#### S. EXECUTIVE SUMMARY

# A. About the Executive Summary

The Executive Summary is presented to brief policymakers, agencies and the public about the findings of the *South Corridor Project Supplemental Draft Environmental Impact Statement* (SDEIS). Because the summary presents results of the SDEIS in a truncated form, some information is incorporated only by reference to the SDEIS itself. Every effort has been made to present the most pertinent results in as clear a manner as possible so that the reader may understand the breadth of information contained in the SDEIS without necessarily having to read the entire document. The reader is encouraged to consult the SDEIS document for more detailed information.

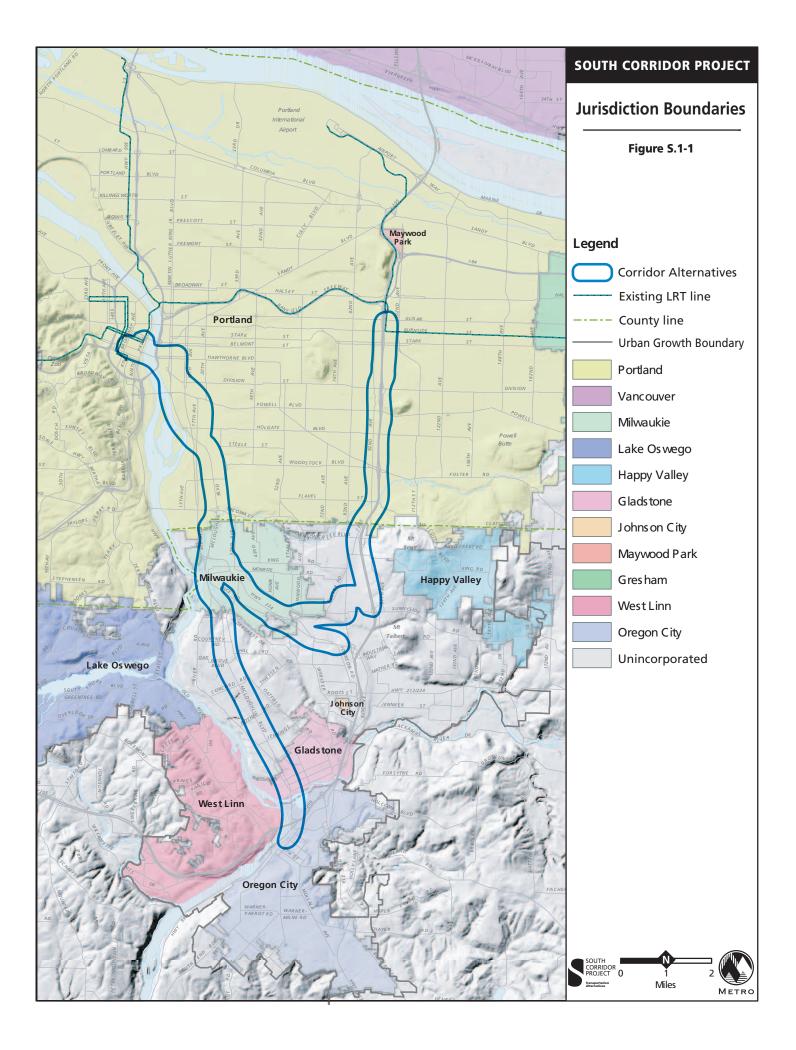
## **B.** About the South Corridor SDEIS

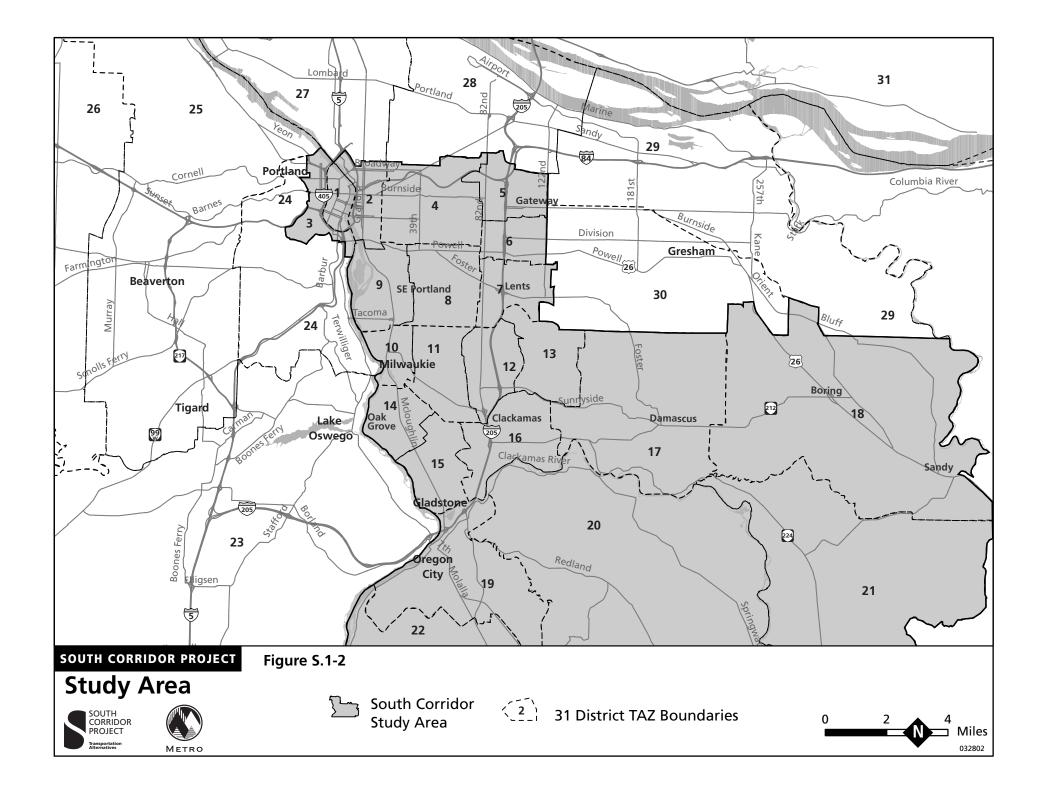
The South Corridor is the southern segment of the South/North Corridor, and the SDEIS fundamentally updates the *South/North Corridor Draft Environmental Impact Statement* (DEIS), which was issued by the Federal Transit Administration (FTA) and Metro in February 1998. As such, the SDEIS (and this Executive Summary) focuses almost exclusively on the South Corridor by providing updated and additional information on the purpose and need, alternatives considered, affected environment and anticipated environmental impacts for the South Corridor, reflecting the changed conditions since the South/North DEIS was published.

The South Corridor SDEIS has been prepared in compliance with the National Environmental Policy Act (NEPA). The Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) are the federal co-lead agencies for the SDEIS, and Metro is the project's local lead agency. Preparation of the SDEIS is one step in the Federal transportation project development process that is intended to be an integral part of a metropolitan area's long-range transportation planning process. The purpose of the South Corridor SDEIS is to provide decision-makers and the public with better and more complete information before final project-level decisions are made. The SDEIS is intended to provide citizens, agencies and jurisdictions with information needed to make an informed decision when selecting the preferred alternative to advance into the next stages of project development.

#### S.1 DEFINITION OF THE SOUTH CORRIDOR

The South Corridor is part of the larger South/North Corridor within the Portland, Oregon and Vancouver, Washington metropolitan region. As shown in Figure S.1-1, this region includes four counties: Multnomah, Clackamas and Washington counties in Oregon and Clark County in Washington. This region is the population and economic center of an extensive area, including much of Oregon, southern Washington and northern Idaho. The South Corridor is defined as the travel shed between the urban and urbanizing portion of Clackamas County and the Portland Central City, as shown in Figure S.1-2. Travel within the corridor uses a variety of local, regional, state and interstate facilities. The Tri-County Metropolitan Transportation District (TriMet) is the provider of public transportation in the South Corridor, and currently operates fixed-route transit buses, ondemand van and small bus service for the elderly and disabled, and light rail lines throughout the region.



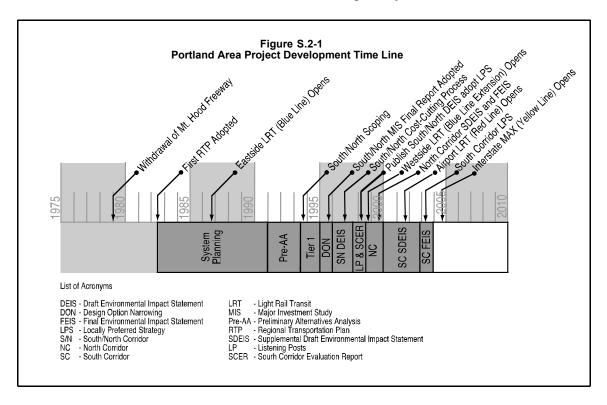


#### S.2 PROJECT HISTORY AND DECISION-MAKING PROCESS

The need to examine high capacity transit (HCT) options in the South Corridor was established over two decades of system and sub-area planning studies. Following is a description of the study stages that have culminated in the development of this SDEIS (see Figure S.2-1 for a time line illustrating these project phases). A more detailed description of the project's history and decision-making process may be found in Section 2.1 of the SDEIS.

#### 1980-1993: Early South/North Corridor Planning Studies

- System Planning Studies. Since the mid-1980s, there has been a series of major transportation analyses and actions taken that implemented the region's basic policy shift away from constructing radial freeways and toward a greater emphasis on meeting travel demand through improvements in public transportation. These included the 1982 *Regional Transportation Plan* (RTP); and a system-level Phase I study of regional transitways between 1984 and 1986 that recommended more detailed studies of the South Corridor.
- Preliminary Alternatives Analysis. Both Milwaukie and I-205 HCT alternatives were evaluated in the Preliminary Alternatives Analysis (Pre-AA) planning phase. In the Milwaukie Corridor, the Pre-AA evaluated a light rail alignment that would connect downtown Portland with Milwaukie, the Clackamas Regional Center and Oregon City. In the I-205 Corridor a light rail alignment was evaluated that would connect the Oregon City, the Clackamas and Gateway regional centers, and continue into downtown Portland via the existing Blue Line. In 1993, the Metro Council selected the Milwaukie Corridor as the priority corridor in the south.



1993-1998: South/North Corridor Major Investment Study (MIS) and Draft Environmental Impact Statement (DEIS) This phase of project development was initiated in 1993 and consisted of three main activities:

- **Scoping.** The Federal *Scoping Process* was undertaken to identify the range of mode and alignment alternatives to be studied further in the project's DEIS.
- **Tier I Narrowing of Alternatives and Major Investment Study (MIS).** In 1995, Tier I narrowed the range of alternatives and options to be studied further in the DEIS. and resulted in the Metro Council's and FTA's approval of the *South/North Major Investment Study* (Metro: November 1995).
- Tier II Draft Environmental Impact Statement (DEIS). Begun in January 1996, the DEIS included a cost-cutting process that was initiated in November 1996 that further refined the range of alternatives and options under study. Based on the revised set of alternatives and options, the South/North Corridor DEIS was published in February 1998. After considering the DEIS and public comments, the Metro Council adopted the project's locally preferred alternative in July 1998.

**1998: Project Funding Vote and Reassessment.** In response to the failure of a November 1998 ballot measure that would have approved local funding for the South/North Corridor light rail project, JPACT and the Metro Council initiated two processes as a result of community input. A redesigned Interstate Avenue light rail alignment was proposed in the North Corridor. The South Corridor began to more fully evaluate non-light rail options.

**1999: North Corridor Project Development.** The following project development activities supplemented the South/North DEIS and resulted in a Full Funding Grant Agreement with FTA and construction of the Interstate MAX light rail line:

- North Corridor Supplemental Draft EIS (SDEIS). Shortly after the November 1998 ballot measure, local business and community leaders proposed a new modified Interstate LRT alignment. A SDEIS was subsequently prepared for the new alignment (now known as the Yellow Line or Interstate MAX). In June 1999, The Metro Council amended the South/North locally preferred alternative to include the Full Interstate Alternative as the preferred alternative, and to define the first construction segment of the South/North Project as the segment between the Rose Quarter and the Expo Center.
- North Corridor Interstate MAX Light Rail Project Final EIS (FEIS). Subsequent to the selection of the locally preferred alternative for the SDEIS, Metro and TriMet published the North Corridor FEIS (October 1999) and FTA issued its Record of Decision for the project (January 2000). The Yellow Line is currently under construction and is scheduled to be completed and in operation by September 2004.

**1999–Present: South Corridor Project Development.** The following activities supplement the South/North DEIS and resulted in the publication of this South Corridor SDEIS:

• **South Corridor Transportation Alternatives Study.** In April 1999, Metro's Joint Policy Advisory Committee on Transportation (JPACT) directed Metro staff to develop and advance a

set of non-light rail options that would address the transportation problems in the South Corridor. Scoping, which concluded in May 2000, identified the array of mode and general alignment alternatives to be studied further. In November 2000, the South Corridor Project Policy Committee narrowed the range of alternatives to be studied further in the South Corridor SDEIS. The alternatives included; the No-Build Alternative; the Bus Rapid Transit (BRT) Alternative; and the Busway Alternative. After this decision, the Policy Committee heard substantial additional public comment requesting the addition of light rail alternatives. In response, the Policy Committee added the Milwaukie LRT Alternative, the I-205 LRT Alternative; and the Combined (Milwaukie and I-205) LRT Alternative.

• **South Corridor SDEIS.** In February 2002, the FTA and FHWA issued a scoping notice in the Federal Register, announcing their intent to work with Metro and TriMet to prepare an SDEIS based on this range of alternatives and a range of options for each alternative. The SDEIS provides a summary of the significant benefits, costs, impacts and trade-offs associated with the alternatives and options. The SDEIS will be used to inform the public and local decision makers in their selection of the locally preferred alternative for the South Corridor. Following receipt of public comment, the region will select the locally preferred alternative to advance into the FEIS, preliminary engineering, final design and construction.

#### S.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

## A. Purpose, Need, Goal and Objectives

The South Corridor Policy Committee defined the Purpose and Need for a major transit investment in the South Corridor as follows:

**Purpose (and Goal) of the Project:** to implement a major transit program in the South Corridor that maintains livability in the metropolitan region, supports land use goals, optimizes the transportation system, is environmentally sensitive, reflects community values and is fiscally responsive.

**Need for the Project:** historic and projected rapid population and employment growth in the Corridor, creating an unmet demand for increased travel opportunities and transit capacity; high levels of existing traffic congestion and travel delay in the corridor and deteriorating travel conditions in the future caused by population and employment growth; and the need for high-quality transit service in the South Corridor to achieve regional and local land use objectives.

**Objectives** for the South Corridor Project to address identified needs include:

- Provide high quality transit service in the corridor.
- Ensure efficient transit system operations in the corridor.
- Maximize the ability of the transit system to accommodate future growth in travel demand in the corridor.
- Minimize traffic congestion and traffic infiltration through neighborhoods in the corridor.
- Promote desired land use patterns and developments in the corridor.
- Provide for a fiscally stable and financially efficient transit system.
- Maximize the efficiency and environmental sensitivity of the engineering design of the proposed project.

#### B. Need for the Project: Growth and Transportation Problems and Opportunities

**Population and Employment Growth.** Over the past twenty-five years, the population of the four-county region grew by approximately 56 percent. Since 1980, the rate of employment growth in the region has been almost 50 percent greater than the national average. With over 120,000 current jobs in the South Corridor portion of Clackamas County, employment is forecast to reach 184,700 jobs by 2020. These high rates of population and employment growth in the corridor will create demand for additional transit service; result in deteriorating travel conditions; and create opportunities for high-density, mixed-use activity centers that can be well served by high-capacity transit alternatives.

**Traffic Congestion and Vehicle Delay.** High levels of population and employment growth in the corridor will continue to cause deteriorating conditions on the corridor's transportation system. Over the next twenty years, Vehicle Miles Traveled (VMT) in the region is forecast to increase by 20 percent, leading to a doubling in the miles of major roadways in the corridor that are congested (i.e., roads that would have volumes greater than 90 percent of the roadway's capacity), which indicates a rapidly-deteriorating level of service in the corridor. For example, SE McLoughlin Boulevard and I-205 would be at or over capacity during peak periods for virtually their entire length within the South Corridor.

**Transit System Conditions.** As a result of increased congestion in the South Corridor, transit operating speeds on SE McLoughlin Boulevard, the corridor's primary transit trunkline, have deteriorated. Deterioration in transit travel times means that TriMet must increase service hours and the size of its bus fleet, thereby incurring increased operating costs, in order to maintain a constant level of service. If transportation network improvements are not made in the South Corridor, these conditions will continue to worsen over time. Under the No-Build Alternative, transit travel times from downtown Portland to the Milwaukie Town Center and the Clackamas Regional Center would increase by over 50 percent by 2020.

**Land Use Policies.** Over the past 25 years, there has been a continuous progression of state, regional and local policy decisions and investments aimed at establishing growth in corridors and activity centers that are or are planned to be supported by high capacity transit. As a result, land use designations, zoning patterns and water, sewer and other infrastructure plans and investments in all jurisdictions have been located and sized on the basis of development forecast in current and planned high capacity transit corridors. In particular, on a regional level, Metro's *Region 2040 Growth Concept* is predicated on implementation of a south/north transit spine to link key activity centers in the corridor. Without a high-capacity transit investment in the corridor, the region's entire growth management strategy could be at risk – and with it, the economic vision, livability and development goals and land use plans for the region may not be realized.

## S.4 ALTERNATIVES CONSIDERED

The purpose of this section is to provide a description of the six alternatives that are under consideration for the South Corridor. Figures S-4.1 through S.4-5 illustrate the alternatives. Table - S.4-1 compares the components of each of the alternatives.

Except for the No-Build Alternative, each of the alternatives has one or more sets of design options, which are relatively small-scale variations in the proposed alignment and/or other characteristic (e.g., a park-and-ride lot) of an alternative. This section summarizes the characteristics of each

alternative based on a set of design options used throughout the SDEIS for the analysis of alternatives (see Table 2.2-3 in Chapter 2 of the SDEIS for a listing of those design options by alternative). A more comprehensive description of the alternatives may be found in Chapter 2 – Alternatives Considered and in the *Detailed Description of Alternatives Report* (Metro: July 2002). Table S.4-1 provides summary information describing the project's alternatives. Figures S.4-1 through S.4-5 show the locations and alignments of all alternatives with the exception of the No-Build.

**No-Build Alternative.** The transit service network, related transit facilities and roadway improvements included in the No-Build Alternative are consistent with the *2000 Regional Transportation Plan* (RTP) 2020 financially constrained transit and road network (Metro: adopted August 2000). The transit capital improvements in the No-Build Alternative would be included in all other alternatives. The No-Build Alternative would include four park-and-ride lots within the South Corridor (880 parking spaces) and roadway improvements that are defined in the financially constrained road network of the RTP. The No-Build also includes a 1.5 percent per year annual systemwide transit service increase, approximately 27 percent more than in 2000. Buses in the South Corridor would continue to operate in mixed traffic on increasingly congested streets and highways. Light rail service would operate on three interconnected lines. (A future extension of the Yellow Line into downtown Vancouver, Washington is also an element of the financially constrained transit network of the RTP and hence the No-Build Alternative).

**Build Alternatives.** Each of the build alternatives represent a different approach to addressing the transportation needs of the South Corridor. Details about each of the alternatives are included in Table S.4-1. The general concept for each alternative is described below:

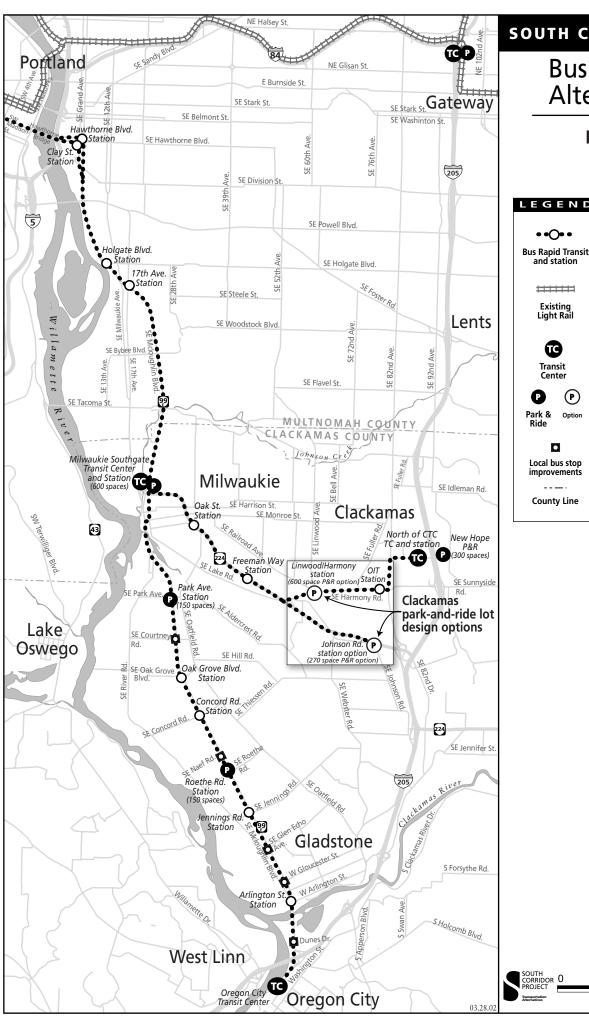
- **Bus Rapid Transit (BRT) Alternative** provides improved bus operations, reliability and travel time for a modest capital investment. BRT would operate between Downtown Portland, Milwaukie, and Oregon City, as well as between Milwaukie and the Clackamas Regional Center.
- **Busway Alternative** provides higher level of reliability and improved travel times through primarily exclusive bus operations in a separate guideway from downtown Portland to Milwaukie and the Clackamas Regional Center. A BRT connection from Oregon City would enter the busway in Milwaukie.
- Milwaukie Light Rail Alternative provides a direct high-capacity rail transit connection between Downtown Portland & Milwaukie on exclusive right-of-way. BRT lines would connect from Oregon City and the Clackamas Regional Center and transfer to light rail at the Milwaukie Transit Center.
- I-205 Light Rail Alternative provides a direct high-capacity rail transit connection between Downtown Portland and the Gateway and Clackamas Regional Centers via the existing east-west light rail alignment to Gateway and an extension along existing reserved right-of-way on I-205 from Gateway to the Clackamas Regional Center. BRT would connect Downtown Portland to Milwaukie and Oregon City.
- Combined Light Rail Alternative provides direct high-capacity rail transit connections between Downtown Portland and Milwaukie and between Downtown Portland and Clackamas Regional Center via the Gateway Regional Center. BRT would connect Milwaukie with Oregon City.

Table S.4-1

Description of Alternatives - Compared to No-Build **Bus Rapid Transit** Busway Milwaukie **I-205** Combined **LRT LRT LRT** Purpose Provide improved Provide higher Provide direct high-Provide direct high-Provide direct highof the bus operations. level of reliability capacity rail transit capacity rail transit capacity rail transit reliability and travel and improved **Alternative** connection connection connections time for modest travel times between Downtown between Downtown between Downtown capital investment through exclusive Portland and Portland and Portland and bus operations Milwaukie on Gateway and Milwaukie and exclusive right-of-Clackamas Downtown Portland way Regional Centers and Clackamas RC Transit Two additional Two additional Replace Replace I-205 bus Replace **Service** trunk bus lines trunk bus lines McLoughlin trunk with LRT McLoughlin trunk (Compared to buses with LRT, buses with LRT. No-Build) Reroute 3 bus Portland to Add Portland to Replace I-205 bus with LRT lines to access Milwaukie Oregon City BRT Busway service - 2 trunk Add BRT, Add BRT. lines. Milwaukie to Add BRT, Milwaukie to Milwaukie to Clackamas & Oregon City Oregon City Milwaukie to Oregon City Capital 17 BRT stations 6.7 miles of 6.5 mile LRT line 6.7 mile LRT line 13.2 miles of LRT **Improvements** busway (Compared to Queue bypass 16 new LRVs 20 new LRVs 25 LRVs No-Build) lanes, signals, 9 Busway bus-only ramps. Stations 8-10 new LRT 8 new LRT stations 16-18 new LRT shoulder lanes stations stations Bus-only ramps 5-6 new P&R lots 2 additional P&R 3-4 new and 1 (2,100 to 2,600 6-8 new and 1 lots (420 - 750 3 new and 1 expanded P&R lots added spaces) expanded P&R lots expanded P&R (960 to 1,895 (2,640 to 3,745 spaces) lots (1,290 to added spaces) Reconfiguration or added spaces) **Expand CTC** 1,620 spaces) relocation of CTC Reconfiguration or **Expand CTC** Relocate MTC to **Expand CTC** Relocate MTC to relocation of CTC Relocate MTC to Southgate Southgate Relocate MTC to Southgate or Relocate MTC to Southgate or Middle School Southgate or Middle School Expand Ruby Jct. Middle School Expand Ruby Jct. LRT Maintenance 11 BRT Stations LRT Maintenance Facility Expand Ruby Jct. Facility LRT Maintenance 11 BRT stations Facility 13 BRT stations 7 BRT stations Bus-only ramps Shoulder lanes **Capital Costs** \$116 million \$281 million \$417 million - LRT \$349 million - LRT \$800 million - LRT \$72 million - BRT \$22 million - BRT (YOE \$, \$60 million - BRT Opening Day) Annual \$7.2 million \$8.2 million \$7.4 million \$11.9 million \$12.2 million Operating Cost - 2020 (\$2002 over

No-Build)
Source: Metro. November 2002.

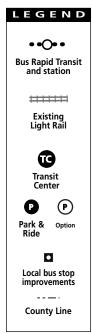
Notes: MTC = Milwaukie Transit Center, P&R = Park and Ride, CTC= Clackamas Transit Center, \$YOE = Year of Expenditure Dollars (2006), LRT = Light Rail Transit, \$2002 = 2002 dollars, LRVs = Light Rail Vehicles, BRT= Bus Rapid Transit



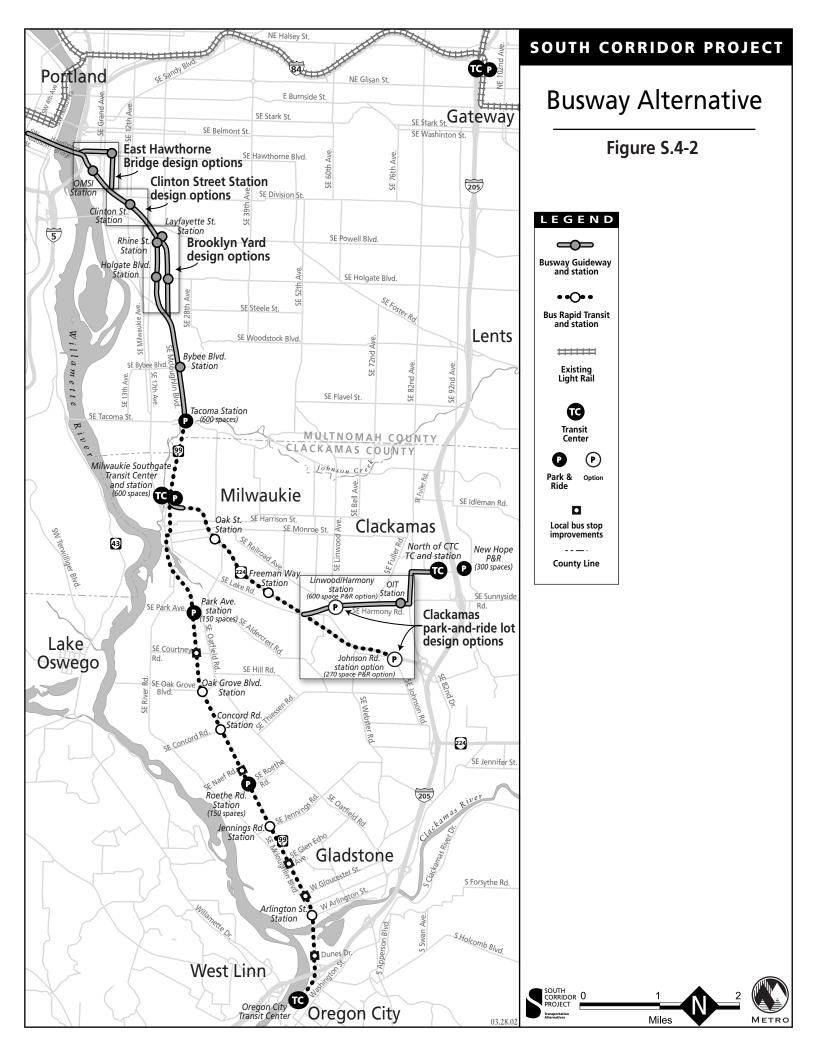
# **SOUTH CORRIDOR PROJECT**

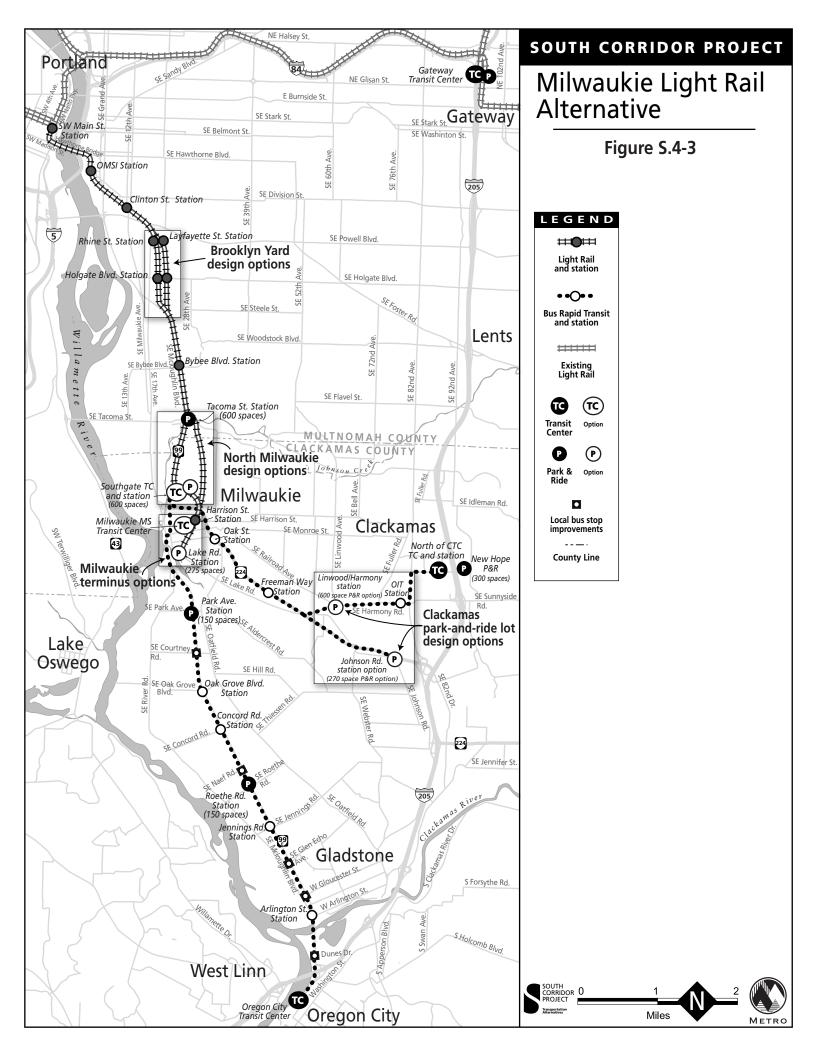
# **Bus Rapid Transit** Alternative

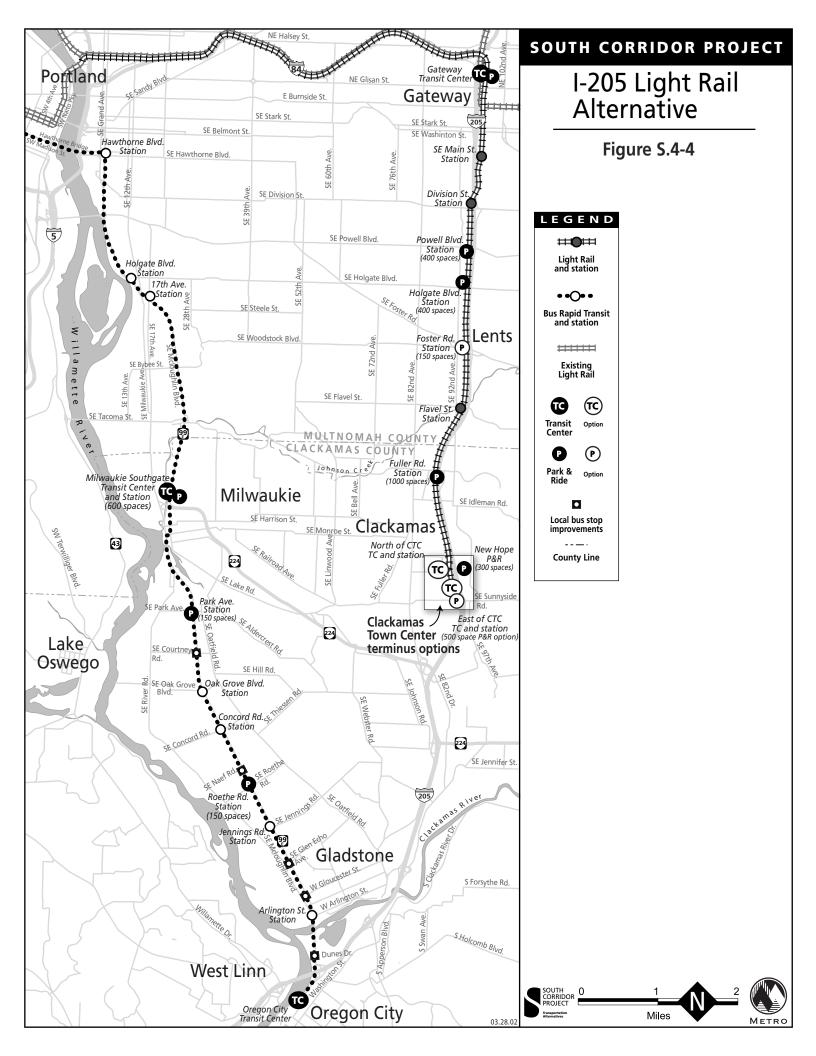
Figure S.4-1

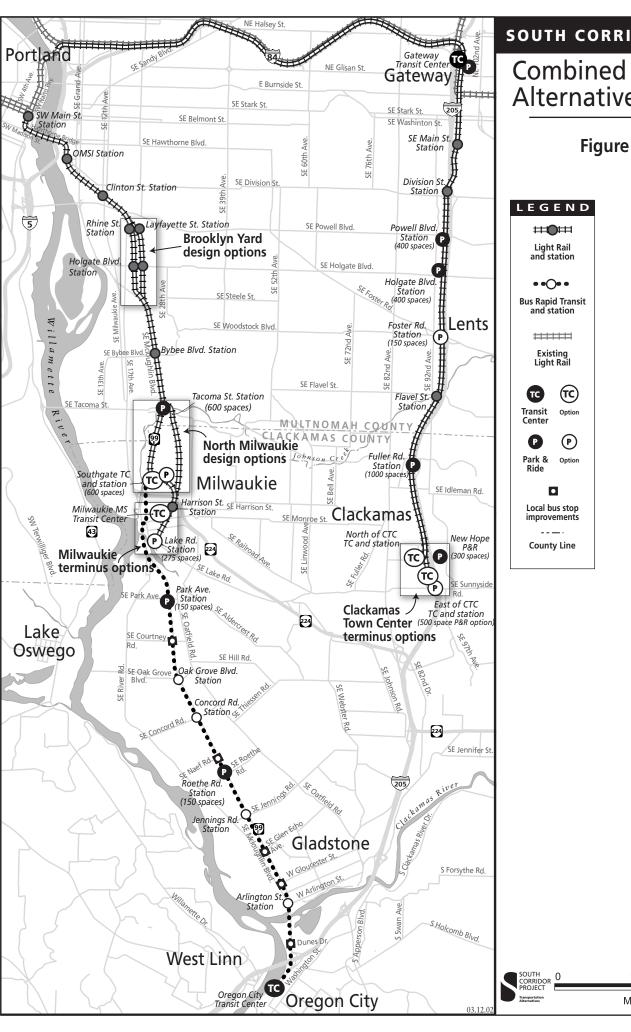












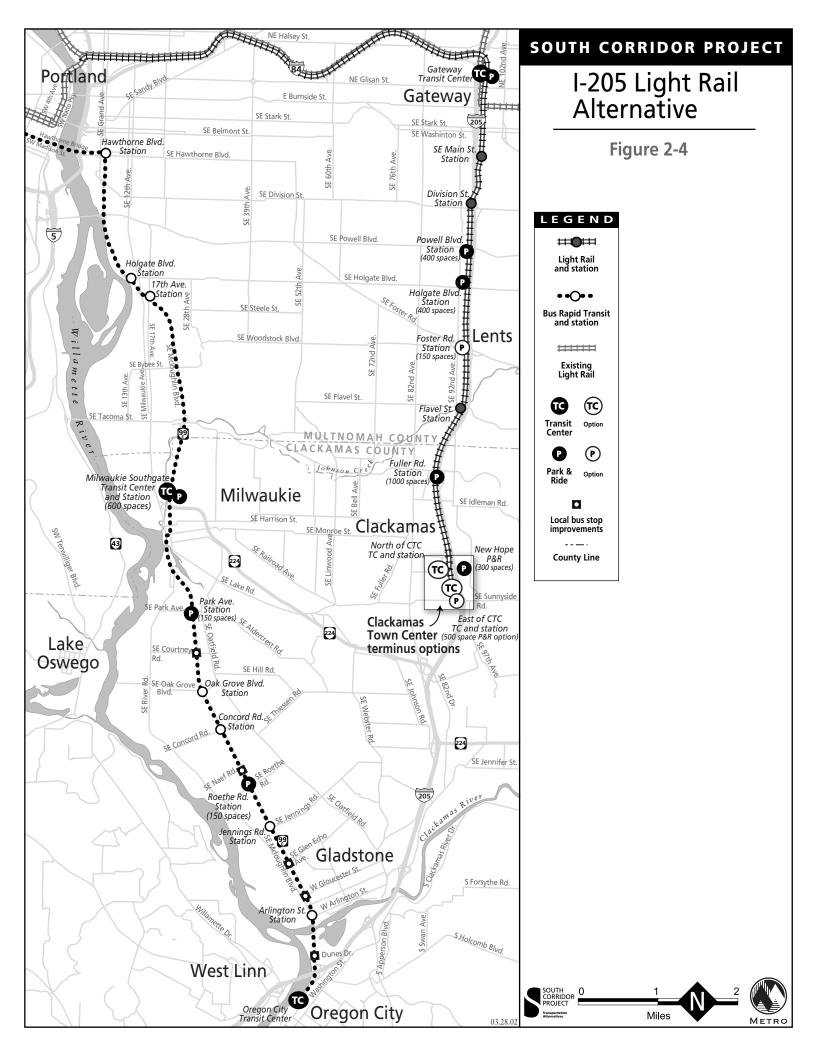
# **SOUTH CORRIDOR PROJECT**

# **Combined Light Rail Alternative**

Figure S.4-5







#### S.5 TRANSPORTATION IMPACTS

This section summarizes the transit, highway and freight impacts (2020) of the alternatives. Variations in some transportation impacts would occur due to different design options.

# **S.5.1 Transit Impacts**

The alternatives would impact transit service and facilities in the corridor by changing the amount of service; the residential and employee access to fixed-guideway stations; transit travel times; reliability; and ridership.

Amount of Transit Service. The No-Build Alternative would include a limited number of new bus routes and improved headways on existing routes that would result in a 37.8 percent increase in transit vehicle miles traveled (for more information, see Table 4.2-1 of the SDEIS). Vehicle hours increase proportionately more than vehicle miles, indicating slower speeds on increasingly congested streets and highways under the No-Build Alternative. Compared to the No-Build Alternative, all of the build alternatives increase the amount of transit service and transit capacity in the corridor.

Residential and Employee Quarter-Mile Walk Access to Fixed-Guideway Stations. Neither the No-Build Alternative nor the BRT Alternative would result in an increase in the number of residents or employees with quarter-mile walk access to a fixed-guideway station, compared to existing conditions with the addition of the Yellow Line north of the Rose Quarter (year 2020) because neither alternative includes fixed guideway stations in the South Corridor. The Busway, Milwaukie LRT and I-205 LRT alternatives would increase the number of residents with quarter-mile walk access to a fixed-guideway station. The Combined LRT Alternative would provide access to approximately 50% more jobs and residents than either the Milwaukie LRT, Busway or I-205 LRT Alternatives.

**Transit Travel Times.** With a few exceptions (see Table S.5-1), all of the alternatives would improve average weekday p.m. peak hour transit travel times in 2020 from the Pioneer Square and the Rose Quarter to the Milwaukie Town Center and the Clackamas Regional Center, compared to the No-Build Alternative. Total transit travel times would improve by one to 15 minutes.

**Reliability.** The alternatives with reserved right-of-way for transit (all but No-Build and BRT) would provide the greatest amount of separation of transit vehicles from the adjacent automobile traffic (see Table S.5-1), which would generally provide for a higher level of reliability than an alternative operating in mixed traffic. The BRT Alternative would provide a higher level of reliability than the No-Build Alternative because of intersection and signalization improvements.

**Ridership.** All of the build alternatives would result in an increase in transit ridership systemwide, in the South Corridor and on BRT, Busway and LRT trunk lines. BRT, Busway and LRT ridership ranges from 24,700 average weekday boarding rides (2020) for the BRT Alternative to 60,600 for the Combined LRT Alternative. The BRT, Busway and Milwaukie LRT alternatives would increase originating rides by 4,800 to 7,900 rides per average 2020 weekday (an originating ride is defined as a one-way person trip from a point of origin to a destination, independent of whether that trip would include a transfer from one transit vehicle to another or not). The I-205 LRT and Combined LRT alternatives would increase originating rides by 13,700 and 16,100 originating rides, respectively.

Table S.5-1

Summary of Transit Impacts, by Alternative<sup>1</sup>

Measures	No-Build	BRT	Busway	Milwaukie LRT	I-205 LRT	Combined LRT
Measures of Transit Service						
Corridor Place Miles <sup>2</sup>	1,833,240	2,418,640	2,453,920	2,480,690	2,781,700	2,698,350
Population with Fixed-Guideway Access <sup>3</sup>	0	0	7,990	9,350	8,290	19,910
Employment with Fixed- Guideway Access <sup>3</sup>	0	0	21,290	24,390	8,390	32,780
P.M. Peak Hour Transit Travel Ti	me (In-Vehicle	e / Total)⁴				
From Pioneer Square to:						
Milwaukie Town Center	25 / 31	25 / 32 <sup>5</sup>	23 / 30	14 / 30	25 / 32	14 / 31
Clackamas Regional Center	47 / 55	38 / 46	34 / 42	27 / 47	37 / 46	37 / 47
P.M. Peak Hour Transit Travel Ti	me (In-Vehicle	e / Total)⁴				
From Rose Quarter to:		-				
Milwaukie Town Center	30 / 40	32 / 41 <sup>5</sup>	30 / 39	20 / 29	32 / 42	20 / 31
Clackamas Regional Center	41 / 53	41 / 53	41 / 53	36 / 46	29 / 38	29 / 38
Measures of Reliability			7	-	7.0	2
Miles of Fixed Guideway <sup>6</sup>	0	0.2	6.7 <sup>7</sup>	6.7 <sup>7</sup>	6.7 <sup>7,8</sup>	13.2 <sup>8</sup>
% of Passenger-Miles in	0%	0%	20%	18%	18%	31%
Reserved Right-of-Way		-,-				
% of Intersections Protected	N/A	53%	63%	65%	87%	97%
Transit Mode Share <sup>9</sup> From:						
Downtown Portland	56%	60%	62%	56%	60%	57%
Clackamas Regional Center	3%	3%	3%	3%	5%	6%
Gateway Regional Center	9%	9%	9%	9%	12%	12%
Milwaukie Town Center	5%	5%	5%	6%	4%	6%
BRT Bus Line, Busway Bus Line	and LRT Boa	rding Rides **				
Portland to Milwaukie	0			25,330 <sup>13</sup>	13,750 <sup>11</sup>	20,950 <sup>13</sup>
Milwaukie to Oregon City	0	24,760 <sup>11</sup>	30,600 <sup>12</sup>	15,360 <sup>11</sup>	13,750	6,810 <sup>11</sup>
Milwaukie to Clackamas	0			10,000	0	0
Gateway to Clackamas	0	0	0	0	33,270 <sup>13</sup>	32,300 <sup>13</sup>
Total	0	24,760	30,600	<b>40,690</b> <sup>14</sup>	47,020	60,060 <sup>15</sup>
Systemwide Transit Ridership Originating Rides <sup>16</sup>	475,000	480,400	482,900	479,800	488,700	491,100
Course: Metre Centember 2002	+10,000	700,700	+0∠,000	710,000	+00,700	701,100

Source: Metro, September 2002.

Note: BRT = bus rapid transit, LRT = light rail transit. All data is for an average weekday in 2020, unless otherwise specified.

- The analyses of alternatives are based on a common set of design options, as defined in Table 2.2-3 and described in Section 2.2 of the SDEIS characteristics of an alternative may vary with other design options.

  Place miles = transit vehicle capacity (seated and standing) for each vehicle type, multiplied by vehicle miles traveled for each vehicle type (see Table S.3-1).
- Changes in population and employment compared to the number of residents and employment that would be within a quarter-mile of a fixed-guideway station that would be provided with the region's existing transit system and the addition of the Yellow Line.
- In minutes, for travel in the p.m. peak period. In-vehicle time is only the time that a passenger would spend within a public transit vehicle. Total time is the sum of in-vehicle time and all other time related to completing the trip, including walking and waiting time.
- <sup>5</sup> Compared to the No-Build Alternative, the BRT Alternative would include additional bus stops (i.e., BRT stations) in the Portland to Milwaukie Segment, which would increase the average travel time for buses in the segment, while improving reliability and transit accessibility.
- A fixed-guideway facility would provide an exclusive grade- and/or barrier-separated transit right-of-way (i.e., a busway or light rail alignment) see Section 2.2 of the SDEIS for more detail.
- Note that the BRT, Busway and Milwaukie Light Rail alternatives would rely on the Hawthorne Bridge for the routing of BRT or busway trunkline bus routes or the light rail line, and the reliability of these trunklines would be adversely affected by bridge lifts that would occur during off-peak time periods. The BRT, Busway and Milwaukie Light Rail alternatives would all include 0.2 mile bus ramps from SE Main Street to Highway 224.
- Includes only the new portion of light rail alignment that would be added with that alternative.
- Transit mode share is the percentage of all trips traveling from the activity center to the South Corridor during the p.m. peak two hours that would be taken on transit.
- Boarding rides are defined as anytime a passenger would board a transit vehicle, independent of whether the boarding would be the result of a transfer from another transit vehicle or not (i.e., unlinked). With several alternatives, the BRT or busway bus lines would span two or more segments and the boarding rides for those lines are grouped together, as illustrated in the table. There would be other boarding rides in the corridor under each alternative, which would be provided by local bus routes, including some local bus routes that would use the busway guideway under the Busway Alternative.
- BRT bus lines see Section 2.2 of the SDEIS for a more detailed description of BRT bus lines.
- Busway bus lines see Section 2.2 of the SDEIS for a more detailed description of busway bus lines.
- Light rail line see Section 2.2 of the SDEIS for a more detailed description of light rail lines.
- <sup>14</sup> Total includes approximately 7,400 boarding rides that would transfer between BRT buses and Milwaukie LRT.
- <sup>15</sup> Total includes approximately 3,500 boarding rides that would transfer between BRT buses and Milwaukie LRT.
- An originating ride (i.e., a linked trip) is defined as a one-way trip from an origin (e.g., one's home) to a destination (e.g., one's place of work), independent of whether the trip would require a transfer or not.

# S.5.2 Traffic Impacts

# A. Regional Traffic Impacts.

Regional traffic impacts are assessed through three regional congestion measures: vehicle miles traveled (VMT); vehicle hours traveled (VHT); and vehicle hours of delay (VHD). Also included are vehicle volumes at two congestion cutlines (that capture traffic flows on a set of parallel roadways); and parking spaces that would be removed. All of the build alternatives would help to reduce congestion and related problems, compared to the No-Build Alternative. The Combined LRT Alternative would do the most to reduce VMT and VHD in 2020; VMT and VHT would be reduced by over 71,000 miles and by over 4,000 hours per average weekday, and VHD would be reduced by 720 hours (see Table S.5-2). The reduction in VMT, VHT and VHD would be over three times greater with the I-205 LRT Alternative than it would be with the BRT, Busway and Milwaukie LRT alternatives.

Table S.5-2
Summary of Traffic Impacts

	Sullillia	ry or rrainc	iiiipacis			
Measures	No-Build	BRT	Busway	Milwaukie LRT	I-205 LRT	Combined LRT
Measures of Regional Travel <sup>2</sup>						
Vehicle Miles of Travel	36,248,000	36,222,100	36,214,700	36,228,000	36,181,400	36,176,800
Vehicle Hours of Travel	1,344,800	1,343,600	1,342,940	1,344,060	1,340,820	1,340,790
Vehicle Hours of Delay	51,280	51,260	51,180	51,280	50,710	50,560
<b>Average Weekday Vehicle Volumes</b>	at Select Cut	lines³				
E-19: I-205 and Parallel Streets at SE Powell Blvd.	56,300	55,900	55,900	55,800	55,400	55,400
E-20: SE McLoughlin Blvd. and Parallel Streets at SE Powell Blvd.	20,700	20,500	20,300	20,400	20,400	20,300
Parking Spaces Removed⁴						
Portland to Milwaukie	0	43	468	539	43	539
Milwaukie to Clackamas	0	25	175	25	0	0
Gateway to Clackamas	0	0	0	0	430	430
Milwaukie to Oregon City	0	392	392	392	392	392
Total	0	460	1,035	956	865	1,361

Source: Metro, September 2002.

Note: BRT = bus rapid transit; LRT = light rail transit. Unless otherwise noted, all data is average weekday 2020.

**Cutline Vehicle Volumes.** In summary, all of the build alternatives would reduce p.m. peak vehicle volumes at the cutlines on I-205 and SE McLoughlin Boulevard at SE Powell Boulevard. The largest reductions on I-205 and parallel streets would result from the I-205 LRT and Combined LRT alternatives and the largest reductions on SE McLoughlin Boulevard would occur with the Busway and Combined LRT alternatives.

**Parking Spaces Removed.** Except for the No-Build Alternative, all of the alternatives would result in the removal of on-street and/or off-street parking spaces, ranging from 460 spaces removed with the BRT Alternative to 1,361 spaces removed with the Combined LRT Alternative (see Table S.5-2).

The analyses of alternatives are based on a common set of design options, as defined in Table 2.2-3 and described in Section 2.2 of the SDEIS – characteristics of an alternative may vary with other design options.

<sup>&</sup>lt;sup>2</sup> Vehicle miles and hours traveled excluded transit vehicles.

The number of vehicles that would cross the cutline (an imaginary east-west or north-south line between two geographic points) on a designated set of parallel streets in both directions within the two-hour p.m. peak period. The numbers E-19 and E-20 are Metro's designation for these two cutlines, illustrated in Figure 4.1-1 of the SDEIS. Cutline E-19 is comprised of the following roadways: SE 26<sup>th</sup>, 39<sup>th</sup>, 52<sup>nd</sup>, 72<sup>nd</sup>, 82<sup>nd</sup>, 112<sup>th</sup>, 122<sup>nd</sup> and 136<sup>th</sup> avenues, SE Foster Road and I-205. E-20 is comprised of the following roadways: SE McLoughlin Boulevard, SE Milwaukie Street and SE 17<sup>th</sup> Avenue.

On-street and off-street parking spaces that would be removed.

# **B.** Local Traffic Impacts

Local traffic impacts are measured in terms of level of service (LOS), volume-to-capacity (V/C) changes or long queue lengths that would occur at intersections or on key roadway segments. These impacts could be the result of: changes in traffic volumes related to the provision of light rail service (particularly the access and egress of vehicles from park-and-ride lots); transit vehicle priority treatments at intersections; and/or modifications to existing roadways that could reduce roadway capacity or at-grade street crossings by light rail. Most of the local traffic impacts that would result from the alternatives under consideration could be fully or substantially mitigated through a range of identified mitigation measures. Following are the local traffic impacts that would be difficult and costly or infeasible to mitigate:

- **Hawthorne Bridge.** The Busway, Milwaukie LRT and Combined LRT alternatives would result in vehicle queuing and additional automobile travel time, which would be difficult and costly to fully mitigate.
- SE 11<sup>th</sup> and 12<sup>th</sup> Avenues and SE Clinton Street. With the Busway, Milwaukie LRT and Combined LRT alternatives, busway and light rail at-grade crossings of SE 11<sup>th</sup> and 12<sup>th</sup> Avenues and SE Clinton Street would result in vehicle queuing and delays during peak periods which would be difficult and costly to fully mitigate.
- **SE 17<sup>th</sup> Avenue and SE Holgate Boulevard.** With the Milwaukie LRT and Combined LRT alternatives and the Brooklyn Yard Design Option, the light rail at-grade crossing of SE Holgate Boulevard would result in vehicle queues that could occasionally block SE 17<sup>th</sup> Avenue during peak periods. Mitigation measures might not fully mitigate the traffic impacts.
- SE McLoughlin Boulevard and SE Milport Road. With all Alternatives, except the No-Build Alternative and the Milwaukie LRT and Combined LRT alternatives with the Tillamook Branch Line Design Option, westbound vehicle queues would develop during the p.m. peak period on SE Milport Road due to the Milwaukie Southgate Park-and-Ride Lot. Delays related to the queuing would be difficult and costly to fully mitigate.
- Foster Road Park-and-Ride Lot. It was initially identified as a 150 surface parking lot, located below I-205 on a vacant parcel between SE Foster Road and SE Woodstock Boulevard. ODOT and FHWA have determined that this site would not meet ODOT and FHWA access control standards for Interstate interchanges and FHWA would not approve an interchange access break for a park-and-ride lot in this location.
- Fuller Road Park-and-Ride Lot Access. With the I-205 LRT and Combined LRT alternatives, it would be difficult to fully mitigate traffic delay that would occur during the a.m. peak period at the intersection of SE Fuller Road and SE Johnson Creek Boulevard. In addition, ODOT has plans to improve the interchange at I-205 and SE Johnson Creek Boulevard. The improved interchange could eliminate certain turning movements at the intersection of SE Fuller Road with SE Johnson Creek Boulevard. Mitigation concepts that would address the restricted access to the park-and-ride lot could include moving the park-and-ride lot or realigning SE Fuller Road.

#### S.6 ENVIRONMENTAL CONSEQUENCES

This section summarizes environmental impacts that would occur with the alternatives. Table S-6.1 summarizes the environmental consequences of the alternatives.

## S.6.1 Land Use and Economic Impacts

Each build alternative would contribute to the effectiveness of the overall transportation system in the corridor, and would, therefore, help to maintain the economic growth of the region. The LRT alternatives would have the greatest potential to positively impact regional land use and development patterns by providing a fourth spoke in the region's LRT system, which would provide high capacity transit connections between the Portland Central City and several regional and town centers. Additionally, light rail stations would have the potential to serve as nodes to attract transit-oriented development, more so than the BRT and busway stations. Short-term economic benefits of the build alternatives would be significant, with the largest increase in short-term employment resulting from the Combined LRT Alternative (over 7,000 additional person-year jobs and approximately \$287 million in additional personal income, compared to the No-Build Alternative – 2002 dollars) (see Table S.6-1).

# **S.6.2** Community Impacts

Community impacts are defined as adverse impacts to neighborhood character, cohesion and livability that could result from traffic, access, noise, vibration, displacements and visual impacts resulting from the alternatives. The Busway and Combined LRT alternatives would result in the greatest number of potential displacements (53), and the BRT Alternative would result in the fewest (six). See sections S.5.2, S.6.3 and S.6.5 for summaries of the local traffic, visual, and noise and vibration impacts, respectively. The build alternatives would also provide potential benefits by improving neighborhood access to community facilities and services. The Combined LRT Alternative would result in the greatest number of benefits from improved access, while the BRT Alternative would result in the fewest improvements in transit access (see Section S.5.1 for additional detail).

## **S.6.3** Visual Impacts

Impacts to the visual and aesthetic environment are defined as changes to the existing conditions that would be brought about by the capital facilities included within the alternatives. Visual impacts are identified by assessing viewer sensitivity, level of change (from the No-Build Alternative) and level of impact. There would be no significant visual impacts with the BRT Alternative. The Busway Alternative would have a relatively high level of impact on the visual environment at two locations. The Milwaukie LRT Alternative would also have a high level of impact on the visual environment at two other locations. The I-205 LRT Alternative would have a high level of impact on the visual environment at one location.

## S.6.4 Air Quality Impacts

In 1997, the Environmental Protection Agency (EPA) approved the carbon monoxide (CO) and ozone Air Quality Maintenance Plan (AQMP) for the Portland/Vancouver region. In January 2001, the US Department of Transportation issued its determination of conformity for the Financially

Constrained System of the 2000 Regional Transportation Plan (The No-Build Alternative) finding that the RTP supports the purpose of the region's State Implementation Plan (SIP). Consistency with the AQMP requires that CO and ozone levels be kept within Federal and state standards. Under all of the alternatives, Federal and state air quality standards would be met. The I-205 LRT and Combined LRT alternatives would result in the greatest reductions in each pollutant type, while the Milwaukie LRT Alternative would result in the smallest reduction in emissions.

# S.6.5 Noise and Vibration Impacts

Table S.6-1 summarizes the number of adverse noise and vibration impacts (adverse impacts are those noise and vibration impacts that would exceed Federally-adopted standards) that would occur under each alternative without and with identified mitigation measures. Note that there would be noise and vibration impacts that are not categorized as adverse under each alternative, except with the No-Build Alternative, and it would not be feasible to mitigate some of those impacts (see Section 3.4 of the SDEIS for more detailed information). The I-205 and Combined LRT Alternatives would result in the greatest number of noise and vibration impacts. These impacts could be mitigated.

#### **S.6.6 Ecosystems Impacts**

In general, most of the potential impacts to wetlands would be avoided through the current conceptual design, and the remaining impacts would be relatively small for potential projects of this scale. Table S.4-1 summarizes the remaining impacts of the alternatives to wetlands. The No-Build Alternative would result in no impacts to wetlands. The Milwaukie LRT and Combined LRT alternatives would result in the filling of less than two-thirds of an acre of wetlands, while the Busway Alternative would result in the filling of approximately one-third of an acre of wetlands. Only 0.03 of an acre of wetland would be filled under the BRT and I-205 alternatives.

The build alternatives could potentially impact streams bearing fish that are listed as threatened or endangered. The Busway would impact 131 feet of streams that are habitat for listed species and the Milwaukie and I-205 LRT Alternatives would impact 58 and 55 feet of streams respectively. The Combined LRT Alternative would impact 113 feet of stream habitat.

# S.6.7 Water Quality and Hydrology Impacts

In general, the current design of the alternatives would avoid most of the potential impacts to floodplains. Table S.6-1 summarizes the remaining impacts of the alternatives to floodplains. In summary, the Busway, Milwaukie LRT and Combined LRT alternatives would result in 9,000 to over 30,000 cubic yards of fill within the 100-year floodplain compared to only 200 cubic yards of fill with the I-205 LRT Alternative (based on the existing 100-year floodplain maps and on the expected modifications to the maps - see Section 3.12 of the SDEIS for more information on floodplain definitions).

## S.6.8 Energy Impacts

Compared to the No-Build Alternative, each of the build alternatives would reduce total regional energy consumption: the greatest reduction in operational energy consumption would occur with the Combined LRT Alternative (a reduction of 0.503 x 10<sup>9</sup> British Thermal Units (BTU) per average weekday in 2020), and the smallest reduction would occur with the Milwaukie LRT Alternative (a

reduction of  $0.101 \times 10^9$  BTU per average weekday) (see Table S.5-1). Energy consumption for construction would be greatest under the Combined LRT Alternative (4,874.890 x  $10^9$  BTU), compared to a low of 630.71 x  $10^9$  BTU with the BRT Alternative.

# S.6.9 Geology, Soils and Seismic Impacts

The South Corridor alternatives would generally cross land that is already urbanized, and the long-term impacts to the geologic environment of all of the alternatives would consist of: relatively minor changes in topography and drainage patterns; minor settlement of near-surface materials; increased erosion; and potential changes in slope stability. Short-term impacts related to construction of the build alternatives would be relatively minor, limited to stability of partially-constructed slopes, temporary changes to drainage, erosion and sedimentation.

# **S.6.10 Hazardous Materials Impacts**

Existing hazardous waste sites and facilities on or near the proposed transit improvements could present a low-level risk to the project during construction. Clean up of hazardous sites would be completed prior to construction related to transit improvements. The number of sites that would be displaced by the alternatives is summarized in Table S.6-1. All alternatives would result in the displacement of six sites in the Milwaukie to Oregon City Segment. The Busway, Milwaukie LRT and Combined LRT alternatives would result in five or seven additional site displacements.

# S.6.11 Historic, Archaeological, Cultural and Parks Impacts

Within the South Corridor's area of potential effect, there are seven individual historic resources listed in the *National Register of Historic Places*. An additional 17 sites are eligible for listing and 21 are potentially eligible for listing. There are five potential archaeological sites located within the South Corridor's area of potential effect. There are also 24 public parkland resources located within approximately 150 feet of the study alternatives. Neither the No-Build nor the BRT alternatives would have an adverse impact on historic resources (see Table S.6-2). The I-205 LRT and Combined LRT alternatives would adversely affect one historic resource and the Busway alternative would adversely impact two historic. The Milwaukie LRT and Combined LRT alternatives would adversely affect five historic resources.

The No-Build Alternative would have no potential adverse impacts to identified archaeologically-sensitive areas. The BRT and the I-205 LRT alternatives would have the potential to adversely affect one archaeologically-sensitive site. The Busway Alternative would have the potential to affect four possible archaeological sites, compared to three potentially affected sites with the Combined LRT Alternative and two with the Milwaukie LRT Alternative.

The No-Build and BRT alternatives would not result in the use of any identified parkland. All of the other alternatives would result in the use of the Springwater Trail. The Milwaukie LRT and Combined LRT alternatives would both result in the use of an informal park or open space at the west end of the Hawthorne Bridge and at the Milwaukie Middle School site.

Table S.6-1

Summary of Environmental Impacts, by Alternative <sup>1</sup>									
Measures	No-Build	BRT	Busway	Milwaukie LRT	I-205 LRT	Combined LRT			
Land Use and Economic <sup>2</sup>									
Long-Term Annual Employment	0	61	67	36	101	95			
Short-Term Employment	0	710	1,480	3,610	3,090	7,260			
Short-Term Personal Income	\$0.0	\$27.9	\$58.1	\$142.4	\$121.7	\$285.7			
Displacements: Residential / Busin	T			Ψ	Ψ.Ξ	Ψ200.7			
Portland to Milwaukie	0/0/0	0/0/0	1 / 44 / 1	1 / 35 / 1	0/0/0	1 / 35 / 1			
Milwaukie to Clackamas	0/0/0	0/4/0	0/5/0	0/4/0	0/0/0	0/0/0			
Gateway to Clackamas	0/0/0	0/0/0	0/0/0	0/0/0	13 / 1 / 0	13 / 1 / 0			
Milwaukie to Oregon City	0/0/0	0/0/0	0/0/0	0/0/0	0/2/0	0/2/0			
Total	0/0/0	0/6/0	1/51/1	1/41/1	13/3/0	14 / 38 / 1			
Regional Air Quality <sup>3</sup>	07070	0/0/0	1/31/1	1/41/1	13/3/0	14/30/1			
	406 405	406 490	406 000	406 200	40E 7EE	40E 669			
Carbon Monoxide	406.425	406.189	406.090	406.209	405.755	405.668			
Nitrogen Oxides	65.786	65.746	65.733	65.750	65.669	65.655			
Volatile Organic Compounds	50.961	50.931	50.919	50.934	50.877	50.866			
Noise and Vibration: Adverse Impa			ied Mitigation	4.40	0.40	4.40			
Portland to Milwaukie	0/0	0/0	0/0	4/0	0/0	4/0			
Milwaukie to Clackamas	0/0	0/0	0/9	0/0	0/0	0/0			
Gateway to Clackamas	0/0	0/0	0/0	0/0	30 / 0	30 / 0			
Milwaukie to Oregon City	0/0	0/0	0/0	0/0	0/0	0 / 0			
Total	0/0	0/0	0/9	4 / 0	30/ 0	34 / 0			
<b>Ecosystems: Acres of Wetland Fille</b>	ed / Spanned								
Portland to Milwaukie	0/0	0/0	0.36 / 0	0.56 / 0	0/0	0.56 / 0			
Milwaukie to Clackamas	0.02 / 0	0.01 / 0	0.03 / 0	0.01 / 0	0/0	0/0			
Gateway to Clackamas	0/0	0/0	0/0	0/0	0.03 / 0.07	0.03 / 0.07			
Milwaukie to Oregon City	0/0	0/0	0/0	0/0	0/0	0/0			
Total	0/0	0.03 / 0	0.39 / 0	0.057 / 0	0.03 / 0.07	0.59 / 0.07			
Linear feet of streams with threater	ned or endang	ered fish sp	ecies						
Total	0	0	131 feet	58 feet	55 feet	113 feet			
Water Quality/Hydrology: Additiona	al Impervious	Acres							
Portland to Milwaukie	0.0	3.5	20.2	16.4	3.5	16.4			
Milwaukie to Clackamas	6.5	10.2	20.2	10.2	0.0	0.0			
Gateway to Clackamas	0.0	0.0	0.0	0.0	23.2	23.2			
Milwaukie to Oregon City	0.0	10.8	10.8	10.8	10.8	10.8			
Ruby Junction	0.0	0.0	0.0	0.0	1.4	1.4			
Total	6.5	24.5	51.0	37.4	38.9	51.4			
Water Quality and Hydrology: Cubi			0.10	• • • • • • • • • • • • • • • • • • • •	00.0	• • • • • • • • • • • • • • • • • • • •			
Portland to Milwaukie <sup>5</sup>	0	0	9,500 / 38,000	9 200 / 32 600	0	9,200 / 38,600			
Milwaukie to Clackamas	Ö	Ö	0	0	Ö	0			
Gateway to Clackamas	0	0	0	0	200	200			
Milwaukie to Oregon City	0	0	0	0	0	0			
Total	0	0	9,500 / 38,000						
Energy Consumption	U	U	9,500 / 36,000	9,200 / 32,600	200	9,400 / 38,800			
	202 502	200 200	202.200	200 404	222.050	222.040			
Regional Daily Vehicle (10 <sup>9</sup> BTU)	322.522	322.328	322.266	322.421	322.058	322.019			
Construction Energy (10 <sup>9</sup> BTU)	0.000	630.710	1,310.641	2,547.210	2,327.680	4,874.890			
Hazardous Materials Sites Displace				4 / -	0.15	4			
Portland to Milwaukie	0/0	0/0	1/5	1/7	0/0	1/7			
Milwaukie to Clackamas	0/0	0/0	0/0	0/0	0/0	0/0			
Gateway to Clackamas	0/0	0/0	0/0	0/0	0/0	0/0			
Milwaukie to Oregon City	0/6	0/6	0/6	0/6	0/6	0/6			
Total	0/6	0/6	0 / 11	1 / 13	0/6	1 / 13			
Source: Metro, September 2002.									

Source: Metro, September 2002.

Note: BRT = bus rapid transit; LRT = light rail transit.

te: BRT = bus rapid transit; LRT = light rail transit.

The analyses of alternatives are based on a common set of design options, as defined in Table 2.2-3 in the SDEIS.

Short-term economic impacts would be the result of construction-related activities within the Portland metropolitan area, expressed in person-year jobs. Long-term impacts would be the result of the on-going operation of the transit facility and additional transit vehicles (based on 2020 service levels) and would be expressed in full-time equivalent jobs.

All emission reductions are measured for the Portland metropolitan region in tons per average weekday in the year 2020.

Based on adverse noise impacts as defined by the FHWA and the FTA criteria. The alternatives, except for the No-Build Alternative, would result in increased paid and the point where paids abstraged—see Section 3.4 of the SDEIS for more information.

noise levels at some receivers to the point where noise abatement would be considered – see Section 3.4 of the SDEIS for more information.

Two estimates are provided: the greater estimate is based on the existing 100-year Floodplain as described on the FEMA Flood Insurance Rate Maps (FIRM); and the lower estimate is based on an expected modification to the FIRM maps.

CERCLIS = Comprehensive Environmental Response, Compensation and Liability Information System, which tracks Federal superfund sites; ECSI = Environmental Clean-up Site Inventory, which is the Oregon Department of Environmental Quality's list of significant hazardous materials sits.

Table S.6-2
Summary of Historic and Parkland Impacts

Characteristic	No-Build	BRT	Busway	Milwaukie	I-205 LRT	Combined			
				LRT		LRT			
<b>Historic Resources Adverse</b>	Historic Resources Adversely Affected								
Portland to Milwaukie	0	0	2	5	0	5			
Milwaukie to Clackamas	0	0	0	0	0	0			
Gateway to Clackamas	0	0	0	0	1	1			
Milwaukie to Oregon City	0	0	0	0	0	0			
Archaeologically-Sensitive Areas Potentially Affected									
Portland to Milwaukie	0	0	2	2	0	2			
Milwaukie to Clackamas	0	0	1	0	0	0			
Gateway to Clackamas	0	0	0	0	1	1			
Milwaukie to Oregon City	0	1	1	1	1	1			
Parklands: Number of Park	s Used								
Portland to Milwaukie	0	0	1	3	0	3			
Milwaukie to Clackamas	0	0	0	0	0	0			
Gateway to Clackamas	0	0	0	0	1	1			
Milwaukie to Oregon City	0	0	0	0	0	0			

Source: Metro, September 2002.

Note: BRT = bus rapid transit; LRT = light rail transit.

#### S.7 EVALUATION OF THE ALTERNATIVES

This section evaluates the alternatives for the South Corridor Project from four different perspectives:

- Financial analysis, which provides information to assess the fiscal feasibility of building and operating the alternatives
- Evaluation of the alternatives, which synthesizes key findings of the other chapters of the SDEIS using a range of criteria and measures to assess the alternatives' ability to meet the project's objectives
- Equity considerations
- A summary of the major tradeoffs between the alternatives.

## S.7.1 Financial Feasibility Analysis

The purpose of this section is to provide an assessment of the financial feasibility of the alternatives under consideration, given the costs of the alternatives and given the current, anticipated and potential sources of revenue. The financial feasibility analysis for the South Corridor Project has been divided into the two following elements, because each element would have a different financing plan:

The Project Capital Financial Feasibility Analysis focuses on whether there are adequate project capital resources currently available to construct each alternative, and, if not, the options for resolving the project capital need for additional resources.

The System Fiscal Feasibility Analysis focuses on whether there are adequate resources to operate and maintain the entire transit system, including operations of the South Corridor Project alternatives, between now and the year 2020, and, if not, the options for resolving the system financial need. System costs include all transit operation and maintenance (O&M) costs and all

<sup>&</sup>lt;sup>1</sup> The analyses of alternatives are based on a common set of design options, as defined in Table 2.2-3 and described in Section 2.2 of the SDEIS – characteristics of an alternative may vary with other design options.

transit capital expenditures to the year 2020, except for the capital costs of the South Corridor Project alternatives accounted for in the Project Capital Financial Feasibility Analysis.

#### **S.7.1.1** Costs

This section summarizes the project capital costs and changes to the system costs that would occur with each of the alternatives.

# A. Project Capital Costs

Table S.7-1 presents the South Corridor Project costs for each of the alternatives, in year-of-expenditure (YOE) dollars. The project capital costs would include all facility improvements and vehicle purchases required by each alternative, in excess of the capital costs that are currently committed and included within the No-Build Alternative. YOE project capital costs range from \$119.04 to \$131.15 million with the BRT Alternative to \$825.57 to \$873.21 million with the Combined LRT Alternative.

Table S.7-1
Summary of Project Capital and Operating Costs, by Alternative (in millions of dollars)

	BRT	Busway	Milwaukie	I-205 LRT	Combined
		-	LRT		LRT
Project Capital Costs in	YOE Dollars <sup>1</sup>				
Low	\$119.04	\$267.10	\$466.82	\$507.39	\$825.57
High	\$131.15	\$299.29	\$517.97	\$514.90	\$873.21
Annual O&M Costs <sup>2</sup>					
Bus	\$22.42	\$23.46	\$15.59	\$17.88	\$14.06
Light Rail	\$0.00	\$0.00	\$7.03	\$9.28	\$13.34
Total	\$22.42	\$23.46	\$22.62	\$27.16	\$27.40
Annual O&M Costs: Diff	ference from the	No-Build Altern	ative <sup>2</sup>		
Bus	\$7.19	\$8.24	\$0.36	\$2.65	-\$1.17
Light Rail	\$0.00	\$0.00	\$7.03	\$9.28	\$13.34
Total	\$7.19	\$8.24	\$7.39	\$11.92	\$12.17

Source: TriMet, November 2002.

#### **B. System Costs**

System costs include all capital and O&M expenditures by TriMet over the 20-year planning period, except the capital costs for the South Corridor Project. Total system cost is the aggregate of system operating costs and system capital costs. System operating costs include all annual transit operating and maintenance costs, including the cost of operating and maintaining: 1) the existing transit system; 2) customary increases in transit service hours throughout the system that are required to maintain headways and capacity; 3) the applicable South Corridor Project alternative, and 4) the expanded bus network in the South Corridor that would be required to support the project alternative. Table S.7-2 summarizes the cumulative system operating costs (shown in YOE dollars) covering the 20-year planning period for each alternative.

Note: BRT = bus rapid transit; LRT = light rail transit; YOE = year-of-expenditure; O&M = operating and maintenance.

1 Low = the cost of an alternative if the lowest cost design option was selected in each instance; high = the cost of an alternative if the highest-cost design option was selected in each instance (see Table 2.3-2 of the SDEIS for the cost difference between design options by alternative. Project capital costs include the cost of improvements that would occur prior to opening day (September, 2008) and those capital costs that would be incurred between 2008 and 2020.

2 O&M costs are in 2002 dollars for the South Corridor, based on 2020 service levels.

Table S.7-2
Summary of System Costs, Revenues and Working Capital Analysis:
Cumulative Total from FY 2002 to FY 2020, by Alternative (in billions of YOE dollars)

	No Build	BRT	Busway	Milwaukie	I-205 LRT	Combined
				LRT		LRT
System Costs						
O&M	\$9.742	\$9.944	\$9.967	\$9.942	\$10.068	\$10.315
Capital	\$1.098	\$1.098	\$1.098	\$1.098	\$1.098	\$1.098
Total System Costs	\$10.840	\$11.042	\$11.065	\$11.040	\$11.166	\$11.413
Total System Revenues	\$11.220	\$11.191	\$11.196	\$11.222	\$11.230	\$11.225
System Feasibility Analysis						
Low Year of Working Capital <sup>1</sup>		1.0	0.6	0.5	-0.5	-2.4
Years with Working Capital		11	13	13	15	15
Below 2.0 months				. •	. •	. •

Source: TriMet, November 2002.

Note: FY = fiscal year; YOE = year-of-expenditure; BRT = bus rapid transit; LRT = light rail transit; O&M = operating and maintenance.

## S.7.1.2 Currently Available Revenues

Two categories of available revenue resources are examined within this section: revenue resources reserved for South Corridor Project capital costs; and revenue resources reserved for transit system costs.

# A. Currently Available Transit Project Capital Revenues

Currently, there are \$69.4 million of revenues available for project capital costs, consisting of the following (not all sources or amounts are available for all alternatives):

- \$24.4 Million in Regional Surface Transportation Program (STP) Funds through Metro.
- \$30 Million in Clackamas County Tax Increment Funds for expenditure within the Clackamas Town Center Urban Renewal District only.
- \$15 Million in TriMet General Funds for Opening Year Costs.

## **B.** Available Transit System Revenues

System revenues are derived from a series of sources. As shown in Table S.7-2, existing transit system revenue sources are projected to provide between \$11.191 and \$11.230 billion (YOE dollars) between FY 2002 and FY 2020, depending on the alternative. The difference in revenue between alternatives reflects differences in passenger revenues and interest earnings. The major sources of available System revenue include the following:

- **Payroll Tax Revenues.** TriMet currently levies a 0.6218 percent tax on the gross payrolls of private businesses and municipalities within its district. The tax is dedicated to TriMet and is TriMet's largest source of operating revenue, accounting for nearly 54 percent (\$152 million) of its operating revenues in FY 2001.
- **Self-Employment Tax Revenues.** TriMet also levies a 0.6218 percent tax on the gross profits earned within its district by self-employed individuals.
- **State In-Lieu Revenues.** State of Oregon government offices located within TriMet's district boundaries are not subject to the municipal payroll tax instead, the offices make in-lieu of tax payments to TriMet.

Without additional revenues.

# **S.7.1.3 Existing Revenue Needs**

This section summarizes the identified project capital and system revenue needs for the alternatives.

# A. Existing Project Capital Revenue Need

As shown in Table S.7-3, project capital shortfalls occur with all of the build alternatives, ranging from \$79.64 million for the low-cost BRT Alternative to \$803.81 million for the high-cost Combined LRT Alternative (note that the low-cost alternative is based on selecting the lowest-cost design option in each instance and the high-cost alternative is based on selecting the highest-cost design option in each instance). Table S.7-3 presents the low and high-cost range for each alternative. Section 2.2 and Section 2.3 of the SDEIS provide a description of the various design options and the cost differences between the design options, respectively. Options for eliminating these shortfalls, including possible federal funds, are discussed in Section S.7.1.4.

Table S.7-3
Summary of Project Capital Costs, Available Revenue and Revenue Need<sup>1</sup>,
by Low- and High- Cost Alternative (in millions of YOE dollars)

	BRT	Busway	Milwaukie LRT	I-205 LRT	Combined LRT
Low-Cost					
Project Capital Cost	\$119.04	\$267.10	\$466.82	\$507.39	\$825.57
Available Capital Revenues	\$39.40	\$39.40	\$39.40	\$69.40	\$69.40
Project Capital Need	\$79.64	\$227.70	\$427.42	\$437.99	\$756.17
High-Cost					
Project Capital Cost	\$131.15	\$299.29	\$517.97	\$514.90	\$873.21
Available Capital Revenues	\$39.40	\$39.40	\$39.40	\$69.40	\$69.40
Project Capital Need	\$80.55	\$259.89	\$478.57	\$445.50	\$803.81

Source: TriMet, November 2002.

Note: YOE = year-of-expenditure; BRT = bus rapid transit; LRT = light rail transit.

## **B.** Existing System Revenue Need

System costs and revenues for the alternatives were projected on a year-by-year basis over the 20-year period from 2000 to 2020. While there would be some variations in the results by alternative, depending on the design options selected, those differences would not have a material effect on the basic conclusions described below. As shown in Table S.7-2, existing system revenues are insufficient for all of the build alternatives to maintain beginning year operating reserves at the desired two-month levels over 11 to 15 years, depending on the alternative. While existing revenues are sufficient to avoid negative operating results for the BRT, Busway and Milwaukie LRT alternatives, the I-205 LRT and Combined LRT alternatives would exhibit negative operating results in FY 2013 and FY 2011, respectively.

#### **S.7.1.4 Proposed Additional Revenues**

This section identifies the potential capital and system revenue sources that could be used to meet the South Corridor Project alternatives' identified revenue need.

Includes capital costs that would be incurred before opening day (i.e., September 2008) and between 2008 and 2020, for both BRT improvements and fixed-guideway improvements. Low cost = the cost and configuration of an alternative if the lowest-cost design option was selected in each instance; high cost = the cost and configuration of an alternative if the highest-cost design option was selected in each instance.

# A. Potential Project Capital Revenue Sources

Following is a description of the potential revenue sources to address the identified project capital revenue need:

- Federal Section 5309 New Starts Funds. FTA Section 5309 New Starts grants are discretionary federal funds available for new fixed-guideway transit systems and extensions to existing fixed-guideway systems. Currently, up to 80 percent of New Starts project costs can qualify for New Starts funding, however Congress and FTA are considering reducing the maximum New Starts share to 50 percent or 60 percent.
- Federal Section 5309 Bus Funds. FTA Section 5309 bus grants are discretionary funds available for bus acquisition and bus-related improvements, including BRT improvements. By statute, Section 5309 Bus funds require 20 percent local matching funds. In total, up to \$104.9 million of Section 5309 Bus funds could be requested for the BRT Alternative. Up to \$55.9 million of Section 5309 Bus funds could be used for the BRT component of the Milwaukie LRT Alternative, \$50.4 million for the BRT component of the I-205 LRT Alternative and \$13.2 million for the BRT component of the Combined LRT Alternative.
- Other Local and Regional Funds. A variety of additional local and regional funding sources will be considered to fund the locally preferred alternative. Depending on the alternative selected, additional local funds may be requested. For those alternatives exhibiting a larger funding gap than can be met with existing resources, a general obligation bond could be considered.

## **B. Potential System Revenue Sources**

**Increased Operating Revenues.** TriMet's enabling legislation limits the employer payroll and self-employment tax rates to 0.6 percent; with upward adjustments permitted to account for revenues lost when areas are withdraw from the TriMet district (thus creating a tax rate of 0.6218 percent). As part of a larger transit expansion strategy, TriMet has been examining the possibility of increasing the pre-adjustment employer payroll and self-employment tax rates from 0.6 percent to 0.7 percent over a ten-year period in increments of 0.01 percent per year. This potential rate increase would require legislative approval of an amendment to TriMet's funding statute. If approved, a portion of the proceeds of such a tax rate increase could be used for South Corridor Project capital costs.

## S.7.1.5 System Fiscal Feasibility Conclusions and Risk Assessment

This section summarizes the conclusion of the fiscal feasibility analysis for project capital and systemwide funding needs.

# A. Project Capital Funding

Table S.7-4 shows the unidentified local capital funding required for all of the alternatives. The amount of this funding changes based on the level of Federal New Starts (S. 5309) funds received. The required level of additional funding has been identified for two likely scenarios, 50% or 60% Federal New Starts funding. Opening day (2008) costs are those costs required to initiate service for a project, but not to provide for system growth until the 2020-planning horizon. The 2008 to 2020

revenues required are those revenues required to purchase additional vehicles and/or additional capital facilities to operate at 2020 service levels. Tables 5.1-8 and 5.1-9 in the SDEIS more fully illustrate these scenarios.

It should be noted that even with a FFGA, a project must have funds appropriated to it on an annual basis to actually receive Federal funds. Appropriations are subject to budget limits, the demand for appropriations from other projects and other congressional dynamics. As a result, the amount of New Starts funds appropriated to a project in a given year may be less than what the project would require that year. If fewer New Starts funds were to be allocated than would be needed within one or more fiscal years, the finance plan could use interim borrowing to maintain its optimum construction schedule. Interim-borrowed funds would be repaid with later appropriated New Starts funds, but the project would incur interest costs in the interim.

Table S.7-4
Additional Local Capital Funding Required (Millions of Year of Expenditure Dollars)

BRT Busway		Milwaukie	I-205	Combined
		LRT	LRT	LRT
\$0	\$101.5	\$169.4	\$105.1	\$330.6
\$0	\$7.6	\$15.2	\$51.4	\$28.4
\$0	\$73.3	\$127.7	\$70.2	\$250.6
\$0	\$6.1	\$12.2	\$41.1	\$22.7
\$11.23	\$0	\$13.98	\$12.61	\$3.30
	\$0 \$0 \$0	\$0 \$101.5 \$0 \$7.6 \$0 \$73.3 \$0 \$6.1	\$0 \$101.5 \$169.4 \$0 \$7.6 \$15.2 \$0 \$73.3 \$127.7 \$0 \$6.1 \$12.2	\$0 \$101.5 \$169.4 \$105.1 \$0 \$7.6 \$15.2 \$51.4 \$  \$0 \$73.3 \$127.7 \$70.2 \$0 \$6.1 \$12.2 \$41.1

Source: Metro November 2002

Note: Capital costs for each alternative are based upon a set of design options discussed in Table 2.3-1 of the SDEIS.

All other alternatives require additional local funds to match identified Federal and local sources of funding. These range from the BRT Alternative at \$11.3 million to the Combined LRT alternative at \$359.0 million, depending upon the degree of Federal Section 5309 funds received.

#### **B.** System Fiscal Feasibility

In Section S.7.1.3, it was demonstrated that all of the alternatives would require additional system revenues to meet the minimum working capital standard in all years. A detailed system financing plan will be adopted after selection of the locally preferred alternative and documented in the project's Final Environmental Impact Statement. One possible component of a finance plan to address the system revenue need would be to seek and receive authority from the Oregon Legislature for a tax rate increase (the rate increase would be enacted by the TriMet Board of Directors). As previously mentioned, the fiscal condition of transit system operations is considered adequate if the beginning-of-year operating reserve (measured in months of operations) is maintained at two-months. With the tax rate increase there would be sufficient system revenues to operate all South Corridor Project alternatives and, in addition, implement substantial service increases in other portions of the system and still maintain beginning year operating reserves at desired levels.

#### C. Implementation of the Finance Plan

Implementation of the funding plan for the South Corridor Project would depend on successfully obtaining:

- The required capital funding commitments from state, regional and local sources, including voter approval of required general obligation bonds, if any, to meet the requirements of the locally preferred alternative:
- Congressional authority to proceed to construction;
- Legislative approval of a new or increased authority for operating revenues;
- TriMet Board enactment of a new or increased operating revenue source;
- Execution of a FFGA between TriMet and FTA, which would provide sufficient Section 5309
   New Starts funds to finance opening day costs of the fixed-guideway component, if any, of the locally preferred alternative; and
- Sufficient appropriations of Section 5309 Bus funds by Congress to finance the BRT component, if any, of the locally preferred alternative.

#### **S.7.2** Effectiveness Evaluation

The purpose of this section is to draw upon the wide array of analyses presented in the Executive Summary and the SDEIS to assess the effectiveness of the project's alternatives. Effectiveness is measured on the basis of an alternative's ability to meet the South Corridor Project's objectives, using a variety of decision-making criteria, each with one or more quantitative and/or qualitative measures. It is important to note that these criteria are not weighted or ranked in order of importance. Select measures for the evaluation criteria are summarized in table S.7-5. This information is presented in summary form in a table because most if not all of the measures discussed are presented elsewhere in this executive summary. For a detailed discussion of the evaluation of alternatives, effectiveness measures and significant trade-offs, please see Section 5.2 of this SDEIS.

# **S.7.3 Social Equity Considerations**

The percentage of minority populations in almost one-third of the South Corridor's neighborhoods has minority and/or Hispanic populations that are greater than the regional average of 17.1% and 8%, respectively (2000 US Census), and over one third have a percentage of low-income residents that is greater than the regional average of 8.7%. Unlike projects that would negatively impact minority and/or low-income neighborhoods without serving them, the South Corridor Project is expressly aimed at serving many minority and/or low-income neighborhoods. Further, none of the alternatives would result in disproportionate negative consequences to low-income or minority neighborhoods that would not be served and benefited by the transit improvements that would occur with an alternative, nor would the impacts to those neighborhoods be disproportionate to the benefits that they would receive.

Table S.7-5

ffs – Comparison of Alternatives

Sigr	nificant Trade-Of	fs – Comparison	of Alternatives		
Selected Measures	Bus Rapid Transit	Busway	Milwaukie LRT	I-205 LRT	Combined LRT
BRT, Busway and LRT Ridership (2020 weekday)	24,760 BRT 24,760 Total	30,600 BRT & Busway 30,600 Total	25,330 LRT +15,360 BRT 40,690 Total	33,270 LRT 13,750 BRT 47,020 Total	53,250 LRT 6,810 BRT 60,060 Total
Travel Time Savings (vs. No-Build) Milwaukie to Pioneer Sq. Milwaukie to Rose Quarter Clackamas to Rose Q Clackamas to Pioneer Sq	1 min. slower* 1 min slower* = No-Build 9 min faster	1 min faster 1 min faster = No-Build 13 min faster	1 min faster** 11 min faster 7 min faster 13 min faster	= BRT*** = BRT*** 15 min. faster 9 min faster	1 min faster** 9 min. faster 15 min. faster 8 min. faster
Reliability (% of Protected Intersections)	53%	63%	65%	87%	97%
Access to Transit Park and Ride Spaces Provided	1,900 *BRT adds more stops and provides more service than No-Build	2,500	2,775 **Travel time = 14 min, walk to P. Sq to 1 <sup>stst</sup> & Main adds time	3,750 ***BRT provides service between Portland and Oregon City	4,625  ** Travel time = 14  min, walk to  Pioneer Sq. to  1st <sup>st</sup> & Main adds  time
Operational Variables changes to system compared to No-Build that could affect operations	- Introduces Articulated buses into system - Hawthorne Bridge reliability issues	- Introduces Articulated buses into system - More Exclusive R-O-W Crossing protection than BRT - Hawthorne Bridge reliability issues	- Milwaukie transfer required for BRT from Clackamas and Oregon City - Hawthorne Bridge reliability issues	- Downtown Cross-Mall capacity impacts	- Hawthorne Bridge introduces potential delays and reliability impacts - Downtown Cross-Mall capacity impacts
Ability to Accommodate Additional System Demand	Expansion constrained by Transit Mall, Hawthorne Bridge	Expansion constrained by Transit Mall, Hawthorne Bridge	LRT on 1 <sup>st</sup> Ave in Downtown relieves demand on Cross- Mall – provides added LRT capacity	Downtown Cross- Mall alignment is main LRT capacity constraint	Downtown Cross- Mall alignment is main LRT constraint
Reduction in Vehicle Miles Traveled	-25,900	-33,300	-20,000	-66,600	-71,200
Reduction in Vehicle Hours Traveled	-1,200	-1,860	-740	-3,980	-4,010
Reduction in Vehicle Hours of Delay	-20	-100	0	-570	-720
Support of Activity Centers Town and Regional Centers Served based on Region 2040 Plan	- Central City, 2 Regional Centers and 1 Town Center by BRT	- Central City, 1 Regional Center and 1 Town Center by Busway - 1 Regional Center via BRT	- Central City, 1 Town Center by LRT - 2 Regional Centers via BRT	- Central City, 2 Regional Centers and 1 Town Center by LRT - 1 Town Center 1 Regional Center by BRT	- Central City, 2 Regional Centers and 2 Town Centers by LRT - 1 Regional Center via BRT
Capital Costs (millions of \$ YOE, opening year)	\$116	\$116 \$281	\$417 – LRT \$72 – Bus	\$349 – LRT \$60 – Bus	\$800 – LRT \$22 – Bus
of \$ 2002 difference from No-Build, Bus and LRT)	\$7.19	\$8.24	\$7.39	\$11.92	\$11.92
rides per service hour)	70	81	171	159	258
Displacements	6 businesses	1 residence	41 businesses 1 residence	3 businesses 13 residences	38 businesses 14 residences 1 public/Inst.
Noise and Vibration		1 public/inst.	1 public/inst.		i public/ii ist.
	BRT, Busway and LRT Ridership (2020 weekday) Travel Time Savings (vs. No-Build) Milwaukie to Pioneer Sq. Milwaukie to Rose Quarter Clackamas to Rose Q Clackamas to Pioneer Sq Reliability (% of Protected Intersections) Access to Transit Park and Ride Spaces Provided  Operational Variables changes to system compared to No-Build that could affect operations  Ability to Accommodate Additional System Demand  Reduction in Vehicle Miles Traveled Reduction in Vehicle Hours Traveled Reduction in Vehicl	Selected Measures BRT, Busway and LRT Ridership (2020 weekday) Travel Time Savings (vs. No-Build) Milwaukie to Pioneer Sq. Milwaukie to Rose Quarter Clackamas to Rose Q Clackamas to Pioneer Sq Reliability (% of Protected Intersections) Access to Transit Park and Ride Spaces Provided  Operational Variables changes to system compared to No-Build that could affect operations  Ability to Accommodate Additional System Demand  Ability to Accommodate Additional System Demand  Reduction in Vehicle Miles Traveled Reduction in Vehicle Hours of Delay  Capital Costs (millions of \$ 2002 difference from No-Build, Bus and LRT)  Efficiency (boarding rides per service hour)  Reficult Cost (millions of \$ 2002 difference from No-Build, Bus and LRT)  Efficiency (boarding rides per service hour)  70	BRT, Busway and LRT Ridership (2020 weekday)	BRT, Busway and LRT Ridership   22.02 weekday   24.760 BRT   Busway   30.600 BRT & Busway   115.360 BRT   125.360 BRT   125.36	Belected Measures   Bus Rapid Transit   Busway   Milwaukie   L205 LRT

Source: Metro, November 2002.

Notes: CBD = Central Business District, Downtown Portland, \$YOE = Year of Expenditure Dollars, BRT = Bus Rapid Transit, Opening Year = 2008, LRT = Light Rail Transit, Cross-Mall LRT alignment in Downtown (SW Yamhill and SW Morrison Streets).

#### S.8 ISSUES TO BE RESOLVED

The analysis and preparation of the SDEIS represents one phase in the course of the South Corridor Project. There are still numerous issues to be resolved, and this section addresses some of the more important and immediate landmarks.

# S.8.1 Selection of the Locally Preferred Alternative (LPA)

This SDEIS, related technical documents, and comments received during the public review period will provide a basis for local jurisdictions to recommend and adopt a preferred alternative and design option(s) that will collectively comprise the LPA. There are many points of view that must be brought to bear on these important decisions. The alternatives and options presented in the SDEIS offer a wide range of alternatives, each with their unique set of benefits, costs and impacts.

The South Corridor Project Policy Committee, participating jurisdictions and general public will have the opportunity to develop and present independent recommendations on project elements to be included in the LPA. These recommendations will be forwarded to the TriMet Board of Directors, the Joint Policy Advisory Committee on Transportation (JPACT) and the Metro Council. Metro will prepare and adopt an LPA report that will document the selection of the preferred alternative and option(s), which will then be forwarded to FTA, completing the local decision step in the Federal environmental process.

# S.8.2 Implementation of the Finance Plan

The financial analyses in this SDEIS show that the alternatives will require, in varying degrees, significant revenue that is currently not available. The financial analysis also identifies required new levels, and proposed sources, of revenue. New Federal funds would be secured through the Federal Section 5309 New Starts authorization and appropriations cycles and through the FTA grant process. New local funds would be secured through one or more local intergovernmental agreements. Finally, implementation of the financial plan includes completing all Federal NEPA and FTA requirements, and the execution of a Full Funding Grant Agreement (FFGA) with FTA. Definition of all items that are considered eligible for Federal funding must be specified in the FFGA.

## **S.8.3** Completion of the Mitigation Plan

Design, determination of impacts and estimates of costs for any major project, such as the South Corridor Project, proceed from conceptual, to preliminary, to final as the project advances to construction. At this SDEIS stage of the process, numerous impacts have been identified and many mitigation measures have already been incorporated into the conceptual design and cost estimates or committed to by the project. Examples include: conformance with applicable state and Federal policy concerning relocation assistance; initial coordination with the Oregon State Historic Preservation Officer (SHPO), and other affected parties to ensure compatible design of transit facilities with historic resources; avoidance, minimization of impacts and appropriate mitigation for impacts to wetland areas; and mitigation for 100- year floodplain encroachment.

In addition, the South Corridor Project will commit to further ways to mitigate or finalize the mitigation of certain impacts. Examples of areas requiring further study and commitment to mitigation include: final designs regarding landscaping and architectural design treatment of project

facilities; traffic capacity problems at intersections where there would be significant project impacts on traffic; final definitions (e.g., location, height, extent, type, etc.) of noise and vibration mitigation for selected alternatives and options; final wetland replacement plan; a memorandum of agreement (MOA) negotiated between the project sponsors and SHPO; demonstration of compliance with all Federal "Section 4(f)" requirements concerning parklands and historic properties through completion of a Draft and Final 4(f) Statement; and development of traffic management plans for the construction phase.

Depending on input during the public comment period and on selection of the LPA, the South Corridor Project will develop a series of more detailed mitigation plans for inclusion in the project's Final Environmental Impact Statement (FEIS).