A	156,727	$3,586,186	SEA-EUG	1405-1830	113,150
113	SB	#N/A	215,929	$5,013,537	SCT-PDX	1225-1732	117,530
115	SB	#N/A	88,810	$2,105,711	SEA-PDX	1605-1832	67,890
117	SB	#N/A	75,267	$1,776,719	SEA-PDX	1705-1932	67,890
119	SB	#N/A	46,074	$1,082,772	SEA-PDX	1805-2032	67,890
121	SB	#N/A	261,558	$5,970,585	SCT-EUG	1625-2320	162,790
123	SB	#N/A	44,171	$1,046,396	SEA-PDX	2000-2227	67,890
125	SB	#N/A	68,030	$1,491,571	SCT-SEA	2025-2250	49,640
102	NB	#N/A	128,364	$2,741,457	SEA-SCT	0640-0905	49,640
104	NB	#N/A	57,954	$1,347,532	PDX-SEA	0600-0827	67,890
106	NB	#N/A	72,748	$1,676,299	PDX-SEA	0700-0927	67,890
108	NB	#N/A	216,142	$4,994,009	PDX-SCT	0800-1315	117,530
110	NB	#N/A	130,167	$2,907,188	EUG-SEA	0705-1127	113,150
112	NB	#N/A	69,652	$1,690,618	PDX-SEA	1000-1227	67,890
114	NB	#N/A	304,368	$7,264,585	EUG-SCT	1005-1715	162,790
116	NB	#N/A	69,803	$1,659,046	PDX-SEA	1400-1627	67,890
14T	NB	#N/A	278,030	$6,535,347	EUG-SCT	1305-2015	162,790
118	NB	#N/A	88,500	$2,102,525	PDX-SEA	1600-1827	67,890
120	NB	#N/A	78,089	$1,866,970	PDX-SEA	1700-1927	67,890
122	NB	#N/A	47,507	$1,129,514	PDX-SEA	1800-2027	67,890
124	NB	#N/A	36,021	$858,696	PDX-SEA	1900-2127	67,890
126	NB	#N/A	44,772	$1,063,005	PDX-SEA	2000-2227	67,890
Total			3,244,236	$75,674,692			

Appendix C
Ridership and Revenue by Train

2023 Revision A Estimate- Scott Road

Train #	Dire	Rank	Riders	Revenue	End Markets	End Times	Annual Train Miles
101	SB	12	61,341	$1,453,770	SEA-PDX	0606-0836	67,890
103	SB	7	70,836	$1,634,027	SEA-PDX	0707-0837	67,890
105	SB	8	70,366	$1,623,696	SEA-PDX	0806-1036	67,890
107	SB	11	62,131	$1,483,282	SEA-PDX	0906-1136	67,890
109	SB	13	58,362	$1,415,383	SEA-PDX	1006-1236	67,890
111	SB	1	309,312	$7,288,681	SCT-EUG	0834-1530	162,790
113	SB	10	62,203	$1,493,441	SEA-PDX	1206-1436	67,890
115	SB	5	153,287	$3,502,218	SEA-EUG	1406-1830	113,150
117	SB	4	199,451	$4,633,522	SCT-SEA	1234-1736	49,640
119	SB	6	84,983	$2,012,376	SEA-PDX	1606-1836	67,890
121	SB	3	209,800	$4,767,661	SCT-SEA	1434-1936	49,640
123	SB	14	42,997	$1,010,031	SEA-PDX	1806-2036	67,890
125	SB	2	247,861	$5,659,924	SCT-EUG	1634-2330	162,790
127	SB	15	42,228	$998,848	SEA-PDX	2006-2236	67,890
129	SB	9	69,278	$1,515,772	SCT-SEA	2034-2250	49,640
102	NB	6	122,086	$2,597,886	SEA-SCT	0645-0857	49,640
104	NB	4	179,423	$3,999,128	PDX-SCT	0600-1057	117,530
106	NB	10	70,316	$1,614,874	PDX-SEA	0700-0930	67,890
108	NB	3	195,043	$4,514,365	PDX-SCT	0800-1257	117,530
110	NB	5	130,259	$2,898,836	EUG-SEA	0705-1130	113,150
112	NB	12	57,312	$1,388,596	PDX-SEA	1000-1230	67,890
114	NB	11	58,427	$1,411,487	PDX-SEA	1100-1330	67,890
116	NB	2	270,349	$6,462,811	EUG-SCT	1005-1657	162,790
118	NB	1	302,473	$7,080,549	EUG-SCT	1205-1857	162,790
120	NB	8	76,319	$1,821,317	PDX-SEA	1500-1730	67,890
122	NB	7	84,717	$2,006,971	PDX-SEA	1600-1830	67,890
124	NB	9	74,575	$1,776,755	PDX-SEA	1700-1930	67,890
126	NB	13	45,565	$1,079,749	PDX-SEA	1800-2030	67,890
128	NB	15	34,665	$823,939	PDX-SEA	1900-2130	67,890
130	NB	14	42,906	$1,015,366	PDX-SEA	2000-2230	67,890
Total			3,488,871	$80,985,262			

Appendix C
Ridership and Revenue by Train

2008 Build Estimate- Sensitivity Analysis (increased base fares by 23%)

Train #	Dire	Rank	Riders	Revenue	End Markets	End Times	Annual Train Miles
117	SB	6	47,263	$1,304,929	VAC-SEA	1810-2135	56,940
115	SB	9	28,503	$826,241	SEA-PDX	1940-2240	67,890
111	SB	8	42,988	$1,208,738	SEA-EUG	1820-0005	113,150
113	SB	1	150,416	$4,270,974	VAC-PDX	1225-1905	124,830
109	SB	3	81,028	$2,271,031	SEA-EUG	1410-2000	113,150
107	SB	2	133,307	$3,807,694	VAC-PDX	0730-1410	124,830
11	*SB*	*10*	*23,627*	*$644,828*	*SEA-EUG*	*0955-1646*	*113,150*
105	SB	5	50,423	$1,501,152	SEA-PDX	0950-1250	67,890
103	SB	4	53,429	$1,508,330	SEA-PDX	0805-1105	67,890
101	SB	7	47,273	$1,351,667	SEA-PDX	0630-0930	67,890
102	NB	3	66,378	$1,746,411	SEA-VAC	0745-1110	56,940
104	NB	7	51,809	$1,439,668	PDX-SEA	0630-0930	67,890
106	NB	4	67,146	$1,863,683	EUG-SEA	0545-1140	113,150
108	NB	1	131,275	$3,851,621	PDX-VAC	1025-1705	124,830
552	NB	11	11,984	$197,274	EUG-PDX	0930-1205	45,260
110	NB	6	52,110	$1,595,015	PDX-SEA	1210-1510	67,890
112	NB	2	128,870	$3,702,177	PDX-VAC	1435-2115	124,830
114	NB	5	62,527	$1,809,337	PDX-SEA	1555-1855	67,890
14	*NB*	*10*	*23,574*	*$674,259*	*EUG-SEA*	*1244-1956*	*113,150*
116	NB	8	33,937	$986,816	PDX-SEA	1815-2115	67,890
118	NB	9	28,647	$829,322	PDX-SEA	1945-2245	67,890
Total			1,316,517	$37,391,168			

Appendix C
Ridership and Revenue by Train

2023 Revision A Estimate- Sensitivity Analysis (increased base fares by 46%)

Train #	Dire	Rank	Riders	Revenue	End Markets	End Times	Annual Train Miles
101	SB	12	52,280	$1,807,682	SEA-PDX	0606-0836	67,890
103	SB	7	60,253	$2,029,979	SEA-PDX	0707-0837	67,890
105	SB	8	60,018	$2,019,268	SEA-PDX	0806-1036	67,890
107	SB	11	53,257	$1,848,420	SEA-PDX	0906-1136	67,890
109	SB	13	50,034	$1,763,922	SEA-PDX	1006-1236	67,890
111	SB	1	243,780	$8,539,199	VAC-EUG	0814-1530	170,090
113	SB	10	53,270	$1,860,435	SEA-PDX	1206-1436	67,890
115	SB	5	128,929	$4,321,886	SEA-EUG	1406-1830	113,150
117	SB	4	165,797	$5,684,350	VAC-SEA	1214-1736	56,940
119	SB	6	72,552	$2,503,641	SEA-PDX	1606-1836	67,890
121	SB	3	167,818	$5,612,790	VAC-SEA	1414-1936	56,940
123	SB	14	36,756	$1,257,238	SEA-PDX	1806-2036	67,890
125	SB	2	194,671	$6,583,255	VAC-EUG	1614-2330	170,090
127	SB	15	36,075	$1,243,043	SEA-PDX	2006-2236	67,890
129	SB	9	53,878	$1,747,568	VAC-SEA	2014-2250	56,940
102	NB	6	86,308	$2,729,616	SEA-VAC	0645-0922	56,940
104	NB	4	146,355	$4,806,818	PDX-VAC	0600-1122	124,830
106	NB	10	59,898	$2,007,317	PDX-SEA	0700-0930	67,890
108	NB	3	160,341	$5,483,763	PDX-VAC	0800-1322	124,830
110	NB	5	109,757	$3,580,676	EUG-SEA	0705-1130	113,150
112	NB	12	49,142	$1,730,603	PDX-SEA	1000-1230	67,890
114	NB	11	50,056	$1,758,527	PDX-SEA	1100-1330	67,890
116	NB	2	223,656	$7,930,229	EUG-VAC	1005-1722	170,090
118	NB	1	237,228	$8,184,621	EUG-VAC	1205-1922	170,090
120	NB	8	65,354	$2,268,712	PDX-SEA	1500-1730	67,890
122	NB	7	72,395	$2,497,976	PDX-SEA	1600-1830	67,890
124	NB	9	63,678	$2,210,827	PDX-SEA	1700-1930	67,890
126	NB	13	38,905	$1,343,543	PDX-SEA	1800-2030	67,890
128	NB	15	29,631	$1,025,664	PDX-SEA	1900-2130	67,890
130	NB	14	36,666	$1,263,781	PDX-SEA	2000-2230	67,890
Total			2,858,737	$97,645,348			