

Strategic Planning and Programming Division Urban Planning Office

## SOUTHEAST KING COUNTY COMMUTER RAIL FEASIBILITY STUDY

Executive Summary Final Report



August 2010



Washington State Department of Transportation
Strategic Planning and Programming Division
Urban Planning Office
401 Second Avenue South, Suite 300
Seattle, WA 98104-2887

# EXECUTIVE SUMMARY SOUTHEAST KING COUNTY COMMUTER RAIL FEASIBILITY STUDY

August 2010

Prepared by

**WSDOT** 

In Association With

HDR Engineering, Inc.

Transit Safety Management

Blaydes Consulting

Hendricks – Bennett, PLLC



#### **Executive Summary**

#### Introduction

The 2009–2011 transportation budget passed by the Washington State Legislature included a proviso requesting a feasibility study of a Diesel-Multiple Unit (DMU) commuter rail service from Maple Valley/Black Diamond to Auburn via Covington on the BNSF Railway Company's (BNSF) Stampede Pass line. In the 2010 legislative session, the language was revised in ESSB 6381, Section 220 (2), and states the following:

\$400,000 of the ((motor vehicle account)) multimodal transportation account--state appropriation is provided solely for a diesel multiple unit feasibility and initial planning study. The study must evaluate potential service on the Stampede Pass line from Maple Valley to Auburn via Covington. The study must evaluate the potential demand for service, the business model and capital needs for launching and running the line, and the need for improvements in switching, signaling, and tracking. The study must also consider the interconnectivity benefits of, and potential for, future Amtrak Cascades stops in south King county and north Pierce county. As part of its consideration, the department shall conduct a thorough market analysis of the potential for adding or changing stops on the Amtrak Cascades route. The department shall amend the scope, schedule, and budget of the current study process to accommodate the market analysis. A report on the study must be submitted to the legislature by September 30, 2010.

The underlined text is the amended proviso language that authorizes the Washington State Department of Transportation (WSDOT) to also perform a market analysis of potential Amtrak *Cascades* stops in south King County or north Pierce county, but provides no additional funding and only three months additional time. The original study used all available resources, and a meaningful market analysis would likely require at least six months of working with AMTRAK, BNSF and affected stakeholders. Therefore the additional *Cascades* market analysis was not performed.



Portland Westside Express Single DMU Car

However, WSDOT has applied for a Federal Railroad Administration (FRA) grant to fund the additional tasks requested by the legislature. The city of Auburn has agreed to provide the required local funds match. The FRA should make a determination of which applications will actually receive grants by early fall of 2010.



WSDOT's Urban Planning Office is serving as the lead agency for the "Southeast King County Commuter Rail Feasibility Study" in partnership with the cities of Auburn, Black Diamond, Covington, and Maple Valley. The feasibility study included the participation of the BNSF Railway, King County, and Sound Transit.

HDR Engineering, Inc. (HDR), in association with Transit Safety Management (TSM), Hendricks – Bennett PLLC, and Lonnie Blaydes Consulting, was selected by WSDOT to provide rail planning and technical design support for the feasibility study. The State managed the feasibility study and performed other items of work with specialized-expertise staff; this work included performing travel-demand forecast modeling, collecting environmental data, and providing oversight of the rail planning/technical work to be delivered by the Consultant team. WSDOT's Rail Office also assisted with this work.

#### **Study Objectives and Approach**

The objective of this study is to assess the feasibility of commuter rail service between Maple Valley / Black Diamond and Auburn, via Covington on the BNSF Railway Stampede Pass line. This assessment analyzes service using self propelled diesel-multiple unit (DMU) rail cars.

This analysis includes an estimation of the expected capital and operating costs, projections of ridership and an analysis of institutional issues.

In order to achieve this objective, the study team began by identifying key issues and potential solutions. This was done in cooperation with local and regional government entities. Meetings were held jointly with representatives of each community and interested organizations including the cities of Auburn, Covington, and Maple Valley; WSDOT; Puget Sound Regional Council<sup>1</sup>; King County Metro<sup>2</sup>; and BNSF. These meetings were held to explain the study and to seek input and guidance from each participant at clearly defined stages of the study. This "Final Report" is a summary of five technical memoranda prepared for this study:

- Scenarios Development
- Travel Demand Forecasts (by WSDOT)
- Rail Operations Analysis
- Rail Business Model and Institutional Issues

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<sup>&</sup>lt;sup>1</sup> The designated Metropolitan Planning Organization or MPO

<sup>&</sup>lt;sup>2</sup> The major mass transit provider in the region



#### Environmental Screening

As work progressed, each technical memorandum was shared with the project partners and other entities in order to seek their input and address issues. These technical memoranda ultimately formed the basis of this report, which is to be presented to the Washington State Legislature.

#### **Study Area**

The project study area, as shown in Exhibit ES-1, is defined as the BNSF Railway Company's Stampede Pass rail corridor in southeast King County from Auburn east to the unincorporated community of Ravensdale. The rail corridor is approximately 13 miles long and encompasses the incorporated areas of the cities of Covington, Maple Valley, and Black Diamond, as well the adjacent unincorporated areas of King County.

#### **Ridership Forecasts and Modeling**

The Puget Sound Regional Council's (PSRC's) travel demand model was chosen to forecast the potential DMU ridership because it contains a mode choice component and the ability to forecast ridership with land uses that differ from the base year. The PSRC Transportation 2040 Plan model was further refined to match the recent traffic counts, future local land use, and disaggregated model analysis zones within the study area. The forecasting effort established a 2006 base year and a forecast year of 2030.

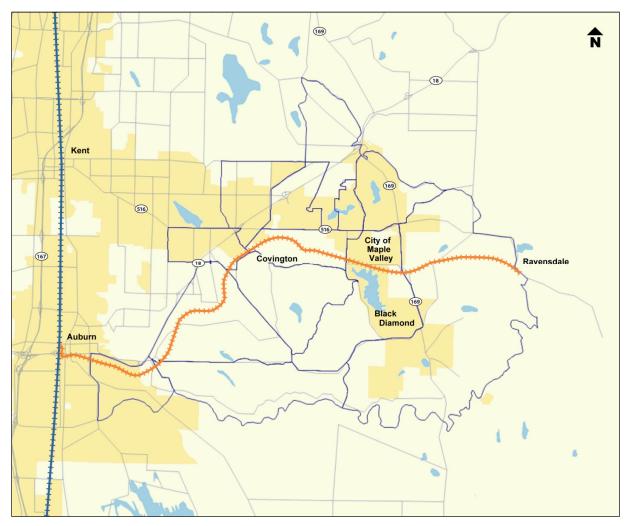


Exhibit ES-1 Study Area

#### **2030 DMU Ridership Forecasts**

The DMU commuter rail line was initially assumed to run from the Ravensdale station area east of SR 169 to the Sounder commuter rail station in Auburn. Four stations were initially considered for the proposed DMU rail corridor including a station at Ravensdale. The Ravensdale station was later eliminated from the study due to low ridership and rail operations issues that created longer travel times on the corridor. The elimination of the Ravensdale station site did not result in a significant reduction in ridership. Each DMU station was assumed to have sufficient park-and-ride capacity to meet unconstrained demand.



Exhibit ES-2 shows daily ridership projections for 30-minute headways (frequency). The daily ridership forecast for this scenario is approximately 1,200 daily riders. As a point of reference, fourth quarter 2009 ridership on Sounder from Everett to Downtown Seattle is approximately 1200 riders per day, and 7,500 riders per day between Tacoma and Seattle.

Exhibit ES-2 2030 DMU Ridership Forecast – 30-Minute Headways

	2030 Model 30-minute Peak Headway for DMU							
Transit Route	Peak Headway	Peak Ridership (AM + PM) <sup>(1)</sup>	Off Peak Headway	Off Peak Ridership (Rest of Day)	2030 Projected Daily Ridership			
<b>Metro</b> 149	~ 45	220	> 60	310	530			
<b>Metro</b> 168	60	630	60	590	1,220			
DMU	30	820	30	320	1,140			
Total	-	1,670	-	1,220	2,890			

<sup>1.</sup> AM peak ridership modeled, PM peak assumed to match AM peak. Volumes represent combined AM and PM peaks.

At 15-minute headways, the ridership potential for the DMU corridor was approximately twice that of 30-minute headways. Operational analysis has determined that 15-minute headways would not be practical on the route and would lead to severe impacts on freight rail movements on the corridor. It was also determined that 33-minute headways versus 30-minute headways would optimize equipment utilization and minimize capital cost, resulting in a more reliable and economical service from a rail operations point of view.



#### **DMU Commuter Service Plan**

The existing freight rail operations and potential commuter rail service plans have been analyzed as part of this study. The commuter rail operations plan has assumed a station at Auburn just south of the existing Sounder station; Covington just east of Covington Way; and Maple Valley just west of SR 169. Exhibit ES-3 shows the assumed station locations that were identified in collaboration with the local jurisdictions. However, no formal station planning, design, or permitting has been undertaken for this study. The station facilities were assumed to include level boarding, 300-foot long platforms with canopies, ticket vending machines, closed circuit television (CCTV), and information signing on the platform. The station sites at Covington and Maple Valley were also assumed to include 200 to 250 parking stalls, lighting, minor landscaping, and bus transfer parking. No other station amenities, such as staffed ticketing, station buildings, or public restrooms, were assumed. Station costs were based on the recently constructed Amtrak Stanwood station. The Maple Valley station would include additional retaining wall construction needed to access the site.



Exhibit ES-3
Assumed Station Locations



Rail commuter service would be provided by self-propelled, diesel-powered passenger cars, known as DMUs. They are operated by a two-person crew consisting of engineer and conductor. At this early phase of project development it is assumed that the DMUs would meet all current Federal Railroad Administration (FRA) safety standards and would be considered "FRA-compliant vehicles." Each trainset was assumed to consist of three cars seating 225 to 250 passengers with a top operating speed of 80 mph. The three-car configuration was selected for this early feasibility study in order to comply with BNSF's operating rules, which require all trains to have a minimum of 12 axles to properly activate the railroad's signal systems.

The draft operating plan assumes that a service agreement would be negotiated with BNSF to share right-of-way, track, and train-control systems infrastructure with BNSF Railway, and that commuter rail operation would be coordinated with BNSF freight trains in the same corridor. Running times on the corridor of 20 minutes and an average speed of 39 mph were developed using a train performance calculator and scheduling software. Various service levels were analyzed including 15-, 20-, 30-, and 60-minute headways. Two service plans were selected for development of a rail business plan, which includes both capital improvements and operating costs. These plans are as follows:

- 1. The **Startup Service Plan:** This scenario would operate one 3-car trainset once per hour (60 minutes).
- 2. The **Full Service Plan** This scenario would operate two 3-car trainsets on a once every 33 minutes schedule. The selection of a 33-minute headway versus a 30-minute headway significantly reduces the infrastructure and operating cost. Potential connections with current Sounder schedules at Auburn are shown in Exhibit ES-4. The trip time from Maple Valley to Seattle's King Street Station can be as little as 60 minutes.



Exhibit ES-4
Example of Connections at Auburn – Full Service (2 trainsets)

	Connections at Auburn to Seattle, Tacoma, and Bellevue							
DMU Service Leave Maple Valley	Arrive Auburn	Sounder North Service Leave Auburn	Arrive Seattle	Sounder South Service Leave Auburn	Arrive Tacoma	ST Express Bus Service Leave Auburn	Arrive Bellevue	
4:34 AM	4:54 AM	5:20 AM	5:54 AM			5:00 AM	5:52 AM	
5:07 AM	5:27 AM	6:01 AM	6:34 AM	5:57 AM	6:38 AM			
5:40 AM	6:00 AM	6:26 AM	6:59 AM			6:27 AM	7:22 AM	
6:13 AM	6:33 AM	6:51 AM	7:24 AM	6:36 AM	7:08 AM	6:53 AM	7:52 AM	
6:46 AM	7:06 AM	7:16 AM	7:49 AM	7:16 AM	7:48 AM	7:23 AM	8:22 AM	
7:19 AM	7:39 AM	7:45 AM	8:19 AM	7:57 AM	8:38 AM	7:53 AM	8:52 AM	
7:52 AM	8:12 AM	8:25 AM	8:59 AM			8:23 AM	9:22 AM	
8:25 AM	8:45 AM					9:02 AM	10:02 AM	
3:10 PM	3:30 PM			3:41 PM	4:14 PM	4:00 PM	4:33 PM	
3:43 PM	4:03 PM	4:11 PM	5:00 PM	4:16 PM	4:49 PM	4:33 PM	5:03 PM	
4:16 PM	4:36 PM	4:50 PM	5:23 PM	4:46 PM	5:19 PM	5:00 PM	6:03 PM	
4:49 PM	5:09 PM	5:25 PM	5:58 PM			5:33 PM	6:33 PM	
5:22 PM	5:42 PM	6:06 PM	6:55 PM	5:11 PM	5:44 PM	6:03 PM	7:03 PM	
5:55 PM	6:15 PM	6:33 PM	7:22 PM	5:38 PM	6:11 PM	6:35 PM	7:31 PM	
6:28 PM	6:48 PM	7:08 PM	7:57 PM	6:41 PM	7:14 PM	7:07 PM	7:59 PM	
7:01 PM	7:21 PM	7:33 PM	8:22 PM			7:37 PM	8:29 PM	
7:34 PM	7:54 PM	8:03 PM	8:52 PM			8:36 PM	9:28 PM	

Times in italics are Sound Transit express buses.

#### **Development of Project Costs**

#### **Capital Improvements**

The following is a brief summary of the capital improvement projects identified in the operational analysis. These capital improvements are necessary to support commuter service levels assumed in the analysis and to allow for two freight trains per hour to operate intermixed with commuter trains. This should meet BNSF performance requirements for freight trains and ensure reliable DMU commuter rail passenger service.



#### Improvement of Main Track Structure to FRA Class 4

Upgrade existing main track from FRA Class 3 to Class 4 and replace existing jointed rail with 141 -lb. continuous welded rail (CWR). The installation of 141-lb. CWR would allow for faster operating speeds and would ensure a smoother ride for DMU commuter trains.

#### Railway Signal Improvements, Auburn to Kanaskat

Extend Centralized Traffic Control (CTC) from Auburn (MP 102.4) to West Kanaskat (MP 83.9) and install Electronic Train Management System (ETMS) to provide positive train control (PTC). The installation of PTC is required by federal law for all new passenger rail services that operate on existing freight rail lines.

#### Auburn Platform and Passing Track Improvements

Construct new station track, platform, and support facilities. Also construct a new 10,800-foot siding, replacing the East Auburn siding. This new, longer siding would provide significant operational benefits for eastbound and westbound BNSF freight trains by providing a meet-point adjacent to, but not on, the north–south Seattle-Tacoma BNSF main line. This siding project would also include grade separation of existing grade crossings at "M" Street (project currently underway by the City of Auburn) and at "R" Street/Auburn-Black Diamond Road. Additional track bridges at A Street, Auburn Way S and F Street will be constructed to accommodate the proposed Auburn Siding.

#### Covington Station Track and Platform

Locate a 300-foot-long Covington platform on the south side of the Stampede Pass main line just east of the Covington-Sawyer Road crossing. The capital work at this location would consist of constructing an approximately 1,000-foot-long station track east of Covington-Sawyer.

#### Covington Passing Track Improvements

Begin the new Covington Siding at MP 94.8 and then extend the existing east end of the siding to approximately MP 93.0. This would provide over 8,000 feet of siding to mitigate effects on freight train operation.

#### Maple Valley Station Track and Platform

Construct a 300-foot-long Maple Valley platform to be served by a stub-ended DMU-only siding track 2,000 feet long.



#### Ravensdale Operations and Maintenance Facility

A layover, storage, and light maintenance facility is planned at Ravensdale to be located off the Ravensdale siding. A small yard of two tracks, each track 600 feet in clear length are to be built to serve the layover and storage areas.

#### **Capital Costs**

The estimated project cost including rolling stock to fully implement this project is in the range of \$169.5 to \$190.4 million. Exhibit ES-5 shows the capital cost estimates. All costs are in 2010 dollars and include engineering, administration, construction management, and a 30% contingency. These planning-level cost estimates are based on the limited information presently available and are subject to refinement.

Exhibit ES-5
SE King County Commuter Rail Capital Cost Estimates

(Year 2010 Dollars)

Project	Service Plan		Cost Range (\$Millions)**		
rioject	Startup	Full	Low	High	
Rolling Stock – 2 Sets	V	V	\$20.0	\$24.0	
Rolling Stock – 1 Additional Set		V	\$10.0	\$12.0	
Main Track Rehabilitation	V	V	\$22.1	\$26.1	
Railway Signal Improvements	V	V	\$8.6	\$11.1	
Auburn Siding/Station Tracks	V	V	\$74.7	\$78.4	
Covington Station Track	V	V	\$9.1	\$10.6	
Covington Siding		V	\$6.1	\$7.1	
Maple Valley Station Track	√	V	\$11.4	\$11.5	
Operations and Maintenance Facility	√	$\sqrt{}$	\$7.5	\$9.6	
Total			\$169.5	\$190.4	

<sup>\*\*</sup> Includes 30% contingency

#### **Operating and Maintenance Costs**

Operating and maintenance costs were developed for the Southeast King County commuter rail service using both fixed and variable costs typical of small commuters rail systems. Typically



fixed costs for small systems are at least 50% of the total operations and maintenance costs of larger systems such as Sound Transit's Sounder commuter service. Fixed costs are summarized in Exhibit ES-6 below and are based on either the service being provided by a third party contractor or the host railroad. All costs are in 2010 dollars and include an appropriate level of contingency for each cost category.

Exhibit ES-6
SE King County Commuter Fixed Operating and Maintenance Costs

#### (Year 2010 Dollars)

Agency Administration	\$500,000
Contractor Management Fee	\$250,000
Station Maintenance	\$100,000
Insurance (\$10,000 per \$1m)	\$2,000,000
Track Maintenance (allocated @ \$10,000/mile)	\$150,000
Dispatching (estimate of allocated cost)	\$75,000
Maintenance Facility Maintenance	\$25,000
Vehicle Maintenance (1/2 of total vehicle maintenance)	\$175,000
Capital Reserve	\$100.000
Total (Per Year) Fixed Costs Estimate	\$3,375,000

Insurance, agency administration, contractor management fees make up \$2.75 million or 81% of the total fixed costs.

The \$200 million insurance policy is the most significant portion of these costs. The premium for this coverage, in all likelihood will be a "minimum" premium, i.e., based on the level of insurance coverage, not dependent on level of service. As with other fixed costs, the premium will not vary significantly whether the Authority operates 10 or 50 trains a day.

Agency administrative costs are related to the basic oversight of the operation by the rail authority, including contract management, supervision, security, customer information, etc.).

Management fees relate to the costs incurred by the contractor regardless of the level of service offered. For example, the Authority will need to pay for the contractor's general manager, transportation supervisor, and chief mechanical officer whether the Authority operates 10 trains or 50 trains.



Some of the fixed costs identified above would be negotiated with BNSF under the likely assumption they will maintain and dispatch the corridor as well as staff the trains. Ultimately these costs may not all be expressed as fixed costs for this service.

Variable cost elements associated with the service would be train operations (crew costs), fuel, and some vehicle maintenance. Variable costs were estimated for both the start-up and full services scenarios and are shown in Exhibit ES-7.

Exhibit ES-7
SE King County Commuter Variable Operating and Maintenance Costs

#### (Year 2010 Dollars)

	Start-up Service		Full Service	
Variable Costs	Assumptions	Costs	Assumptions	Costs
Train Operations	Two 2-person crews	\$400,000	Four 2-person crews	\$800,000
Fuel (\$4.00/gal, 0.5 miles per train mile)	14 trips/day, 255 annual service days	\$215,000	22 trips/day, 255 annual service days	\$350,000
Vehicle Maintenance	Scheduled	\$90,000	Scheduled	\$175,000
<b>Total Variable Costs</b>		\$705,000		\$1,325,000

The total estimated operating and maintenance costs range from \$4.08 million to \$4.7 million for the full service scenario.

These estimates do not include either the capital or operating costs for bus or other circulation systems at the rail stations.

#### **Farebox Revenues**

For farebox revenues, a \$5.00 average round-trip fare was assumed for the ridership estimate. This is comparable with early 2010 existing base fares around the country (Sounder's one-way base fare is \$2.55). Based on 255 revenue days per year, the annual farebox revenue would be \$765,000 (1,200 x \$2.50 x 255) expressed in 2010 dollars or approximately 16% of annual operation cost for the full service scenario. An annual subsidy of just under \$4 million in 2010 dollars would be required and there could still be a potential deficit.

Two factors are clear from the information above. First, the variable costs are a relatively small portion (a little more than 25% for the full service) of the overall costs. Second, there is not a large difference between the costs for the starter service and full service levels. Because the incremental operating and maintenance costs of adding service are low, increasing service levels (until additional capital infrastructure is necessary) may be the most cost-effective service to pursue.



These cost estimates could be reduced by a significant amount if the Southeast King County service could be contracted through the existing Sounder commuter rail service. If it is, many of the fixed costs could be spread across the larger Sounder system. For example, if this service is contracted through the existing Sounder service, the increase in the existing insurance premium for the \$200 million policy will likely be minimal, and the allocation of the premium to this service will be only a fraction of a standalone policy premium. However, the DMU service is outside of the Sound Transit district, the DMU service would be outside of the ST2 plan and the modal technology is different, ST vs. DMU reducing the potential economies of scale .

The following exhibit (ES-8) demonstrates the effect a sharing of insurance (\$2,000,000), agency administration (\$500,000), and Contractor Management Fee (\$250,000) costs. Assuming a 50% savings in these costs, there would be a net cost reduction of \$1,375,000 resulting in a farebox recovery factor of 30%.

Exhibit ES-8
Hypothetical cost-reduction from Cost Sharing (50%) of Operating and Maintenance Costs

(Year 2010 Dollars)

System	Total Costs	Revenue (Remains Constant)	Total Subsidy
Stand Alone System	\$4,700,000	\$765,000	\$3,950,000
Shared System	\$3,325,000	\$765,000	\$2,560,000

An increase of \$1 in the average round-trip fare would generate an additional \$153,000 in revenues. When combined with cost sharing, farebox recovery factor increases to 36%.

All the assumptions on shared service and costs with Sounder are clearly dependent on agreement and negotiations with Sound Transit. All fare policies would have to be determined by the governing body overseeing the service.

#### **Federal Funding Options**

There are several Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) programs that could be used to fund portions of commuter rail operating and capital costs. The two most suitable programs are the FTA discretionary Section 5309 New Starts program and the FTA Small Starts program.

The FTA New Starts program typically fund about 50% of project costs and the remaining 50% comes from local sources. A significant local commitment to the project is necessary to receive New Starts funding. There are multiple steps to be taken in obtaining New Start funding and



New Start projects are required to go through a lengthy evaluation process. New Starts candidate projects are evaluated on criteria which include: Mobility improvements, environmental benefits, cost-effectiveness, operating efficiencies, transit supportive land use and future patterns plus other optional factors based upon the nature of the project.

The Small Starts program, a component of the New Starts, is intended to fund projects with a capital cost under \$250 million and with a federal share of under \$75 million in year of expenditure dollars. This program provides a method of funding projects using streamlined criteria and a streamlined approval process. A Small Starts project must meet the definition of a fixed guideway for at least 50 percent of the project length, be a new fixed guideway project or be a new corridor-based bus project with all of these minimum criteria to satisfy. The evaluation criteria are basically the same as for the New Starts program.

Both the New Starts Program and the Small Starts programs are highly competitive. The Southeast King County project would be competing against projects with significantly higher ridership levels and lower costs per passenger mile. Without significant reductions in costs or increases in ridership or both, it is doubtful this project could compete favorably for the limited grant funds available.

### Potential Governance Structures and Funding Options Available in South East King County

A review of the existing agencies in King County that provide public transportation services was conducted as part of this study. These agencies included King County Metro, Sound Transit, WSDOT, and Amtrak. However each of these agencies has limited ability to deliver commuter rail services in SE King County. For example, WSDOT and Amtrak policy is to provide intercity passenger services such as the Amtrak *Cascades* service as opposed to short-haul commuter services. Sound Transit is a special purpose district specifically created to provide high-capacity transit services; however, for Sound Transit to adopt this project, it would need to annex significant portions of SE King County outside its current boundary. While King County Metro has the legal ability to provide this service, commuter rail service in any form is not part of its adopted service plan or budget.

This review suggests that while DMU operation by existing agencies may be theoretically possible, there is little reason to expect those agencies to pursue the idea. It is also apparent that the governance structure of the existing agencies along with their funding limitations would not be a good fit for the circumstances in the corridor.

In addition to the four existing agencies discussed above, a thorough review of the RCW identifies at least a dozen other agencies that could provide transportation services. Of these,



four types of public entities were identified that could plausibly manage the operation of DMU commuter rail service under current law.

These entities and their relevant characteristics are as follows:

**Public Transportation Benefit Area Authority** (RCW 36.57A). The PTBA is the most commonly used type of governance structure for public transportation in Washington State. Examples include Pierce Transit, Kitsap Transit and Community Transit. PTBA's have considerable flexibility in setting boundaries, fares, service policies, etc.

- 1. Created by a transportation improvement conference (RCW 36.57A.020.
- 2. Governing Board-Nine member Board, consisting of elected officials from the cities and counties within the boundaries of the Area Authority
- 3. Taxing Possibilities and Limitations:

B&O and Household Tax (35.95.045)

Cannot levy sales and use tax in this instance per RCW 81.14.045

No authority to levy property tax

No authority to levy motor vehicle tax

**Cities and Towns** though an agreement under the Interlocal Cooperation Act (RCW 39.34). A number of cities including Everett, Yakima, and Pullman operate public transportation services. The Interlocal Cooperation Act gives cities the ability to contract with one another or other agencies for public transportation services including those that cross jurisdictional boundaries.

- 4. Created by an agreement between the cities and possibly King County
- 5. Governing Board Determined by the agreement between the parties to the Interlocal Agreement
- 6. Taxing Possibilities and Limitations:
  - a. May be able to levy a B&O and household tax per RCW 35.95.040
  - b. Property tax within the city's current authority
  - c. No sales and use tax within King County pursuant to RCW 81.14.045
  - d. No authority for a motor vehicle excise tax



County Rail District (RCW Chapter 36.60). It is not entirely clear whether this statute would allow for passenger rail service. RCW 36.60.010 specifies that the boundaries are drawn to include property from which agricultural and other products are shipped. However, in RCW 36.60.010 the statute does refer to passenger service. This statute may need to be amended to clarify that passenger rail service may be allowed.

- 7. Created by the county council (RCW 36.60.010)
- 8. Governing Board The county council (RCW 36.60.010)
- 9. Taxing Possibilities and Limitations:
  - a. Can levy for one year excess property tax, with a limitation of 1% (RCW 36.60.040)
  - b. Levy property tax, with a 1% limitation, to retire bonds (RCW 36.60.040)
  - c. B&O and household tax probably possible
  - d. Not authorized to levy retail sales and use tax
  - e. Not authorized to levy a motor vehicle excise tax

**Transportation Benefit District** (RCW Chapter 36.73) provides for the creation of a transportation benefit district for the operation of public transit. TBD's were originally enabled to facilitate a cooperative approach to funding transportation capital projects by local jurisdictions.

- 10. Created agreement through the Interlocal Cooperation Act (RCW 36.73.020 (2)).
- 11. Governing Board Determined by the agreement between the parties to the Interlocal Agreement.
- 12. Taxing Possibilities and Limitation:
  - a. Levy property tax, with a 1% limitation, to retire bonds (RCW 36.73.060)
  - b. Sales and use tax per RCW 36.73.040(3)(a)
  - c. Motor Vehicle Tax per RCW 36.63.040(3)(b)
  - d. B&O and household tax per RCW 35.95.045

Authority for each of these entities was written into the RCW to address specific transportation needs or problems, but none of the entities were put in place to address the particular conditions found in SE King County. Therefore it should come as no surprise that even though it appears



feasible to implement and operate DMU commuter rail service under any of these statutes none of them are a perfect fit for the circumstances in the corridor.

The biggest challenge a new entity must overcome is generation of adequate tax revenue to fund the service. It should be noted that of the four plausible types of entities identified, the first three have very limited taxing ability (see Exhibit ES-9) and may have difficulty raising sufficient revenue from the allowed sources. In contrast, Transportation Benefit Districts are much more generously endowed with taxing authority (but are somewhat less well suited to providing ongoing governance for transit operations). Amendments to the RCW that allow greater flexibility in levying sales and use tax, property tax, or MVET would facilitate development of a commuter rail business plan that is a better fit for SE King County.

Exhibit ES-9 Funding Options

Funding Sources	РТВА	Interlocal Cooperation Act	Country Rail District	Transportation Benefit District
Retail Sales and Use Tax (RCW 82.14.045)	No	No	No	Yes
Business and Occupation Tax (RCW 35.95.040)	Yes	Probably	Probably	Yes
Household Tax (RCW 35.95.040)	No	Probably	Probably	Yes
Property Taxes	No	Yes	Yes	Yes
Motor Vehicle Excise Tax (RCW 36.73.040(3)(b)	No	No	No	Yes

#### **Agreement and Consent Requirements**

Before any entity operates passenger rail service within either King County or within the boundaries of Sound Transit, that entity would need to have an agreement with either or both King County (RCW 35.58.250) and Sound Transit (RCW 81.112.090). Also, either or both King County (RCW 35.58.260) and Sound Transit (RCW 81.112.110) would need to consent to such rail operations.

Pursuant to RCW Chapter 36.56, King County has assumed all the powers of Seattle Metro which was formed under RCW Chapter 35.58. And, RCW 35.58.250 states, in part, the following in this regard:



Except in accordance with an agreement made as provided herein, upon the effective date on which the metropolitan municipal corporation commences to perform the metropolitan transportation function, no person or private corporation shall operate a local public passenger transportation service within the metropolitan area with the exception of taxis, buses owned or operated by a school district or private school, and buses owned or operated by any corporation or organization solely for the purposes of the corporation or organization and for the use of which no fee or fare is charged.

Also, RCW 35.58.260 specifies that the city or cities would need consent of King County to operate the passenger rail service.

#### **Enhanced Bus Service Plan**

The enhanced bus scenario has been developed to provide a point of comparison with the DMU commuter rail scenario, to assess how rail and bus service could provide complementary services, and to illustrate the range of possible transit improvements that could accommodate projected demand in the corridor. The Enhanced Bus Service Plan presented here has been designed to complement DMU commuter rail service in the corridor and could be implemented as a "stand alone" option. The enhanced bus scenario consists of increased service on two existing routes (149 and 168) and one new peak-period-only express service (Maple Valley Parkand-Ride to Auburn Sounder station via SR 18).

The service improvements described in the report have been developed in cooperation with King County Metro; however, the improvements have not been put through Metro's formal service planning process. The service increases would require funding beyond the current Metro budget as well as approval by the County Council. (King County Metro received funding to implement service improvements on the #149 and #168 routes and that schedule improvement has been reflected in Exhibit ES-4. These route enhancements were not included in the study as this was an end of study occurrence. Also, this funding expires in 2013 unless local authorities can develop a funding source. A description of the Southeast King County Connectors Project can be found in Appendix G.)

The bus alternative did not assume any new park-and-ride capacity along the proposed routes; however, it did assume transit signal priority along SR 516 between SR 169 and SR 18 in Covington and between SR 18 and Kent.

Exhibit ES-10 shows bus ridership forecasts with and without DMU commuter rail service operating on the corridor.

The Route 168 ridership forecasts increase from 1,200 riders per day at current service levels to approximately 2,000 riders per day with 30-minute headways, a 60% increase. The Route 149 forecast showed an increase of approximately 400 riders per day at 30-minute headways, an 80% increase. The Route 149 and 168 service improvements were not tested with the DMU line; however, it is highly probable that similar ridership increases could be realized with these service improvements to these routes since they do not directly serve the same markets as the DMU service. Essentially, the service improvements to the Metro 149/168 routes and the proposed express bus service on SR 18 between Maple Valley and Auburn would serve as a predecessor to and complement future DMU commuter rail service. These could be implemented in advance of DMU commuter rail service if sufficient resources were made available.

Exhibit ES-10 2030 Ridership Forecast – 30-Minute Headways

Metro	2030 Model 30-minute Peak Headway for SR 18 Express						
Bus Route	Peak Headway	Peak Ridership (AM + PM)	Off-Peak Headway	Off-Peak Ridership (Rest of Day)	Daily	Daily <sup>(1)</sup>	
149	30	510	60	450	960	530	
168	30	1,250	60	720	1,970	1,220	
SR 18 Exp	30	670	60	250	920	1,140	
Total	-	2,430	-	1,420	3,850	2,890	

<sup>(1)</sup> DMU bus ridership numbers do not include enhanced bus service, but it is highly probable that ridership increases would be similar with enhanced bus service.

#### **Primary Findings**

The objective of this study was to assess the feasibility of commuter rail service in Southeast King County. This has been accomplished by analyzing the costs of providing commuter passenger rail service between Maple Valley/Black Diamond and Auburn via Covington. The findings of this study are based on the available data and analyses of the study team as defined by the scope of services. In the next phase of project development, more rigorous planning, environmental, and engineering analyses would be required to verify and refine the findings of this study. The key findings of this study are summarized as follows:



#### A. Future growth and ridership:

The communities of Covington, Maple Valley and Black Diamond have experienced significant growth over the last ten years adding almost 20,000 residents which is approximately 33% growth.

Southeast King County is projected to grow at a significantly faster rate than King County as a whole. There are projected to be 18,600 new households, 42,600 additional residents, and 5,500 new jobs in Southeast King County by 2030.

The DMU Commuter Rail Ridership forecasts project approximately 1,200 daily riders in 2030 under a full service plan (33-minute headways).

Other factors that have not been accounted for in this study may influence transit demand. For example, Sound Transit is studying the possibility of collecting parking fees at their existing stations on the Seattle-Tacoma corridor.

#### B. Operational feasibility:

DMU commuter rail service in the corridor is feasible. The DMU service could be operated without precluding continued freight service; however, extensive track and signal upgrades and other improvements will be needed, along with construction of rail sidings, stations, station amenities/parking, etc. Some of these improvements could also yield benefits to BNSF and its freight rail franchise.

Proposed enhancements to Metro routes #149 and #168 could serve existing needs for transit service in Southeast King County in the near term. Potentially a DMU commuter rail service on the BNSF Stampede Pass line could serve transit needs in the longer term.

#### C. Environmental feasibility:

A preliminary screening identified no fatal flaws; however, the rail line runs along a river and the required right-of-way improvements would have impacts on the environment. Additional analysis would be needed to determine if the environmental impacts are significant.

#### D. Institutional feasibility:

The project could be implemented and operated by agencies enabled under existing law, however DMU rail service in this corridor is not included in Puget Sound Regional Council's long-range regional transportation plan (MTP) Transportation 2040. Neither Sound Transit nor King County



Metro, agencies that are authorized to provide rail services expressed interest in providing this service, though no formal inquiry was made in this feasibility study.

The Revised Code of Washington (RCW) enables a number of other types of authorities that could undertake the project, but none of those entities are perfectly suited to the circumstances found in SE King County. Amendments to the RCW would facilitate implementation.

Under current Washington State law, a public vote would probably be required to approve taxing authority for a new transit entity.

Local jurisdictions or a new entity would have the ability to contract with existing agencies for transit and support services under the Interlocal Cooperation Act (RCW 39.34).

#### E. Business case feasibility:

It appears that the requirements of BNSF can be met, but an operating agreement would need to be negotiated with the railroad.

The substantial upfront capital costs (\$170 – \$190 million) are a significant challenge. A number of grant programs exist that this project might be eligible for, but future funding levels and the competitive environment cannot be reliably foreseen. There are a number of other commuter rail projects nationwide that may compete for these grant funding sources.

Other entities are interested in improvements to the Stampede Pass line. Any infrastructure improvements on the line and subsequent increased freight traffic levels may have impacts on the upfront capital costs estimated in this study. Two studies that have considered improvements to the Stampede line but are not incorporated within this study are shown below:

- 1. Statewide Rail Capacity and System Needs Study, Prepared for Washington State Transportation Commission by Cambridge Systematics, December 2006
- 2. East-West Passenger Rail Feasibility Study: A preliminary Analysis Prepared for the WSDOT by HDR Engineering, June 2001.

The forecasted ridership of about 1,200 per day at full implementation in 2030 would produce farebox revenue equal to about 16% annual operating costs (estimated at \$4.7 million per year). This gap between expected operating revenue and operating cost would necessitate ongoing subsidy of the service.

Fixed insurance, administration, and contract management fees (\$2.7 million) are a significant part of the estimated \$4.7 million annual operating and maintenance costs. If a 50% cost sharing



agreement could be reached with Sound Transit for insurance, administration and contract management services a net cost reduction of approximately \$1,375,000 could be achieved. These savings would result in a farebox recovery factor of 30% versus 16%.

