

S. EXECUTIVE SUMMARY

This Executive Summary is presented to brief policymakers, agencies and the public about the findings of the *Downtown Portland Amendment to the South Corridor Project Supplemental Draft Environmental Impact Statement* (i.e., the Amendment). Because the Executive Summary presents results of the Amendment in a truncated form, some information is incorporated only by reference to the Amendment 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 Amendment without necessarily having to read the entire document. The reader is encouraged to consult the Amendment directly for more detailed information.

About the Downtown Amendment

The South Corridor is the southern segment of the South/North Corridor and this Amendment fundamentally updates the *South Corridor Project Supplemental Draft Environmental Impact Statement* (SDEIS), which was issued by the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA) and Metro in December 2002. The Amendment has been prepared in order to evaluate a downtown Portland Mall alignment that was not included in the Light Rail Transit (LRT) alternatives evaluated in the SDEIS. This Amendment has been prepared to disclose the impacts of adding the Portland Mall LRT alignment to the I-205 Light Rail Alternative, which was evaluated in the SDEIS and subsequently selected as the South Corridor Project's Locally Preferred Alternative. This amendment modifies the SDEIS in order to meet the requirements of the National Environmental Policy Act (NEPA).

A Portland Mall light rail alignment was extensively evaluated in the *South/North Corridor Project Draft Environmental Impact Statement* (Metro, February 1998), the document upon which the South Corridor SDEIS and this Amendment are based. The Portland Mall alignment was selected as part of the South/North DEIS Locally Preferred Alternative. However, the South/North DEIS was completed more than three years ago and, after consultation with FTA and FHWA, it was determined that the data and analysis was not recent enough to be sufficient to address NEPA requirements. Options for providing updated information and analysis included a re-evaluation of the South/North DEIS or amending the South Corridor SDEIS. After consultation with FTA and FHWA, it was concluded that an amendment to the SDEIS should be completed. Accordingly, this document has been prepared.

The South Corridor Amendment has been prepared in compliance with NEPA. The FTA and the FHWA are the federal co-lead agencies for the Amendment and Metro is the project's local lead agency. Preparation of the Amendment 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 Amendment is to provide decision-makers and the public with better and more complete information before final project-level decisions are made. The Amendment is intended to provide citizens, agencies and jurisdictions with information needed to make an informed decision when affirming or amending the preferred alternative to advance into the next stages of project development.

S.1 Description of the South Corridor and the Downtown Portland Segment

The South Corridor is part of the larger South/North Corridor within the Portland, Oregon/Vancouver, Washington metropolitan region, which incorporates the urban portion of three Oregon

counties – Multnomah, Clackamas and Washington Counties – and the urban portion of Clark County, Washington. Portland, Oregon is the largest city in the region and is located at its geographic center (see Figure S.1-1). The corridor study area is generally defined as the “travel-shed” between the urbanizing portion of Clackamas County and the Portland Central City (see Figure S.1-2). Figure S.1-3 provides an illustration of the Downtown Portland Segment of the South Corridor and the transportation analysis zone system within the segment that has been used to prepare this Amendment. Figure S.1-1 illustrates the South Corridor segments: the Downtown Portland Segment and the I-205 Segment.

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, sub-area and planning studies and Federal environmental impact and alternatives analysis studies. Figure S.2-1 is a timeline illustrating the sequencing of prior phases of study related to the South Corridor Project. The previous study stages included:

- System Planning – various corridor studies 1982-1992.
- Preliminary Alternatives Analysis (Pre-AA) – 1992-1993.
- Scoping for South/North DEIS – 1993.
- Tier I Narrowing of Terminus and Alignment Alternatives – 1994-1995.
- South/North Draft Environmental Impact Statement (DEIS) – 1996-1998.
- North Corridor Project Supplemental DEIS (SDEIS) and Final Environmental Impact Statement (FEIS) – 1999.
- South Corridor Transportation Alternatives Study – 1999-2001.
- South Corridor SDEIS – 2001-2003.

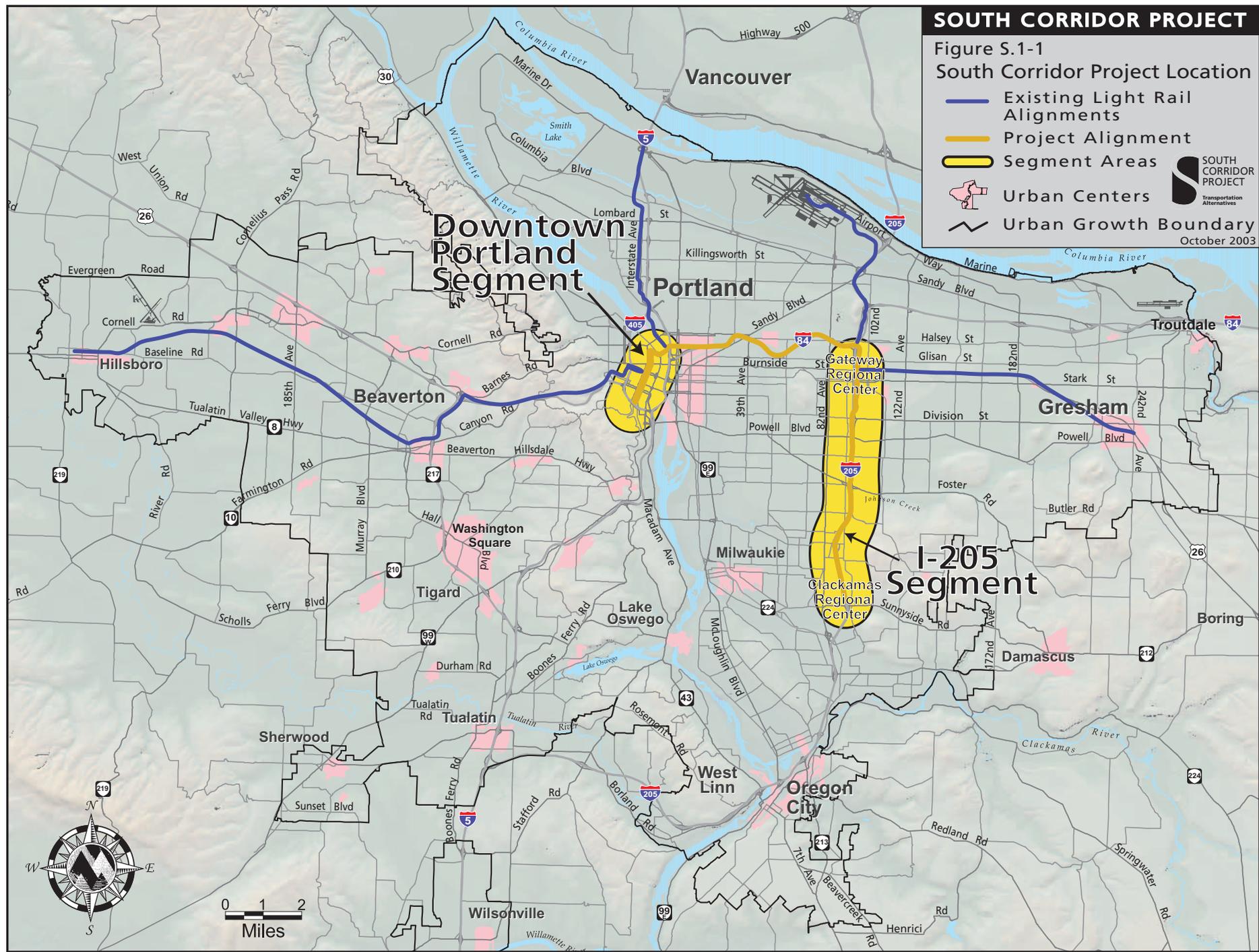
Numerous light rail alignments in downtown Portland have been investigated over the past 30 years. In 1972, the Downtown Plan called for a high-capacity transit spine in downtown Portland to help focus and serve high-density development along SW 5th and 6th avenues. Southwest 4th Avenue and SW Broadway were designated automobile and truck access streets, providing access for all types of vehicle trips in the downtown core. The Portland Mall, which is located on SW 5th and 6th avenues, between SW Madison Avenue and W Burnside Street, was opened in 1978.

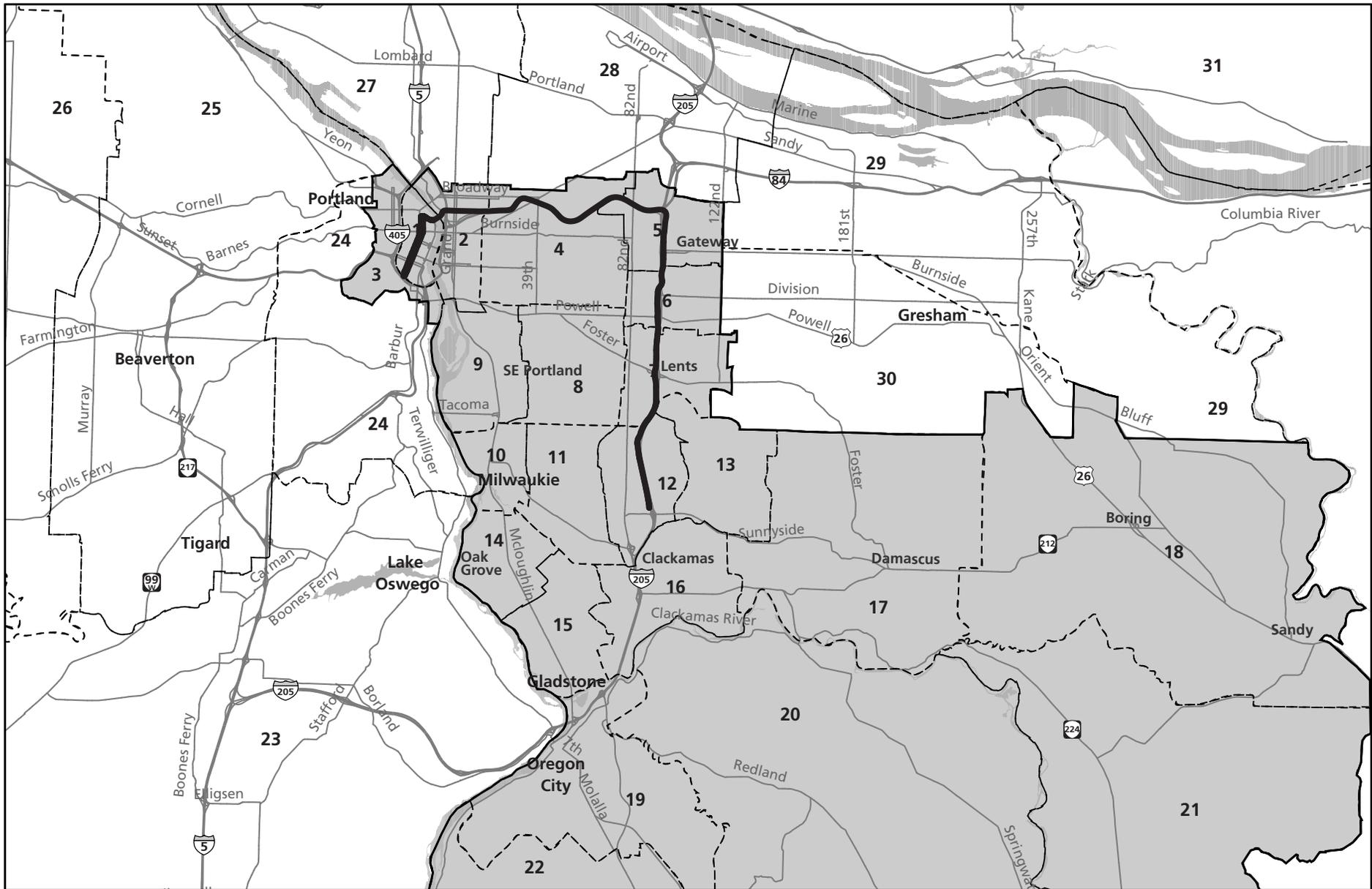
Prior to 1979, during the planning for the Banfield Light Rail Project, numerous downtown light rail alignments were investigated. The Cross Mall light rail alignment (on SW Yamhill and Morrison streets, coupled with SW 1st Avenue) was selected as the preferred alignment for the Banfield Light Rail Project. The Portland City Council conditioned its approval of the Cross Mall alignment based on the plan that the next light rail alignment within downtown Portland would be placed on the Portland Mall. The Banfield Light Rail Project opened in 1986. The Central City Plan, completed in 1988, reaffirmed the Portland Mall as the preferred location for the next light rail alignment and strengthened zoning allowing for the highest land use densities along SW 5th and 6th avenues to be supported by transit. During planning for the Westside Light Rail Project, the Portland Mall and Cross Mall alignment were reinvestigated and the Cross Mall alignment was selected for that project. The Westside Light Rail Project opened in 1998.

SOUTH CORRIDOR PROJECT

Figure S.1-1
South Corridor Project Location

- Existing Light Rail Alignments
 - Project Alignment
 - Segment Areas
 - Urban Centers
 - Urban Growth Boundary
- SOUTH CORRIDOR PROJECT**
Transportation Alternatives
October 2003





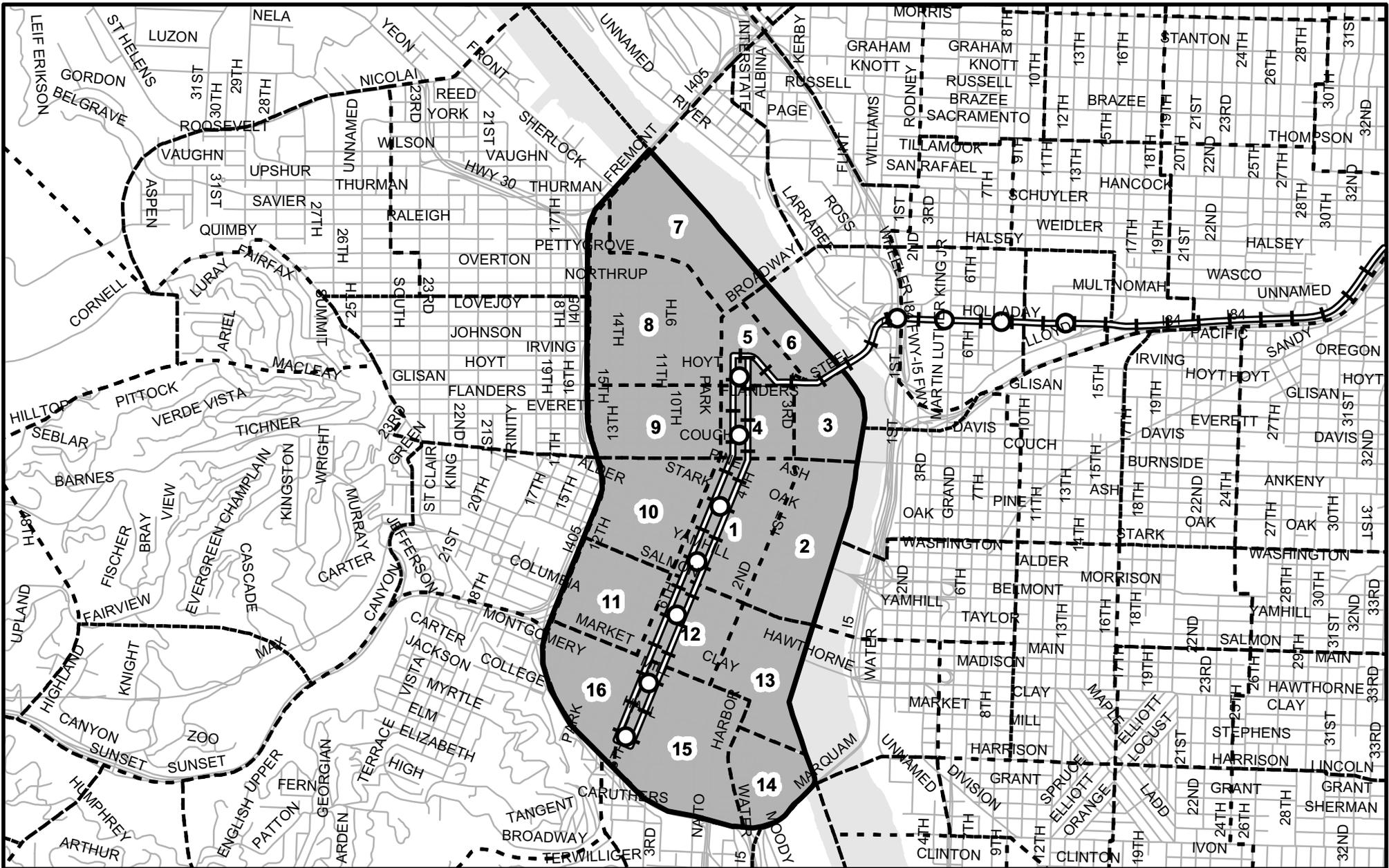
SOUTH CORRIDOR PROJECT

Figure S.1-2

Study Area

-  South Corridor Study Area
-  31 District TAZ Boundaries
-  I-205 Light Rail Alignment





SOUTH CORRIDOR PROJECT Figure S.1-3

Downtown Corridor

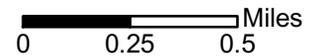


Downtown Portland Segment



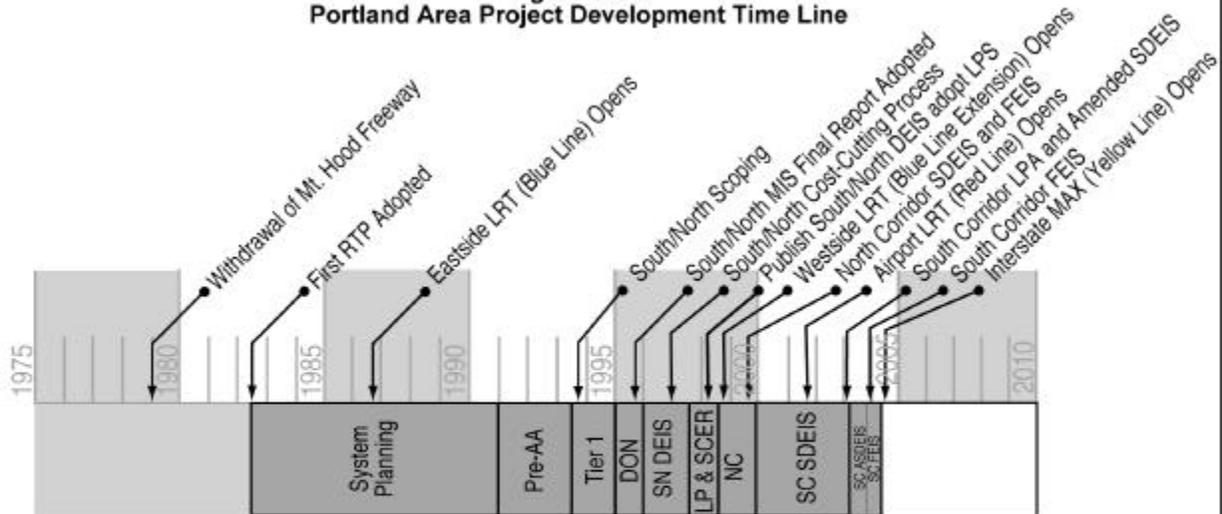
Detailed TAZ zones

I-25 Portland Mall Alignment



October 2003

**Figure S.2-1
Portland Area Project Development Time Line**



List of Acronyms

- | | |
|---|--|
| DEIS - Draft Environmental Impact Statement | LRT - Light Rail Transit |
| DON - Design Option Narrowing | MIS - Major Investment Study |
| FEIS - Final Environmental Impact Statement | Pre-AA - Preliminary Alternatives Analysis |
| LPA - Locally Preferred Alternative | RTP - Regional Transportation Plan |
| LPS - Locally Preferred Strategy | SDEIS - Supplemental Draft Environmental Impact Statement |
| S/N - South/North Corridor | LP - Listening Posts |
| NC - North Corridor | SCER - South Corridor Evaluation Report |
| SC - South Corridor | ASDEIS - Amendment to the South Corridor Supplemental Draft Environmental Impact Statement |

The City of Portland convened the Downtown Rail Advisory Committee in 1993 in concert with the North/South Light Rail Project to provide recommendations to the City on future light rail alignments within downtown Portland. Numerous surface and subway alignments within downtown Portland were reexamined and a light rail surface alignment on 5th and 6th avenues was reconfirmed as the preferred surface alignment. As an element of the South/North Light Rail Project, Metro formed the Downtown Oversight Committee, which was comprised of elected officials and business leaders. The committee investigated various configurations for the Portland Mall, including four, three and two lane combinations on SW 5th and 6th avenues. The recommendations from this committee were developed into plans that were examined in the *South/North DEIS* (February 1998) and that were selected as the preferred downtown alignment in the *South/North Locally Preferred Strategy* (Metro: July 1998).

During the South Corridor Project, the South Corridor Policy Committee directed staff to develop lower-cost alignments for light rail, which resulted in the I-205 Light Rail Alternative proposed to operate on the Cross Mall. During the public comment period for the *South Corridor SDEIS* (Metro: December 2002) many concerns were raised about the feasibility of adding more trains to the Cross Mall alignment, particularly the effects on reliability. Based on these public comments and technical concerns, the Metro Council adopted the *South Corridor Locally Preferred Alternative Report* (Metro: April 2003) that included a Portland Mall alignment with the I-205 Light Rail Alternative.

Based on discussions with FTA and FHWA, the I-205 light rail alignment was recognized as the Phase One LPA (the Phase Two LPA is the Milwaukie light rail alignment, to be constructed after completion of Phase One). Further, the Portland Mall segment of the Locally Preferred Alternative (LPA) was given a *Preliminary LPA* designation by Metro, FTA and FHWA. This designation was applied because the South Corridor SDEIS did not contain the Portland Mall alignment and because

the original South/North Corridor DEIS, which contained an evaluation of the Portland Mall light rail alignment, was completed in February 1998, which exceeded the three-year FTA threshold for an active DEIS.

S.3 Purpose and Need for the Proposed Action

This section provides a summary of the project's purpose and need statement, including the project's goal and objectives. The project's objectives are used to evaluate the effectiveness and tradeoffs among the alternatives using a variety of measures (see Section S.7).

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; and
- 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. The amount of office space within downtown Portland has increased by approximately 174% between 1980 and 2000, while employment grew by approximately 36 percent. Within the Downtown Portland Segment, households are projected to more than double over the next two decades and employment is expected to increase by approximately 38 percent. These high rates of office space growth, population and employment growth in the Downtown Portland Segment 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. Traffic volumes to, from and within the Downtown Portland Segment have also grown over the past two decades, as indicated by the growth in traffic volumes on the bridges crossing the Willamette River, which generally link the Downtown Portland Segment with the remainder of the South Corridor. Average weekday traffic volumes across the bridges have increased by 13.7 percent to 64.0 percent over the past two decades.

Transit System Conditions. The Portland Mall and the Cross Mall alignments generally provide buses and light rail vehicles, respectively, with a relatively reliable operating environment by providing a high level of exclusive operating right-of-way for transit vehicles. However, both the Portland Mall and the Cross Mall alignments have theoretical and practical capacity limitations that, if exceeded, can result in a deterioration of speed and reliability for the transit vehicles and patrons utilizing the facilities. In the year 2020, combined light rail train volumes of the Red, Blue, Yellow and Green lines would equal 33 trains per hour in the peak direction during the peak periods, exceeding the Cross Mall alignment's functional capacity of 27 trains per hour. Without an additional light rail alignment within the Downtown Portland Segment, the system's light rail travel times and reliability would tend to degrade over the next two decades, resulting in increasing operating costs and decreasing transit ridership.

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 with downtown Portland. Without a high-capacity transit investment in the corridor and within the Downtown Portland Segment, the region's entire growth management strategy could be at risk – the larger risk is that the economic vision, livability and development goals and land use plans for the region may not be realized.

S.4 Alternatives Considered

This section provides a description of the two alternatives under consideration for the South Corridor:

- No-Build Alternative; and
- I-205 Light Rail Alternative with the Portland Mall Alignment.

The focus of this section is the definition of the alternatives within the Downtown Portland Segment of the South Corridor. Table S.4-1 summarizes the description of the two alternatives under consideration.

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 also includes a 1.5 percent per year annual systemwide transit service increase, which would result in approximately 27 percent more transit service hours in

2020 than in 2000. In much of the South Corridor, buses would continue to operate in mixed traffic on increasingly congested streets and highways, except in downtown Portland, where most of the buses would operate in generally exclusive right-of-way on the Portland Mall. Light rail service would be provided with three interconnected lines. Two of those lines, the Blue Line and the Red Line, are currently in revenue service and the third line, the Yellow Line, is under construction. Under the No-Build Alternative, all three light rail lines would operate on the Cross Mall alignment through downtown Portland, which would result in 26 trains per hour operating in each direction during the peak period.

**Table S.4-1
Description of Alternatives within the Downtown Portland Segment¹**

Project Element	No-Build	I-205 LRT with Downtown Mall	
		Main Street Terminus	PSU Terminus
LRT Service			
Cross Mall LRT Frequency ²	26 ³	15 ⁴	15 ⁴
Portland Mall LRT Frequency ²	N/A	21 ⁵	21 ⁵
LRT Capital Improvements			
LRVs ⁶	N/A	33	33
Miles of new LRT alignment	0	1.3	1.8
New LRT Stations	0	4	7
Bus Service			
Portland Mall Bus Frequency	Existing plus planned service expansion.	Same as No-Build, with possible reduction to accommodate LRT operations.	Same as No-Build, with possible reduction to accommodate LRT operations.
Bus Capital Improvements			
Approximate Mall bus stop spacing	Every 2 blocks.	Every 4 blocks.	Every 4 blocks.
Capital Costs			
2002\$ (millions)		\$125.5	\$83.6
Annual Systemwide O&M Costs			
2002\$ (millions)	\$286.2	\$293.9	\$293.0

Source: Metro and TriMet, August 2003.

Note: PSU = Portland State University; LRV = light rail vehicle; LRT = light rail transit; N/A = not applicable; 2002\$ = 2002 dollars; YOES\$ = year of expenditure dollars; O&M = operating and maintenance.

¹ Except as noted, all statistics are for the Downtown Portland Segment and are based on 2020 service levels. Note that with the I-205 Light Rail with Portland Mall Alternative, there would be additional capital improvements within the I-205 Segment and additional transit service changes within the I-84 and I-205 segments – see the South Corridor SDEIS and LPA Report for more information on those improvements.

² LRT frequency is the approximate average number of light rail trains per hour in one direction during the p.m. peak period in 2020.

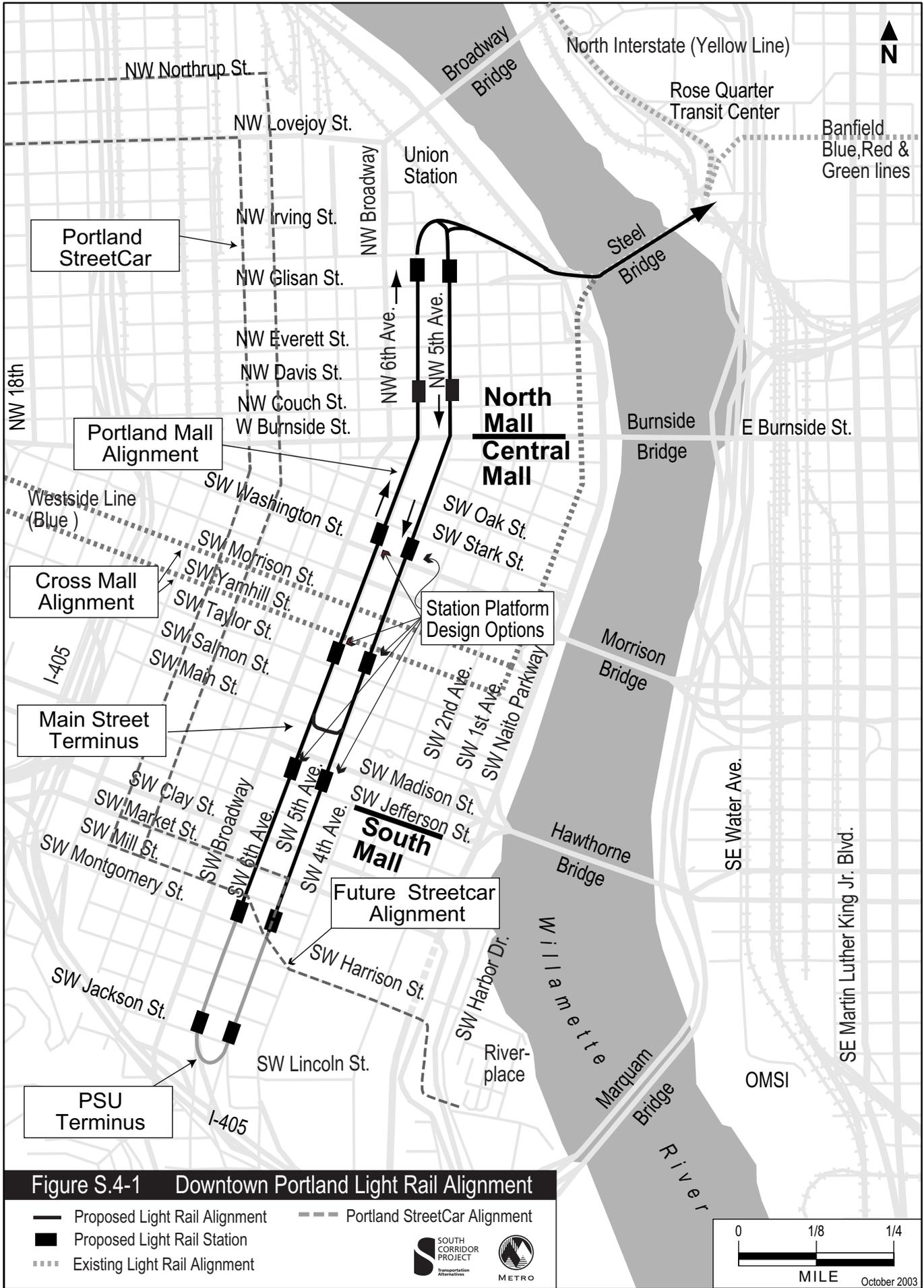
³ Combined light rail trains per hour from the Blue, Red and Yellow lines.

⁴ Combined light rail trains per hour from the Blue and Red lines.

⁵ Combined light rail trains per hour from the Yellow and Green lines.

⁶ Fleet size to operate I-205 Alternative in 2020.

I-205 Light Rail Alternative with the Portland Mall Alignment. Figure S.4-1 illustrates the proposed improvements that would be made within the Downtown Portland Segment with I-205 Light Rail Transit (LRT) with Portland Mall Alternative. The I-205 Light Rail Alternative would include all of the transit capital improvements in the No-Build Alternative, as well as additional light rail and bus-oriented capital improvements. The addition of the I-205 LRT line (or Green Line) would provide light rail service for the South Corridor. Light rail capital improvements would be made in the Downtown Portland and I-205 segments of the South Corridor. While the Green Line would operate through all three segments of the corridor (including the I-84 Segment), there would be no capital improvements made to the I-84 Segment – the Green Line would use the existing light



rail alignment and stations. In addition to the Green Line, the Yellow Line would operate on the Portland Mall alignment, instead of the Cross Mall alignment under the No-Build Alternative.

Within the Downtown Portland Segment, the Portland Mall Alignment would branch off from the existing Cross Mall light rail alignment at the west end of the Steel Bridge, transitioning to a new structure that would lead to NW Irving Street. The alignment would return to grade at NW 4th Avenue and would then turn onto NW 5th and 6th avenues.

Bus stops on the Portland Mall would be relocated to approximately every four blocks with the I-205 Light Rail Alternative, compared to approximately every two blocks as exists now and is assumed for the No-Build Alternative. Light rail stations would be located approximately every four blocks and other modifications would be made to the Portland Mall to accommodate the joint operation of buses and light rail vehicles. At station blocks in the Central Mall, two design options are being considered: the Sidewalk Station and the Island Station design options. The Portland Mall alignment would terminate at SW Jackson Street (i.e., the Portland State University (PSU) Terminus), with a turn-around facility for light rail trains. In the case of inadequate financial resources, the I-205 Light Rail Alternative could use a lower-cost terminus located at SW Main Street, which would be located eleven blocks north of the PSU terminus. The Main Street Terminus would eliminate station pairs at SW Madison and Jefferson streets, SW Mill and Montgomery streets and at SW College and Jackson streets and would eliminate the ability to lay trains over for schedule recovery.

S.5 Transportation Impacts

This section summarizes the transit, local traffic and freight impacts (2020) of the alternatives.

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.

Transit Operations. Construction of the Portland Mall light rail alignment would provide opportunities for expanding light rail coverage, improving light rail and bus capacity and enhancing connectivity between the bus and light rail system. With a reduction in the number of bus stops along the Portland Mall, bus loading and dwell times would increase. The average walk time and distance to reach a bus stop would increase for approximately half of bus riders by up to a block, compared to the No-Build Alternative. In general, the increased walk time would be offset by faster bus travel times on the Mall.

Bus and light rail operations would be focused on two free-flowing transit-only lanes in the Central Mall and a large portion of the South Mall. In the North Mall and in portions of the far end of the South Mall, where bus volumes are and would continue to be lower, buses would share lanes with automobiles. A combination of existing and new operating rules would result in safe and efficient operations. There would be no buses allowed in the light rail lane at a station when a train was present. A bus signal control system would be installed to give priority to trains and clear the shared bus/light rail lane of buses to allow trains to move forward. These signals would clear the track for trains traveling between stations. Normal operating procedures would call for the entire path between stations to be clear of buses for trains to move forward.

Transit Reliability. With the No-Build Alternative, there would be no change in bus service schedule reliability, because the existing mode mix, operating rules for transit lanes and number and location of bus stops would be maintained. Detailed modeling of transit operations in the Downtown Portland Segment has also shown that, while higher train volumes of up to 27 trains per hour can be accommodated, operating the existing line at or above 28 trains per hour would tend to have an increasing risk of delay. Because the No-Build Alternative would require approximately 26 trains per hour to operate on the Cross Mall alignment in 2020, some deterioration in schedule reliability on the existing Cross Mall alignment would occur, compared to existing conditions. With light rail on the Portland Mall (with either the PSU Terminus or the Main Street Terminus), buses would share one of two transit-only lanes with light rail vehicles. The new mode mix and operating rules for the transit lanes would reduce the maximum number of buses per hour that could reliably operate on the Portland Mall. In contrast, the number of bus stops that would be serviced by a bus operating on the Portland Mall would be reduced and the net result would be a small increase in bus travel speeds through the Mall, an improvement of 6 to 7 percent over the No-Build Alternative. Light rail train volumes would be well below the capacity ceiling on both downtown alignments, which would result in sustainable light rail schedule reliability, while improving bus operations.

Ridership. All of the alternatives would result in an increase in systemwide transit ridership, compared to existing conditions. With the No-Build Alternative, there would be 475,000 total average weekday systemwide originating rides in 2020 (see Table S.4-1). The I-205 Light Rail with Portland Mall Alternative would increase systemwide transit ridership to 490,800, independent of the terminus. With the No-Build Alternative, there would be 168,350 boarding rides on the light rail system on an average weekday in 2020, compared to 189,215 or 197,500 with the I-205 Light Rail with Portland Mall Alternative with the Main Street or PSU terminus, respectively.

**Table S.5-1
Average Weekday Systemwide Transit and Light Rail Ridership, by Alternative – Year 2020**

	No-Build	I-205 LRT with Portland Mall	
		Main Street Terminus	PSU Terminus
Total Systemwide Transit Originating Rides¹	475,000	490,800	490,800
Systemwide LRT Boarding Rides²			
Green Line	N/A	39,970	46,970
Blue Line	106,970	104,220	102,230
Yellow Line North	38,630	34,800	38,070
Red Line	22,750	10,220	10,230
Total System LRT Boarding Rides²	168,350	189,215	197,500

Source: Metro, 2003.

¹ Originating rides are one-way person trips from an origin (e.g., home) to a destination (e.g., place of work or school), independent of whether the trip requires a transfer or not. A person traveling from home to work and back counts as two trips. Total transit originating rides include all light rail and bus trips.

² A boarding ride is defined as when a patron boards a transit vehicle, whether or not they arrived to that vehicle by transferring from another transit vehicle – for example, a person trip that required a transfer between two light rail lines would result in two boarding rides.

S.5.2 Local Traffic Impacts

This section summarizes the bicycle and pedestrian, parking, traffic circulation and diversion, intersection level of service, vehicle access, traffic and transit operations and queuing impacts.

Bicycle and Pedestrian Impacts. The proposed Portland Mall light rail alignment would require bicyclists on SW 5th Avenue south of SW Jackson Street to ride with vehicular traffic along the east curb vehicle lane. The light rail turn-around near the PSU campus would require southbound

pedestrians on SW 5th Avenue (along the west curb) to cross two light tracks approximately 100 feet south of SW Jackson Street.

Parking Impacts. With the PSU Terminus, the Portland Mall light rail alignment would remove approximately 130 highly-utilized on-street parking spaces along several block faces on SW 5th and 6th avenues, south of SW Madison Street and it would remove a total of approximately 64 highly-used spaces from three off-street parking lots. No on-street or off-street parking removal would occur with the Main Street Terminus. In addition, two taxi and two bus staging areas would be removed with either the PSU or Main Street termini.

Traffic Circulation and Diversion. The Portland Mall light rail alignment would require the removal of auto and/or bus lanes along the Portland Mall, as well as turn prohibitions at certain signalized and un-signalized intersections. As many as two vehicle lanes would be removed along the southern portion of the proposed light rail alignment. The loss of capacity to motor vehicle facilities and turn prohibitions on SW 5th Avenue and SW 6th Avenue would divert some traffic to parallel facilities, primarily SW Broadway and SW 4th Avenue. In addition, with the PSU Terminus the light rail alignment and operations would restrict traffic movements and pedestrian drop-off and pick-up activities at St. Mary's Academy, located between SW 5th and 6th avenues and between SW Mill and SW Market streets.

Intersection Level of Service. With the No-Build Alternative, the intersection of Broadway and W Burnside Street would be the only intersection along the Transit Mall alignment that would operate at congested levels during peak periods in 2020 (i.e. Level of Service (LOS) E). With the I-205 Light Rail Alternative, congestion levels at that intersection and at most other intersections within the segment would remain unchanged or improved, compared to the No-Build Alternative. However, with the addition of traffic diverted from SW 6th Avenue to SW 4th Avenue in the morning peak period, SW 4th Avenue would operate at saturated conditions (LOS D) between SW Lincoln and Market streets.

Vehicle Access. The proposed Mall light rail alignment would adversely impact ten vehicular access points that could require design modifications in order to maintain current levels of access.

Traffic and Transit Operational Impacts. With the proposed Portland Mall light rail alignment, buses would share a lane with automobiles north of W Burnside Street whenever light rail vehicles were present (during peak periods there would be approximately one train every three to four minutes). Due to the difference in cycle lengths between the transit mall traffic signals (56-second A.M. cycle and 60-second P.M. cycle) and the W Burnside Street traffic signals (85-second A.M. cycle and 90-second P.M. cycle) green bands do not allow for good northbound and southbound light rail progression across W Burnside Street. Southbound trains on SW 5th Avenue would need to be held at the station between NW Couch and Davis streets until progression could be achieved through W Burnside Street. The same light rail operating plan would be required for northbound vehicles at the Stark Street Station.

Queuing. With the I-205 Light Rail Alternative and the PSU Terminus, the northbound queue on SW 6th Avenue at SW College Street would extend through SW Jackson Street to the I-405 ramp junction during the morning peak period. This queue would not block the merge area for the ramp. In addition, the sight distance has been evaluated and compared with the posted speed limit. There is adequate sight distance consistent with the posted speed limit and no queuing is expected within the

sight distance area. The northbound queue on SW 6th Street at SW Market Street would occasionally extend past SW Mill Street. During the evening peak period, the southbound queue on NW 5th Avenue at W Burnside Street would extend past NW Couch Street.

S.5.3 Freight Impacts

The I-205 Light Rail Alternative with the PSU Terminus would require the removal or relocation of approximately 11 truck loading zones on SW 5th and 6th avenues. Neither the No-Build nor the Main Street Terminus would remove or relocate truck-loading zones. Mitigation for loss of truck loading zones on SW 5th and 6th avenues could be accomplished by moving them to side streets adjacent to SW 5th and 6th avenues, or in some locations (not lower 6th Avenue because of the potential to increase queuing) through reconfiguration of the zones or special operations (active signs).

S.6 Environmental Consequences

Table S-6.1 summarizes the environmental consequences of the alternatives.

Table S.6-1
Summary of Environmental Impacts¹, by Alternative

Measures	No-Build	I-205 LRT with Portland Transit Mall	
		Main Street Terminus	PSU Terminus
Land Use and Economic²			
Short-Term Employment	0	1,600	2,400
Displacements:			
Residential / Business / Institutional or Public	0 / 0 / 0	0 / 1 / 0	0 / 1 / 0
Regional Air Quality³			
Carbon Monoxide (000 lbs)	728.0	714.0	714.0
Nitrogen Oxides (tons)	58.2	57.7	57.7
Volatile Organic Compounds (tons)	37.0	36.2	36.2
Noise and Vibration: Adverse Impacts⁴ Without / With Identified Mitigation			
Noise Impacts	0 / 0	0 / 0	12 / 0
Vibration Impacts	0 / 0	0 / 0	1 / 0
Energy Consumption			
Regional Daily Vehicle (billion BTU)	322.522	322.058	322.058
Construction Energy (billion BTU)	0.000	2,327.680	2,327.680
Hazardous Materials Sites Displaced:			
CERCLIS / ECSI ⁵	0 / 0	0 / 0	0 / 0
Historic and Parkland Impacts Adversely Impacted			
Historic Resources	0	0	0
Archaeologically-Sensitive Areas	0	0	0
Parklands Used	0	3	3

Source: Metro, August 2003.

Note: BRT = bus rapid transit; LRT = light rail transit; BTU = British thermal unit.

¹ See Chapter 3 of the Amendment for more detail.

² Short-term economic impacts would be the result of construction-related activities within the Portland metropolitan area, expressed in person-year jobs.

³ All emission reductions are estimated for the Portland air quality maintenance area for the year 2020.

⁴ 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 noise levels at some receivers to the point where noise abatement would be considered – see Section 3.4 of the Amendment for more information.

⁵ 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 sites.

S.6.1 Land Use and Economic Impacts

The I-205 Light Rail Alternative with Mall Alignment would have the greatest potential to positively impact regional land use and development patterns by providing a fourth spoke in the region's light rail

system, which would provide high capacity transit connections between the Portland Central City and several Regional and Town Centers. Further, the Portland Mall light rail alignment would provide improved transit access to the existing and zoned high-density development spine in downtown Portland, further reinforcing the Region 2040 plan. Additionally, light rail stations would have the potential to serve as nodes to attract transit-oriented development, more so than bus stops. The I-205 Light Rail Alternative with Mall Alignment would increase short-term employment by 1,612 and 2,400 jobs for the Main Street and PSU termini, respectively, compared to the No-Build Alternative.

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 Downtown Portland Segment includes three neighborhoods: Downtown, Old Town/China Town and Pearl. With the I-205 Light Rail Alternative, there would be one potential business displacement in the Old Town/China Town neighborhood and there would be changes in the visual environment in all three neighborhoods due to the introduction of catenaries, track and other rail facilities. There would be 12 noise impacts and one vibration impact in the Downtown neighborhood with the PSU Terminus, which would be avoided with the Main Street Terminus, however all of those impacts could be mitigated. Each of the neighborhoods would receive benefits from the South Corridor Light Rail Project in the form of improved 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. The I-205 Light Rail with Portland Mall Alternative would introduce a variety of visual elements into the Downtown Portland Segment, including catenary poles and wires and light rail tracks and stations, which would be consistent with the visual environment along the existing Cross Mall alignment. Visual simulations have been done to illustrate how Portland Mall would look with the addition of light rail. These simulations include both illustrations of individual locations as well as video simulations available for viewing on TriMet's web site (http://www.trimet.org/promotions/mall_cdr&openhouse.htm). Design alternatives that could mitigate adverse affects of adding light rail to the Portland Transit Mall have also been identified for consideration during the FEIS phase.

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. This plan included "Completion of Light Rail Transit (LRT) in the South/North Corridor by the Year 2007." as a Transportation Control Measure for maintaining air quality. 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. This conformity determination included the addition of LRT in the downtown Portland Mall, though it did not include I-205 LRT extension from Gateway to Clackamas regional center. A new conformity determination has been

completed which includes I-205 LRT, LRT in the Portland Mall as well as all other planned transportation improvements in the financially constrained system of the 2000 RTP, as amended. Analysis shows that out to the year 2020 (the furthest year analyzed), all air quality standards would be met. This conclusion was affirmed by FTA and FHWA in August, 2003, when USDOT air quality conformity was determined for the South Corridor LRT, when added to the financially constrained RTP and MTIP (see letter in Appendix A of the Amendment).

S.6.5 Noise and Vibration Impacts

Table S.6-1 summarizes the number of adverse noise and vibration impacts that would occur under each alternative with and without identified mitigation measures (adverse impacts are those noise and vibration impacts that would exceed Federally-adopted standards). All adverse noise or vibration impacts could be mitigated. 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 Amendment).

S.6.8 Energy Impacts

Compared to the No-Build Alternative, the I-205 Light Rail Alternative, with either Downtown Mall terminus option, would result in a reduction of approximately 0.464 billion British Thermal Units (BTUs) of energy expended each day in 2020 in the operation of the region's transportation system. In contrast, the I-205 Light Rail Alternative, with the PSU terminus option, would result in the expenditure of approximately 3,010 billion BTUs due to construction activities.

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. None of the alternatives would affect sites listed under the Comprehensive Environmental response Compensation and Liability Information System (CERCLIS) or the Environmental Clean-up Site Inventory (ECSI). There are some sites which are listed in Resource Conservation and Recovery Information System (RCRIS), Leaking Underground Storage Tanks (LUST) or Underground Storage Tanks (UST) lists within the downtown Portland Mall area. However, though included on these lists, remediation has already been completed for many of these sites. The remaining sites will be investigated and addressed during Preliminary Engineering and during the preparation of the FEIS.

S.6.11 Historic, Archaeological, Cultural and Parks Impacts

Within the Downtown Portland Segment, there are 65 identified historic and archaeological resources within the area of potential effect of the Portland Mall Alternative. None of those resources would be "adversely affected" by the alternative. There are three parkland (Section 4(f) resources in the Downtown area, neither of which would be used by the alternative with either terminus option (see Table S.6-1). A small portion of the property associated with three of the historic resources at the north end of the downtown area would be used for the LRT Alignment All three historic structures would not be affected by the LRT improvements. In order to ensure that the project is compatible with adjacent historic resources, the project design staff will consult further

with the State Historic Preservation Officer (SHPO) during the preliminary engineering, final design and construction phases of the project. A Memorandum of Agreement will be prepared between the SHPO, TriMet and the FTA in conjunction with the FEIS to ensure that the design concerns are adequately addressed.

S.7 Evaluation of the Alternatives

This section evaluates the alternatives 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 analysis using a range of criteria and measures to assess the alternatives' ability to meet the project's objectives;
- Social equity considerations; and
- A summary of the major tradeoffs between the alternatives.

S.7.1 Financial Feasibility Analysis

This section presents the analysis of financing scenarios for the I-205 Light Rail Project options. The financial analysis is conducted in two parts, one for *project capital costs* and one for *system costs*, because each part has a different financing plan. This method of analysis clearly differentiates between one-time project capital cost requirements and ongoing system fiscal results.

Project Capital Funding Analysis: The *Project Capital Funding Analysis* focuses on whether there are adequate capital resources to construct each alternative and, if not, the options that will be considered during preliminary engineering (the next phase of project development) for resolving the capital shortfall. I-205 Light Rail Project capital costs are only those costs associated with constructing the I-205 LRT Project alternatives.

System Funding Analysis. The *System Funding Analysis* focuses on if there are adequate resources to operate and maintain the entire transit system, including operations of the I-205 LRT Project, over the 20-year planning period and, if not, the options to be considered during preliminary engineering for resolving the system shortfall. System costs include all transit operating and maintenance costs and all transit capital expenditures to 2022, except for I-205 LRT Project capital costs.

S.7.1.1 Costs

This section presents both *Project Capital Costs* and *Systems Costs* for each of the alternatives. Costs are shown in 2002 dollars and year of expenditure dollars (YOE dollars).

A. I-205 LRT Project Costs

Table S.7-1 shows the capital costs for each I-205 LRT Project terminus option in 2002 dollars and YOE dollars. The project capital costs include all facility improvements, right-of-way costs and vehicle purchases required by each project alternative, in excess of the already-committed capital costs associated with the No-Build Alternative. YOE project capital costs would range from \$527.9 million to \$585.7 million, depending on the terminus and design options selected.

B. System Costs

System costs include all capital and Operations and Maintenance (O&M) expenditures by TriMet over the 20-year planning period, except the capital costs, for the I-205 LRT Project. Total system cost is the aggregate of system operating costs and system capital costs.

Table S.7-1
Summary of Project Capital and Operating Costs by Alternative
in Millions of Dollars

	I-205 LRT with Mall Main St Terminus	I-205 LRT with Mall PSU terminus
Project Capital Costs (Total Opening Day and 2008 to 2020 Costs) in 2002 Dollars		
Total Cost: Lowest Cost Design Option	\$442.3	\$484.2
Total Cost: Highest Cost Design Option	\$449.9	\$490.8
Project Capital Costs (Total Opening Day and 2008 to 2020 Costs) in YOE Dollars		
Total Cost: Lowest Cost Design Option	\$527.9	\$577.8
Total Cost: Highest Cost Design Option	\$535.8	\$585.7
Year 2020 Corridor Annual Operating Costs (in 2002 Dollars)		
Bus Operations	\$15.51	\$15.51
LRT Operations	\$ 7.77	\$ 8.77
Total Operations	\$23.28	\$24.28
Year 2020 Corridor Annual Operating Cost: Difference from No-Build Alternative (in 2002 Dollars)		
Bus Operations	(\$ 0.32)	(\$ 0.32)
LRT Operations	\$ 7.77	\$ 8.77
Total Operations	\$ 7.45	\$ 8.45

Source: TriMet, July 2003.

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

System operating costs include all annual transit operating and maintenance costs, including the cost of operating and maintaining the existing transit system, customary increases in transit service hours throughout the system that are required to maintain headways and capacity, the applicable I-205 LRT Project alternative and the expanded bus network in the South Corridor that would be required to support the project alternative. Table S.7-2 shows the cumulative system operating costs (shown in YOE dollars) covering the 20-year planning period for each alternative. These costs incorporate the 2020 O&M costs for the I-205 LRT Project shown in Table S.7-1. O&M costs were calculated for the interim years by extrapolating between the opening year costs and the 2020 costs and converting to YOE dollars by inflating the 2002 dollar costs by the applicable inflation rate. The resulting year-by-year costs were then summed to determine the cumulative totals shown in Table S.7-2.

Table S.7-2
Summary of Transit System Costs: Cumulative Total from FY 2002 to FY 2022
(in Millions of YOE Dollars)

	No Build	I-205 LRT with Mall Main St Terminus	I-205 LRT with Mall PSU Terminus
System Operating Costs	\$8,235.9	\$8,510.1	\$8,563.3
System Capital Costs	\$971.6	\$1,067.3	\$1,108.7
Total System Costs	\$9,207.5	\$9,577.4	\$9,672.0
Total System Revenues	\$9,459	\$9,512	\$9,575
System Feasibility Analysis			
Low Year of Working Capital (millions) ¹	N/A	-\$24.6	-\$39.7
Years with Working Capital Below 2.0 months	N/A	15	15

Source: TriMet, July 2003.

Note: FY = fiscal year; YOE = year-of-expenditure; LRT = light rail transit.

¹ Without additional revenues.

S.7.1.2 Currently Available Resources

Two categories of available revenue resources are examined within this section: revenue resources reserved for I-205 LRT Project capital costs and revenue resources reserved for transit system costs.

A. Currently Available Transit Project Capital Revenues

Currently, there are \$104.4 million of non-Section 5309 New Start funds committed to pay for I-205 LRT Project capital costs, as follows:

- \$39.4 million in Regional Surface Transportation Program (STP) funds for opening day costs;
- \$35.0 million in Clackamas County tax increment funds;
- \$20.0 million in TriMet general funds for opening day costs; and
- \$10.0 million in City of Portland funds for opening day 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 \$9,459 and \$9,575 billion (YOE dollars) between FY 2002 and FY 2020, depending on the alternative. The difference between alternatives reflects differences in passenger revenues and interest earnings. In addition to the above capital revenues, 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.
- **Grants and Capital Reimbursement.** The forecast is based on a projection that TriMet will receive the Federal Section 5307 funds in FY 2003, as proposed by the current administration, and that Section 5307 funds will grow thereafter by 3 percent per year.
- **Passenger Revenues.** Passenger revenues are TriMet's second largest revenue source. In FY 2002, passenger revenues totaled \$53.2 million, 19.4% of operating revenue.

S.7.1.3 Existing Revenue Needs

This section discusses the amount of additional project and system revenues that would be needed to make each alternative fiscally feasible.

A. Existing Project Capital Revenue Needs

Table S.7-3 summarizes the projected capital funding shortfalls (currently available capital revenues minus the capital costs of the alternative) for each alternative in YOE dollars. The capital costs shown include all capital costs for an alternative. Project capital shortfalls would occur with all of the alternatives, ranging from \$423.5 million for the low-cost Main Street Terminus Option to \$481.3 million for the high-cost PSU Terminus Option. Potential methods for eliminating these shortfalls, including the possible use of federal funds, are discussed in Section S.7.1.4.

B. Existing System Revenue Needs

System costs and revenues were projected on a year-by-year basis over the 20-year period based on the key elements of the fiscal analysis described in previous sections. Identical analyses were prepared for the No-Build Alternative and both I-205 LRT Project terminus options. As shown in Table S.7-2, existing system revenues are insufficient for all build alternatives to maintain beginning year operating reserves at the desire two-month levels over 15 years. The existing revenues are also insufficient to avoid negative operating results for the build alternatives.

Table S.7-3
Summary of Project Capital Revenue Shortfall:
Total Costs (Opening Day and 2008 to 2020 Costs)
Minus Available Revenues (in Millions of YOE Dollars)

	I-205 LRT w/ Mall Main St. Terminus	I-205 LRT w/ Mall PSU Terminus
Low-Cost Design Option		
Project Capital Cost	\$527.9	\$577.8
Available Capital Revenues	\$104.4	\$104.4
Project Capital Shortfall	\$423.5	\$473.4
High-Cost Design Option		
Project Capital Cost	\$535.8	\$585.7
Available Capital Revenues	\$104.4	\$104.4
Project Capital Shortfall	\$431.4	\$481.3

Source: TriMet, July 2003.

Note: YOE = year-of-expenditure; LRT = light rail transit

S.7.1.4 Proposed Additional Revenues

This section discusses options for additional revenue that TriMet may seek to eliminate project capital and system revenue shortfalls.

A. Proposed Additional Project Capital Revenues

Potential sources for addressing the capital cost funding shortfalls are identified below:

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. While federal statutes allow up to 80 percent of project costs to be paid by Section 5309 New Starts funds, FTA and Congress may seek to limit the amount of New Starts funds in Full Funding Grant Agreements (FFGAs) to 50 percent to 60 percent of project costs. As shown in Table S.7-4, \$212.6 million of Section 5309 New Starts funds would be sought for the opening day costs for the Main St. Terminus, based on a 50 percent New Starts share. The total Section 5309 New Starts fund request

for the Main St. Terminus, including opening day costs and 2008 to 2020 costs, would be \$264.0 million, based on a 50 percent New Starts share. The PSU Terminus Option would require \$288.9 million of Section 5309 New Starts funds, in total (opening day and 2008-2020 costs), of which \$237.5 million would be required for Opening Day Costs, based on a 50 percent New Starts share.

Other Local and Regional Funds. A variety of additional local and regional funding sources will be considered to fund the project. Additional local funds totaling the amount shown in Table S.7-4 would be requested from the City of Portland (possibly from tax increment funds, city general funds or other city funds) and ODOT's State Transportation Improvement Program (STIP). In addition, a possible increase to TriMet's payroll/self-employment tax, discussed in Section 5.1.4.2, could fund all or a portion of the local share of 2008 to 2020 costs; if such an increase is enacted.

Table S.7-4
Capital Finance Plan: Illustrative Concept Plan
Assuming 50% New Starts Share for LRT Capital Costs
(in Millions of YOE Dollars)

	I-205 LRT w/ Mall Main St. Terminus	I-205 LRT w/ Mall PSU Terminus
Opening Day LRT Capital Cost		
Cost in YOE dollars	\$425.1	\$475.0
Revenues		
U Section 5309 New Starts Funds	\$212.6	\$237.5
A MTIP-STP Funds	\$ 39.4	\$ 39.4
A Clackamas County Tax Increment Funds	\$ 35.0	\$ 35.0
A Portland Funds	\$ 10.0	\$ 10.0
A TriMet Funds	\$ 20.0	\$ 20.0
U Other Local and Regional Funds	\$108.1	\$133.1
Total	\$425.1	\$475.0
2008 to 2020 LRT Capital Costs		
Cost in \$YOE	\$102.8	\$102.8
Revenues		
U Section 5309 New Starts Funds	\$ 51.4	\$ 51.4
U TriMet Funds	\$ 51.4	\$ 51.4
Total	\$102.8	\$102.8
Grand Total: Opening Day and 2008 to 2020 Costs		
Cost in \$YOE	\$527.9	\$577.8
Revenues		
U Section 5309 New Starts Funds	\$264.0	\$288.9
A MTIP-STP Funds	\$ 39.4	\$ 39.4
A Clackamas County Tax Increment Funds	\$ 35.0	\$ 35.0
A Portland Funds	\$ 10.0	\$ 10.0
A TriMet Funds	\$ 20.0	\$ 20.0
U Other Local and Regional Funds (includes currently-unavailable TriMet funds)	\$159.5	\$184.5
Total	\$527.9	\$577.8

Source: TriMet, July 2003.

Notes: The funding plan shown is conceptual, subject to further examination during preliminary engineering. U = funds currently unavailable, A = funding source currently available, YOE = year-of-expenditure, LRT = Light Rail Transit, MTIP = Metropolitan Transportation Improvement Program, STP = Surface Transportation Program.

B. Potential System Revenue Sources

As shown in Table S.7-2, it is currently forecast that TriMet will not have sufficient system revenues to operate the I-205 LRT Project alternatives and maintain, at a minimum, a two-month beginning working capital reserve each year. Consequently, it would be necessary to secure additional operating revenues for the I-205 LRT Project. 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 withdrawn 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 percentage points per year. This would require legislative approval of an amendment to TriMet's funding statute. If approved, a portion of the proceeds could be used for I-205 LRT Project capital costs.

S.7.1.5 System Fiscal Feasibility Conclusions and Risk Assessment

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

A. Project Capital Funding Conclusions

Table S.7-4 shows capital funding concepts for each Terminus Option, based on a 50 percent share of project capital costs being paid with Section 5309 New Start funds. The funding plan shown is a preliminary concept and is shown for illustrative purposes. Based on a 50 percent share from Section 5309 New Starts funds, \$212.6 million of New Starts funds would be proposed to pay opening day costs of the Main Street Terminus Option. In addition, \$51.4 million of Section 5309 New Starts funds would be needed in the future to fund, in part, the 2008 to 2020 costs. \$108.1 million of other local and regional funds would be needed to complete the financing of opening day costs and another \$51.4 million would be needed for the 2008 to 2020 costs. Based on a 50 percent share from Section 5309 New Starts funds, \$237.5 million of New Starts funds would be proposed to pay opening day costs of the PSU Terminus Option. In addition, \$51.4 million of Section 5309 New Starts funds would be needed in the future to fund, in part, the 2008 to 2020 costs. Further, \$133.1 million of other local and regional funds would be needed to complete the financing of opening day costs and another \$51.4 million would be needed for the 2008 to 2020 costs. Even with a FFGA, a project must have funds appropriated to it on an annual basis to actually receive such funds. When fewer New Starts funds are allocated than are needed by the local project, 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.

B. System Fiscal Feasibility Conclusions

All of the alternatives require additional system revenues to meet the minimum working capital standard in all years. As previously mentioned, the fiscal condition of transit system operations is considered adequate if the beginning of year operating reserve (in months of operations) is maintained at two months. With the proposed payroll tax rate increase there would be sufficient system revenues to operate all of the Project alternatives, as well as 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 project finance plan depends on successfully obtaining:

- The required capital funding commitments from state, regional and local sources to meet the capital cost requirements;
- FTA and Congressional authority to proceed to construction;
- Oregon State Legislative approval of authority for TriMet to increase operating revenues;
- TriMet Board enactment of a new or increased operating revenue source; and
- A FFGA between TriMet and FTA that provides sufficient Section 5309 New Starts funds to finance opening day costs.

S.7.2 Effectiveness Evaluation

The purpose of this section is to draw upon the wide array of analyses presented in this Executive Summary and the Amendment 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 the Amendment.

S.7.3 Social Equity Considerations

There are three established neighborhoods located within the Downtown Portland Segment: Downtown; Pearl; and Old Town/China Town (see Table 3.3-1 of this Amendment). The Downtown (23.7 percent) and the Old Town/China Town (22.6 percent) neighborhoods have minority populations greater than the Tri-County average of 17.1 percent (i.e., Multnomah, Clackamas and Washington counties – 2000 US Census). 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. While the neighborhoods would experience some adverse impacts, they would also benefit from improved transit access. None of the alternatives would result in disproportionately high negative consequences to low-income or minority neighborhoods in relationship to the benefits received.

S.7.4 Significant Tradeoffs Between the Alternatives

The purpose of this section is to provide a summary of the significant tradeoffs between the alternatives under study for the South Corridor Project by comparing the benefits (e.g., increased performance of the Corridor's transportation system, fewer or avoided adverse environmental impacts, or lower costs) of one alternative with benefits of another alternative. All costs are expressed in 2002 dollars and all costs and statistics are based on 2020 service levels.

No-Build and I-205 Light Rail with Portland Mall Alternatives. The significant tradeoffs between the No-Build and the I-205 Light Rail with Portland Mall Alternatives would be as follows.

The **I-205 Light Rail with Portland Mall Alternative** would result in: 27,000 to 36,300 additional residents and 143,000 to 171,400 additional jobs within 1/2 mile of a fixed-guideway station; 7 percent faster average transit vehicle speeds on the Portland Mall; 20,865 to 29,150 additional

**Table S.7-5
Evaluation Criteria and Selected Measures¹ by Alternative**

Evaluation Criteria	Selected Measures	No Build	I-205 LRT with Transit Mall	
			Main Street Terminus	PSU Terminus
Provide High Quality Transit Service	Access to/from Transit Network			
	Residents – 1/2 mile station access ²	n/a ³	27,000	36,300
	Jobs – 1/2 mile station access ²	n/a ³	143,000	166,900
	Travel Time Savings			
	PSU to Rose Quarter ⁴	15.2	15.2	14.6
	Pioneer Square to Rose Quarter ⁴	8.6	8.6	8.6
	Peak mall bus speeds	4.2 mph	4.5 mph	4.5 mph
Reliability	Crowded conditions for LRT on Cross Mall alignment	Elimination of crowded conditions for LRT on Cross Mall alignment	Elimination of crowded conditions for LRT on Cross Mall alignment	
Transit Ridership				
Corridor transit ridership ⁵	184,700	200,000	200,100	
Systemwide LRT ridership ⁶	168,350	189,215	197,500	
CBD p.m. peak mode share	56%	61%	61%	
Ensure Effective Transit System Operations	Operational Effectiveness Safety and operating considerations	Possible operational and traffic conflicts on Cross Mall alignment	Reduction in operational and traffic conflicts on Cross Mall alignment – more complex LRT-bus-automobile operations on the Portland Mall	Reduction in operational and traffic conflicts on Cross Mall alignment – more complex LRT-bus-automobile operations on the Portland Mall
Maximize Ability of Project to Handle Growth	Ability to Accommodate Additional System Demand	Little or no LRT service expansion capability on Cross Mall alignment after 2020	LRT service expansion capability on the Cross Mall and Portland Mall alignments – little or no bus service expansion on the Portland Mall	LRT service expansion capability on the Cross Mall and Portland Mall alignments – little or no bus service expansion on the Portland Mall
Minimize Traffic Congestion	Local Traffic Impacts Parking spaces removed (on/off street)	0	0	130 / 64
Promote Desired Land Use Patterns	Support of Activity Centers Ability to serve Central City as planned for in Region 2040	Does not fully support Region 2040 Plan and Central City Plan	Partially supports Region 2040 Plan and Central City Plan	Fully supports Region 2040 Plan and Central City Plan
	Support Land Use Policies	Not supportive of adopted plans and policies	Somewhat supportive of adopted plans and policies	Most supportive of adopted plans and policies
	Access to Labor Force Change in short-term jobs ⁷	0	1,600	2,400
Fiscally Stable and Financially Efficient Transit System	Capital Costs (millions of YOES)	\$0.0	\$99.8	\$149.7
	Operating Costs (millions of 2002\$)	\$286.2	\$292.6	\$293.6
	Efficiency Green Line rides per service hour ⁵	N/A	194	184
Maximize Environmental Sensitivity	Displacements	0	1	1
	Noise and Vibration Impacts that could not be mitigated	0	0	0

Source: Metro and TriMet, August 2003.

Note: Unless otherwise noted all statistics are for the Downtown Portland Segment for 2020 service levels. LRT = light rail transit; PSU = PSU; YOES = year of expenditure dollars; UGB = urban growth boundary.

¹ A complete list of the effectiveness measures may be found in Table 5.2-1 of the Amendment and a complete assessment of the alternative by each of the measures may be found in Section 5.2 of the Amendment.

² 1/2 mile access to fixed-guideway stations.

³ Not Available. This measure estimates the number of additional residents and jobs that would be within 1/2 mile of a Portland Transit Mall light rail station. By adding LRT stations along the Transit Mall, more people would be within walking distance (1/2 mile) of LRT. In the No-Build, this proximity would not be provided beyond the number of residents and jobs served by existing stations.

⁴ In minutes during the p.m. peak period of an average weekday.

⁵ Originating rides (an originating ride 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).

⁶ Boarding rides (a boarding ride is defined as when a patron boards a transit vehicle, whether or not they arrived to that vehicle by transferring from another transit vehicle – for example, a person trip that required a transfer between two light rail lines would result in two boarding rides).

⁷ Person-year jobs.

systemwide average weekday light rail boardings; 15,300 to 15,400 additional systemwide average weekday transit originating trips; a 9 percent increase in the average weekday p.m. peak transit mode split from Downtown Portland to the South Corridor; 1,600 to 2,400 additional short-term jobs; and improved transit service for the PSU campus, compared to the No-Build Alternative.

The **No-Build Alternative** would result in one less potential commercial displacement and would cost approximately \$527.9 million to \$577.8 million (YOE) less to construct and approximately \$6.8 million to \$7.7 million less to operate in 2020 than the I-205 Light Rail with Portland Mall Alternative.

Main Street and PSU Termini. The significant tradeoffs between the Main Street and PSU terminus options would be as follows. The **Main Street Terminus** would cost approximately \$49.9 million (YOE) less to construct and approximately \$1.0 million less to operate, compared to the PSU Terminus. The **PSU Terminus** would result in: 9,300 more residents and 28,400 more employees within 1/2 mile of a fixed-guideway station; a 4 percent (30 seconds) reduction in travel times from PSU to the Rose Quarter by approximately; 15,300 more systemwide light rail boarding rides; 800 more short-term jobs; and better transit service for the PSU campus than the Main Street Terminus.

S.8 Issues to be Resolved

The analysis and preparation of the Amendment to 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 ones.

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

This Amendment, related technical documents and comments received during the public review period will provide a basis for the region to reaffirm or amend the project's preferred alternative for the Downtown Portland Segment that is a subset of the project's LPA. There are many points of view that must be brought to bear on these important decisions. The alternatives presented in the Amendment offer a 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 reaffirmation or amendment of the preferred alternative for the Downtown Portland Segment, 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 Amendment 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 Amendment stage of the process, impacts within the Downtown Portland Segment 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; and initial coordination with the Oregon SHPO, and other affected parties to ensure compatible design of transit facilities with historic resources.

In addition, the South Corridor Project will commit to further ways to mitigate or finalize the mitigation of certain impacts of the entire LPA project. 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 FEIS.