

Lake Oswego to Portland Transit Project

Economic Activity Technical Report

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TriMet and Metro

Bonnie Gee Yosick Ilc

For URS Corporation

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1. INTRODUCTION

This report contains the detailed analysis and documentation that is the basis for Chapter 3, Section 3.2 on Economic Activity in the Lake Oswego to Portland Transit Project (LOPT) Draft Environmental Impact Statement (DEIS) published by the Federal Transit Administration in December 2010. This chapter of the report includes a summary of the project background, Purpose and Need, the alternatives/options considered, and the description of the alternatives analyzed.

1.1 Project Background

Transit improvements in the Lake Oswego to Portland corridor have been studied several times in recent history. In the 1970s and 80s, a light rail alignment through Johns Landing was studied as part of the Westside Corridor Alternatives Analysis, and in the 1990s potential light rail alignments through Johns Landing were studied as part of the South/North Corridor Study.

The Willamette Shore Line right of way was first established in 1885-1887 as the Portland and Willamette Valley Railroad, which began operation in July 1887. The Southern Pacific Railroad (SPRR) later purchased the railway in 1914. The railroad had a major impact on the development of southwest Portland. Initially, 14 trains operated between Portland and Oswego (as it then was known), and it became the main transportation link for developing residential communities along the route. The line was electrified in 1914 and passenger traffic hit its peak in 1920 with SPRR running 64 daily trains between Portland and Oswego. Passenger service ended on October 5, 1929, while freight service continued until 1983.

In August of 1984, the Interstate Commerce Commission granted SPRR permission to abandon the line. In 1988, the Willamette Shore Line Consortium (the Consortium) purchased the 6.3-mile-long line from SPRR for approximately \$2 million. The Consortium, comprised of the City of Lake Oswego, City of Portland, Oregon Department of Transportation (ODOT), Clackamas County, Multnomah County, Metro, and TriMet, purchased the line to preserve it for future passenger rail transit use. TriMet holds title for the Consortium and the City of Lake Oswego provides maintenance services funded by the Consortium.

In 2005, with the endorsement of the Joint Policy Advisory Committee on Transportation, the Metro Council directed staff to initiate the Lake Oswego to Portland Transit and Trail Alternatives Analysis. The alternatives analysis focused on improving the ability to serve travel demand in the corridor through improved transit service and development of a multi-use pathway.

1.2 Purpose and Need

The **Purpose** of the project is to optimize the regional transit system by improving transit within the Lake Oswego to Portland transit corridor, while being fiscally responsive and supporting regional and local land use goals. The project should maximize, to the extent possible, regional resources and economic development opportunities, and garner broad public support. The project should build on previous corridor transit studies, analyses, and conclusions and should be environmentally sensitive.

The **Need** for the project results from:

- Historic and projected increases in traffic congestion in the Lake Oswego to Portland corridor due to increases in regional and corridor population and employment;

- Lengthy and increasing transit travel times and deteriorating public transportation reliability in the corridor due to growing traffic congestion;
- Increasing operating expenses, combined with increasingly scarce operating resources and the demand for more efficient public transportation operations;
- Local and regional land use and development plans, goals, and objectives that target the corridor for residential, commercial, retail, and mixed-use development to help accommodate forecast regional population and employment growth, and previous corridor transit studies, analyses, and conclusions;
- The region's growing reliance on public transportation to meet future growth in travel demand in the corridor;
- The topographic, geographic, and built-environment constraints within the corridor that limit the ability of the region to expand the highway and arterial infrastructure in the corridor; and
- Limited options for transportation improvements in the corridor caused by the identification and protection of important natural, built, and socioeconomic environmental resources in the corridor.

1.3 Alternatives/Options Considered

Metro's 2004 Regional Transportation Plan (RTP) identified the need for a refinement plan for a high-capacity transit option for the corridor, which included an analysis of several modal alternatives. Metro initiated the corridor refinement plan in July 2005 and issued the *Lake Oswego to Portland Transit and Trail Alternatives Analysis Evaluation Summary Public Review Draft* in June 2007.

On December 13, 2007, after reviewing and considering the alternatives analysis report, public comment, and recommendations from the Lake Oswego to Portland Transit and Trail Project Citizen Advisory Committee (CAC), the Lake Oswego to Portland Transit and Trail Project Management Group (PMG), Steering Committee, and partner jurisdictions and agencies, the Metro Council approved Resolution No. 07-3887A. The resolution adopted the *Lake Oswego to Portland Transit and Trail Alternatives Analysis: Alternatives to be Advanced into a Draft Environmental Impact Statement and Work Program Considerations* (December 13, 2007). (See Section 2.1 for additional detail on the process used to identify and narrow alternatives.) It also selected the No-Build, Enhanced Bus, and Streetcar alternatives to advance into the project's DEIS for further study, and directed staff to conduct a refinement study to identify design options in the Johns Landing Area and terminus options to advance into the project's DEIS. The resolution called for further refinement of the trail component to move forward as a separate process.

1.3.1 Alternatives Analysis

The project's alternatives analysis process developed a wide range of alternatives for evaluation and early screening, which included: a no-build alternative, widening of Highway 43, reversible lanes on Highway 43, river transit (three options), bus rapid transit (BRT) (three options); commuter rail, light rail, and streetcar (a wide range of alignment alternatives and terminus alternatives and options).

Through a screening process that assessed the ability of the alternatives to meet the project's Purpose and Need, the initial range of possible alternatives was narrowed. Appendix C of the DEIS provides a summary of the technical evaluation of the alternatives and options considered during the alternatives analysis phase.

The following alternatives were selected for further study through the alternatives analysis phase: 1) No-Build Alternative, 2) Bus Rapid Transit Alternative, and 3) Streetcar Alternative. Following is a description of those alternatives as they were studied in the alternatives analysis (see the *Lake Oswego to Portland Transit and Trail Study Evaluation Summary Public Review Draft* for more information).

- **No-Build Alternative.** Similar to the project's current No-Build Alternative, as described in Section 1.4.1.
- **Bus Rapid Transit Alternative.** The Bus Rapid Transit Alternative would operate frequent bus service with Line 35 on Highway 43 between downtown Portland and downtown Lake Oswego, generally in mixed traffic, with bus station spacing that would be longer than TriMet typically provides for fixed-route bus service. Transit queue bypass lanes would be constructed at congested intersections, where feasible.
- **Streetcar Alternative.** The Streetcar Alternative would extend the existing Portland Streetcar line, which currently operates between NW 23rd Avenue and SW Lowell Street, to downtown Lake Oswego. Study of this alternative includes an evaluation of whether the Willamette Shore Line right of wayright of way would be used exclusively of whether it would be used in combination with SW Macadam Avenue or other adjacent roadways.

1.3.2 Scoping/Project Refinement Study

This section describes the alignment and terminus options developed, evaluated, and screened in 2009 as a part of the project's scoping and refinement study phase. In November 2010, Metro published the *Lake Oswego to Portland Transit Project Refinement Report*, which detailed the study's results and summarized public comment. This phase focused on refinements in two areas: 1) alignment options for the Johns Landing area; and 2) terminus options in the Lake Oswego area. In summary, the project's Purpose Statement during the refinement phase was to:

- Optimize the regional transit system;
- Be fiscally responsive and maximize regional resources;
- Maximize the economic development potential of the project;
- Be sensitive to the built and social environments; and
- Be sensitive to the natural environment.

The options, evaluation measures, and results of the Johns Landing streetcar alignment refinement process and the Lake Oswego terminus refinement processes are summarized below.

A. Johns Landing Streetcar Alignment Refinement. For the refinement of streetcar design options within the Johns Landing area, the project used the following criteria: streetcar operations, streetcar performance, financial feasibility, traffic operations, accessibility and development potential, neighborhood sustainability, and adverse impacts to the natural environment. Measures for each of the criteria were developed and applied to each of the alignment options studied, which included:

- Hybrid 1: Macadam Avenue In-Street
- Hybrid 2: East Side Exclusive

- Hybrid 3: Macadam Avenue with New Northbound Lane
- Willamette Shore Line
- Full Macadam In-Street

B. Lake Oswego Terminus Option Refinement. For the refinement of terminus options in the Lake Oswego area, the project used the following criteria: expansion potential and regional context, streetcar operations, streetcar performance, financial feasibility, traffic operations, accessibility and development potential, and neighborhood sustainability. Measures for each of the criteria were developed and applied to each of the alignment options studied, which included: a) Safeway Terminus Option; b) Albertsons Terminus Option; and c) Trolley Terminus Option.

On June 1, 2009, in consultation with FTA and based on the findings of the analysis, public and agency comment and recommendations from the Lake Oswego to Portland Project Management Group, the Lake Oswego to Portland Transit Project Steering Committee selected the following options in the Johns Landing area to advance into the DEIS: Willamette Shore Line; Hybrid 1: Macadam Avenue In Street (Boundary Street to Carolina Street); and Hybrid 3: Macadam Avenue with New Northbound Lane (Boundary Street to Carolina Street).

1.4 Description of Alternatives Analyzed in this Technical Report and the DEIS

This section summarizes the roadway and transit capital improvements and transit operating characteristics for the No-Build, Enhanced Bus, and Streetcar alternatives. Table 1-1 provides a summary of the transit capital improvements associated with the three alternatives, and Table 1-2 summarizes the operating characteristics of the alternatives. A more detailed description of the alternatives may be found in the *Lake Oswego to Portland Transit Project Detailed Definition of Alternatives Report* (Metro/TriMet: January 2010). Detailed drawings of the Streetcar Alternative, including the various design options, can be found in the *Streetcar Plan Set*, November 2009.

1.4.1 No-Build Alternative

This section describes the No-Build Alternative, which serves as a reference point to gauge the benefits, costs, and effects of the Enhanced Bus and Streetcar alternatives. In describing the No-Build Alternative, this section focuses on: 1) the alternative's roadway, bicycle and pedestrian, and transit capital improvements; and 2) the alternative's transit operating characteristics. This description of the No-Build Alternative is based on conditions in 2035, the project's environmental forecast year.

1.4.1.1 Capital Improvements

Following is a brief description of the roadway, bicycle and pedestrian, and transit capital improvements that would occur under the No-Build Alternative (see Table 1-1). Figure 1-1 illustrates the location of those improvements.

- **Roadway Capital Improvements.** The No-Build Alternative includes the existing roadway network in the corridor, with the addition of roadway capital improvements that are listed in the financially constrained road network of Metro's 2035 RTP.¹ Following is a list of the roadway projects that would occur within the corridor by 2035.
 - *Moody/Bond Avenue Couplet* (create couplet with two lanes northbound on SW Bond Avenue and two lanes southbound on SW Moody Avenue);
 - *South Portal* (Phases I and II to extend the SW Moody Avenue/SW Bond Avenue couplet to SW Hamilton Street and realign SW Hood Avenue to connect with SW Macadam Avenue at SW Hamilton Street);
 - *I-5 North Macadam* (construct improvements in the South Waterfront District to improve safety and access); and
 - *Macadam Intelligent Transportation Systems* (install system and devices in the SW Macadam Avenue corridor to improve traffic flow).

¹ Metro, 2035 Regional Transportation Plan, approved Dec. 13, 2007.

**Table 1-1 Transit Capital Improvements for the
No-Build, Enhanced Bus, and Streetcar Alternatives (2035)**

Capital Improvements	No-Build	Enhanced Bus	Streetcar¹
<i>New Streetcar Alignment Length²</i>	N/A	N/A	5.9 to 6.0
<i>One-Way Streetcar Track Miles</i>			
Portland Streetcar System	15.7	15.7	26.2 to 27.0
Proposed Lake Oswego to Portland Project	0	0	10.5 to 11.3
<i>Streetcar Stations</i>			
Portland Streetcar System	69	69	79
Proposed Lake Oswego to Portland Project	0	0	10 ³
<i>Streetcars (in service/spares/total)</i>			
Portland Streetcar System	17/5/22	17/5/22	27/6/33
Proposed Lake Oswego to Portland Project	N/A	N/A	10/1/11
<i>Streetcar Operations and Maintenance (O&M) Facilities</i>			
Number of Facilities ⁴	1	1	2
Maintenance Capacity (number of Streetcars)	36	36	36
Storage Capacity (number of Streetcars)	25	25	33
Line 35 Bus Stops			
<i>Line 35 Bus Stops (Lake Oswego to SW Bancroft St.)</i>	26	13	0
<i>Buses (in service/spares)</i>			
TriMet Systemwide	607/712	619/725	601/704
Difference from No-Build Alternative	N/A	13	- 8
Transit Centers⁵	1	1	1
Park-and-Ride Facilities			
Joint Use Surface – Lots/Spaces	3/76	3/76	3/76
Surface – Lots/Spaces	0/0	0/0	1/100
Structured – Lots/Spaces	0/0	1/300	1/300

Note: LO = Lake Oswego; O&M = operating and maintenance.

¹ The transit capital improvements of the Streetcar Alternative summarized in this table would not vary by design option, except when shown as a range and as noted for new streetcar alignment length and one-way track miles. The first number listed is under the Willamette Shore Line design option and the second number listed is under the Macadam design options (in the Johns Landing Segment).

² Under the No-Build and Enhanced Bus alternatives, the Portland Streetcar System would include two streetcar lines: a) the existing Portland Streetcar Line, between NW 23rd Avenue and SW Bancroft Street, and b) the Portland Streetcar Loop, which is currently under construction and will be completed when the Milwaukie Light Rail and Streetcar Close the Loop project are constructed. The Streetcar Alternative would extend the existing Portland Streetcar line south, from SW Bancroft Street to Lake Oswego. One-way track miles are calculated by multiplying the mileage of double-tracked sections and adding that to the mileage of single-track sections. Alignment length and one-way track miles are presented as a range, because they would vary by design option. The number of streetcar stations, streetcars in service or as spares and the number and size of streetcar O&M facilities would not change by streetcar design option.

³ Two optional stations are also being considered for inclusion in the Streetcar Alternative (see Figure 1-5 and Figure 1-6): 1) the Pendleton Station under the Macadam In-Street and Macadam Additional Lane design options in the Johns Landing Segment; and the E Avenue Station in the Lake Oswego Segment.

⁴ There is an existing streetcar operations and maintenance (O&M) facility at NW 16th Avenue, between NW Marshall and NW Northrup streets; under the Streetcar Alternative, additional storage for eight vehicles would be provided along the streetcar alignment under the Marquam Bridge. There would be no change in the number or size of bus O&M facilities under any of the alternatives or design options. Bus stops are those that would be served exclusively by Line 35 between Lake Oswego and SW Bancroft Street

⁵ Under the No-Build and Enhanced Bus alternative, the Lake Oswego Transit Center would remain at its current location (on 4th Street, between A and B avenues); under the Streetcar Alternative, the transit center would be moved to be adjacent to the Lake Oswego Terminus Station.

Source: TriMet, January 2010.

Table 1-2 Streetcar and Bus Network Operating Characteristics of No-Build, Enhanced Bus, and Streetcar¹ Alternatives (2035)

Operating Characteristics by Vehicle Mode	No-Build	Enhanced Bus	Streetcar
Streetcar Network Operating Characteristics¹			
<i>Weekday Streetcar Vehicle Miles Traveled</i>			
Systemwide	2,180	2,180	3,200 or 3,230
Difference from No-Build Alternative	N/A	0	1,020 or 1,050
<i>Weekday Streetcar Revenue Hours</i>			
Systemwide	267	267	326 or 332
Difference from No-Build Alternative	N/A	0	59 or 65
<i>Corridor Weekday Streetcar Place Miles²</i>	N/A	N/A	89,000 or 91,320
<i>Corridor Streetcar Round-Trip Time³</i>	N/A	N/A	37 or 44 minutes
<i>Corridor Streetcar Headways⁴</i>			
Lake Oswego to PSU	N/A	N/A	7.5 / 7.5 minutes
Bus Network Operating Characteristics			
<i>Weekday Bus Miles Traveled</i>			
Systemwide	76,560	77,560	75,520
Difference from No-Build Alternative	N/A	1,000	-1,040
<i>Weekday Bus Revenue Hours</i>			
Systemwide	5,300	5,400	5,210
Difference from No-Build Alternative	N/A	100	-90
<i>Line 35 (bus) Weekday Place Miles²</i>	37,000	57,840	0
<i>Line 35 (bus) Headways⁴</i>			
Lake Oswego to Downtown Portland	15 / 15 min.	6 / 15 min.	N/A
Oregon City to Lake Oswego	15/15 min.	15/15 min.	15/15 min.

Note: N/A = not applicable; LO = Lake Oswego; O&M = operating and maintenance; PSU = Portland State University.

¹ The operating characteristics of the Streetcar Alternative summarized in this table would not vary by design option, except when shown as a range and as noted for streetcar vehicle miles traveled, place miles, and round-trip time. The first number listed is under the Willamette Shore Line Design Option and the second number listed is under the Macadam design options (in the Johns Landing Segment).

² Place miles are a measure of the passenger carrying capacities of the alternatives, similar to airline seat miles. Place miles = transit vehicle capacity (seated and standing) of a vehicle type, multiplied by the number vehicle miles traveled for that vehicle type, summed across all vehicle types. The No-Build Alternative bus place miles are based on lines 35 and 36.

³ Round-trip run time for the proposed streetcar line would include in-vehicle running time from SW Bancroft Street to the Lake Oswego Terminus Station and back to SW Bancroft Street; it does not include layover time at the terminus.

⁴ Headways are the average time between transit vehicles per hour within the given time period that would pass by a given point in the same direction, which is inversely related to frequency (the average number of vehicles per hour in the given time period that would pass by a given point in the same direction). Weekday peak is generally defined as 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.; weekday off-peak is generally defined as 5:00 to 7:00 a.m., 9:00 a.m. to 4:00 p.m. and 6:00 p.m. to 1:00 a.m. There would be streetcar service every 12 minutes between SW Bancroft Street and the Pearl District (via PSU) under the No-Build and Enhanced Bus alternatives. The peak headways shown for the No-Build Alternative are the composite headways for Lines 35 and 36.

Source: TriMet – January 2010.

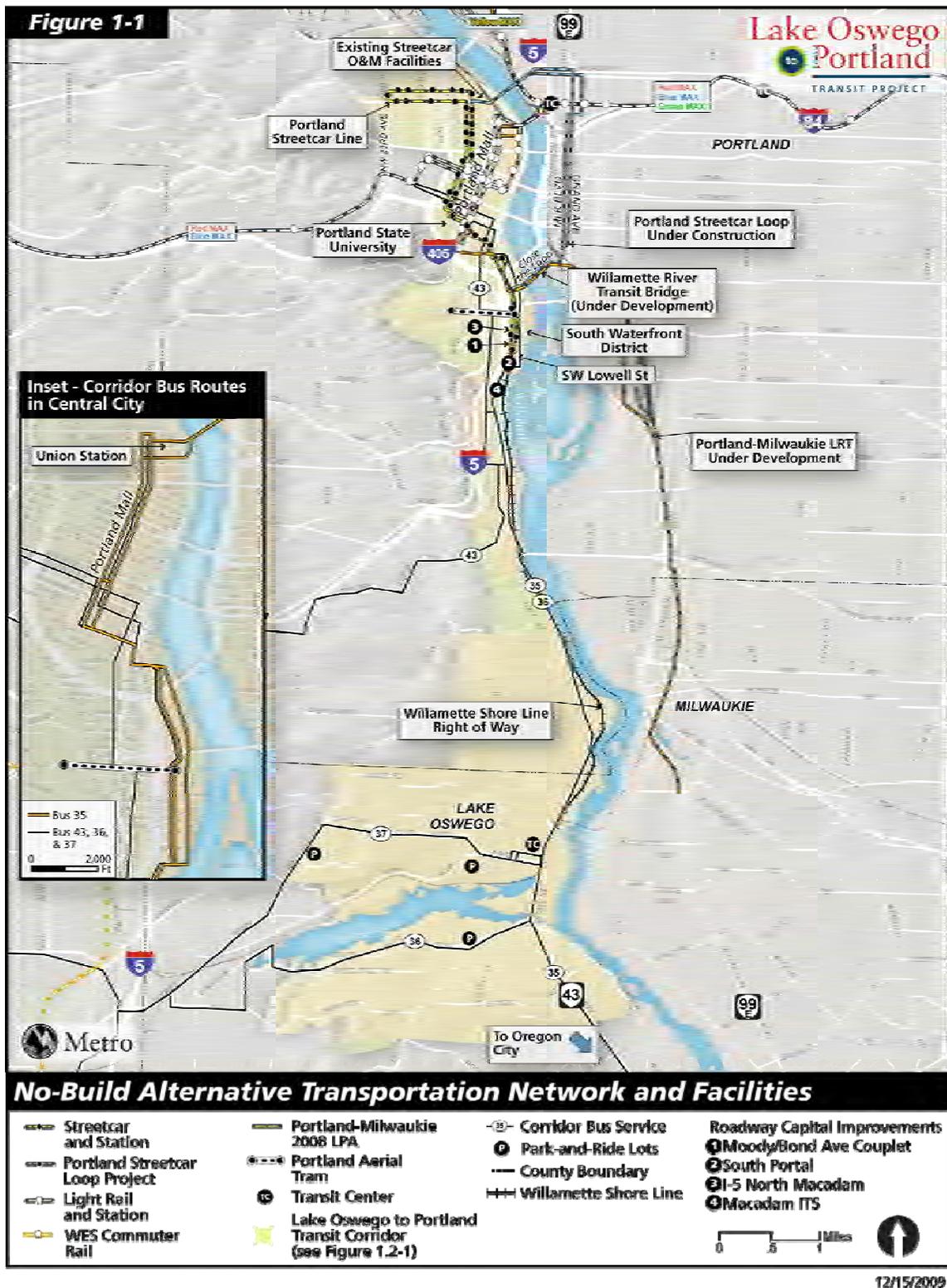


FIGURE 1-1 NO-BUILD ALTERNATIVE TRANSPORTATION NETWORK AND FACILITIES

- **Bicycle and Pedestrian Improvements.** The No-Build Alternative includes the existing bicycle and pedestrian network in the corridor, with the addition of bicycle and pedestrian capital improvements that are listed in the financially constrained road network of Metro’s 2035 RTP. Following is a list of the bicycle and pedestrian projects proposed to occur within the corridor by 2035.
 - *Lake Oswego to Portland Trail* (extension of a multiuse path between Lake Oswego and Portland);
 - *I-5 at Gibbs Pedestrian/Bicycle Overcrossing* (construct a bicycle and pedestrian bridge over I-5 in the vicinity of SW Gibbs Street); and
 - *Tryon Creek Bridge* (construct a new pedestrian/bicycle bridge near the mouth of Tryon Creek).

- **Bus Capital Improvements.** There are currently two primary bus capital facilities in the corridor: *Lake Oswego Transit Center* (on 4th Street, between A and B avenues); and *Portland Mall* (bus and light rail lanes and shelters on NW/SW 5th and 6th avenues between NW Glisan Street and SW Jackson Street). These bus facilities would remain as-is under the No-Build Alternative. (The financially constrained transit project list of the RTP includes relocation of the Lake Oswego Transit Center to be adjacent to the Lake Oswego to Portland Streetcar alignment, which is also in the financially constrained project list. Neither would occur under the No-Build Alternative.) No additional bus capital improvements are planned for the corridor under the No-Build Alternative by 2035.

- **Light Rail Capital Improvements.** Under the No-Build Alternative, TriMet’s existing Yellow Line light rail service would continue to operate on the Portland Mall (with a station at PSU added), across the Steel Bridge and into North Portland. Yellow Line facilities and service would be extended north from the existing Expo Center Station, across the Columbia River into Vancouver, Washington, and south from the Portland Mall, generally via SW Lincoln Street, across the Willamette River to Milwaukie, Oregon. In addition, downtown Portland would be served by the following TriMet light rail lines: Blue Line (Gresham to Hillsboro); Red Line (Beaverton to Portland International Airport); and Green Line (downtown Portland to Clackamas Town Center).

- **Excursion Trolley Capital Facilities.** Under the No-Build Alternative there would be no changes to the existing excursion trolley capital facilities that are located or operate within the corridor. Those excursion trolley capital facilities include approximately six miles of single-tracked Willamette Shore Line tracks and related facilities; stations at SW Bancroft and Moody streets and at N State Street at A Avenue; a trolley barn at approximately N State Street at A Avenue; and typically one vintage and/or other trolley vehicle propelled by externally attached diesel units.

- **Streetcar Improvements and Vehicles.** Under the No-Build Alternative, the existing Portland Streetcar Line would continue to operate between NW 23rd Avenue and SW Lowell Street. In addition, the No-Build Alternative includes the Eastside Streetcar Project (currently under construction), which would extend streetcar tracks and stations across the Broadway Bridge, serving NE and SE Portland on N and NE Broadway and NE and SE Martin Luther King

Boulevard and Grand Avenue to OMSI. With the Close the Loop Project, the Eastside Streetcar will be extended across the Willamette River, to complete the planned Streetcar Loop, via a new transit, bicycle, and pedestrian bridge to be constructed under the Milwaukie Light Rail Project, connecting to the Streetcar line in the South Waterfront District. Under the No-Build Alternative in 2035, there would be 22 streetcars in the transit system (including spares), an increase of 11 compared to existing conditions.

- **Park-and-Ride Facilities.** Under the No-Build Alternative, the park-and-ride facilities in the corridor would be those that currently exist: a shared-use 30-space park-and-ride lot at Christ Church (1060 SW Chandler Road); a shared-use 34-space park-and-ride lot at Lake Oswego United Methodist Church (1855 South Shore Boulevard); and a shared use 12-space park-and-ride lot at Hope Church (14790 SW Boones Ferry Road).
- **Operations and Maintenance Facilities.** Under the No-Build Alternative, there would be one operations and maintenance facility within the corridor, which would be the existing streetcar maintenance building and storage yard on NW 16th Avenue under I-405. With the Streetcar Loop and Close the Loop Projects, the storage yard could accommodate 25 streetcars and the maintenance facility would have the capacity to service 36 streetcars (an increase in capacity of 13 and 18 vehicles, compared to existing conditions, respectively).

1.4.1.2 Transit Operations

This section summarizes the transit operating characteristics that would occur under the No-Build Alternative, focusing on bus and streetcar operations (see Table 1-2). Figure 1-1 illustrates the transit network for the No-Build Alternative in the vicinity of the corridor.

- **Bus Operations.** Bus operations under the No-Build Alternative would be similar to TriMet's existing fixed-route bus network with the addition of improvements included in the 2035 RTP's 20-year financially constrained transportation system (see Figure 1-1). Transit service improvements within the No-Build Alternative would be limited to those that could be funded using existing and readily-foreseeable revenue sources. Systemwide, those bus operations improvements would include: 1) increases in TriMet bus route frequency to avoid peak overloads and/or maintain schedule reliability; 2) increases in run times to maintain schedule reliability; and 3) incremental increases in TriMet systemwide bus service hours consistent with available revenue sources and consistent with the 2035 RTP's 20-year financially constrained transit network, resulting in annual increases in service hours of approximately 0.5 percent per year. Specifically, the No-Build Alternative would include the operation of the TriMet bus route Line 35 between downtown Portland and Lake Oswego (continuing south to Oregon City).
- **Streetcar Operating Characteristics.** Under the No-Build Alternative, the City of Portland, through an operating agreement with the Portland Streetcar, Inc. (PSI), would continue to operate the existing Portland Streetcar line between Northwest Portland and the South Waterfront District, via downtown Portland (see Figure 1-1). On average weekdays in 2035, the Streetcar line would operate every 12 minutes during the peak and off-peak periods. Further, the City of Portland would operate the Streetcar Loop Project, serving downtown Portland, the Pearl District, northeast and southeast Portland, OMSI and the South Waterfront District. Frequency on the line for an average weekday in 2035 would be every 12 minutes during the peak and off-peak periods.

1.4.2 Enhanced Bus Alternative

This section describes the roadway, bicycle and pedestrian, and transit capital improvements and transit operating characteristics under the Enhanced Bus Alternative, generally compared to the No-Build Alternative. The intent of the Enhanced Bus Alternative is to address the project's Purpose and Need without a major transit capital investment.

1.4.2.1 Capital Improvements

This section summarizes the transit, bicycle and pedestrian, and transit capital improvements that would occur under the Enhanced Bus Alternative, compared to the No-Build Alternative (see Table 1-1 and Figure 1-2).

- **Roadway Capital Improvements.** Except for the addition of a two-way roadway connection between the proposed 300-space park-and-ride lot and Foothills Road, there would be no change in roadway improvements under the Enhanced Bus Alternative, compared to the No-Build Alternative.
- **Bicycle and Pedestrian Improvements.** There would be no change in bicycle and pedestrian improvements under the Enhanced Bus Alternative, compared to the No-Build Alternative.
- **Bus Capital Improvements.** Under the Enhanced Bus Alternative, the 26 bus stops that would be served by Line 35 between downtown Lake Oswego and SW Bancroft under the No-Build Alternative would be consolidated into 13 bus stops, which would continue to be served by Line 35 (the other 13 bus stops would be removed). The bus stops served by Line 35 between Lake Oswego and Oregon City would be unchanged under the Enhanced Bus Alternative, compared to the No-Build Alternative.
- **Light Rail Capital Improvements.** There would be no change in light rail capital improvements under the Enhanced Bus Alternative, compared to the No-Build Alternative.
- **Excursion Trolley Capital Improvements.** There would be no change in excursion trolley capital improvements under the Enhanced Bus Alternative, from the No-Build Alternative.
- **Streetcar Improvements and Vehicles.** There would be no change in streetcar improvements and vehicles under the Enhanced Bus Alternative, compared to the No-Build Alternative.
- **Park-and-Ride Facilities.** In addition to the park-and-ride facilities included under the No-Build Alternative, the Enhanced Bus Alternative would include a 300-space structured park-and-ride lot that would be located at Oswego Village Shopping Center on Highway 43 in downtown Lake Oswego. The park-and-ride lot would be served by Lines 35 and 36.
- **Operations and Maintenance Facilities.** There would be no changes to the region's operations and maintenance facilities under the Enhanced Bus Alternative, compared to the No-Build Alternative, except that the capacity of TriMet's bus operating and maintenance facilities at either the Center or Powell facility would be expanded to accommodate the additional 13 buses

under the Enhanced Bus Alternative (see the *Detailed Definition of Alternatives Report* for additional information).

1.4.2.2 Transit Operations

This section summarizes the corridor's transit operations under the Enhanced Bus Alternative, focusing on bus and streetcar operations. Figure 1-2 illustrates the transit network for the Enhanced Bus Alternative in the vicinity of the corridor.

- **Bus Operations.** Except for changes to the routing, frequency, and number of stops of Line 35 and the elimination of Line 36 service between downtown Portland and downtown Lake Oswego, bus operations under the Enhanced Bus Alternative would be identical to the bus operations under the No-Build Alternative. Under the Enhanced Bus Alternative, Line 35's routing between Oregon City and Lake Oswego would remain unchanged relative to the No-Build Alternative. Further, between Lake Oswego and downtown Portland there would be two routing changes to Line 35, compared to the No-Build Alternative: 1) the bus would be rerouted to serve the new park-and-ride lot at the Oswego Village Shopping Center; and 2) in downtown Portland, Line 35 would be rerouted to serve SW and NW 10th and 11th avenues, generally between SW Market and Clay streets and NW Lovejoy Street/Union Station to address the travel markets.
- **Streetcar Operating Characteristics.** Under the Enhanced Bus Alternative, there would be no change in streetcar operating characteristics, compared to the No-Build Alternative.

1.4.3 Streetcar Alternative

This section describes the roadway, bicycle and pedestrian, and transit capital improvements and transit operating characteristics under the Streetcar Alternative, generally compared to the No-Build Alternative.

1.4.3.1 Capital Improvements

This section summarizes the transit, bicycle and pedestrian, and transit capital improvements that would occur under the Streetcar Alternative, generally compared to the No-Build Alternative (see Table 1-1 and Figure 1-3). This section provides a general description of the capital improvements that would occur under the Streetcar Alternative, independent of design option, and it highlights the differences between design options within three of the corridor's segments.

A. Summary Description

Following is a general description of the roadway, bicycle and pedestrian, and transit improvements that would occur under the Streetcar Alternative. The next section provides a description of differences in capital improvements for design options that are under consideration in three of the project's six segments. See Figure 1-4 for an illustration of the project segments and the design options under consideration.

- **Roadway Capital Improvements.** There would be no roadway improvements under the Streetcar Alternative in the following corridor segments: 1) Downtown Portland; and 2) South Waterfront. The roadway capital improvements that would occur under the other corridor segments are described below for those segments. Changes to traffic controls at signalized and

non-signalized intersections would occur throughout the corridor to accommodate the safe and efficient operation of the streetcar and local traffic. The *Detailed Definition of Alternatives*

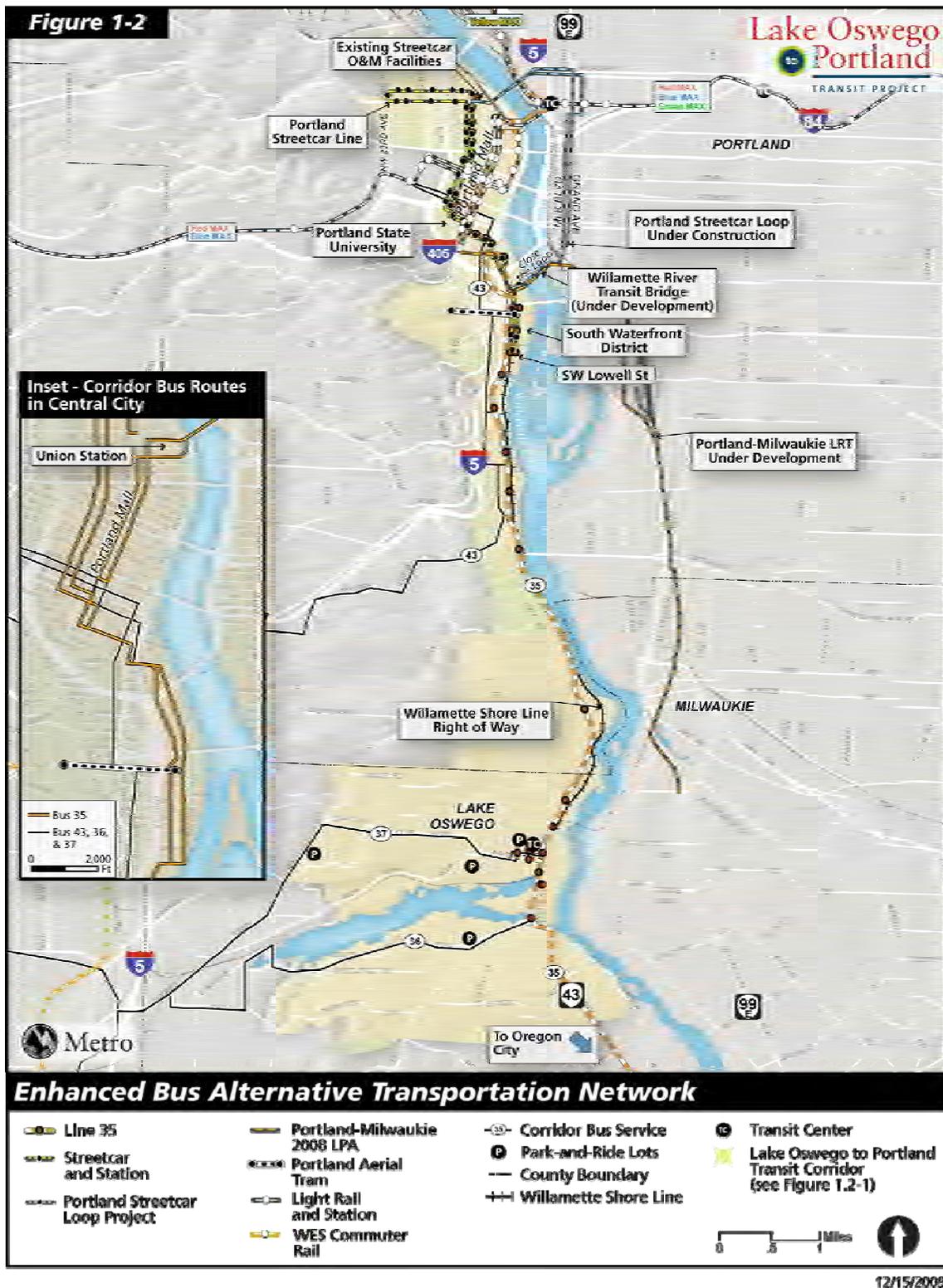


FIGURE 1-2 ENHANCED BUS ALTERNATIVE TRANSPORTATION NETWORK

Report and the *Streetcar Plan Set* provide additional details on changes to traffic operations at intersections under the Streetcar Alternative.

- **Bicycle and Pedestrian Improvements.** There would be no change in bicycle and pedestrian improvements under the Streetcar Alternative, compared to the No-Build Alternative, except as noted in the following segment-by-segment description.

Bus Capital Improvements. Under the Streetcar Alternative, all 26 bus stops that would be served by Line 35 on Highway 43 between downtown Lake Oswego and the Sellwood Bridge and on SW Macadam Boulevard north of SW Corbett Street under the No-Build Alternative would be removed, because Line 35 service would be replaced in the corridor by streetcar service. The bus stops served by Line 35 between Lake Oswego and Oregon City would be unchanged under the Streetcar Alternative, compared to the No-Build Alternative. In addition, under the Streetcar Alternative, the Lake Oswego Transit Center would be relocated to be adjacent to the Lake Oswego Terminus Station, from its existing location on 4th Street, between A and B avenues. The changes to the bus capital improvements under the Streetcar Alternative would not vary by any of the design options under consideration.

- **Light Rail Capital Improvements.** There would be no change in light rail capital improvements under the Streetcar Alternative, compared to the No-Build Alternative.
- **Interim Excursion Trolley Capital Improvements.** Under the Streetcar Alternative, there would no longer be an operating and maintenance agreement between the City of Lake Oswego and the Willamette Shore Line Consortium that would allow for the operations of the excursion trolley between SW Bancroft Street and Lake Oswego. Further, the Oregon Electric Railway Historical Society would no longer operate the vintage excursion trolley on the Willamette Shore Line alignment under agreement with the City of Lake Oswego, as they currently do and as they would under the No-Build and Enhanced Bus Alternatives.
- **Streetcar Improvements and Vehicles.** The Streetcar Alternative would extend streetcar tracks and stations south from the existing Portland Streetcar line that operates between NW 23rd Avenue and SW Bancroft Street. Compared to existing conditions and the No-Build Alternative, the Streetcar Alternative would add approximately 5.9 to 6.0 one-way miles of new streetcar tracks and catenary (overhead electrical wiring and support) and ten new streetcar stations between SW Bancroft Street and Lake Oswego. Except when crossing over waterways, roadways, or freight rail lines or through an existing tunnel, the new streetcar line would generally be at the same grade as existing surface streets. Of the approximately six miles of new streetcar tracks, 5.3 miles would be double-tracked (i.e., two one-way tracks) and 0.7 miles would be single-tracked (i.e., inbound and outbound streetcars would operate on the same tracks; see Figure 1-4 for an illustration of the location of single and double-track segments). The new streetcar stations would be of a design similar to the existing streetcar stations in downtown Portland and the Pearl District.

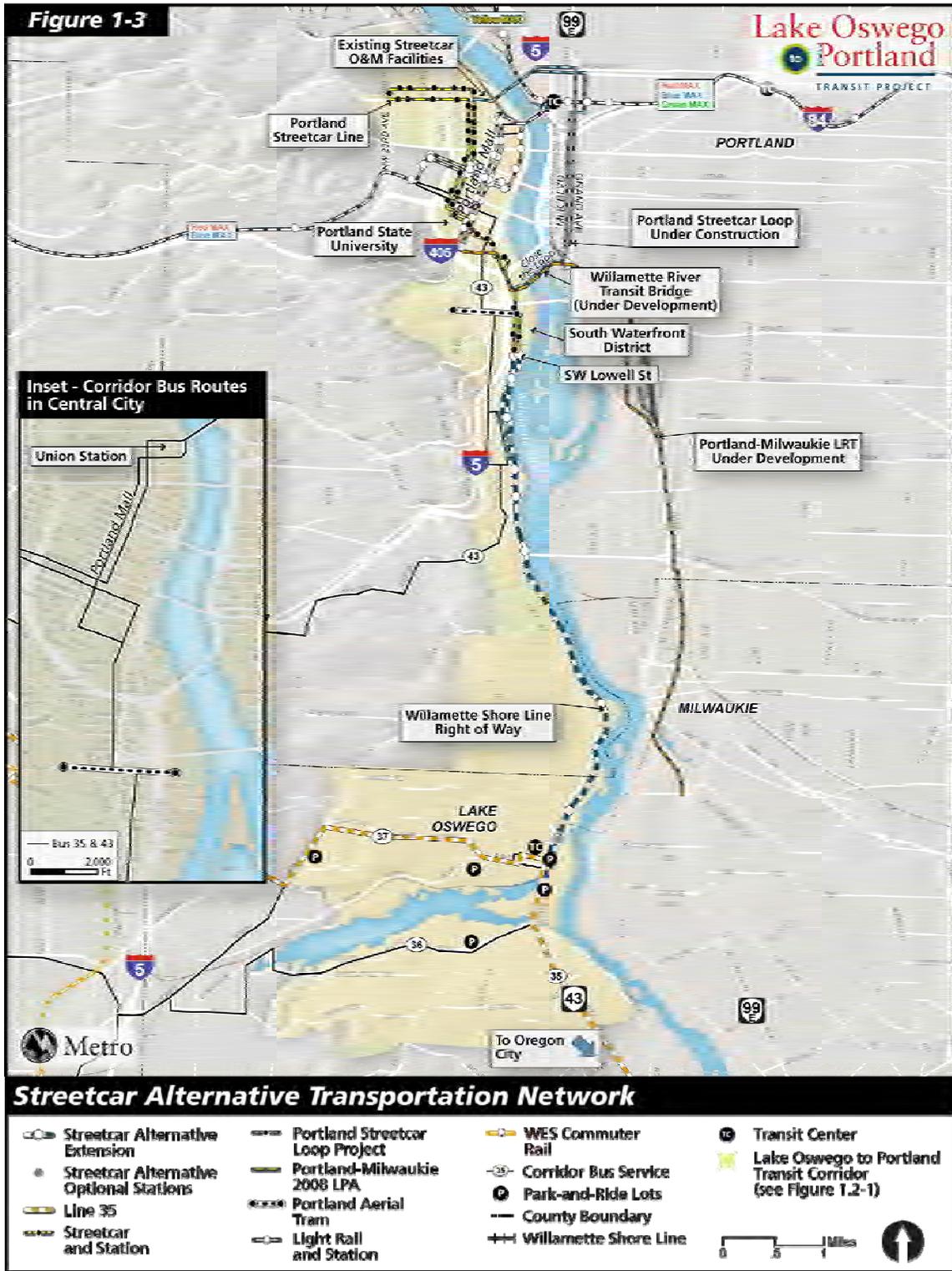


FIGURE 1-3 STREETCAR ALTERNATIVE TRANSPORTATION NETWORK

- **Park-and-Ride Facilities.** In addition to the park-and-ride facilities included under the No-Build Alternative, the Streetcar Alternative would include: a) a 100-space surface park-and-ride lot served by the proposed streetcar line at the B Avenue Station; and b) a 300-space structured park-and-ride lot that would be served by the proposed streetcar line at the Lake Oswego Terminus Station. The size and location of these park-and-ride lots would not vary by any of the design options under consideration.
- **Operations and Maintenance Facilities.** With the Streetcar Alternative, a new storage facility that would accommodate eight streetcars would be located adjacent to the streetcar alignment under the Marquam Bridge. The size and location of the streetcar operating and maintenance facilities would not vary by any of the design options under consideration.

B. Segment-by-Segment Description and Design Option Differences

For the purposes of description and analysis, the Lake Oswego to Portland Corridor has been divided into six segments for the Streetcar Alternative; those segments and design options within three of the segments are illustrated schematically in Figure 1-4. Figure 1-3 illustrates the proposed roadway improvements, streetcar alignment, stations, and park-and-ride lots that would occur in the corridor under the Streetcar Alternative. Figures 1-5 and 1-6 provide more detailed illustrations of the streetcar design options currently under study.

1. Downtown Portland Segment. There would be no roadway or bicycle and pedestrian improvements within the Downtown Portland Segment under the Streetcar Alternative, compared to the No-Build Alternative. Under the Streetcar Alternative, a connection would be added between westbound streetcar tracks on SW Market Street to southbound tracks on SW 10th Avenue, which would allow inbound streetcars from Lake Oswego to turn back toward Lake Oswego, providing increased operational flexibility. There are no streetcar alignment design options within this segment and there would be no new streetcar stations within this segment.

2. South Waterfront Segment. The South Waterfront Segment extends between SW Lowell Street to SW Hamilton Court. Streetcar tracks would be extended south of their existing southern terminus at SW Lowell Street, within the right of way of the planned Moody/Bond Couplet extension, to SW Hamilton Street. There would be two new streetcar stations within this segment (Bancroft and Hamilton stations).

3. Johns Landing Segment. The Johns Landing Segment extends between SW Hamilton Court to SW Miles Street. This segment includes three design options: Willamette Shore Line; Macadam In-Street; and Macadam Additional Lane. Under all options, the streetcar alignment would extend south from SW Hamilton to near SW Julia Street, generally within the existing Willamette Shore Line right of way. The three design options would include two new streetcar stations at varying locations, described below. To the south, all three options would share a common alignment between SW Carolina and SW Miles Street, generally via the existing Willamette Shore Line right of way, and they would share one common station at SW Nevada. Following is a description of how the design options would differ:

- The Willamette Shore Line Design Option*** would continue the extension of streetcar tracks south within the existing Willamette Shore Line right of way from SW Julia Street to SW

Carolina Street (extending to SW Miles Street). There would be three new streetcar stations (Boundary, Nebraska, and Nevada stations).

- b. ***The Macadam In-Street Design Option*** would locate the new streetcar tracks generally within the existing outside lanes of SW Macadam Avenue, approximately between SW Boundary and Carolina streets. Between approximately SW Julia and Boundary streets, the streetcar alignment would be within the right of way of SW Landing Drive, which would be converted from a private to a public street. There would be three new streetcar stations (Boundary, Carolina, and Nevada stations). An optional station at Pendleton Street is also under consideration.

Segments

Design Options

Single-Track Sections
 (All others are double-track sections)
 Yellow = Short-Term Single Track
 Red = Long-Term Single Track

1 - Downtown Portland

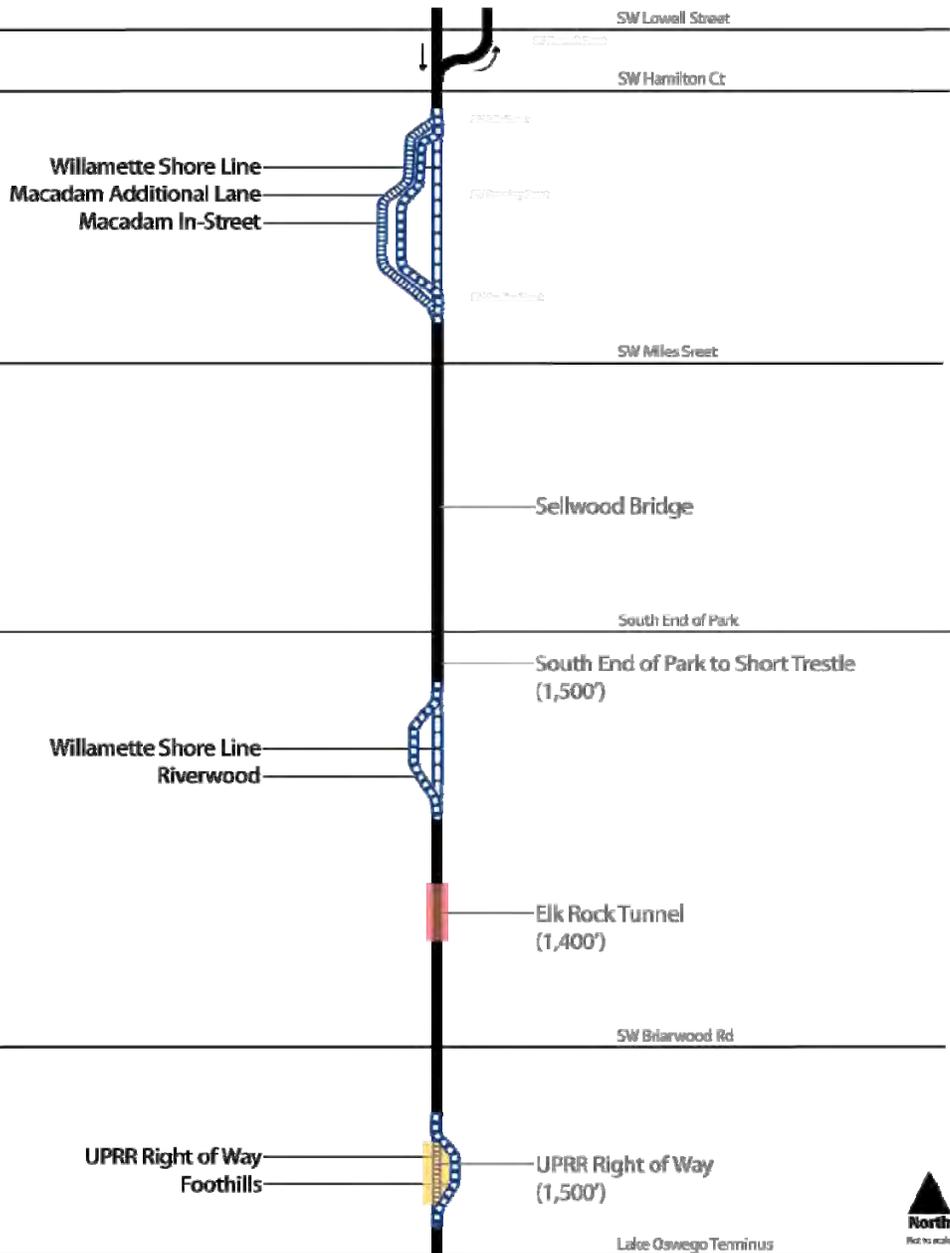
2 - South Waterfront

3 - Johns Landing

4 - Sellwood Bridge

5 - Dunthorpe/Riverdale

6 - Lake Oswego



Streetcar Alternative Design Option Locations

Figure 1-4

FIGURE 1-4 STREETCAR ALTERNATIVE DESIGN OPTION LOCATIONS

- c. *The Macadam Additional Lane Design Option* would be similar to the Macadam In-Street Design Option, except that the new northbound streetcar tracks would be located within a new traffic lane just east of the existing general purpose lanes – streetcars would share the new lane with right-turning vehicles. Between approximately SW Julia and Boundary streets, the streetcar alignment would be within the right of way of SW Landing Drive, which would be converted from a private to a public street. There would be three new streetcar stations (Boundary, Carolina, and Nevada stations). An optional station at Pendleton Street is also under consideration.

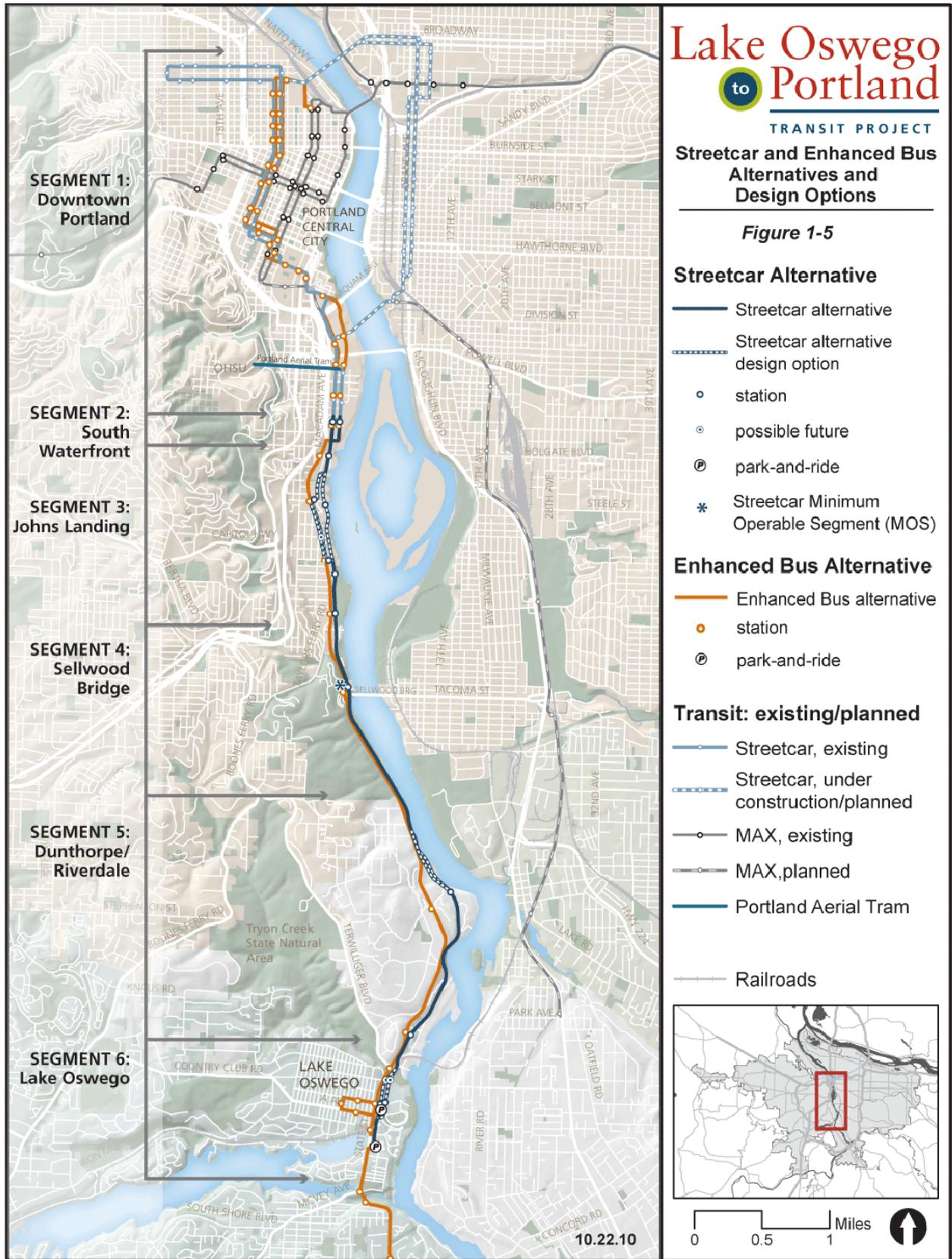
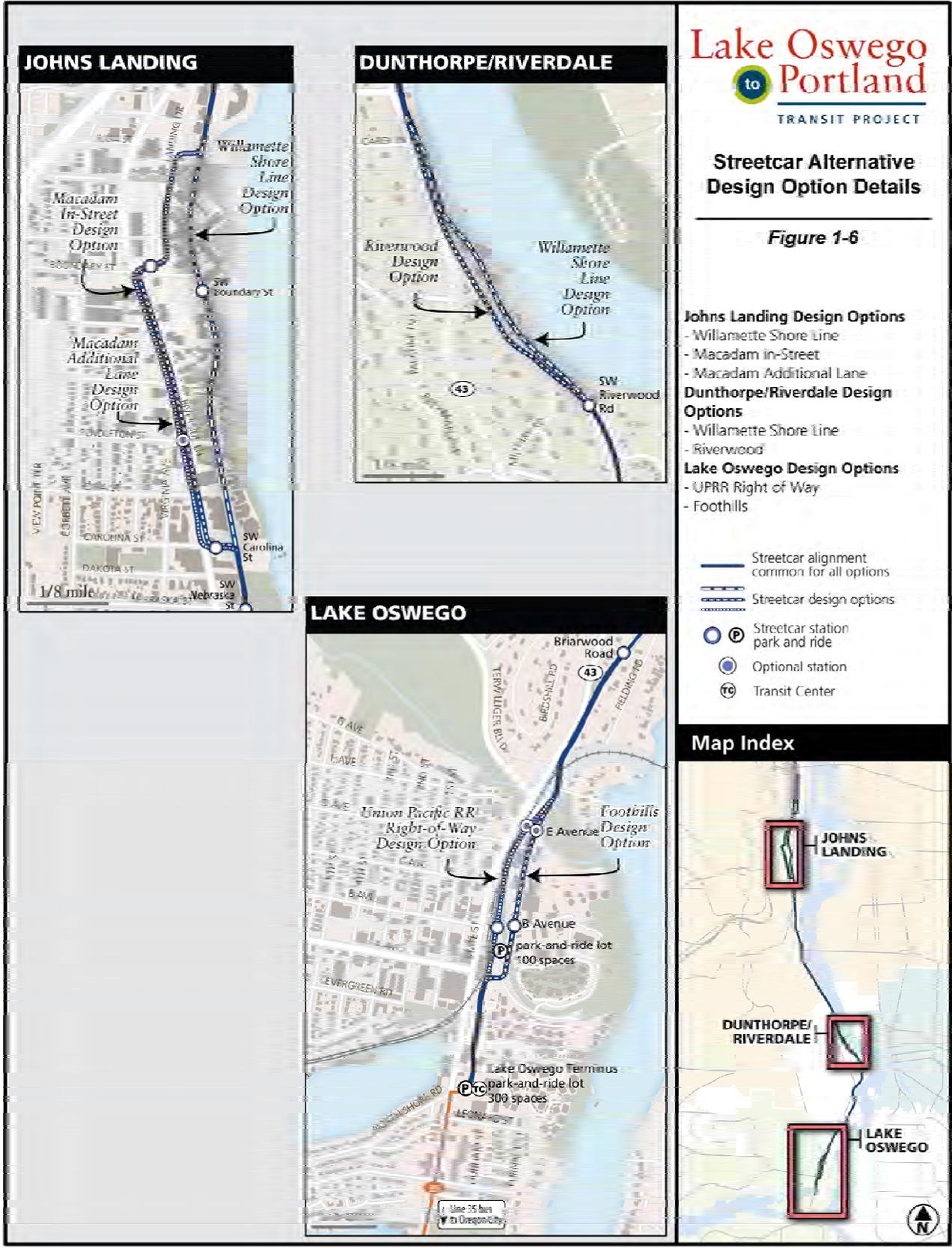


FIGURE 1-5 STREETCAR AND ENHANCED BUS ALTERNATIVES AND DESIGN OPTIONS



Lake Oswego to Portland
 TRANSIT PROJECT

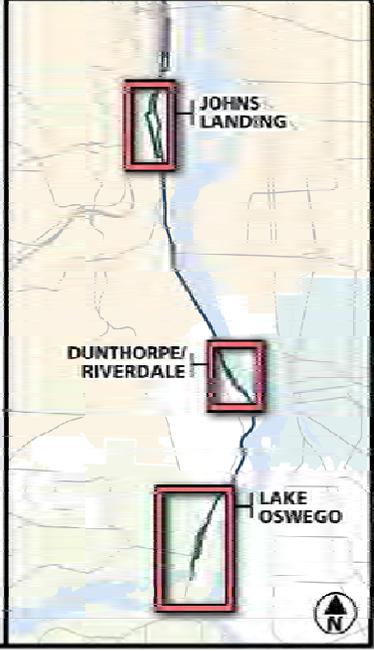
Streetcar Alternative Design Option Details

Figure 1-6

- Johns Landing Design Options**
- Willamette Shore Line
 - Macadam In-Street
 - Macadam Additional Lane
- Dunthorpe/Riverdale Design Options**
- Willamette Shore Line
 - Riverwood
- Lake Oswego Design Options**
- UPRR Right of Way
 - Foothills

- Streetcar alignment common for all options
- - - Streetcar design options
- Ⓟ Streetcar station park and ride
- Ⓞ Optional station
- Ⓣc Transit Center

Map Index



Oct 22, 2010

FIGURE 1-6 STREETCAR ALTERNATIVE DESIGN OPTION DETAILS

4. Sellwood Bridge Segment. The Sellwood Bridge Segment extends from Miles Street to the southern end of Powers Marine Park. Generally, the streetcar alignment would be located in the Willamette Shore Line right of way, except for the area between Stephens Creek and approximately 1,200 feet south of the Sellwood Bridge. In this area, the streetcar alignment would be constructed in conjunction with the planned west interchange improvements with the Sellwood Bridge (the streetcar would be located slightly east of the existing Willamette Shore Line right of way). The design and construction of the streetcar alignment under this design option would be coordinated with the design and construction of the new interchange for the Sellwood Bridge. There would be one new streetcar station within this segment (Sellwood Bridge Station).

5. Dunthorpe/Riverdale Segment. The Dunthorpe/Riverdale Segment extends between the southern end of Powers Marine Park and SW Briarwood Road. There are two design options in this segment: Willamette Shore Line Design Option and Riverwood In-Street Design Option. Both options would share a common alignment within the Willamette Shore Line right of way, generally north of where SW Riverwood Road intersects with Highway 43 and generally south of the intersection of SW Military Road and SW Riverwood Road. One new streetcar station is proposed within this segment, generally common to both design options (Riverwood Station). Following is a description of how the design options would differ:

- a. ***The Willamette Shore Line Design Option*** would generally locate the new streetcar alignment in the existing Willamette Shore Line right of way between the intersections of SW Riverwood Road and Highway 43 and SW Riverwood Road and SW Military Road.
- b. ***The Riverwood Design Option*** would locate the new streetcar alignment generally adjacent to Highway 43, north of SW Riverwood Road, and within the right of way of SW Riverwood Road, generally between where it intersects with Highway 43 (that intersection would be closed) and where it intersects SW Military Road. Except for the closure of the Highway 43 and SW Riverwood Road intersection, SW Riverwood Road would remain open to traffic (with joint operation with streetcars).

6. Lake Oswego Segment. The Lake Oswego Segment extends between SW Briarwood Road and the Lake Oswego Terminus Station. There are two design options within this segment: the UPRR ROW Design Option and the Foothills Design Option. Both options would generally be the same in two sections: 1) the new streetcar line alignment would extend south from SW Briarwood Road to where the alignment would cross under the existing UPRR tracks; and 2) the new streetcar alignment would be located within a new roadway that would extend south from SW A Avenue to the alignment's terminus near the intersection of N State Street and Northshore Road. Both options would provide for a new bicycle and pedestrian connection under the existing UPRR tracks. There would be two stations within this segment, one that would be common to the two design options (Lake Oswego Terminus Station). An optional station at E Avenue is also under consideration.

This segment would include two park-and-ride lots, both of which would be generally common to the two design options. Following is a description of how the design options would differ:

- a. ***The UPRR ROW Design Option*** would extend the streetcar alignment south, generally in the UPRR right of way, from its under crossing of the existing UPRR tracks to SW A Avenue.

The B Avenue Station would be located on the west side of the 100-space surface park-and-ride lot.

- b. ***The Foothills Design Option*** would extend the streetcar alignment south from its under crossing of the UPRR tracks to SW A Avenue generally within the right of way of a new general-purpose roadway (Foothills Road), which would be built as part of the Streetcar Alternative.

1.4.3.2 Transit Operations

This section describes transit operations under the Streetcar Alternative, generally compared to the No-Build Alternative (see Table 1-2). Figure 1-3 provides an illustration of the transit lines in the vicinity of the corridor under the Streetcar Alternative. There would be no difference in transit operations under any of the design options under consideration.

The Streetcar Alternative would extend the existing Portland Streetcar line from its current southern terminus at Lowell Street to the Lake Oswego Terminus Station in downtown Lake Oswego, expanding the streetcar length from 4 miles to 9.9 to 10 miles (depending on design option). The total round trip running time of the streetcar line between 23rd Avenue and downtown Lake Oswego (10 miles) in 2035 would be 105 or 112 minutes, excluding layover (based on the Willamette Shore Line and Macadam design options in the Johns Landing Segment, respectively). In comparison, under the No-Build Alternative the round trip running time for the streetcar line between 23rd Avenue and Lowell Street (4 miles) would be 68 minutes.

With the extension of streetcar service to Lake Oswego, Line 35 service between Lake Oswego and downtown Portland would be eliminated. The remainder of Line 35 between Oregon City and Lake Oswego would be combined with Line 78, in effect to create a new route between Oregon City and Beaverton. The new bus route and other TriMet transit routes serving downtown Lake Oswego would be rerouted to serve the relocated Lake Oswego Transit Center, which would be adjacent to Lake Oswego Terminus Station.

1.4.3.3 Construction Phasing Options

This section summarizes Streetcar Alternative construction phasing options currently under consideration – neither the No-Build Alternative nor the Enhanced Bus Alternative include construction phasing options. Currently, there are two types of construction phasing options or scenarios under consideration: 1) finance-related and 2) external project related. The Streetcar Alternative evaluated in this Technical Report and the DEIS is as Full-Project Construction. Should the Streetcar Alternative with phasing be selected as the Locally Preferred Alternative, during preliminary engineering (PE) additional analysis of environmental impacts resulting from the interim project alignment (as opposed to Full-Project Construction) will be conducted and additional opportunity for public review and comment may be required.

A. Finance-Related Phasing Options

Following is a description of the two finance-related phasing options currently under consideration.

- **Full-Project Construction.** Under the first construction phasing option, the project would be constructed and opened in its entirety as described within Section 2.2.2.
- **Sellwood Bridge Minimum Operable Segment (MOS).** Under the Sellwood Bridge MOS phasing option, the Streetcar Alternative would be initially constructed between SW Lowell Street and the Sellwood Bridge, with a second construction phase between the Sellwood Bridge and the Lake Oswego Terminus Station occurring prior to 2035. Under this construction phasing option, there would be no additional park-and-ride facilities in the corridor, compared to existing conditions. Under this phasing option, Line 35 would operate between Oregon City and the Nevada Street Station; frequencies would be adjusted to meet demand. Service and bus stops served exclusively by Line 35 would be deleted between the Nevada Station and downtown Portland.

B. External Project Coordination Related Phasing Options

Following is a description of phasing options related to the coordination of the Streetcar Alternative, if it is selected as the LPA, and other external projects. These external project coordination related phasing options represent interim steps in the construction process that would be taken to implement the Streetcar Alternative.

- **South Waterfront Segment Phasing Options.** If the planned and programmed South Portal roadway improvements are not in place or would not be constructed concurrently with the Streetcar Alternative, there would be two options for proceeding with construction of the streetcar alignment in the segment: 1) a different streetcar alignment using the Willamette Shore Line right of way would be initially constructed within the South Waterfront Segment; or 2) the streetcar alignment and its required infrastructure improvements would be constructed consistent with the alignment under the Full-Project Construction phasing option, but other non-project roadway improvements would be constructed at a later date by others. If the Willamette Shore Line right of way were to be used, then, when the South Portal roadway improvements were made, the streetcar alignment would be reconstructed consistent. The transit operating characteristics of the Streetcar Alternative would not be affected by this phasing option.
- **Sellwood Bridge Segment Phasing Options.** The Sellwood Bridge Segment includes two phasing options for the Streetcar Alternative that reflect two potential phasing options or scenarios for construction of the project in relationship to construction of a proposed new interchange that is planned to occur with the Sellwood Bridge replacement project. If the new interchange is constructed prior to or concurrently with the Streetcar Alternative, the initial and long-term streetcar alignment would be based on the new interchange design. The new interchange design is the basis for the analysis in this technical report and the DEIS. If the proposed interchange is constructed after the Streetcar Alternative, then the initial streetcar alignment to be constructed would be in the Willamette Shore Line right of way. Subsequently, when the proposed interchange is constructed, the Sellwood Bridge replacement project would relocate the streetcar alignment with the new interchange design. Therefore, the long-term streetcar alignment would be the new interchange and the Willamette Shore Line phasing option would only be implemented as an interim alignment. Therefore, the two design options in this

segment do not constitute a choice of alignments – instead they represent two construction phasing scenarios, dependent upon how external conditions transpire.

- The Foothills Design Option. The Foothills design option of the Streetcar Alternative is based on roadway improvements that would occur under the City of Lake Oswego’s Foothills redevelopment project. If those roadway improvements are not constructed prior to or concurrently with construction of the streetcar alignment, then the Lake Oswego to Portland Transit Project would construct the streetcar alignment and required infrastructure improvements using the same alignment and the roadway improvements would be added at a later date by others.

2. EVALUATION METHODS

The analysis described in this technical report was prepared in support of the Draft Environmental Impact Statement (DEIS) for the Lake Oswego to Portland Transit project. The Economic Activity Technical Report was completed in four phases:

- 1) collection of data;
- 2) profile of the affected environment at the regional and study-area levels;
- 3) assessment of potential impacts; and
- 4) identification of potential mitigation measures.

The analysis considers the effect of developing the Lake Oswego to Portland Transit Project on the pattern of growth in the region. The analysis of effects is based on data on historic and projected households, population, and employment in the region, and includes the effects of long-term operations impacts and short-term construction impacts.

The economic impact analysis relies on the evaluation of land use patterns, plans, and development trends at the regional level, at the corridor level, and for various project subsections in the land use results report. The analysis reflects the experiences of TriMet, Metro, and local jurisdictions as they have developed other rail transit projects in the region.

Federal laws and regulations and federal agency guidance were considered in the analysis of economic impacts. The National Environmental Policy Act (NEPA), Council of Environmental Quality Guidance, Federal Transit Administration (FTA), and Federal Highway Administration (FHWA) environmental guidance on preparing NEPA documents were all considered, as well as the evaluation criteria for federal New Starts projects.

2.1 Data Collection

The primary source of data is Metro's forecast of population, households, and employment, prepared by Metro's Data Resource Center. These data were supplemented with historical information from the U.S. Census Bureau's decennial census, employment data from the Oregon Employment Department, and land use information from the land use technical report, which relies heavily on Regional Land Information System (RLIS), Metro's geographic information system (GIS), supplemented by field observation. Information on future economic conditions, including population and employment by area, are based on 2035 forecasts developed by Metro in cooperation with local jurisdictions, and allocated by Transportation Analysis Zones. These forecasts are the same as those used to develop travel demand and ridership forecasts, as discussed in more detail in the Transportation Analysis.

Information was gathered on the real estate market by major market classification (office-commercial, industrial, retail-commercial). Information on construction and operation costs, construction phasing, operation details, and right-of-way impacts are used to evaluate impacts to economic activity. These data include the number of residences and businesses displaced and the effects of this major construction project on the regional economy. Assessed value by parcel and property tax rates are used to estimate impacts to property tax revenue. License information from the Portland Revenue Bureau was used to determine the potential impact of displaced buildings which may house businesses thereby displaced.

Construction impacts have been calculated using the IMPLAN model's data for the four-county economy, based on capital cost estimates for the transit project. IMPLAN is a static equilibrium input-output model first developed in 1979 by the U.S. Forest Service in cooperation with the Federal Emergency Management Agency and the U.S. Bureau of Land Management to assist the Forest Service in land and resource planning and management. The program has been updated and improved over subsequent years and is now one of the most commonly used economic modeling tools for measuring the economic impacts of development projects. This analysis employs data for Multnomah, Washington, and Clackamas counties in Oregon, and Clark County, Washington, from 2007, which is the latest year for which data were available when this analysis began. Operations and maintenance (O&M) cost estimates from TriMet were used with employment factors in the IMPLAN model to generate long-term employment estimates.

2.2 Affected Environment Profile

A profile of the affected environment includes tabular representations of the regional population, households, and employment, profile of the regional real-estate market, with reference to the mapping of land-use patterns in the land use technical memorandum, and coordinated with the land use and social and neighborhoods technical memoranda. The data review for the corridor focuses on factors relevant to the impacts analysis such as the population, households, and employment within roughly one-quarter mile of study alternatives.

2.3 Impact Assessment

The impact assessment focuses primarily on a comparison of the alternatives. At the regional level, the potential effect of each alternative on the pattern of growth in the metropolitan area was evaluated with respect to its compatibility with the statewide planning goals and guidelines, the *Region 2040 Growth Concept*, the *Regional Transportation Plan*, and the local jurisdiction comprehensive plans.

The analysis evaluates the overall effectiveness of the project alternatives in serving existing and future activity centers and various economic activities within the corridor. The analysis of impacts includes employment and other direct impacts, indirect impacts including tax base impacts (such as the impact of displacements on property tax revenue), short-term construction impacts, and cumulative effects.

Direct Effects: The analysis of direct effects of the various alternatives addresses impacts that could result from acquisition of right-of-way, potential changes to localized development patterns, and long-term operational employment. TriMet's O&M cost estimates were used to generate long-term employment estimates. The potential effect of displacements and land acquisition for the study alternatives on local tax bases (such as property tax revenue and business tax revenue) is also examined.

Indirect Effects: This analysis quantifies the indirect and induced economic impacts of construction and operations and maintenance of each alternative. It also considers the effects of other project influences on economic activity, including assessments of the degree that existing land uses would be affected, as well as a qualitative assessment of potential redevelopment or revitalization influences related to construction of the various alternatives.

Construction-Related Effects: This analysis evaluates the short-term impacts of the timing and duration of construction and construction-related employment. Capital cost estimates are used to

estimate construction-related employment. Indirect effects of construction are estimated using regional multipliers from the IMPLAN model.

Cumulative Effects: This section reviews the extent of induced impacts resulting from the project in combination with other projects in the corridor.

2.4 Mitigation Measures

The technical report and DEIS sections on Economic Activity identify potential mitigation measures that could reduce or eliminate adverse economic impacts related to the study alternatives. Short-term construction-related mitigation (phasing, traffic signing, open business signing, etc.) and long-term changes (design or operations) are included and would be coordinated with the applicable areas of analysis. Potential mitigation options are identified in the technical report and the DEIS. It is expected that commitments to mitigation will be identified for the Preferred Alternative in the FEIS.

2.5 Documentation

The *Economic Activity Technical Report* has been prepared to document the analysis of existing economic conditions, impacts, and potential mitigation. The analysis is also summarized in the DEIS section on economic activity.

3. CONTACTS, COORDINATION, AND CONSULTATION

There are no specific legal requirements for coordination in the preparation of the economic activity technical report. In preparing this report, the authors referred to FTA discussion papers for guidance and direction, and consulted with staff members from the following jurisdictions and agencies: City of Lake Oswego, City of Portland, Metro, TriMet, and ODOT.

4. AFFECTED ENVIRONMENT

4.1 Regional Profile

The Portland/Vancouver metropolitan region is the economic center of an extensive area that includes most of Oregon, southwest Washington, and portions of Idaho. The metropolitan region, with downtown Portland as its urban center, is located near the confluence of the Columbia and Willamette rivers (see Figure 4-1). The census-designated Metropolitan Statistical Area (MSA) for the region includes seven counties—Multnomah, Clackamas, Washington, Yamhill, and Columbia counties in Oregon, and Clark and Skamania counties in Washington. To be consistent with other disciplines analyzed for this DEIS, the region is defined as the four-county region which is Multnomah, Clackamas, and Washington counties in Oregon and Clark County in Washington. In some cases, economic data from the larger seven-county region is referenced where differences between the regional definitions are minimal.

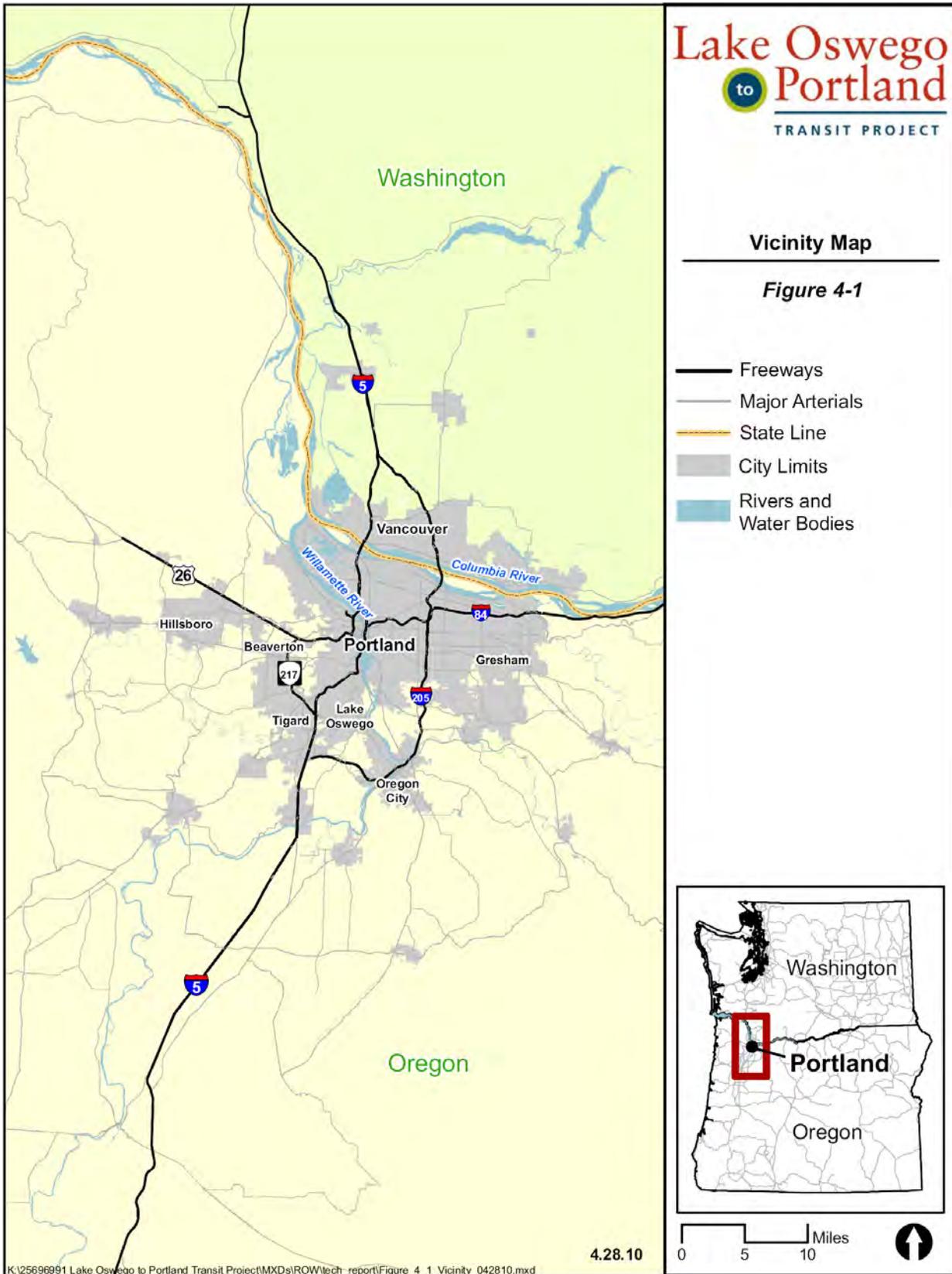


FIGURE 4-1. VICINITY MAP

The region has experienced significant population and employment growth in recent years. Between 1980 and 2005 the population of the four-county region grew by 57 percent, to a year 2005 population of nearly 1,946,000, as shown in Table 4-1. The number of households increased by 61 percent (over 290,000 households) to an estimated total of approximately 767,000 by year 2005. Population and household growth in Portland, which contains the northern portion of the corridor, were lower than in the region. Conversely, population and household growth in Lake Oswego, which contains the southern end of the corridor, were higher than in the region, as shown in Table 4-1.

Table 4-1. Regional Population and Households, 1980 through 2005

	1980	1990	2000	2005	Growth 1980-2005	
					Percent	Number
Population						
City of Portland ¹	366,400	437,300	529,100	556,400	52	190,000
City of Lake Oswego ²	22,900	30,600	35,300	40,900	79	18,100
Portland Metro region ²	1,242,600	1,412,300	1,759,100	1,946,00	57	703,400
State of Oregon ¹	2,633,100	2,842,300	3,421,400	3,638,900	38	1,005,800
Households						
City of Portland ¹	158,900	187,300	223,800	235,200	48	76,300
City of Lake Oswego ²	8,500	12,600	14,800	17,200	102	8,700
Portland Metro region ²	477,800	548,700	696,700	767,000	61	289,200
State of Oregon ¹	991,593	1,103,300	1,333,700	1,425,300	44	433,700
Employment						
City of Portland ¹	173,800	218,800	276,100	424,000	144	250,100
City of Lake Oswego ²	11,800	16,600	18,300	19,300	64	7,500
Portland Metro region ²	491,200	697,300	906,800	1,032,200	110	541,000
State of Oregon ¹	1,138,400	1,320,000	1,627,800	1,654,400	45	516,000

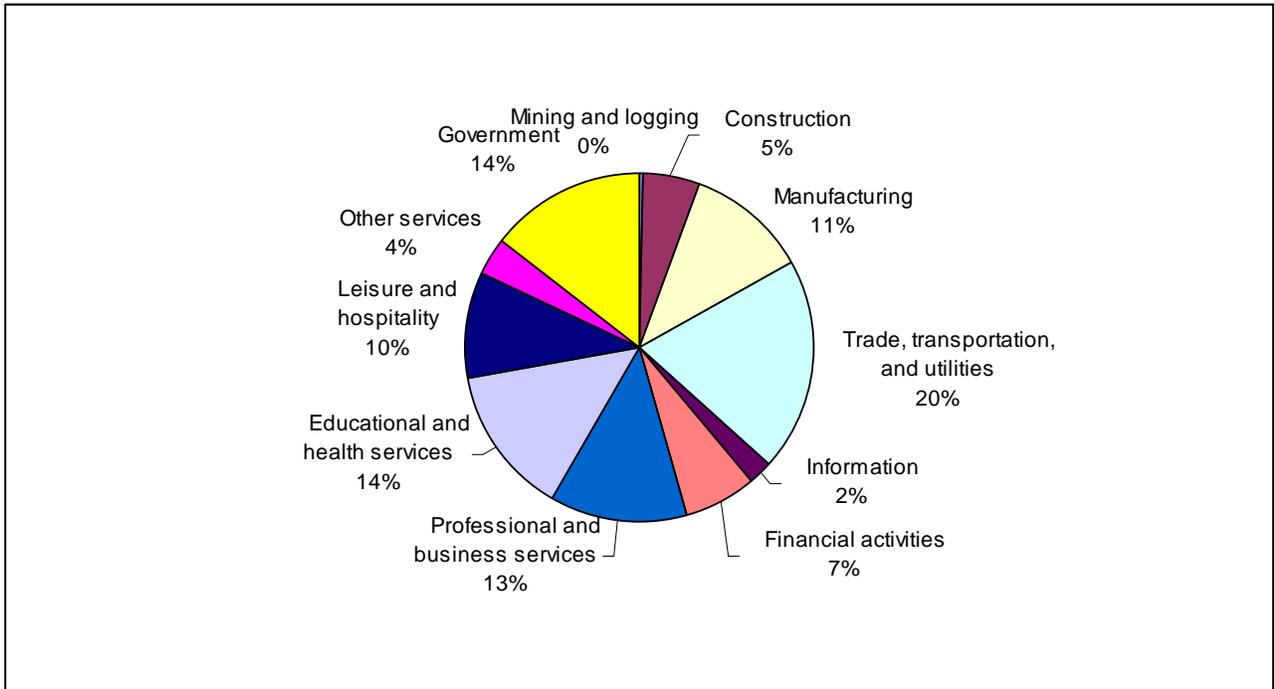
Note: The four-county region includes all of Multnomah, Clackamas, and Washington counties in Oregon, and Clark County in Washington.

¹Source: US Census except for 2005 (PSU Population Research Center, 2008)

²Source: Metro, 2009

Employment for the region has also been growing. Employment in Portland, which includes the region's Central Business District, has been growing at a higher rate than the region or the statewide average. Total employment in the region reached over 1 million jobs by 2005. The region has suffered with the recent economic downturn as evidenced by the unemployment rate, estimated at a seasonally adjusted 11.1 percent for the MSA in September 2009, up from 6.1 percent one year previous, compared to the Oregon average unemployment rate of 11.0 percent and the United States average of 9.8 percent. The Oregon Employment Department estimated total nonfarm employment in the MSA in September 2009 of approximately 975,800 jobs, across a wide range of industry groups. The largest employment sectors are trade, transportation, and utilities (20 percent); education and health services (14 percent); and government (14 percent). The industrial breakdown of employment for the MSA is shown in Figure 4-2.

FIGURE 4-2. REGIONAL EMPLOYMENT BY INDUSTRY, SEPTEMBER 2009



Source: Oregon Employment Department

4.1.1 Real Estate Market

4.1.1.1 Housing

As in the nation as a whole, housing prices in the Portland Metro region peaked in 2007 and have fallen with the current recession and the deflation of the housing bubble since then. The median sale price of homes sold in the Portland area fell 12.9 percent from May 2008 to May 2009; however, this figure is lower than both the national year-over-year decline of 16.1 percent and the decline in the Western U.S. of 30.3 percent. The Portland Metro area median sale price for existing detached homes was \$259,000 in May 2009, compared to \$172,900 for the nation as a whole. The levels of appreciation seen in the Portland region during the housing bubble of 2005-2007, while significant, did not reach the proportions seen in other metropolitan areas. Compared to regions such as Phoenix, Las Vegas, and San Francisco, which saw annual depreciation rates of 35, 32, and 28 percent respectively, Portland is experiencing a milder correction to the housing bubble. Home values are still significantly higher than they were before the housing bubble; the index based on a home valued at \$100,000 in 2000 stood at \$146,850 at the end of April 2009. Signs that the housing market is recovering are beginning to appear. Second-quarter 2009 home sales increased 67 percent over the first quarter, and price per square foot increased by 2 percent, the first increase seen since 2007. Condominium sales in the Portland Metro region increased 55 percent from the first quarter of 2009 to the second quarter, and the price per square foot saw an 8 percent quarterly increase.

4.1.1.2 Office

The market for office space is also suffering in the current economic crisis, and newly completed projects are adding to already high vacancy rates in some areas. According to Portland State University Center for Real Estate, market-wide vacancy rates in the second quarter of 2009 had a median of 14.6 percent. Given the unemployment rate of over 11 percent for the region in September

2009, a high level of vacancy is not surprising. Over 370,000 square feet of newly constructed office space was delivered to the market through the end of the second quarter of 2009, and an additional 766,919 square feet were under construction, despite a vacancy rate of over 20 percent in many suburban submarkets, including Beaverton, Hillsboro, Kruse Way, Tualatin, and Washington Square. As job growth returns to the region it will have a ready supply of office space. The existing high-tech employment base, the state's push for leadership in the area of green technology, and the expanding, well-educated labor force are reasons for some optimism in predictions that job growth will resume in 2010.

CoStar reports a total rentable area in the region of nearly 89 million square feet, with over 26 million square feet (nearly 30 percent) in the downtown core, and another 3 million square feet in the rest of the project corridor, as of December 2009. Though rents tend to be higher in the downtown core, vacancies in downtown and the rest of the project corridor stayed lower than the region-wide average. These and other key indicators for office, industrial, and retail real estate products compiled from CoStar are shown in Table 4-2.

Table 4-2. Commercial Real Estate Market Conditions

	Net Rentable Area	Vacant	Rent	
			Average	Range
Office				
Downtown Portland	26,371,954	9.51%	\$21.34	\$6.00-\$60.00
Rest of Project Corridor	3,089,104	10.42%	\$13.55	\$8.00-\$17.00
Region	88,974,105	11.50%	\$16.40	\$3.96-\$60.00
Industrial				
Downtown Portland	2,508,725	7.97%	\$6.60	\$3.60-\$24.00
Rest of Project Corridor	635,782	13.27%	\$7.30	\$4.56-\$13.50
Region	189,759,609	8.70%	\$6.06	\$1.80-\$27.72
Retail				
Downtown Portland	10,538,511	4.21%	\$22.53	\$7.80-\$45.00
Rest of Project Corridor	1,294,009	6.73%	\$16.24	\$7.80-\$35.00
Region	101,784,918	6.30%	\$17.54	\$2.40-\$45.00

Source: CoStar, data generated December 3, 2009.

4.1.1.3 Industrial

The four largest commercial brokerage firms in the region report industrial real estate vacancy rates with a median of 8.3 percent in the second quarter of 2009, a year-over-year increase of 2 percentage points. The nine-year period spanning 2000-2008 averaged 2.8 million square feet per year absorption into the market. The market is currently experiencing scaled-back demand due to high unemployment in the region. In the first quarter of 2009, 527,000 square feet of industrial space were delivered to the Portland metro area, and there were 443,500 square feet in development during the second quarter.

With nearly 190 million square feet of net rentable industrial space in the region, the downtown area and the rest of the project corridor contain a mere fraction of that space, with just over 2.5 million square feet of industrial space downtown and approximately 636,000 square feet in the rest of the project corridor. Vacancy rates for the downtown area at just under 8 percent are comparable to those for the region, 8.7 percent. Though the rest of the project corridor reports a higher vacancy rate, the rate is difficult to compare due to the small amount of space included in the calculation.

4.1.1.4 Retail

As shown in Table 4-2, CoStar reports nearly 102 million square feet of rentable retail space in the region, with nearly 1.3 million square feet—or just over 10 percent—in the downtown area, and nearly 1.3 million square feet in the rest of the project corridor, mostly in the commercial areas of Johns Landing and downtown Lake Oswego. Overall vacancy for the region is 6.3 percent, though the downtown area has fared better with only 4.2 percent vacancy, while the rest of the corridor was slightly higher than the regional average at 6.7 percent. Recently closed sports superstore Joe’s Outdoor contributed to the overall vacancy rate in the suburban markets. Contributing to the vacancy rate are several large restaurants that have recently closed and may take time to re-lease in the current economic climate.

4.2 Study Area

As noted in the *Land Use Technical Report*, the Lake Oswego to Portland Transit Corridor includes six districts: Portland Central Business District (CBD), Northwest Portland, South Waterfront/OHSU, Johns Landing, Dunthorpe/Riverdale, and Lake Oswego (see Figure 4-3). Table 4-3 summarizes historic household and employment growth within the corridor districts, the Lake Oswego to Portland Transit Corridor, and the Portland/Vancouver metropolitan region. The corridor comprises approximately 15 percent of the region’s employment and approximately 4 percent of the region’s households.

Table 4-3. Households and Employment 1990 and 2005

Area	Households				Employment			
	1990	2005	Growth		1990	2005	Growth	
			Number	Percent			Number	Percent
Portland CBD	5,970	13,010	7,040	118	84,380	101,200	16,820	20
Northwest Portland	5,650	6,060	410	7	14,730	15,200	470	3
South Waterfront/OHSU	1,950	2,250	300	15	15,280	25,730	10,450	68
Johns Landing	1,050	1,150	100	10	6,350	8,080	1,730	27
Dunthorpe/Riverdale	1,040	1,140	100	10	1,150	1,560	410	36
Lake Oswego	7,120	7,580	460	6	4,340	5,420	1,080	25
Corridor Total	22,780	31,190	8,410	37	126,220	157,190	30,970	25
Region Total	548,740	767,020	218,280	40	697,260	1,032,320	335,060	48

Source: Metro, 2009.

From 1990 to 2005, household growth in the corridor (37 percent) was comparable to household growth in the region (40 percent), with the greatest household growth in the corridor occurring within the Portland CBD (118 percent). The corridor’s employment growth rate of 25 percent during the same period has been slower than the region’s (at 48 percent), though employment growth in the South Waterfront/OHSU area was greater at 68 percent.

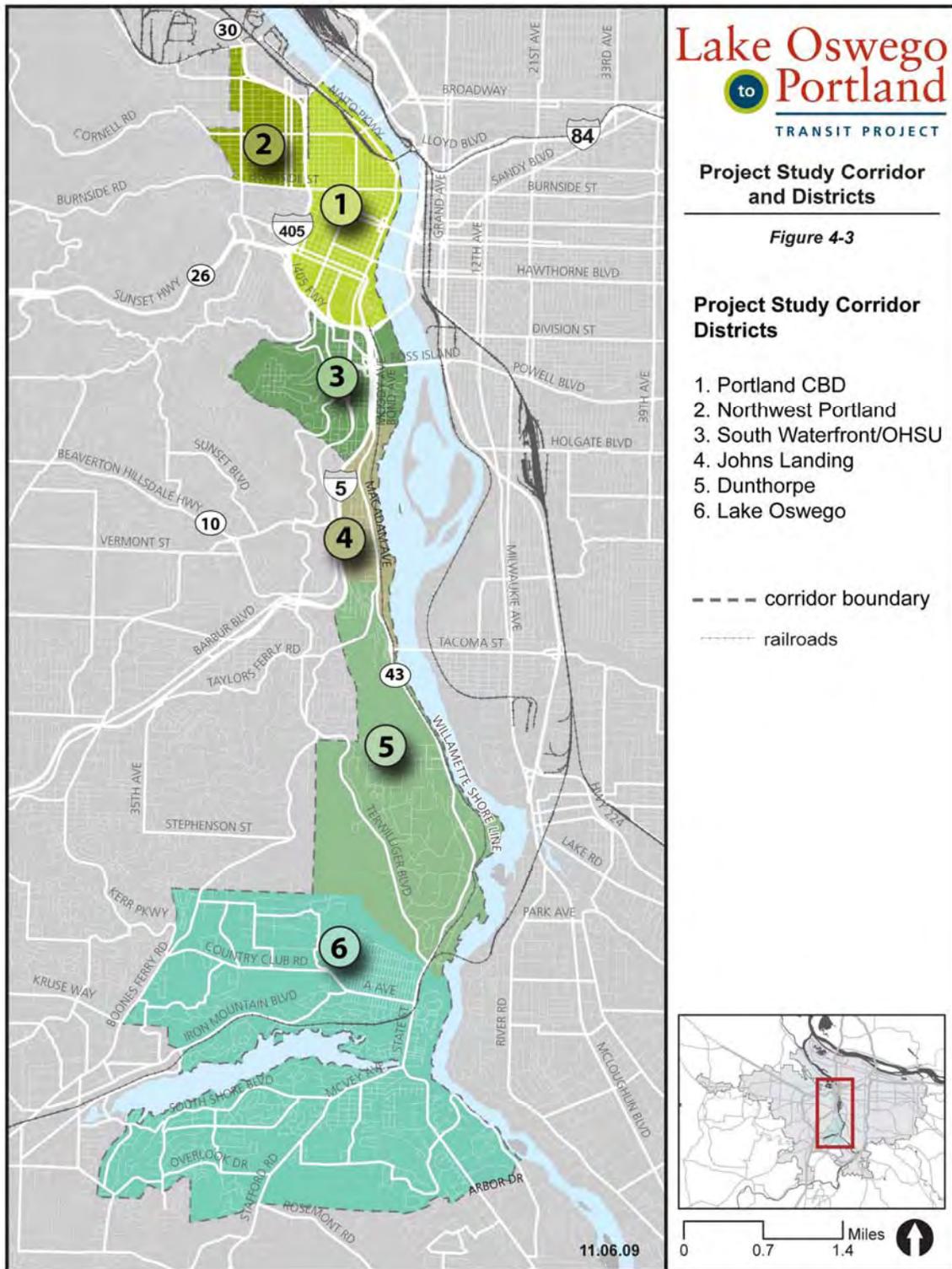


FIGURE 4-3. CORRIDOR MAP AND DISTRICTS

4.3 Study Area Districts

4.3.1 District 1: Central Business District

The Portland Central Business District (CBD) is the hub of economic and cultural activity for the region. For this study, the CBD consists of the area located on the west side of the Willamette River and bounded by Interstates 5 and 405. The industry sectors strongly represented in the CBD include retail; restaurants and entertainment; professional services; health, social, and education services; and government. According to the Portland Business Alliance's 2008 Downtown Business Census & Survey, 3,919 businesses, organizations and governmental entities were located within the I-5/I-405 loop as of October 1, 2008. (This count includes a small area outside of the study area on the east side of the Willamette River.) Finance and insurance, professional scientific and technical services, and public administration were the sectors that employed the largest number of people, comprising 34 percent of total CBD employees.

The CBD includes a significant retail core, including a Nordstrom's, Macy's, and the Pioneer Place shopping mall, all concentrated around Pioneer Courthouse Square, a large, open-air plaza informally known as "Portland's Living Room." Not surprisingly, retail vacancies throughout the downtown are on the rise. According to the Norris, Beggs, and Simpson Central City Vacancy Survey, vacancies for the Central Business District (downtown) increased from 5.4 percent in the fourth quarter of 2007 to 9.8 percent in the second quarter of 2009. However, the retail core is still considered some of the most attractive urban retail real estate in the Portland metropolitan area. The CBD includes Portland State University at the southern end and the Pearl District, a vibrant neighborhood of shops, restaurants, galleries, and cultural and educational institutions, at the northern end, with the downtown retail and business core in the center.

In District 1: Central Business District, the direct economic impacts of the transit alternatives would be slight. Easier access to downtown shopping and cultural activities from residential areas of Lake Oswego, Dunthorpe/Riverdale, and Johns Landing with improved transit would have an indirect impact on the CBD through potential increased spending that otherwise would not occur. Improved transit access from Lake Oswego to downtown Portland could also be a factor in locational decisions when businesses are deciding between a central city or suburban site. Such land-use decisions affect how the region grows, whether more compactly and consistent with the goal of an economically vibrant downtown or in a more sprawl-like and resource-intensive fashion.

4.3.2 District 2: Northwest Portland

Northwest Portland is a well-established neighborhood just to the northwest of the CBD. It contains a mix of residential, retail, commercial and industrial uses. It is also already served by the Portland streetcar; thus direct impacts of the streetcar or alternatives would be minimal. Enhanced transit choices from Lake Oswego to Northwest Portland would have similar indirect impacts as those described for the CBD.

4.3.3 District 3: South Waterfront/OHSU

The South Waterfront district is a newly developing neighborhood taking shape on former brownfields south of the CBD and close to the banks of the Willamette River. Through a public-private partnership and the creation of the North Macadam Urban Renewal Area (URA), the area has seen significant investment, including new high-density housing. Oregon Health & Science

University (OHSU), the city's largest employer with over 12,000 employees, opened its Center for Health & Healing, a 16-story, 412,000-square-foot building, in the South Waterfront district, at the base of the Portland Aerial Tram that connects to its main campus to the west. OHSU owns 26 acres of land in the district and has long-term plans to expand their South Waterfront presence, including establishing a biotechnology center. The goal set for the URA is to establish a vibrant mixed-use central city neighborhood, with a greenway connecting it to the Johns Landing neighborhood to the south and improved transportation infrastructure and accessibility. The timing of the development meant that many of its residential units were completed just as recession took hold on the region. Bringing so many new units into a weak market, the South Waterfront has struggled to fill its condominiums and apartments. There is a small amount of retail activity in the district, which will likely increase as the area increases its population. The Portland Streetcar currently terminates in the South Waterfront district.

4.3.4 District 4: Johns Landing

Johns Landing is the neighborhood directly to the south of the South Waterfront district. It is an established business and residential area with Macadam Avenue as its hub of activity. Designated a "Main Street" in Metro's *2040 Growth Concept*, Macadam Avenue and the surrounding side streets include a mix of business types, including retail, professional services, and office, as well as apartments, condominiums, and single-family residences. The headquarters of Oregon Public Broadcasting, which employs about 120 people, is located in Johns Landing, as is Zupan's, an upscale full-service supermarket. Willamette Park is a popular site for residents and visitors to the neighborhood to enjoy water activities and experience the riverfront.

South of the Johns Landing neighborhood, Macadam Avenue continues to be the primary thoroughfare through the corridor, and provides access to the Sellwood Bridge, which crosses the Willamette and connects to the east side of Portland. The land surrounding the bridge is largely parklands, with the exception of the Staff Jennings Boating Center, a marine dealership in existence at its location at the west end of the Sellwood Bridge since 1929, and the Riverview Cemetery and Funeral Home to the west of Macadam Avenue.

4.3.5 District 5: Dunthorpe/Riverdale

Dunthorpe/Riverdale is a largely single-family residential neighborhood, with few commercial enterprises compared to other districts of the study corridor.

4.3.6 District 6: Lake Oswego

The Lake Oswego district includes the downtown core of the city of Lake Oswego, designated a "Town Center" in Metro's *2040 Growth Concept*. Redevelopment efforts over the past two decades have created a vibrant, mixed-use business district at the east end of Lake Oswego, where the streetcar terminus would be located.

4.4 Household and Employment Forecast

According to Metro's forecast, the seven-county Metropolitan Statistical Area is expected to experience continued population growth, at an annual rate of 1.4 percent through 2035. Though slightly lower than the historic 1.8 percent average annual growth rate experienced from 1980 – 2000, this forecast still presents a sizeable increase in population to be absorbed by the region. Metro's forecast indicates a total population of 3.2 million people in 2035, representing an increase of almost 1 million people or 52.8 percent from 2005 to 2035.

The growth in households and population is expected throughout the region, but household growth is expected to be particularly strong in the project corridor, with the number of households more than doubling between 2005 and 2035 in the corridor, compared with forecast region-wide growth of 58 percent for the same time period, as shown in Table 4-4. The districts expected to absorb the highest levels of household growth are the South Waterfront/OHSU and Johns Landing areas. The number of households in the corridor is expected to grow to nearly 66,500 from the 2005 estimate of 31,200, while the number of households in the region is expected to grow to from 767,000 to over 1,208,600. The future employment growth rate in the corridor will be about two-thirds of the regional average (estimated at nearly 157,200 in 2005, employment in the corridor is expected to grow to 235,500 by 2035, for a growth rate of 50 percent, compared to regional employment growth to nearly 1,799,200 from 1,032,300, or a regional rate of 74 percent). See Table 4-4.

Table 4-4. Households and Employment, 2005 Estimate and 2035 Forecast

District	Households				Employment			
	2005	2035	Growth		2005	2035	Growth	
			Number	Percent			Number	Percent
Portland CBD	13,013	34,637	21,624	166	101,203	147,834	46,631	46
Northwest Portland South	6,058	7,852	1,794	30	15,198	19,858	4,660	31
Waterfront/OHSU	2,246	7,324	5,078	226	25,730	42,267	16,537	64
Johns Landing	1,145	3,688	2,543	222	8,083	12,937	4,854	60
Dunthorpe/Riverdale	1,136	1,518	382	34	1,564	2,377	813	52
Lake Oswego	7,578	11,477	3,899	51	5,415	10,235	4,820	89
Corridor Total	31,176	66,496	35,320	113	157,193	235,508	78,315	50
Region Total	767,016	1,208,649	441,633	58	1,032,316	1,799,212	766,896	74

Source: Metro, 2009.

The corridor's districts that are forecast to have household growth rates approximately equal to or greater than the regional average are the Portland CBD (166 percent), the South Waterfront/OHSU (226 percent), Johns Landing (222 percent), and Lake Oswego (51 percent). The districts with the greatest employment growth rate over the next 25 years are forecast to be Lake Oswego (89 percent), South Waterfront/OHSU (64 percent), Johns Landing (60 percent), and Dunthorpe/Riverdale (52 percent).²

² This forecast growth rate of 52 percent for the Dunthorpe District is based on a 2005 employment estimate of 1,564, or an increase of 813 jobs by 2035.

5. ENVIRONMENTAL CONSEQUENCES

This section of the Economic Activity Technical Report quantifies the economic impacts associated with each of the alternatives: the No-Build Alternative, the Enhanced Bus Alternative, and the Streetcar Alternative, with its various design options evaluated along with a Sellwood Bridge Minimum Operable Segment (MOS).

As noted earlier, there would be no changes to the existing excursion trolley with the No-Build or Enhanced Bus alternatives. The Streetcar Alternative would easily accommodate excursion-trolley riders, thereby capturing the economic activity generated by those riders.

Transit-related projects generate distinct economic impacts during both the construction and operations phases. Project construction results in a one-time increase in economic activity, while operations produce long-term economic benefits to the local community. Both sources of economic activity result in increased economic output, employee compensation, and employment throughout the region. There are additional long-term economic impacts, including changes to jurisdictions' tax bases that would occur due to acquisition of property and the displacement of residences and businesses. These fiscal impacts are also evaluated in this section.

5.1 Long-Term Impacts

One direct long-term impact to economic activity is the employment and personal income generated from operating and maintaining each alternative. Additional long-term impacts to economic activity—including impacts to property tax revenue and potential impacts to business revenue—are caused by the displacement of property for right-of-way or other transit-related use.

5.1.1 Transit-Generated Operations Costs and Employment

The primary long-term direct impacts would be changes in employment from the operation of and maintenance associated with each alternative. The degree to which these jobs would be an actual economic benefit would depend on the source of funding for the project. Locally funded operations yield a smaller economic benefit than federally funded operations, because the local resources would otherwise be spent on other projects in the region. According to the finance report summarized in Chapter 5 of the DEIS, funding for construction would largely be from federal sources and as-of-yet-undetermined state, regional, and local funds, other than a local match credit for using portions of the Willamette Shore Line right-of-way.

The IMPLAN economic impact assessment model estimates that every \$10 million in transit operations costs would result in 101 direct long-term jobs, including vehicle operators, maintenance staff, and administrative and supervisory staff.

Total economic effects include direct³ effects of the transit employment, as well as indirect⁴ and induced⁵ effects resulting from resulting spending in the economy. Table 5-1 summarizes economic impacts by alternative in terms of economic output, employee compensation, and employment.

³ Direct economic effects refer to changes in output, income, and employment attributable to expenditures and/or production values specified as direct final demand.

Table 5-1. Summary of Annual Economic Impacts of Operations and Maintenance, Streetcar and Enhanced Bus Alternative, Difference over No-Build Alternative

Economic Impact	Enhanced Bus	Streetcar
<i>Output (millions 2010\$)</i>		
Direct	\$2.79	\$1.25
Indirect	\$1.21	\$0.54
Induced	\$1.45	\$0.65
Total Output	\$5.45	\$2.44
<i>Employee Compensation (millions 2010\$)</i>		
Direct	\$1.84	\$0.82
Indirect	\$0.40	\$0.18
Induced	\$0.44	\$0.20
Total Employee Compensation	\$2.68	\$1.20
<i>Employment (Jobs)</i>		
Direct	28	13
Indirect	9	4
Induced	13	6
Total Employment	49	22

Source: Metro/TriMet; January 2010, and IMPLAN Pro 2.0.1025.
Based on increases in annual transit operating costs in 2035, compared to the No-Build Alternative. See Section 2.4 for the operating cost estimates by alternative. Streetcar design options under consideration would not affect long-term employment estimates.

According to Chapter 5 of the DEIS, corridor operations and maintenance (O&M) costs relating to the No-Build Alternative at 2035 service levels are estimated at \$28.41 million in 2010 dollars, compared to \$31.20 million for the Enhanced Bus Alternative or \$29.66 million for the Streetcar Alternative. In other words, corridor O&M costs for the Streetcar Alternative would be \$1.25 million higher than the No-Build Alternative, due to the increased service levels. The corridor O&M costs for the Enhanced Bus Alternative would be \$1.54 million higher than those for the Streetcar Alternative. Because the analysis compares the operating costs of each alternative to the No-Build Alternative, the Enhanced Bus operating cost of \$2.79 million over the No-Build Alternative yields roughly 28 jobs (over the No-Build Alternative), while the Streetcar operating cost of \$1.25 million over the No-Build Alternative yields approximately 13 jobs (over the No-Build Alternative). Design options under consideration would not affect the long-term employment resulting from the Streetcar Alternative. See Chapter 5 of the DEIS for a summary of the operating cost estimates for each alternative.

Because operating costs are estimated to be lower for the Streetcar Alternative than the Enhanced Bus Alternative, the long-term employment would also be lower for the Streetcar Alternative. The No-Build Alternative would not result in any increase in long-term employment, compared to the Enhanced Bus and Streetcar alternatives that would result in 28 and 13 long-term jobs, respectively, estimated using the IMPLAN factors.

⁴ Indirect economic effects refer to changes in output, income, and employment resulting from iterations of businesses making expenditures initially caused by the direct economic effects.

⁵ Induced economic effects refer to changes in output, income, and employment caused by expenditures associated with increased household income generated by the direct and indirect effects.

5.1.2 Impacts to Local Government Revenues

In addition to operating each of the alternatives, there are long-term impacts to economic activity, including those caused by the displacement of private properties from property taxes and—for those properties in commercial use—business taxes. (Refer to *Appendix A—Potentially Affected Properties and the Community Impact Assessment Technical Report* prepared by URS, November 2010, for more information about displacements.)

5.1.2.1 Property Tax Impacts

With the exception of the No-Build Alternative, each of the alternatives would have some effect on the local property tax bases. The most notable impact would result from the removal of private property from the property tax rolls through public acquisition for the project. Additional issues include land use or market changes that affect assessed values of private properties surrounding streetcar stations.

Table 5-2 shows the full or partial property acquisitions and the building displacements that would be required for each of the alternatives being considered: No-Build, Enhanced Bus, and Streetcar Alternative, evaluated with both the Lake Oswego Terminus and Sellwood Bridge MOS.

Table 5-2. Summary of Potential Full or Partial Property Acquisitions and Building Displacements by No-Build, Enhanced Bus, and Streetcar Alternatives

Alternative	Full or Partial Property Acquisitions	Building Displacements
No-Build	0	0
Enhanced Bus	8	0
Streetcar		
Sellwood Bridge MOS	7-25	0-1
Lake Oswego Terminus	28-60	0-7

MOS = Minimum Operable Segment
Source: URS Corporation.

As shown in Table 5-2, the No-Build Alternative would not require acquisition of any properties. The Enhanced Bus Alternative would involve acquisition of eight properties in Lake Oswego. For the two streetcar alternatives, the number of property acquisitions would depend on the design options selected. As noted earlier, the streetcar alignment is divided into six segments, and for Segments 3, 5, and 6, there are two or more design options being considered. Thus, there is a range rather than an exact number of property acquisitions associated with the Streetcar Alternative, for both the Lake Oswego Terminus and Sellwood Bridge MOS options.

The Streetcar Alternative would require the acquisition of a minimum of 28 properties and a maximum of 60 properties. The Streetcar Alternative with the Sellwood Bridge MOS would require the acquisition of a minimum of 7 properties and a maximum of 25 properties. The number of impacted parcels by segment and design option are shown in Table 5-3.

**Table 5-3. Summary of Potential Full or Partial Property Acquisitions
by Streetcar Segment and Design Option**

Segment	Design Option	Lake Oswego Terminus	Sellwood Bridge MOS
Segment 1 – Downtown	None	0	0
Segment 2 – South Waterfront	None	0	0
Segment 3 – Johns Landing	Willamette Shore Line	7	7
	Macadam In-Street	17	17
	Macadam Additional Lane	25	25
Segment 4 – Sellwood Bridge	None	0	0
Segment 5 – Dunthorpe/ Riverdale	Willamette Shore Line	0	NA
	Riverwood	8	NA
Segment 6 – Lake Oswego	UPRR Right-of-Way	21	NA
	Foothills	27	NA
Totals (ranges based on Design Options)		28-60	7-25

Source: URS Corporation.

Note: Table does not include one property owned by ODOT and two properties owned by UPRR. Use of these properties for the Streetcar Alternative is not expected to require acquisition of the properties. ODOT may allow use of its property without acquisition and use of the UPRR property may be by permit.

*Displacements occur when an activity that has been occurring on a parcel of land can no longer occur there. A full acquisition does not result in a displacement when there are no buildings or other activities that would be interrupted by the acquisition.

The analysis of property tax impacts applies an estimated tax rate by jurisdiction to the assessed value in the RLIS (Metro’s GIS database) to estimate the impact on assessed value and the resulting annual impact on property tax revenue. It calculates a per-square-footage estimate of value based on the assessor land value and the square footage of the parcel. It adds the value of the building if the parcel is identified as a building “take” in the right-of-way analysis, described more fully in the Community Impacts Assessment Technical Report. This analysis applies an estimated tax rate of 0.007392 percent for Portland and 0.005683 percent for Lake Oswego (including bonds). These tax rates were derived from the *2008-09 Oregon Property Tax Statistics Supplement*, a companion document to the *2008-09 Oregon Property Tax Statistics*, published by the Oregon Department of Revenue. Table 5-4 shows the resulting aggregated assessed values of displaced properties for the Enhanced Bus Alternative and for the Streetcar Alternative, by streetcar segment and design option.

Table 5-4. Summary of Estimated Assessed Value of Displaced Property and Estimated Annual Tax Impact¹ by Segment and Streetcar Design Option

Segment	Design Option	Displaced Property Value	Annual Loss in Tax Revenues
Enhanced Bus	None	\$1,214,130	\$6,900
Segment 1 – Downtown	None	\$0	\$0
Segment 2 – South Waterfront	None	\$0	\$0
Segment 3 – Johns Landing	Willamette Shore Line	\$139,030	\$1,030
	Macadam In-Street	\$2,663,410	\$19,690
	Macadam Additional Lane	\$5,061,180	\$37,410
Segment 4 – Sellwood Bridge ²	None	\$0	\$0
Segment 5 – Dunthorpe/Riverdale	Willamette Shore Line	\$0	\$0
	Riverwood	\$468,890	\$3,470
Segment 6 – Lake Oswego	UPRR Right-of-Way ³	\$1,548,490	\$8,800
	Foothills ⁴	\$4,050,864	\$23,020

¹ These estimates do not include right-of-way and other property already owned or controlled by public entities or railroads.

² The right-of-way would be relocated as part of the Sellwood Bridge project, done by others.

³ In addition to acquisition of property from UPRR railroad.

⁴ Streetcar would be responsible for \$4,050,860 of the \$13,461,830 total value of displaced property in the foothills area, resulting in an estimated \$23,020 loss in annual tax revenue.

Source: URS and Oregon Department of Revenue; January 2010.

Eight properties in Segment 6 (Lake Oswego) would be impacted with development of the Enhanced Bus Alternative. The assessed value of the affected portions of those properties aggregates to \$1.2 million, with an associated annual tax impact of \$6,900.

For the Streetcar Alternative, several of the segments include displacements of private property, resulting in loss of property tax revenue. With no displacements in Segment 1 or 2, there is no expected impact to property tax revenue in these segments. All three design options in Segment 3 include displacements, resulting in impacts to property tax revenue. The Macadam Additional Lane design option would impact 25 parcels, of which impacted portions' value aggregates to over \$5 million, with an annual tax impact of \$37,410. The Macadam In-Street Design Option would impact all or part of 17 parcels, with an aggregate assessed value of \$2.66 million, or a property tax impact estimated at \$19,690 annually. The Willamette Shore Line design option would impact 7 parcels, whose impacted portions aggregate in value to \$139,030, and an associated tax impact estimated of \$1,030.

There would be no property displacements in Segment 4, because the right-of-way relocation for that segment is being done by others as part of the Sellwood Bridge project. As a result, there are no property tax impacts associated with Segment 4.

In Segment 5, no parcels would be impacted by the Willamette Shore Line Design Option, and thus there would be no direct property tax impacts. The Riverwood In-Street design option impacts 8 parcels, of which the impacted portions have an aggregated assessed value of \$468,890, yielding an estimated annual property tax impact of \$3,470.

Portions of the 27 parcels would be impacted by the Foothills design option in the Lake Oswego segment and would have the highest aggregated value of property displaced by any alternative or design option. However, only a portion of that impact would be attributed to streetcar. The City of Lake Oswego has been planning for roadway development in the Foothills area, and the degree to which the impacts would be apportioned to this Foothills project (as opposed to streetcar) would depend on the phasing of the construction for the two projects. The estimates applied in this analysis are based on URS engineering estimates. The UPRR Right-of-Way Design Option in Segment 6 would impact all or part of 21 parcels, for an aggregate of over \$1.5 million or an estimated tax impact of \$8,800 annually.

Table 5-5 shows the estimate of assessed value and estimated property tax impacts of removing the properties that would be displaced by the alternatives, by jurisdiction. Actual property taxes are levied on the net assessed value of the property. With no property displacements/acquisitions, the No-Build Alternative would have no impacts on assessed value or impacts to annual property taxes. The Enhanced Bus Alternative would impact eight parcels in Lake Oswego with an aggregate assessed value of nearly \$1.2 million, resulting in an estimated tax impact of approximately \$6,700 annually. The Streetcar Alternative would result in the loss of approximately \$10,500 to \$67,900 in annual tax revenues for the applicable taxing districts (\$1,600 to \$45,000 for the City of Portland, up to \$7,570 for unincorporated Multnomah County, and \$8,800 to \$22,920 for the City of Lake Oswego), depending on the Streetcar design option.

Table 5-5. Estimate of Assessed Value and Estimated Taxes from Displaced Properties, by Alternative

Alternative	Estimated Assessed Value	Estimated Annual Tax Impact by Jurisdiction		
		Portland	Lake Oswego	Total
No-Build	\$0	\$0	\$0	\$0
Enhanced Bus	\$1.2M	\$0	\$6,900	\$6,900
Streetcar				
Sellwood Bridge MOS	\$139,030 to \$5.1M	\$1,030 to \$37,410	\$0	\$1,030 to \$37,410
Lake Oswego Terminus	\$2.4M to \$9.6M	\$1,600 to \$37,400	\$13,980 to \$23,020	\$10,500 to \$63,900

Note: These estimates do not include right-of-way and other property already owned or controlled by public entities. They include only the portion of displacements attributable to the LOPT project.

Source: URS and Oregon Department of Revenue.

Many of the displaced businesses and residences would likely relocate and/or rebuild within the same area, thereby increasing assessed value and property tax revenue elsewhere. Despite a short-term loss in assessed value and property tax revenue caused by displacement of properties, properties close to streetcar stations would likely experience an increase in value upon completion of the project, thereby increasing property tax revenue in the long term. The likely impact of this type of activity is described more fully in the Land Use Technical Report.

5.1.2.2 Business Revenue Tax Impacts

The economic impacts include potential revenue loss if businesses are required to close or relocate due to their location or proximity to affected properties. In Portland, loss of business income tax revenue from these business impacts is a possibility; however, the City of Lake Oswego does not collect business taxes, so any impact to businesses displaced in Lake Oswego would not result in an impact on local business tax revenue.

The displaced properties for the Streetcar Alternative include parcels with existing structures, some of which are commercially zoned and may house existing businesses. As shown in Table 5-2, the No-Build and Enhanced Bus alternatives would not displace any existing buildings. For the Streetcar Alternative, the building displacements by segment by design option range from zero for many of the design options within the segments to seven building displacements for the Foothills Lake Oswego Terminus Option, as shown in Table 5-6.

Table 5-6. Summary of Potential Building Acquisitions by Streetcar Alternatives (Lake Oswego Terminus and Sellwood Bridge MOS)

Segment	Design Option	Lake Oswego Terminus	Sellwood Bridge MOS
Segment 1 – Downtown	None	0	0
Segment 2 – South Waterfront	None	0	0
Segment 3 – Johns Landing	Willamette Shore Line	0	0
	Macadam In-Street	0	0
	Macadam Additional Lane	1	1
Segment 4 – Sellwood Bridge	None	0	0
Segment 5 – Dunthorpe/ Riverdale	Willamette Shore Line	0	NA
	Riverwood	1	NA
Segment 6 – Lake Oswego	UPRR Right-of-Way	0	NA
	Foothills	7	NA
Totals (ranges based on Design Options)		1-9	0-1

Notes: MOS = Minimum operable Segment. Additional information on building displacements available in the Community Impact Assessment Technical Report.
Source: URS.

Table 5-6 summarizes the potential building displacements for the Streetcar Segments by design option. (See the Community Impact Assessment Technical Report for detail on the displacement analysis.) For the Streetcar Alternative, the various design options being considered in several of the segments would affect the number of buildings that would need to be acquired. Thus, there is a range rather than an exact number of building acquisitions associated with the Streetcar Alternative.

Most parcels would only be partially affected, but in some cases, entire properties would need to be acquired, forcing any business located there to either close or relocate. As noted earlier, loss of business income tax revenue is a possibility in Portland. The City of Lake Oswego has a minimal business license fee, but does not collect city or county business taxes. It is likely that most affected

businesses would relocate rather than close completely; thus there would not be any impact on business tax revenue. However, there could be circumstances under which a business would cease to operate or locate in a different jurisdiction.

The number of building displacements for the Streetcar Alternative would depend on the design options chosen. This number could range from one to seven for the Foothills Lake Oswego Terminus Option of the Streetcar Alternative. Table 5-7 shows the distribution of land uses for the displaced buildings.

Table 5-7. Land Uses for Potential Building Acquisitions for Streetcar Alternative

Segment/Design Option	Land Use		
	Single-Family Residential	Commercial	Industrial
Segment 3/Macadam Additional Lane	0	1	0
Segment 5/Riverwood	1	0	0
Segment 6/Foothills	0	0	7
Totals	1	1	7

Note: Only segments and design options that include building displacements are shown.
Source: URS.

The potential commercial displacement in Segment 3 under the Macadam Additional Lane Design Option is a commercial fueling station. As a utility, if this business no longer existed, the economic activity it formerly generated would simply shift to other fueling stations. As a commercial fueling facility, it does not serve the general public, thus its loss would not affect the large majority of the population in the area.

The seven potential building displacements in Segment 6 under the Foothills Design Option are all being used for industrial purposes: three are part of a self-storage complex, one is in use as All Purpose Design, one is in use as Jeepers It’s Erickson’s auto repair and dealership, one as Skyline Northwest Auto Dealership, and one as Lakeshore Concrete. They represent a small number of businesses that could most likely relocate within relative proximity to their current locations. As such, the impact upon overall economic activity in the region would be small.

5.2 Short-Term Construction-Related Employment and Income Impacts

Any of the alternatives that include construction (the “build alternatives”) would result in short-term regional income and employment benefits. The short-term income impacts from construction would include:

- Direct added income associated with new construction jobs;
- Indirect added income from employment created in industries providing goods and services to the construction firms;
- Induced income resulting from additional purchases made by the households receiving the new or increased direct and indirect income; and
- Potential adverse short-term business income impacts related to reduced roadway access and construction noise.

The capital cost estimates were provided by alternative and aggregated by segment and design option for the purposes of estimated output, jobs, and income associated with developing each alternative. The estimates used for this portion of the analysis include construction and development costs only, excluding costs for right-of-way (ROW) acquisition. The No-Build Alternative does not include any new construction. The estimated construction and development cost of the Enhanced Bus Alternative is \$26 million, again excluding ROW-acquisition costs. For the Streetcar Alternative, the estimated construction and development costs range from \$156.9 million to \$165.6 million. The Sellwood MOS construction estimates range from \$61.8 million to \$62.7 million. The aggregation of total estimated construction/development costs are shown in Table 5-8.

Table 5-8. Summary of Construction Costs by Segment and Design Option

Segment	Design Option	Estimated Construction/Development Costs Excluding ROW Costs (millions)	Estimated Total Jobs Resulting from Construction
Segment 1 – Downtown ¹	None	\$1.0	10
Segment 2 – South Waterfront	None	\$10.1	90
Segment 3 – Johns Landing	Willamette Shore Line	\$18.5	170
	Macadam In-Street	\$22.3	210
	Macadam Additional Lane	\$22.9	210
Segment 4 – Sellwood Bridge ²	None	\$23.4	220
Segment 5 – Dunthorpe/ Riverdale	Willamette Shore Line	\$52.6	490
	Riverwood	\$51.3	470
Segment 6 – Lake Oswego	Foothills	\$50.3	460
	UPRR Right-of-Way	\$43.8	400
Storage Facility Allowance	--	\$2.5	20
Lake Oswego Terminus Range	Low	\$154.4	1,430
	High	\$162.8	1,500
Sellwood MOS Range	Low	\$59.3	550
	High	\$59.5	550

¹Segment 1 includes maintenance facility allowance and misc trackwork.

²Cost estimates for the Sellwood Bridge MOS include entirety of Segment 4 costs.

There is an additional \$48.4M estimated for the purchase of 11 streetcar vehicles. These vehicles are expected to be manufactured by Oregon Iron Works, resulting in an additional quantifiable local economic impact. Streetcar manufacturing is classified as NAICS code 336510 (Railroad rolling stock manufacturing) which corresponds to IMPLAN industry code 289 (Railroad rolling stock manufacturing). IMPLAN estimates that \$48.4M in streetcar manufacturing results in 144 jobs in this industry, with an estimated aggregated compensation of \$8.7M.

Source: TriMet, URS Corporation, and IMPLAN Pro 2.0.1025.

Using data for the four-county economy and the capital cost estimates provided for the transit project, the IMPLAN model was used to estimate the number of construction jobs and employee compensation generated as a result of this project. Using spending patterns associated with construction projects for government-operated passenger transit for the region, IMPLAN estimates that every \$10 million in streetcar construction results in an estimated 92.3 jobs: 52.6 directly employed in the construction, 18.8 jobs in direct sectors, and 21.0 jobs as the result of induced spending.

Table 5-9. Short-Term Construction Impacts by Alternative

Alternative	Construction Costs	Estimated Construction Impacts	
		Total Jobs	Personal Income
Streetcar			
Lake Oswego Terminus	\$154.4M to \$162.8M	1,430 to 1,500	\$62.5M to \$65.8M
Sellwood Bridge MOS	\$59.3M to \$59.9M	550	\$24.0M to \$24.6M
Enhanced Bus	\$26M	240	\$10.5M
No-Build	\$0	0	\$0

Source: TriMet, URS Corporation, and IMPLAN Pro 2.0.1025.

The No-Build Alternative would not result in any construction-related spending, jobs, or income impacts. The Enhanced Bus Alternative, with an estimated construction cost of \$26 million, would result in an estimated 240 jobs, approximately 140 employed directly by construction, about 50 indirectly for the construction, and about 55 as a result of induced spending. The estimated \$154 to \$163 in construction costs for the Streetcar Alternative with the Lake Oswego Terminus would result in approximately 1,430 to 1,500 total jobs and an estimated \$62.5 to \$65.8 million in personal income. The Sellwood Bridge MOS, with its correspondingly lower construction costs of \$59.3 million to \$59.9 million, would result in approximately 550 jobs and an estimated \$24.0 to \$24.6 million in personal income as shown in Table 5-9.

There is an additional \$48.4 million estimated for the purchase of 11 streetcar vehicles. These vehicles are expected to be manufactured by Oregon Iron Works, resulting in an additional quantifiable local economic impact. Streetcar manufacturing is classified as NAICS code 336510 (Railroad rolling stock manufacturing) which corresponds to IMPLAN industry code 289 (Railroad rolling stock manufacturing) which IMPLAN estimates results in 144 jobs in the industry, with an estimated aggregated compensation of \$8.7 million.

The direct, indirect, and induced economic effects relating to construction—expressed in terms of economic output—is summarized by alternative in Table 5-10.

Table 5-10. Summary of Direct, Indirect, and Induced Economic Impacts in Terms of Output Generated by Construction of No-Build, Enhanced Bus, and Streetcar Alternatives (millions)

Alternative	Direct	Indirect	Induced	Total
No-Build	\$0	\$0	\$0	\$0
Enhanced Bus	\$26.0	\$6.8	\$6.3	\$39.1
Streetcar				
Sellwood Bridge MOS	\$59.3 to \$59.9	\$15.4 to \$15.6	\$14.4 to \$14.6	\$89.1 to \$90.0
Lake Oswego Terminus	\$154.4 to \$162.8	\$40.1 to \$42.4	\$37.5 to \$39.5	\$232.0 to \$244.6

Source: TriMet, URS Corporation, and IMPLAN Pro 2.0.1025.

The estimated construction cost of \$26 million for the Enhanced Bus Alternative is augmented by indirect output estimated at \$6.8 million, and output resulting from induced spending of \$6.3 million, for a total economic impact—in terms of economic output—of \$39.1 million. The Streetcar

Alternative, with its much higher estimated construction costs, has correspondingly higher estimated total economic impacts, ranging from \$89.1 million to \$90.0 million in total construction-related economic impacts for the Sellwood Bridge design option, to \$232.0 million to \$244.6 million in total construction-related economic impacts for the Lake Oswego Terminus Option, a range which varies depending on the alignment and design option selected, as shown in Table 5-10.

Any major construction project, public or private, inconveniences or disturbs the residents, businesses, and business customers adjacent to that construction project. Construction-related effects can vary considerably over time and location. Some businesses in the active commercial areas along the corridor may suffer little or no adverse impacts, while others may experience a noticeable decline in sales or decrease in efficiency. Some commercial activity within the project area may be adversely affected by the duration of construction activities and other direct construction effects, such as traffic restrictions, traffic congestion, and noise. Temporary effects could include any or all of the following:

- The presence of construction workers and heavy construction equipment and materials within the construction area and along transport routes;
- Temporary road closures, traffic diversions, and alterations to property access (see Transportation Technical Report);
- The presence of airborne dust (see Air Quality Technical Report);
- Noise and vibrations from construction-related activities (see Noise Technical Report); and
- Decreased visibility and access to businesses.

These construction-related effects may adversely affect the operations and viability of existing businesses, unless appropriately mitigated. Project coordination and public information to promote awareness of the Project's construction timing and locations should help to mitigate some of these temporary adverse effects.

5.3 Other Indirect Impacts

Other indirect effects are those caused by the proposed action but indirectly related. They may occur at a later point in time or may be farther removed in location, but are still reasonably foreseeable effects of the project.

The potential overall influence on growth in the project area is difficult to predict. As an indirect effect, changes in land uses—and by extension, economic activity—may be stimulated by the overall improvement in accessibility associated with Streetcar alternatives, compared to the No-Build Alternative.

As was discussed in the section on the transit project's purpose and need, this project serves to support regional and local land use goals, optimizing the regional transit system by improving transit within the Lake Oswego to Portland corridor. The experience of the original westside streetcar project, however, indicates that development of the Streetcar Alternative may encourage redevelopment at higher densities than with either the No-Build or Enhanced Bus alternatives. The experiences of the westside streetcar and the resulting impact on land use and economic activity are described more fully in the Land Use Technical Report.

The Streetcar Alternative would likely result in redevelopment of commercial uses, particularly near Macadam Avenue in Segments 3 and 4 and the portion of Segment 6 in downtown Lake Oswego,

representing the potential to accommodate intensification of land uses and accompanying economic activity. In areas fully developed in compliance with single-family residential zoning, such as the entirety of Segment 5 and portions of Segment 6, the Streetcar Alternative would not have any indirect impacts to land use or economic activity.

The experience of the original Portland Streetcar was an intensification of land uses and resulting economic activity in commercially designated areas following development of the streetcar. Again, the role of the project in serving as a catalyst for enhanced economic activity through increased density or other development opportunities is further described in the Land Use Technical Report.

5.4 Cumulative Impacts

Cumulative effects are the total effects of the proposed action combined with other past, present, and reasonably foreseeable future actions. They include both construction and operational effects.

The No-Build Alternative would have no cumulative impacts. The Enhanced Bus Alternative would have some cumulative impacts in the Foothills redevelopment area, in conjunction with the City of Lake Oswego's plans for developing a street plan near the Enhanced Bus construction area. The Streetcar Alternative would have some cumulative impacts in the area near the Sellwood Bridge Station and the Foothills redevelopment area.

Redevelopment impacts of a combination of the Streetcar Alternative and the Sellwood Bridge replacement would be greater than the impact of the Streetcar Alternative alone. The replacement of the Sellwood Bridge would include displacement of properties required to provide for a new right-of-way for the replacement bridge as well as replacing rail right-of-way for the Streetcar Alternative. This property acquisition would result in the removal of assessed value property taxes. Over the long term, however, vehicular and pedestrian access and visibility would be improved by the new interchange developed in conjunction with bridge replacement, encouraging redevelopment of the Staff Jennings Boating Center property more than with the Streetcar Alternative alone.

The Streetcar Alternative would have some cumulative impacts in the Foothills redevelopment area as well. Only the Streetcar Alternative with the Lake Oswego Terminus includes the Foothills area in Lake Oswego. The Sellwood Bridge MOS does not include this portion of the corridor, and thus, would not include these cumulative impacts. The combined effect of the Streetcar Alternative and the development of a new street plan in the Foothills area would be greater than the impact of the Streetcar Alternative alone. The combined effect of the Streetcar Alternative and the Foothills street plan would include displacement of an increased number of properties required for new right-of-way, resulting in removal of increased assessed value from property taxes. Over the long-term, however, vehicular and pedestrian access and visibility would be improved, encouraging development activity to a greater degree than with the Streetcar Alternative alone.

The overall effects of the Lake Oswego to Portland Transit Project would be minor in the context of the number of jobs and output generated in the metropolitan region. As compared to the No-Build Alternative, cumulative effects of the Streetcar Alternative could include redevelopment along the streetcar line, particularly station areas in established commercial areas, including Johns Landing and downtown Lake Oswego. The possible effects of this potential redevelopment activity are described more fully in the Land Use Technical Report.

6. POTENTIAL MITIGATION MEASURES

6.1 Mitigation for Long-Term Impacts

The operational effects would be minor in the context of the number of jobs and output generated by the metropolitan region. With approximately 1 million jobs in the metropolitan region, the high end of employment generated by streetcar construction would represent less than 0.24 percent of all employment in the region, with Enhanced Bus representing less than one-tenth of that estimate.

The Project design has sought to minimize the extent and number of businesses, jobs, and access that would be permanently affected. The direct loss the local government tax revenues due to displacement of property are likely to be offset by increases in assessed values caused by redevelopment near streetcar stations, as raised in the discussion of indirect impacts and explored more fully in the Land Use Technical Report.

Compensation for acquisitions and easements would be provided at fair market value, and acquisition of property and resulting relocation of displaced residents will follow the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

6.2 Mitigation for Short-Term Impacts

Public information relating to the Project's construction timing and proximity should help to mitigate some of the potential temporary effects. A comprehensive package of public information and business assistance measures will be developed; these measures would include conducting public information campaigns to encourage patronage of businesses during construction. Construction activities could interfere with access to some businesses and properties adjacent to and impacted by the Streetcar Alternatives. A primary goal of construction planning will be to maintain adequate access to all businesses so their operations can continue.

7. REFERENCES

City of Portland, Revenue Bureau, Lisa Goldberg personal communication with Terri Williams, License & Tax Division Manager, December 2009.

CoStar Realty Information, generated December 3, 2009.

Metro, 2005-2060 Regional Population and Employment Forecast, May 19, 2008.

Metro, Draft Urban Growth Report, 2009 - 2030. September 15, 2009.

NAI Norris Beggs & Simpson, Retail Report, Portland Metro Area, Third Quarter 2009, <http://www.nai-nbs.com/MarketReports/retail.pdf>.

Oregon Department of Revenue, *2008-09 Oregon Property Tax Statistics Supplement*, a companion document to the *2008-09 Oregon Property Tax Statistics*.

OLMIS (Oregon Labor Market Information System) Current Employment Statistics. www.qualityinfo.org/olmisj/CES . Accessed 11/10/09.

OHSU, Schnitzer Campus Strategic Framework, Technical Summary, June 20, 2008. Department of Campus Planning, Development and Real Estate.

Portland Business Alliance, 2008 Downtown Portland Business Census & Survey.

Portland Development Commission, North Macadam URA Fast Facts (www.pdc.us/ura/sowa_n-macadam.asp). Accessed 11/10/09.

Portland State University Center for Real Estate, Quarterly and Urban Development Journal, 3rd Quarter 2009. August 2009.

Portland State University Center for Real Estate, Quarterly and Urban Development Journal, 4th Quarter 2009. November 2009.

U.S. Census, 1990, 2000.

VanderVliet, Amy, Regional Economist. Portland Metro Labor Trends, November 2009. Oregon Employment Department.

8. LIST OF PREPARERS

Bonnie Gee Yosick, MBA Public Management, BA Economics and Political Science, 15 years experience, responsible for analysis of economic activity.

Lisa Goldberg, MRP Regional Planning, BA Literary Studies, 4 years experience, responsible for analysis of economic activity.

Technical Reviewer: John Cullerton, BS Geography, 30 years experience, responsible for technical review.

APPENDIX A. POTENTIALLY AFFECTED PROPERTIES

APPENDIX A

POTENTIALLY AFFECTED PROPERTIES

Building and operating the Lake Oswego to Portland Transit Project requires acquiring property for right of way and other facilities and presumes displacing and relocating some existing uses. This appendix presents the likely property acquisitions based on the current conceptual design. It is important to note that this list of potentially affected parcels should not be interpreted as the final determination regarding property acquisition and the list could be updated as the project design is further refined. Furthermore, the estimates described below reflect the various alternatives and design options that are being considered in the DEIS. Accordingly, the number and/or type of acquisitions and/or displacements could vary between what has been disclosed in this DEIS and what is actually required for the project but would reflect the alternative and design options chosen as the locally preferred alternative.

Two types of property acquisitions could occur:

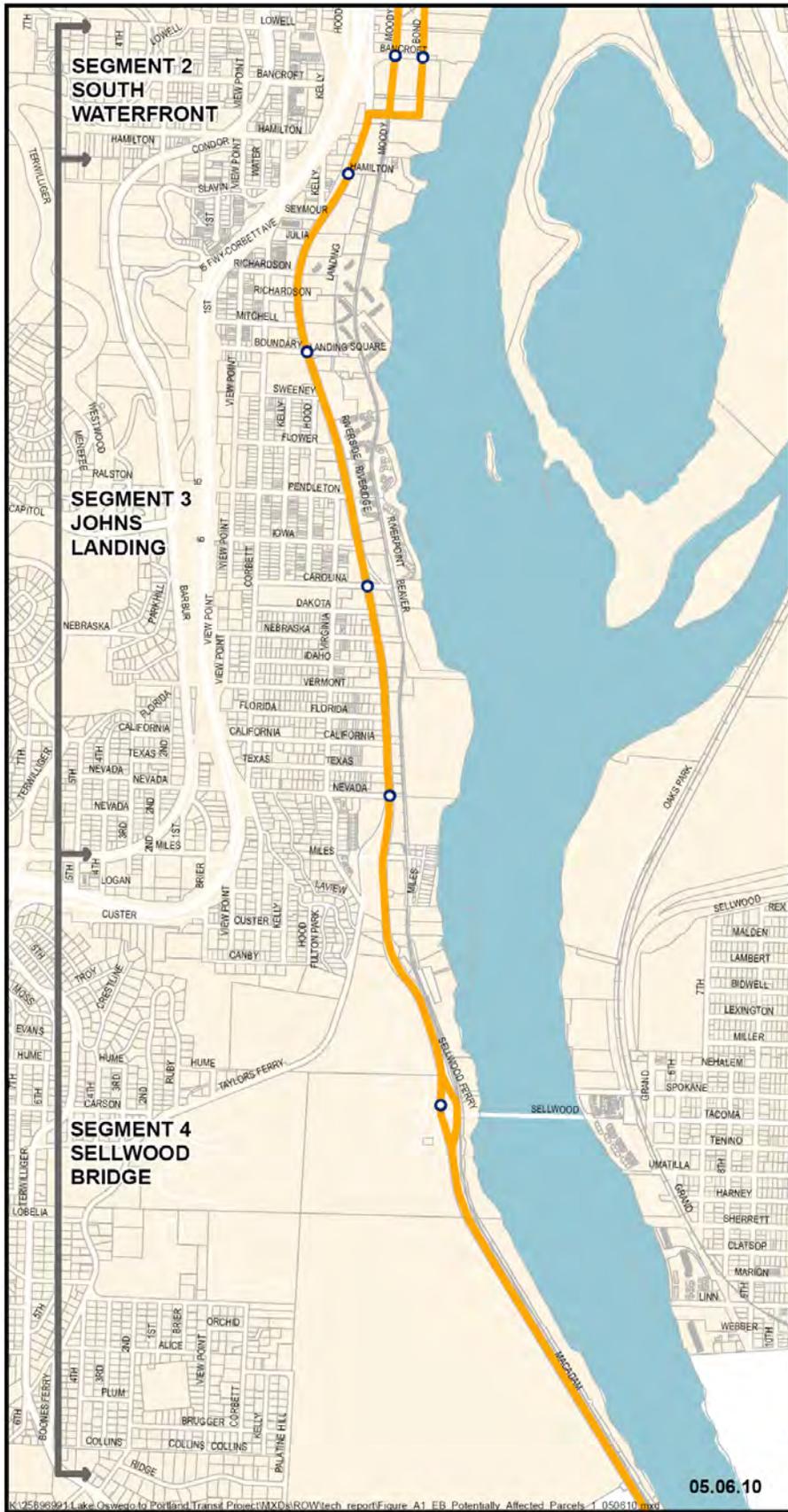
- A partial acquisition would acquire part of a parcel but would not dislocate the existing use.
- A full acquisition would acquire the full parcel and displace the current use. Full acquisitions include parcels that may not be fully acquired for the project but would be affected (due to loss of parking, access or other features) such that the existing use would be substantially impaired. This includes parcels that would be required for construction activities, although in some cases all or part of the parcels would be available for other use or redevelopment after construction is complete.

The following tables present information on the likely acquisitions. Tables A-1 through A-9 present a list of properties potentially affected with each alternative and design option. The tables list map identification numbers, parcel identification numbers, property owner's name and current use of the property, provided by the Multnomah and Clackamas County Tax Assessors. Figures A-1 through A-4 show the locations of the properties as identified by the map identification numbers.

Table A-1*
Enhanced Bus Alternative – Segment 6
 (See Figure A-2)

Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
55	21E11BB -00400	273288	Oswego Lender LLC	Multi-Family Residential
58	21E10AA -03600	253647	Pak Hasong J.	Commercial
59	21E10AA -03900	253674	Pak Hasong J.	Commercial
60	21E10AA -04000	253683	Pak Hasong J.	Commercial
61	21E10AA -03700	253656	Pak Hasong J.	Commercial
62	21E10AA -04001	253692	Headlee Properties LP	Commercial
63	21E10AA -04002	253709	City of Lake Oswego	Commercial
64	21E10AA -04100	253718	GMS Realty LLC	Commercial

*Note: No potentially affected parcels have been identified for the Enhanced Bus Alternative in Segments 1 through 5.



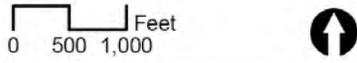
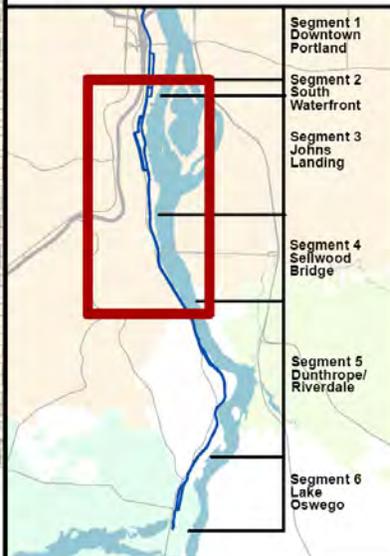
Lake Oswego to Portland

TRANSIT PROJECT

**Figure A-1
Enhanced Bus Alternative
Potentially Affected Parcels
Segments 2, 3, and 4**

-  Enhanced Bus Alternative
-  Bus Stop
-  Taxlot
-  Potentially Affected Parcel ID
-  City Boundaries

No potentially affected parcels have been identified for the Enhanced Bus Alternative in Segments 2, 3, and 4.



**Figure A-2
Enhanced Bus Alternative
Potentially Affected Parcels
Segments 5 and 6**

-  Enhanced Bus Alternative
-  Bus Stop
-  Park-and-Ride
-  Taxlot
-  Potentially Affected Parcel ID
-  City Boundaries

This map shows potentially affected parcels for the Enhanced Bus Alternative in Segments 5 and 6. For specific parcel information, refer to Table A-1.

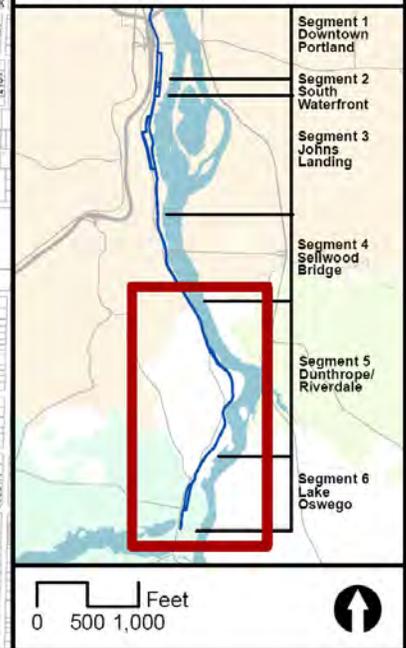
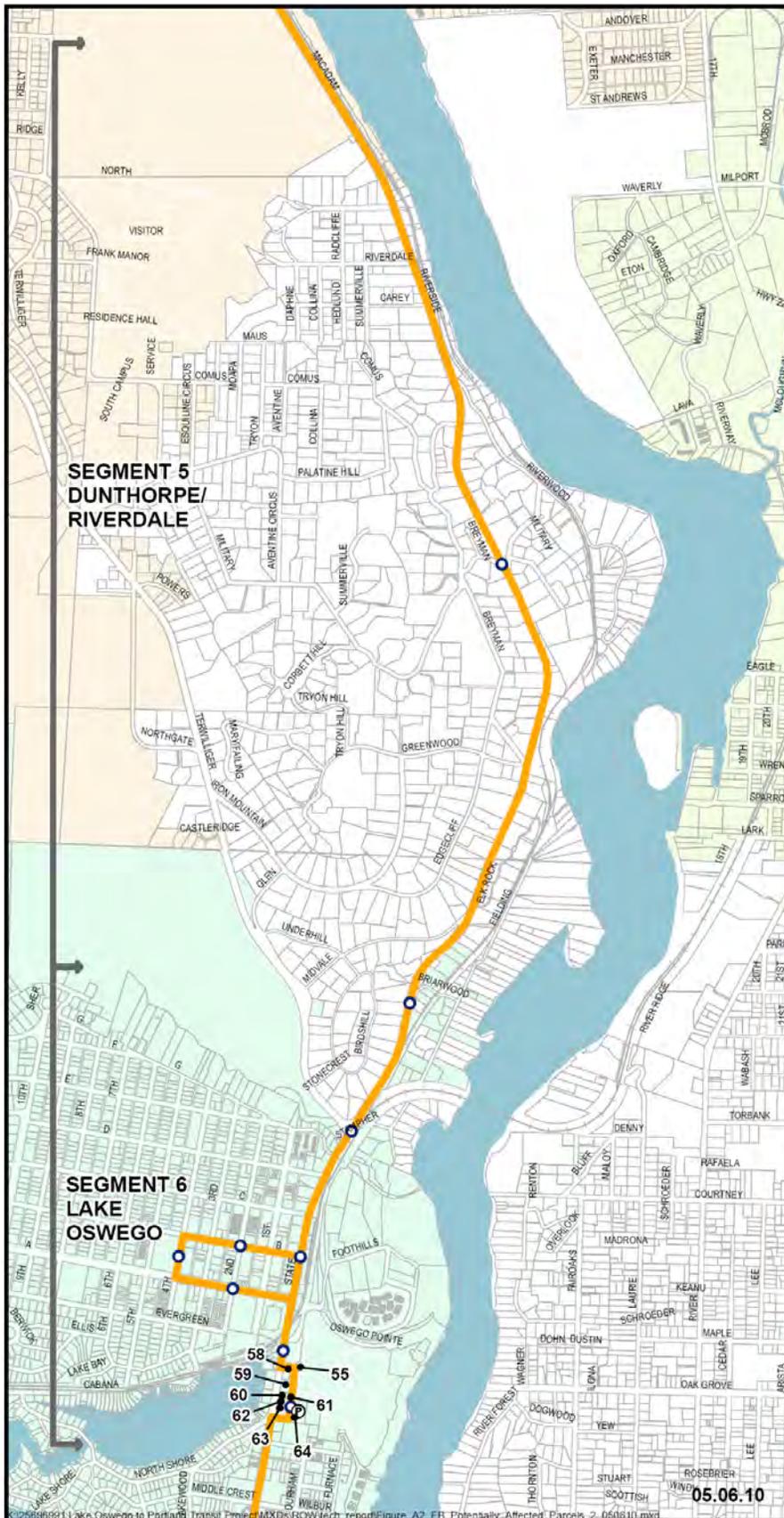


Table A-2
Streetcar Alternative – Segment 2
South Waterfront Phasing Options
(See Figure A-3)

Willamette Shore Line Construction Phasing Option				
Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
1	1S1E10DC -00200	R991100660	City of Portland	Vacant
2	1S1E10DC -00300	R991100740	South Riverblocks Investors LLC	Commercial
3	1S1E10DC -00800	R991100650	River Forum LLC	Commercial
4	1S1E10DC -00900	R991100890	River Forum LLC	Commercial
5	1S1E10CD -01300	R991100170	Gerding Robert K. et al	Commercial
Moody/Bond Couplet Construction Phasing Option*				
mb1	1S1E10CD -00500	R991100800	Lindquist Stuart H.	Commercial
mb2	1S1E10DC -00400	R991100730	T & E Investments	Commercial
mb3	1S1E10DC -00600	R991100840	State of Oregon	Transportation (non-right of way)
mb4	1S1E10CD -00900	R991100090	Lex Associates Inc.	Vacant
mb5	1S1E10CD -01100	R991100140	Gerding Robert K. et al	Commercial
mb6	1S1E10DC -00700	R991100920	Lex Associates Inc.	Industrial
mb7	1S1E10CD -01200	R991100150	Gerding Robert K. et al	Commercial

*Note: These additional parcels would be potentially affected with the Moody/Bond Couplet Phasing Option.

Table A-3
Streetcar Alternative – Segment 3
Willamette Shore Line Option
(See Figure A-3)

Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
6	1S1E15BA -00300	R991150710	Cameron Oregon Properties LLC	Commercial
13	1S1E15BD -90000	R828550010	Association of Unit Owners of	Multi-Family Residential
15	1S1E15BD -00400	R991150130	Johns Landing Commercial Areas Association	Vacant
16	1S1E15BD -00403	R991151420	Johns Landing Commercial Areas Association	Vacant
28	1S1E22A -00700	R780200030	Oregon Public Broadcasting	Commercial
29	1S1E22A -00800	R780200010	Oregon Public Broadcasting	Vacant
30	1S1E22AC -00200	R991220380	Oregon Public Broadcasting	Commercial
mb8*	1S1E15BA -01100	R991150700	Breuer Charles F. & Bruun Kelly C.	Commercial
mb9*	1S1E15BA -00900	R991150870	PCC Johns Landing LLC	Commercial

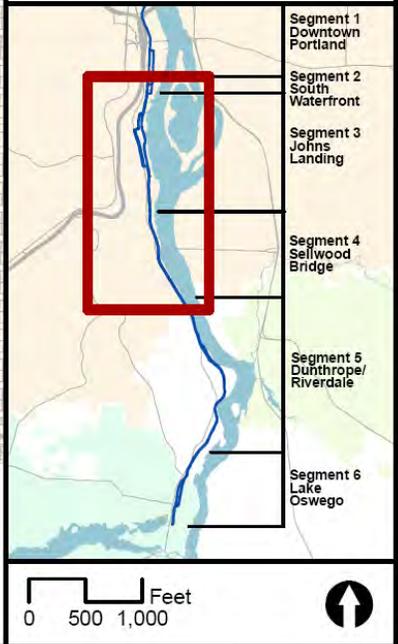
*Note: These additional parcels would be potentially affected with the Moody/Bond Couplet Phasing Option.

Figure A-3
Streetcar Alternative
Potentially Affected Parcels
Segments 2, 3, and 4



- Streetcar Alternative
- Streetcar Alternative Design Option
- Station
- Possible Future Station
- Park-and-Ride
- Taxlot
- Potentially Affected Parcel ID
- City Boundaries

This map shows potentially affected parcels for the Streetcar Alternative in Segments 2, 3, and 4. For differences between design options, refer to Tables A-2 through A-6.



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Table A-4
Streetcar Alternative – Segment 3
Macadam In-Street Option
(See Figure A-3)

Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
6	1S1E15BA -00300	R991150710	Cameron Oregon Properties LLC	Commercial
7	1S1E15BA -00601	R649833050	Matin Realty Investors LLC	Commercial
8	1S1E15BA -00602	R649833060	BAM Waterfront LLC	Commercial
9	1S1E15BA -60000	R378870010	Heron Pointe at Johns Landing	Multi-Family Residential
10	1S1E15BA -01600	R991150400	SRI Eight Riverside LLC	Commercial
11	1S1E15 -90000	R378900010	Association of Unit Owners of Bowen Property Management Co.	Multi-Family Residential
12	1S1E15BD -00200	R991151100	SRI Eight Riverside LLC	Commercial
13	1S1E15BD -90000	R828550010	Association of Unit Owners of	Multi-Family Residential
14	1S1E15BD -00300	R991151110	Harbor Landing LLC	Commercial
15	1S1E15BD -00400	R991150130	Johns Landing Commercial Areas Association	Vacant
16	1S1E15BD -00403	R991151420	Johns Landing Commercial Areas Association	Vacant
17	1S1E15BD -00402	R991151410	Johns Landing Commercial Areas Association	Vacant
18	1S1E15BD -00500	R991151080	Willamette Waterfront Ltd	Commercial
25	1S1E15CD -00500	R781202520	Macadam LLC	Commercial
27a	1S1E15CD -19200	R780200630	Oregon Dept. of Transportation	Transportation (non-right of way)
28	1S1E22A -00700	R780200030	Oregon Public Broadcasting	Commercial
29	1S1E22A -00800	R780200010	Oregon Public Broadcasting	Vacant
30	1S1E22AC -00200	R991220380	Oregon Public Broadcasting	Commercial
mb8*	1S1E15BA -01100	R991150700	Breuer Charles F. & Bruun Kelly C.	Commercial
mb9*	1S1E15BA -00900	R991150870	PCC Johns Landing LLC	Commercial

*Note: These additional parcels would be potentially affected with the Moody/Bond Couplet Phasing Option.

Table A-5
Streetcar Alternative – Segment 3
Macadam Additional Lane Option
(See Figure A-3)

Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
6	1S1E15BA -00300	R991150710	Cameron Oregon Properties LLC	Commercial
7	1S1E15BA -00601	R649833050	Matin Realty Investors LLC	Commercial
8	1S1E15BA -00602	R649833060	BAM Waterfront LLC	Commercial
9	1S1E15BA -60000	R378870010	Heron Pointe at Johns Landing	Multi-Family Residential
10	1S1E15BA -01600	R991150400	SRI Eight Riverside LLC	Commercial
11	1S1E15 -90000	R378900010	Association of Unit Owners of Bowen Property Management Co.	Multi-Family Residential
12	1S1E15BD -00200	R991151100	SRI Eight Riverside LLC	Commercial
13	1S1E15BD -90000	R828550010	Association of Unit Owners of	Multi-Family Residential
14	1S1E15BD -00300	R991151110	Harbor Landing LLC	Commercial
15	1S1E15BD -00400	R991150130	Johns Landing Commercial Areas Association	Vacant
16	1S1E15BD -00403	R991151420	Johns Landing Commercial Areas Association	Vacant
17	1S1E15BD -00402	R991151410	Johns Landing Commercial Areas Association	Vacant
18	1S1E15BD -00500	R991151080	Willamette Waterfront Ltd	Commercial
19	1S1E15BD -01300	R991151050	Harbor Landing LLC	Commercial
20	1S1E15CA -90000	R913900010	Association of Unit Owners of Bowen Property Management Co.	Multi-Family Residential
21	1S1E15CA -60000	R708980006	Association of Unit Owners of Riveridge (Phases 1&2)	Multi-Family Residential
22	1S1E15CA -50000	R711000010	Association of Unit Owners of	Multi-Family Residential
23	1S1E15CA -13000	R991150800	Abraham Patricia J. Tr et al	Commercial
24	1S1E15CA -13100	R991150790	Abraham Patricia J. Tr et al	Commercial
25	1S1E15CD -00500	R781202520	Macadam LLC	Commercial
26	1S1E15CD -00200	R780200690	Petrocard Systems Inc.	Commercial
27	1S1E15CD -00100	R780200680	Sunset Fuel Co.	Commercial
27a	1S1E15CD -19200	R780200630	Oregon Dept. of Transportation	Transportation (non-right of way)
28	1S1E22A -00700	R780200030	Oregon Public Broadcasting	Commercial
29	1S1E22A -00800	R780200010	Oregon Public Broadcasting	Vacant
30	1S1E22AC -00200	R991220380	Oregon Public Broadcasting	Commercial
mb8*	1S1E15BA -01100	R991150700	Breuer Charles F. & Bruun Kelly C.	Commercial
mb9*	1S1E15BA -00900	R991150870	PCC Johns Landing LLC	Commercial

*Note: These additional parcels would be potentially affected with the Moody/Bond Couplet Phasing Option.

Table A-6
Streetcar Alternative – Segment 4
(See Figure A-3)

Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
No potentially affected parcels have been identified for the Streetcar Alternative in Segment 4 with either design option.				

Table A-7
Streetcar Alternative – Segment 5
Riverwood Option
(See Figure A-4)

Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
31	1S1E26CC -00200	R708800510	Waverley Country Club	Single-Family Residential
32	1S1E26CC -00300	R708800590	Evans Carey R. Tr	Single-Family Residential
33	1S1E26CC -00400	R708800990	Evans Carey R. Tr	Single-Family Residential
34	1S1E26CC -00500	R638800180	KDH LLC	Single-Family Residential
35	1S1E26CC -00600	R638800140	Spada Charisse M.	Single-Family Residential
36	1S1E35BA -00100	R638800080	Lindquist Stuart H.	Single-Family Residential
37	1S1E35BA -01500	R711301830	Orloff Susan L.	Single-Family Residential
38	1S1E35BA -01400	R711301840	Howieson John Tr	Vacant

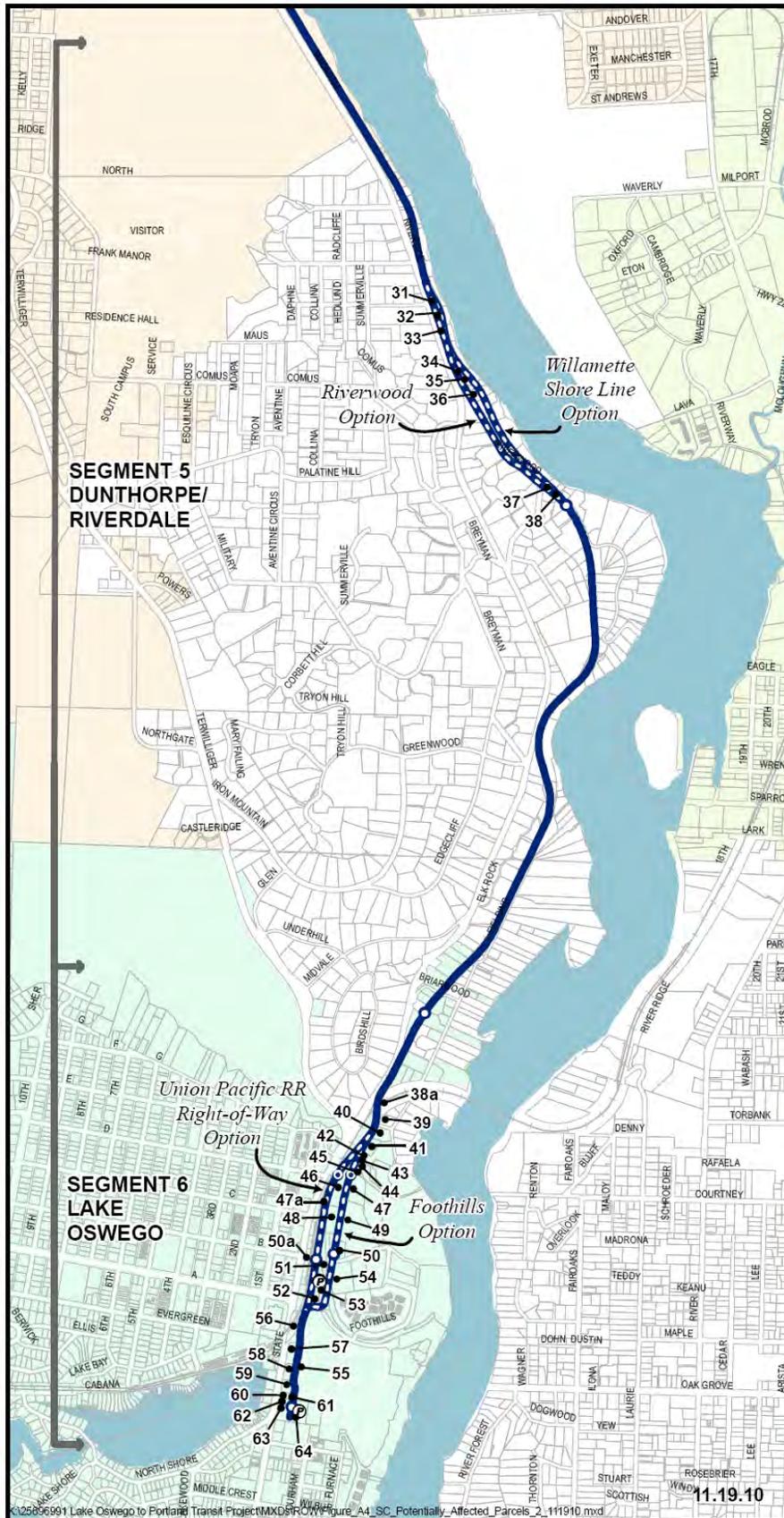
Note: No potentially affected parcels have been identified for the Streetcar Alternative in Segments 5 with the Willamette Shore Line option.

Table A-8
Streetcar Alternative – Segment 6
UPRR Right of Way Option
(See Figure A-4)

Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
38a*	No Taxlot	NA	Union Pacific Railroad (UPRR)	Transportation
39	21E02BD -01700	181760	Voncolditz Rochelle Trustee	Single-Family Residential
40	21E02CB -02200	5021790	City of Lake Oswego	Public/Semi-Public
41	21E02CB -02300	5021791	City of Lake Oswego	Public/Semi-Public
42	21E02CB -02400	5021792	Metro	Public/Semi-Public
43	21E02CB -02700	5021795	City of Portland	Utility
44	21E02CB -00900	182037	City of Portland	Utility
46	21E02CB -01700	182117	Public Storage Inst Fund	Industrial
47a*	No Taxlot	NA	Union Pacific Railroad (UPRR)	Transportation
50a	21E03DD -06900	198547	City of Lake Oswego	Commercial
51	21E02CC -00700	182215	City of Lake Oswego	Public/Semi-Public
52	21E03DD -07000	198574	Portland General Electric Co.	Utility
53	21E02CC -00800	182224	City of Lake Oswego	Public/Semi-Public
55	21E11BB -00400	273288	Oswego Lender LLC	Multi-Family Residential
56	21E03DD -09300	5021201	City of Lake Oswego	Vacant
57	21E10AA -05800	5005604	City of Lake Oswego	Commercial
58	21E10AA -03600	253647	Pak Hasong J.	Commercial
59	21E10AA -03900	253674	Pak Hasong J.	Commercial
60	21E10AA -04000	253683	Pak Hasong J.	Commercial
61	21E10AA -03700	253656	Pak Hasong J.	Commercial
62	21E10AA -04001	253692	Headlee Properties LP	Commercial
63	21E10AA -04002	253709	City of Lake Oswego	Commercial
64	21E10AA -04100	253718	GMS Realty LLC	Commercial

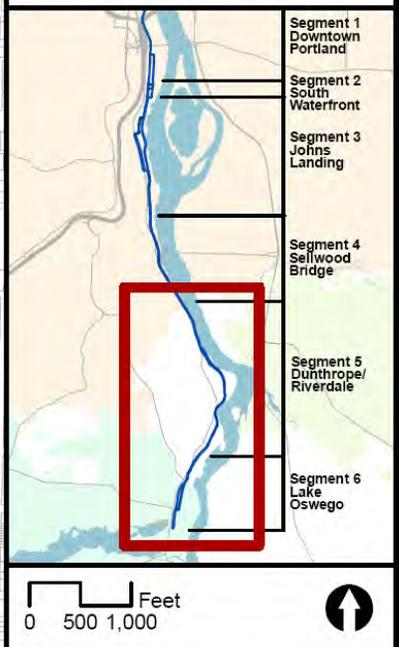
*Note: Property owned by UPRR may be acquired or leased for the Lake Oswego to Portland Transit Project. Final disposition would be determined after negotiations with UPRR.

Figure A-4
Streetcar Alternative
Potentially Affected Parcels
Segments 5 and 6



- Streetcar Alternative
- Streetcar Alternative Design Option
- Station
- Possible Future Station
- Park-and-Ride
- Taxlot
- Potentially Affected Parcel ID
- City Boundaries

This map shows potentially affected parcels for the Streetcar Alternative in Segments 5 and 6. For differences between design options, refer to Tables A-7 through A-9.



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Table A-9
Streetcar Alternative – Segment 6
Foothills Option
(See Figure A-4)

Map ID No.	Taxlot ID Number	Account Number	Owner	Existing Use
38a*	No Taxlot	NA	Union Pacific Railroad (UPRR)	Transportation
39	21E02BD -01700	181760	Voncolditz Rochelle Trustee	Single-Family Residential
40	21E02CB -02200	5021790	City of Lake Oswego	Public/Semi-Public
41	21E02CB -02300	5021791	City of Lake Oswego	Public/Semi-Public
42	21E02CB -02400	5021792	Metro	Public/Semi-Public
43	21E02CB -02700	5021795	City of Portland	Utility
44	21E02CB -00900	182037	City of Portland	Utility
45	21E02CB -01000	182046	Public Storage Inst Fund	Industrial
46	21E02CB -01700	182117	Public Storage Inst Fund	Industrial
47	21E02CB -01501	182108	Public Storage Inst Fund	Industrial
48	21E02CB -01800	182126	Stafford Investments Ltd.	Industrial
49	21E02CB -01500	182091	Mreen Family LLC	Industrial
50	21E02CB -02101	182144	Black-Warren-McPhee LLC	Industrial
50a	21E03DD -06900	198547	City of Lake Oswego	Commercial
51	21E02CC -00700	182215	City of Lake Oswego	Public/Semi-Public
52	21E03DD -07000	198574	Portland General Electric Co.	Utility
53	21E02CC -00800	182224	City of Lake Oswego	Public/Semi-Public
54	21E02CC -00600	182206	L&S Investments	Industrial
55	21E11BB -00400	273288	Oswego Lender LLC	Multi-Family Residential
56	21E03DD -09300	5021201	City of Lake Oswego	Vacant
57	21E10AA -05800	5005604	City of Lake Oswego	Commercial
58	21E10AA -03600	253647	Pak Hasong J.	Commercial
59	21E10AA -03900	253674	Pak Hasong J.	Commercial
60	21E10AA -04000	253683	Pak Hasong J.	Commercial
61	21E10AA -03700	253656	Pak Hasong J.	Commercial
62	21E10AA -04001	253692	Headlee Properties LP	Commercial
63	21E10AA -04002	253709	City of Lake Oswego	Commercial
64	21E10AA -04100	253718	GMS Realty LLC	Commercial

*Note: Property owned by UPRR may be acquired or leased for the Lake Oswego to Portland Transit Project. Final disposition would be determined after negotiations with UPRR.