Draft Environmental Impact Statement
Appendix P
Economics Technical Memorandum

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SR 99: ALASKAN WAY VIADUCT & SEAWALL REPLACEMENT PROJECT

Draft EIS
Economics Technical Memorandum

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Submitted to:

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ACRONYMS

B&O  business and occupation
BINMIC  Ballard Interbay Northend Manufacturing and Industrial Center
BNSF  Burlington Northern Santa Fe Railway Company
CBD  Central Business District
CEVP  Cost Estimate Validation Process
FAZ  forecast analysis zone
FHWA  Federal Highway Administration
MIC  Manufacturing and Industrial Center
NEPA  National Environmental Policy Act
I-5  Interstate 5
I-O  input-output
O&M  operations and maintenance
RSF  rentable square footage
RIMS II  Regional Input Output Modeling System
SIG  Seattle International Gateway
SR  State Route
WSDOT  Washington State Department of Transportation
Chapter 1 SUMMARY

Local, state, and federal transportation agencies are working together to develop and evaluate alternatives to improve State Route (SR) 99, including the Alaskan Way Viaduct and Seawall in the City of Seattle. The Alaskan Way Viaduct and Seawall Replacement Project alternatives will be evaluated in an environmental impact statement as required by the Washington State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA). Lead agencies for the Alaskan Way Viaduct and Seawall Replacement Project are the Federal Highway Administration (FHWA), Washington State Department of Transportation (WSDOT), and City of Seattle.

This technical memorandum provides detailed information about the economic context of the project corridor and potential effects that could directly or indirectly result from each of the alternatives. The following sections summarize the affected economic environment, impacts, and benefits to the local and regional economies, and recommended mitigation for adverse impacts.

1.1 Methodology, Studies, and Coordination

The project area that is being studied to describe the affected economic environment and evaluate direct impacts generally extends 0.5 mile, or five blocks, to either side of the project alternatives and includes associated construction staging areas, tunnel vent shaft locations, and connecting roadways. This area is generally bounded by S. Spokane Street to Ward Street and from the Elliott Bay shoreline to Fourth Avenue/Dexter Avenue North. Secondary and cumulative impacts are described for a broader area such as the City of Seattle, King County, and the King-Pierce-Snohomish Counties region.

Economic factors quantified and evaluated with regards to impacts include:

- Net change in available parking spaces and net change in parking meter revenue.
- Number of parcels acquired, number of structures acquired, net change in property tax revenue, and estimate of permanent jobs relocated or displaced.
- Operations and maintenance, construction, and right-of-way cost estimates.
- Sales taxes and temporary jobs created during construction.
The economic impacts at the regional and state levels due to influx of capital construction funds are quantified as direct and indirect impacts. The direct and indirect impacts are calculated using multipliers provided by the U.S. Department of Commerce Bureau of Economic Analysis’ Regional Input Output Modeling System (RIMS II) for the King-Snohomish-Pierce Counties region (central Puget Sound region) and the state of Washington. The detailed application of these RIMS II multipliers is presented in Chapter 6.

Data are collected from a variety of federal, state, and local sources. The analysis of economic impacts follows guidelines put forth by FHWA NEPA guidelines; FHWA Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents; National Highway Cooperative Research Report-122 Summary and Evaluation of Economic Consequences of Highway Improvements; and WSDOT Environmental Procedures Manual (March 2003). Ongoing coordination with the City of Seattle, WSDOT, and FHWA occurred during the preparation of this technical memorandum.

### 1.2 Affected Environment

#### 1.2.1 General Role of the Local Economy

The greater Seattle area and King County host a large and diverse economy. King County is known as a “national center for manufacturing, high technology industries, services, international trade and tourism” (EDC 2003). To support this economy, transportation infrastructure in this area includes two transcontinental railroads, extensive nationwide trucking capacity, three interstate highways, dozens of state highways, a ferry system, a world-class port, and an international airport (EDC 2003).

The three highest revenue generating companies and top employers in the greater Seattle area are The Boeing Company, Costco Wholesale Corporation, and Microsoft Corporation, which contribute to combined annual revenues of over $106 billion (2000) and 103,000 employees (EDC 2003; City of Seattle 2003a). Tourism is the fourth largest industry for Washington State and is a critical part of Seattle’s economy, particularly in the project area. In 1999, 27 million out-of-state visits generated $5.28 million in travel expenditures, $220 million state tax receipts, and $118.8 million local tax revenues (City of Seattle 2003a).

#### 1.2.2 Established Business Districts

The project is located within and near several retail/commercial centers, manufacturing/industrial centers, and urban centers. These districts and centers include the Ballard Interbay Northend Manufacturing and Industrial Center, Duwamish Manufacturing and Industrial Center, International
District, Pike Place Market, Pioneer Square Historic District, Seattle Central Business District (CBD), Seattle Center, South Lake Union Urban Center, Uptown Urban Center, Waterfront District, and Westlake Center.

1.2.3 Employment

The number of jobs has more than doubled in the King-Snohomish-Pierce Counties region over the last three decades, with an increasing percentage of jobs gained in the services industries. In 2000, the region had 39.3 percent of its jobs in service industries; however, the City of Seattle has a higher proportion (47.5 percent) in this sector. The next highest employment sectors for the region are retail trade (18.1 percent), government/education (16.2 percent), and manufacturing (13.6 percent). Seattle’s second highest employment sector is slightly less diverse, with government/education providing 17.6 percent of the jobs.

Employment within and near the project study area has several variations from the region- and city-level distribution of jobs across industry sectors. The majority of employment in the Seattle CBD and Seattle Central areas is in the service sector (55 to 60 percent), which is substantially higher than the regional, King County, and Seattle averages. Government/education sectors are the second leading job sectors in the CBD.

Unemployment rates within the region have historically been lower than the statewide average rate. In 2003, the average civilian labor force in King County numbered 1,021,100. Approximately 67,100 (6.6 percent) were unemployed (Washington State Employment Security Department 2003).

1.2.4 Parking Inventory

Parking is categorized by on-street and off-street parking. The available inventory of short-term on-street parking is provided by the City of Seattle and is quantified by the number of parking meters. According to the 2002 Seattle Parking Management Study, there are 8,598 parking meters citywide (Heffron 2002). The City is planning on having approximately 9,000 meters in service by the end of 2003. The total number of meters in service at any one time fluctuates depending upon construction, hooding, and other temporary measures that remove parking meters from use. Within the Seattle CBD, there are 4,545 parking meters (50 percent of the citywide total). The available inventory of off-street parking is provided by private property owners and operators of private lots. According to the 2002 Parking Inventory for the Central Puget Sound Region, there were 58,538 stalls within the Seattle CBD (Puget Sound Regional Council 2003a). Within the Seattle Center area, there are six parking lots that provide 3,534 stalls (Seattle Center 2003a). This
represents approximately 20 percent of the total parking stalls within the Lower Queen Anne study area (Puget Sound Regional Council 2003a).

1.2.5 Local Government Revenues

The City of Seattle relies on a variety of taxes to fund state and local government programs. These taxes include a combined state and local sales and use tax; business and occupation (B&O) tax; public utility tax; property tax; and several other excise, real estate, and estate taxes.

The combined state and local sales tax rate for the study area is 8.8 percent, which also includes a Regional Transit Authority tax. For the City of Seattle’s endorsed 2004 budget, retail sales tax revenues account for $121.4 million, which is 18 percent of the General Subfund Revenue (City of Seattle 2003c).

Most businesses operating in the state are subject to the B&O tax. B&O taxes account for $113.8 million (18 percent) of the General Subfund Revenue (City of Seattle 2003c). In addition, the City levies a tax on the gross income derived from sales of utility services by privately owned utilities within Seattle, including telephone, steam, cable communications, natural gas, and refuse collection. These business tax revenues on utilities account for $116.7 million (17 percent) of the General Subfund Revenue (City of Seattle 2003c).

Real and personal property is subject to property tax. Within King County, property taxes account for 50 percent of the total taxes collected as revenue. According to the 2002 adopted budget, King County estimated to collect $356 million in property taxes for the 2002 fiscal year (King County Budget Office 2002). Property tax revenues in the City of Seattle’s endorsed 2004 budget account for $176.7 million, which is approximately one-quarter of the General Subfund Revenue (City of Seattle 2003c).

1.2.6 Revenues from Parking Meters and Public Garages

Revenues from parking meters are deposited in the City of Seattle’s General Fund. Citywide, there are 8,598 parking meters (as of July 2002) that generated $9.67 million in revenue for the City of Seattle for the year 2002. Parking meters for downtown Seattle from Denny Way to S. Atlantic Street and from Interstate 5 to Elliott Bay represented approximately 70 percent of the City’s total parking meter revenue.

The City of Seattle collects an annual license fee from operators of public garages. The annual license fee, in addition to the business license fee, is either $13.50 per stall or $90 per 1,000 square feet of floor or ground space contained in a parking garage or lot and used for parking or storage purposes. Using the unit cost per stall, off-street parking within the Seattle CBD is
estimated to have generated approximately $0.6 million in license fees for the City of Seattle in 2003.

1.2.7 Ferry and Cruise Ship Facilities

Four different areas of the Seattle CBD waterfront are used for ferry and cruise ship operations: Terminal 30 Cruise Facility, Pier 50/52 Washington State Ferry Terminal, Pier 66/Bell Street Cruise Terminal, and Pier 69. For 2002, the Port of Seattle hosted 244,905 cruise ship passengers and 74 cruise ship vessel calls and estimates accommodating approximately 400,000 passengers and 97 vessel calls for 2003 (Port of Seattle Records).

1.2.8 Inventory of Existing Businesses

The AWV Environmental Team performed a physical inventory of businesses within the area of direct effects by pedestrian reconnaissance. The area of direct effects for the inventory includes businesses within one block of proposed changes to existing facilities or proposed new facilities.

Within the area of direct effects, 1,098 businesses were identified Businesses operating in Commercial Office space accounted for over half (52.3 percent) of the type of businesses operating within the area of direct effects. Other Service accounted for 17.1 percent of businesses operating within the area of direct effects; over half (58.5 percent) of the Other Service businesses were involved in food service other than retail grocery. Commercial retail accounted for 11.7 percent of the business activity within the area of direct effects. Other represented about one-tenth of the business activity within the area of direct effects; the majority of other activity identified was parking (46.8 percent). Residential Multi-Family use represented about 5 percent of the business activity within the area of direct effects. The sum of Industrial (both Marine and Non-Marine Dependent) and Government Service represented 3.6 percent of the business activity within the area of direct effects.

The vast majority (78.5 percent) of the businesses operating in the area of direct effects was estimated to be small (less than 20 employees). Medium-sized businesses (20 to 100 employees) accounted for 16.6 percent of the businesses operating in the area of direct effects. The remainder was almost equally split between large businesses (greater than 100 employees) at 2.6 percent and vacant businesses (no discernable business activity) at 2.3 percent.

The visual survey indicated that for a majority of businesses (60.9 percent) in the area of direct effects, street parking is a critical component in their parking considerations for employees and customers. Almost a third of all businesses (32.9 percent) provide on-site parking for employees and customers. The remainder had either directly-identifiable off-street parking
(5.1 percent) or had access that would be directly affected by the project (1.1 percent).

1.3 Operational Impacts and Benefits

Improved freight mobility will be the major economic benefit of implementing the Rebuild, Aerial, and Tunnel Alternatives as compared to the Bypass Tunnel, Surface, and No Build Alternatives. Freight connections within the southern portion of the project will be improved in all Build Alternatives compared to the No Build Alternative. These gains in freight connectivity will be offset by increased travel times in the Bypass Tunnel and Surface Alternatives. Pedestrian access between the waterfront and the CBD will remain generally the same in the No Build, Rebuild, and Aerial Alternatives. Slight economic disadvantages associated with the Build Alternatives include some loss of parking, acquisition of private property, and loss of workspace. Operations and maintenance (O&M) costs associated with the Build Alternatives are not expected to substantially differ from current costs.

1.3.1 Transportation, Access, and Visibility

Freight connections between SR 99, SR 519, and the waterfront will be improved in all alternatives other than the No Build Alternative. Freight connections to and from the Ballard Interbay Northend Manufacturing and Industrial Center (BINMIC) will be degraded in the Bypass Tunnel and Surface Alternatives, as trucks will be required to travel on the Alaskan Way surface street for all or portions of the waterfront area. Travel times for the two primary freight routes are improved or similar compared to the No Build Alternative for all Build Alternatives except the Bypass Tunnel (BINMIC trips) and Surface (both primary freight routes) Alternatives.

The Rebuild, Aerial, and Tunnel Alternatives provide the best travel times of the alternatives studied. Revised downtown access under the Tunnel and Bypass Tunnel Alternatives results in travel times that are similar to those provided by the current ramp locations. The Surface Alternative is forecast to result in significantly longer travel times, particularly for trips that travel through (rather than to) downtown.

The No Build, Rebuild, and Aerial Alternatives include elevated structures that impose a psychological barrier to pedestrians accessing the waterfront from the CBD. The Bypass Tunnel and Surface Alternatives include an increased number of lanes on Alaskan Way, providing a more cumbersome crossing of that street for pedestrians. The Bypass Tunnel and Surface Alternatives are anticipated to result in increased traffic volumes on Alaskan Way, imposing an additional burden to pedestrians crossing the street.
The Tunnel, Bypass Tunnel, and Surface Alternatives allow for easier recognition of individual businesses while traveling on the Alaskan Way surface street.

1.3.2 Parking

The Rebuild Alternative will result in the fewest parking spaces taken out of service, while the Surface Alternative will result in the most permanently lost parking spaces. The impacts associated with the Tunnel, Bypass Tunnel, and Surface Alternatives are roughly equal with respect to the approximate number of parking spaces lost, while the Aerial Alternative results in impacts that are greater than the Rebuild Alternative but less than the Tunnel, Bypass Tunnel, and Surface Alternatives.

1.3.3 Acquired Property

The Rebuild, Aerial, Tunnel, and Bypass Tunnel Alternatives will result in approximately equivalent economic impacts related to acquired parcels (by square-footage), area of work space relocated or displaced, and number of permanent jobs relocated or displaced. Adoption of the Surface Alternative will result in greater economic impacts related to acquired parcels, area of workspace relocated or displaced, and number of permanent jobs relocated or displaced when compared to the other four Build Alternatives. However, if the Surface Alternative located the tail track to the north of S. Royal Brougham Way, the alternative would require a similar number of acquisitions and displacements as the Tunnel or Bypass Tunnel Alternatives.

1.3.4 Operations and Maintenance Costs

With the exception of the Aerial Alternative, the Build Alternatives will result in a decrease in O&M costs when compared to the No Build Alternative. For the Rebuild, Aerial, and Tunnel Alternatives, the O&M costs are not substantially different from the No Build Alternative, and no economic impacts would likely be realized. For the Bypass Tunnel and Surface Alternatives, the annual O&M expenditures will decrease appreciably, which will provide a cost savings to those agencies that provide O&M services. However, the cost savings realized for this project would likely be absorbed by O&M needs for other transportation elements within the central Puget Sound region. Therefore, the O&M expenditures for this project are not likely to provide direct, indirect, and induced economic impacts to the region.

1.4 Construction Impacts and Benefits

Increased employment and economic stimulus to the local economy from construction activities will be the primary economic benefit from
implementing any of the Build Alternatives. The Build Alternatives all require relatively long construction periods that will disrupt normal business activities occurring in the study area. Businesses along the Waterfront District and in the Pioneer Square Historic District will likely endure the greatest disruption due to proximity of the viaduct.

Sales taxes will be generated through the purchase of goods and materials related to construction. The project will generate sales tax ranging from $132 million for the Surface Alternative to $207 million for the Tunnel Alternative.

This discussion about economic impacts only includes those quantifiable effects due to construction funds being spent in the region. This discussion does not reflect any estimate of any new induced economic activity associated with any of the Build Alternatives.

1.4.1 Increased Employment and Economic Activity

The employment and economic activity associated with construction of any of the Build Alternatives will result in additional (gross) employment and activity throughout all economic sectors within the Puget Sound region and the state of Washington. This gross employment and economic activity is derived from the multiplication effects on the capital expenditures for the project. Examples of capital expenditures include the direct hiring of temporary construction workers, the purchase of construction materials and equipment, and the expenditure of capital funds to acquire new right-of-way. The Tunnel Alternative, with the highest estimated capital cost will generate the most direct, indirect, and induced jobs and activity within the Puget Sound region. The Surface Alternative, with the lowest estimated capital cost will generate the least direct, indirect, and induced jobs and activity within the Puget Sound region.

The number of new jobs directly associated with these alternatives that are the result of new money entering the Puget Sound regional economy is roughly equivalent for all alternatives and ranges between 3,500 and 4,000 jobs. The amount of new earnings (wages) entering the Puget Sound regional economy ranges from $225 million to $240 million.

1.4.2 Disruption to Local Businesses

Any major construction project, public or private, inconveniences or disturbs the residents, businesses, and business customers adjacent to that construction project. These temporary effects include:

- Presence of construction workers and materials.
- Temporary road closures, traffic diversions, and alterations to property access.
• Airborne dust.
• Noise and vibrations from construction equipment and vehicles.
• Loss of visibility of businesses to their customers.

Up to 132 active commercial and industrial structures are located within 50 feet of the project alignment that will not be acquired. Some businesses located in these structures may suffer little or no adverse impacts, while others may experience a noticeable decline in sales or increase in costs and/or decrease in efficiency.

Based upon an inventory performed of all existing parking spaces within the project footprint, it was determined that 2,038 spaces will be lost for the entire construction period. These spaces include a mix of short-term on-street (metered) (814), long-term on-street (276), and off-street (900) spaces.

Specific business districts that rely heavily upon available on-street parking, as presented in Section 4.7 (Inventory of Existing Businesses), include Pioneer Square, the Waterfront, and the Central segment/Commercial Core. Each of these districts relied on on-street parking as their primary parking requirement for at least 50 percent of the existing businesses within the district. All three of these districts will be impacted by the loss of parking spaces within the Central segment.

Temporary impacts to the operations of the Colman Dock Ferry Terminal or the cruise ship terminals are anticipated during construction. The Alaskan Way Viaduct Project includes the construction of an over-water pier between S. King Street and Yesler Way. A parallel service road called the Colman Dock Ferry Terminal Access Road will be built on the pier. The roadway is needed for all alternatives during construction to maintain access/egress for ferry operations and to accommodate construction staging activities from the Pier 48 uplands. It is expected that the Colman Dock Ferry Terminal and cruise ship terminals will be able to continue to operate during construction.

1.5 Secondary Impacts and Benefits

Economic benefits could result from implementing any of the Build Alternatives; however, the degree to which economic benefits will become manifest will depend upon the final design of the facility. It is expected that a surface structure (Surface Alternative) or a subsurface structure (Tunnel or Bypass Tunnel Alternative) would have less visual and audio impact than an elevated structure (Rebuild or Aerial Alternative). This could help facilitate more pedestrian activity along the alignment and a less inhibited environment for reinvestment. The economic benefits would be manifest in the form of increased investment, vitality, and development opportunity. Each of the
Build Alternatives will provide differing degrees of investment opportunity to different groups providing reinvestment capital.

These benefits would occur over time with the revitalization and reinvestment in the project area, particularly in the central waterfront, once construction activities are complete. Revitalization and reinvestment could increase property values, stimulate more economic activity, enable opportunities for new or expanded business and employment, and generate more tax revenues. This revitalization and redevelopment could result in substantially increased economic activity compared to the No Build Alternative.

Adverse economic impacts over time could include slight increases in property taxes due to reduced taxable land if more land is acquired for the Build Alternative than what is returned to tax rolls. In addition, depending on the amount of parking lost from the Build Alternatives, changes in parking market pricing would be expected to occur including rate restructuring. A net increase in parking rates may have a secondary impact on the CBD and downtown economy by limiting the number of vehicles that would choose to enter the CBD to conduct business. This may have the effect of changing the mix or types of businesses that would continue to be located or would decide to locate in the future within the CBD. A net parking rate reduction, or reduction in specific rate strata, could have an opposite effect.

1.6 Cumulative Impacts and Benefits

The Build Alternatives will contribute to impacts on adjacent businesses in addition to impacts from other projects that may occur along, or near, the proposed project route. Other key development projects located within the proposed study area include the following:

- Central Link Light Rail
- Colman Dock Ferry Terminal Expansion
- Mercer Street Corridor
- Seattle Monorail Project
- Seattle Aquarium and Waterfront Park
- SR 519
- Terminal 46

These key development projects are anticipated to add to the economic effects in the project area that will be experienced during project construction. Taken together, these projects would be expected to contribute to noise, dust, and traffic congestion to the project area during construction, causing similar disruptions to adjacent businesses, as would the viaduct construction. In addition, other smaller private development projects along the project route, such as Belltown/Queen Anne Proposed Development, Seattle Downtown...
Proposed Development, and South Lake Union Redevelopment, will be expected to occur during the construction period for any of the proposed Build Alternatives. At this time, it is unknown how these projects might be expected to affect the project area in the long term when considered cumulatively. Some of the long-term effects will depend on local and regional economic cycles of growth and downturns.

1.7 Operational Mitigation

The mitigation measures proposed below are general in nature. Specific mitigation measures will need to be determined based on the expected cost effectiveness, specific needs of individual businesses, and resiliency of individual businesses to endure the impacts associated with each alternative. A detailed mitigation plan will need to be developed as project design plans are finalized.

Potential mitigation measures to reduce permanent adverse economic effects include:

- Minimize the extent and number of businesses, jobs, and access that will be permanently affected.
- Compensate for right-of-way acquisition, displacement and relocation of businesses, and loss of property value per the Uniform Relocation Assistance and Real Property Acquisition Policies Act and applicable state and local policies.
- Consider temporary relocation of displaced businesses during construction and permanent return to a place in the Seattle CBD after construction for those businesses that will be permanently affected.
- Increase utilization of off-street parking, especially in the South end of the project area to mitigate the loss of on-street short-term parking in the Central segment.
- Provide additional off-street parking opportunities or build replacement short-term parking spaces to mitigate for lost on-street short-term parking for those areas where off-street parking is currently at or near capacity or where business districts (such as Pioneer Square and the waterfront) rely heavily on on-street metered parking.
- Consider raising parking meter rates or installing additional meters to mitigate the annual loss of revenue associated with loss of short-term on-street parking for all Build Alternatives except for the Rebuild Alternative.
- For the South Lake Union Sub-Area, the most probable parking mitigation option would include increasing the utilization of existing parking facilities in the area. Surrounding arterials, such as, 6th Avenue North and Harrison Avenue have short-term on-street
parking. Additionally, most businesses in the area of impact, have their own on-site parking lots.

WSDOT and the City of Seattle will work closely with affected business owners to minimize the level of disruption that may be caused by displacements and relocations along the project route. Every effort will be made to assist business owners in finding suitable replacement locations, especially those that will be near the project route. Where businesses will be required to relocate, lead agency staff will work with owners to ensure that moves could be made in a timely manner, thereby reducing the overall expenses, inconveniences, and the amount of time a business must remain closed during the move.

1.8 Construction Mitigation

Commercial activity within the project area will be adversely affected by the duration of construction activities, the physical extent of the project area, the complexity of construction, and the accumulation of direct construction impacts. While these impacts will not be permanent, they will be comparatively long-term for a public works project.

In order to mitigate construction impacts related to changes in vehicular, transit, and pedestrian access within the corridor, various routes (SR 99, Alaskan Way, E. Marginal Way) will be maintained, although limited, during construction. Potential mitigation to reduce adverse effects, such as economic hardships to existing businesses in the project area during construction activities include conducting public information campaigns to encourage patronage of businesses during construction, maintaining the most optimal access possible for all transportation modes (pedestrian, bicycle, transit, passenger vehicle, freight, ferry and cruise, and marine cargo) to the project area as possible, and implementing noise, dust, and vibration mitigation during construction.

If multiple transportation projects will have overlapping construction schedules, the City will lead a coordination effort to minimize construction impacts on businesses, residents, and other visitors to Seattle.
Chapter 2 METHODOLOGY

Existing data sources were supplemented by a pedestrian reconnaissance of existing businesses. The physical inventory only included information that could be observed/inferred from observed activities. The area of direct effects for the inventory included businesses within one block of proposed changes to existing facilities or proposed new facilities. Facilities included surface streets, aerial structures and tunnels, and the seawall. Primary detour routes where parking and access are likely to be affected, such as Broad Street, where also inventoried.

Existing information and data were collected from a variety of federal, state, and local sources, including the U.S. Bureau of the Census; U.S. Bureau of Economic Analysis; Washington State Offices of Financial Management and Trade and Economic Development; Washington State Department of Revenue; Washington State Employment Security Department, Labor Market and Economic Analysis Branch; Puget Sound Regional Council; King County Assessor’s Office; City of Seattle Office of Economic Development, Department of Licensing, Strategic Planning Office, and Department of Planning and Development; University of Washington School of Economics; Seattle Center; Port of Seattle; Central Puget Sound Regional Transit Authority; Metro Transit; Seattle Center Monorail; and Washington State Ferries.

The project area being studied to describe the affected economic environment and evaluate direct impacts generally extends 0.5 mile, or five blocks, to either side of the project alternatives and includes associated construction staging areas, tunnel vent shaft locations, and connecting roadways. This area is generally bounded by S. Spokane Street to Ward Street and from the Elliott Bay shoreline to Fourth Avenue. Secondary and cumulative impacts are described for a broader area, such as the City of Seattle, King County, and the King-Pierce-Snohomish Counties region.

General descriptions of the City of Seattle and Puget Sound region economies are provided and evaluated for economic impacts. Impacts are differentiated as construction-related, operation-related, secondary, or cumulative. Mitigation measures are recommended for construction-related and operation-related impacts.
Economic factors quantified and evaluated with regards to impacts include:

- Net change in available parking spaces and net change in parking meter revenue.
- Number of parcels acquired, number of structures acquired, net change in property tax revenue, and estimate of permanent jobs relocated or displaced.
- Operations and maintenance, construction, and right-of-way cost estimates.
- Sales taxes and temporary jobs created during construction.

The economic impacts at the regional and state levels due to influx of capital construction funds are quantified as direct and indirect impacts. The direct and indirect impacts are calculated using multipliers provided by the U.S. Department of Commerce Bureau of Economic Analysis’ Regional Input Output Modeling System (RIMS II) for the Tacoma–Seattle area and the state of Washington. The detailed application of these RIMS II multipliers is presented in Chapter 6, Construction Impacts and Benefits.
Chapter 3 STUDIES AND COORDINATION

The analysis of economic impacts follows guidelines put forth by FHWA NEPA guidelines; FHWA Technical Advisory T6640.8A, Guidance for Preparing and Processing Environmental and Section 4(f) Documents; National Highway Cooperative Research Report-122 Summary and Evaluation of Economic Consequences of Highway Improvements, and WSDOT Environmental Procedures Manual (March 2003). Ongoing coordination with the City of Seattle, WSDOT, and FHWA occurred during the preparation of this technical memorandum.
**Chapter 4 Affected Environment**

Existing conditions are characterized for the project area. Some aspects of the affected environment are reported for the broader geographical area, including King County and the King-Pierce-Snohomish Counties region.

### 4.1 General Role of the Local Economy

The greater Seattle area and King County host a large and diverse economy. King County is a “national center for manufacturing, high technology industries, services, international trade and tourism” (EDC 2003). In particular, the county

- Hosts the largest concentration of manufacturing businesses in the five-state Pacific Northwest region (EDC 2003).
- Provides the fifth largest warehouse and distribution center in the United States (EDC 2003).

When comparing King County to other counties in the state, it is evident that King County represents a disproportionate share of the state population (29 percent) and state jobs (43 percent) and supports an average wage of $46,053 compared to the state average of $35,724 and the national average of $31,098 (Washington State Employment Security Department 2003b). The county also has a higher proportion of jobs in services, finance/insurance/real estate, wholesale trade, and transportation/public utilities than exists at the state level (Washington State Employment Security Department 2003b).

To support this economy, transportation infrastructure in this area includes two transcontinental railroads, extensive nationwide trucking capacity, three interstate highways, dozens of state highways, a ferry system, a world-class port, and an international airport (EDC 2003). Local transit and transportation systems enable the shipment of goods and services within the region, state, Pacific Northwest, and Canada.

The three highest revenue generating companies and top employers in the greater Seattle area are The Boeing Company, Costco Wholesale Corporation, and Microsoft Corporation, which contribute to combined annual revenues of over $106 billion (2000) and 103,000 employees (EDC 2003; City of Seattle 2003a). Other major businesses in terms of revenue and employment include Weyerhaeuser, Washington Mutual, Paccar, Safeco, Nordstrom, Puget Sound Energy, Airborne Freight, Amazon.com, Alaska Air Group, Starbucks, T-Mobile, Expediters International of Washington, AT&T Wireless, Labor Ready, Safeway, Fred Meyer, Group Health Cooperative, Swedish Health, Bank of America, Multicare Health Systems, and Bon Macy’s (EDC 2003; City
of Seattle 2003a). Exhibit 4-1 shows the distribution of firm sizes in King County.

**Exhibit 4-1. Size and Distribution of Firms in King County (2001)**

<table>
<thead>
<tr>
<th>Firm Size (No. of Employees)</th>
<th>No. of Firms</th>
<th>Percent of Total</th>
<th>Employment</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>81,020</td>
<td>100.0</td>
<td>1,093,343</td>
<td>100.0</td>
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<tr>
<td>0–4</td>
<td>55,629</td>
<td>68.7</td>
<td>68,781</td>
<td>6.3</td>
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<tr>
<td>5–9</td>
<td>10,290</td>
<td>12.7</td>
<td>68,058</td>
<td>6.2</td>
</tr>
<tr>
<td>10–19</td>
<td>6,750</td>
<td>8.3</td>
<td>91,733</td>
<td>8.4</td>
</tr>
<tr>
<td>20–49</td>
<td>4,963</td>
<td>6.1</td>
<td>150,733</td>
<td>13.8</td>
</tr>
<tr>
<td>50–99</td>
<td>1,752</td>
<td>2.2</td>
<td>121,242</td>
<td>11.1</td>
</tr>
<tr>
<td>100–249</td>
<td>1,154</td>
<td>1.4</td>
<td>171,391</td>
<td>15.7</td>
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<tr>
<td>250–499</td>
<td>298</td>
<td>0.4</td>
<td>101,851</td>
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<td>500–999</td>
<td>109</td>
<td>0.1</td>
<td>73,542</td>
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<tr>
<td>1000+</td>
<td>75</td>
<td>0.1</td>
<td>246,012</td>
<td>22.5</td>
</tr>
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</table>


Tourism is the fourth largest industry for Washington State and is a critical part of Seattle’s economy, particularly in the project area. In 1999, 27 million out of state visits generated $5.28 million in travel expenditures, $220 million state tax receipts, and $118.8 million local tax revenues (City of Seattle 2003a). Key attractions and services tied to the Seattle Central Business District (CBD) include the Washington State Convention and Trade Center, Norwegian Cruise Line homeport, Seattle Center (1962 World’s Fair site) and the Space Needle, Pike Place Market, Seattle Aquarium, Pioneer Square, International District, and various waterfront activities, shopping venues, hotels, and restaurants (City of Seattle 2003a). In addition, professional sports teams, including Seahawks football, Mariners baseball, SuperSonics basketball, Sounders soccer, and Storm basketball, call Seattle home (City of Seattle 2003a).

International commerce also plays a large role in the local economy. In 1999, two-way trade through the Port of Seattle amounted to over $106 billion (EDC 2003). Freight arrives at seaport cargo and vessel handling terminals (Terminals 5, 18, and 46), the Seattle-Tacoma International Airport, and Fishermen’s Terminal.

Access to businesses, services, and government located in the Seattle CBD is available via multiple modes of transportation and transit. On-street parking is limited; however, parking garages are available. The Seattle Center
Monorail runs between Westlake Center and Seattle Center. Metro Transit operates a fleet of about 1,300 vehicles, which include standard and articulated coaches, electric trolleys, dual-powered trolleys, and streetcars. A bus tunnel underneath downtown Seattle enables access to downtown destinations while easing street congestion (Metro 2002). In addition, bus service in the Seattle CBD is operated as a free-ride zone. A light rail transit project (Sound Transit) is proposed to connect the cities of Seattle, Tukwila, and SeaTac.

4.2 Established Business Districts and Retail/Commercial Centers

The project is located within and near the Seattle CBD, several retail/commercial centers, manufacturing/industrial centers, and urban centers (Exhibit 4-2). As defined by an independent office space information provider, Commercial Office Space (2003):

*The Seattle Central Business District is the area bounded by Yesler Way to the south, Interstate 5 to the east, Stewart Street to the north and First Avenue to the west. This area functions as the financial hub of the region and is highly concentrated comprised mainly of high rise office buildings. This is the largest submarket in the Seattle area containing more than 80 buildings totaling approximately 22.5 million rentable square footage (RSF) of space. A great diversity of buildings can be found in the CDB ranging from older historic brick and mortar structures to newer highly sophisticated upscale high-rise towers. This sub-market is the hub of the region’s largest service-related industries including Bank of America, Wells Fargo, Washington Mutual, Aetna Insurance, the law firms of Perkins Coie and Preston Gates & Ellis, and many others. Corporate headquarters include Washington Mutual, Northern Life Insurance, and the Simpson Companies.*

Established retail/commercial centers in the project area include Pike Place Market, Seattle Waterfront, Westlake Center, and Pioneer Square. The International District and Seattle Center also are located near the project area.

4.2.1 Ballard Interbay Northend Manufacturing and Industrial Center

The Ballard Interbay Northend Manufacturing and Industrial Center (BINMIC) is one of two manufacturing and industrial centers in the city. BINMIC is a 971-acre area that has management goals that focus on several areas: marine, fishing, and waterfront businesses; smaller industrial manufacturing operations; and advanced technology industries (City of Seattle 2003b).
Established Business Districts

- Central Business District
- Uptown Urban Center
- Seattle Center
- Pioneer Square District
- International District
- Waterfront District
- Pike Place Market
- Westlake Center
- Ballard-Interbay Manufacturing & Industrial Center
- Uptown Urban Center
- Ballard-Interbay Manufacturing & Industrial Center
- Westlake Center
- Pike Place Market
- Waterfront District
- Pioneer Square District
- International District
- Duwamish Manufacturing / Industrial Center
- Duwamish River
- Queen Anne Ave N
- Mercer St
- Broad St
- 99
- 1st Ave S
- 4th Ave S
- S Holgate St
- S Royal Brougham Way
- S Lander St
- S Spokane St
- Lake Union

Exhibit 4-2
Established Business Districts
4.2.2 Duwamish Manufacturing/Industrial Center

The Duwamish Manufacturing/Industrial Center (MIC) comprises over 4,000 acres of marine and industrial lands south of the Seattle CBD and represents 84 percent of the industrial lands within the city (Greater Duwamish Planning Committee 1999). Key assets of the Duwamish MIC include access to water for transportation and seafood processing/storage industry, access to multi-modal transportation (freeways, highways, rail, harbor facilities, and airports), proximity to Boeing facilities, and access to a large pool of highly skilled industrial workers (Greater Duwamish Planning Committee 1999). The Duwamish MIC includes two major league sports stadiums on its northern boundary.

4.2.3 International District

The International District is located south of the Seattle CBD and east of the project area. The district includes a collection of Asian shops, restaurants, and businesses. It also is home to the Nippon Kan Theatre, a National Historic Landmark built in 1909, and the Wing Luke Asian Museum (City of Seattle 2003a).

4.2.4 Pike Place Market

Pike Place Market is located in the commercial center of Seattle with nearby department stores, specialty shops, hotels, theatres and cinemas, restaurants, and shopping centers. The market is a popular attraction for tourists and is the oldest continually operating farmers market in the country (City of Seattle 2003a). It provides a place for farmers, craftspeople, and artists to display their goods and hosts numerous eateries (City of Seattle 2003a).

4.2.5 Pioneer Square Historic District

The Pioneer Square Historic District is Seattle’s oldest neighborhood and is now a historic district at the south end of the CBD. The area is characterized by red brick buildings and is situated among art galleries, antique shops, and the Seattle Underground (City of Seattle 2003a). This district also provides extensive nighttime entertainment, ranging from sports bars, taverns and varying music venues, and restaurants. However, the Pioneer Square Historic District has experienced economic challenges over the last several years resulting from sports stadium construction, Nisqually earthquake damage, and the regional economic downturn.
4.2.6  **Seattle Center**

Seattle Center is an urban park and entertainment center located just north of the Seattle CBD. It hosts over 10 million visitors a year and is a social gathering place of international recognition. Seattle Center is home to theatre companies, professional sports teams, museums, ballet and opera, a nationally recognized children’s theatre and children’s museum, and scientific exhibitions (Seattle Center 2003). Seattle Center revenue comes from parking, facility rentals, concessions, and various sales, which covers about 70 to 80 percent of its operating costs (City of Seattle, 2003c). The total estimated revenue for the Seattle Center fund, as stated in the 2004 Endorsed Budget for the City of Seattle, is $35.8 million.

4.2.7  **South Lake Union Urban Center**

South Lake Union includes a development of 12 acres that is designated for a cultural, educational, and recreational waterfront center. It also includes biotech and mixed-use office space combined with housing (City of Seattle 2003b). Streetcar access is proposed for the area, which would connect this center to other hubs in the City (City of Seattle 2003b).

4.2.8  **Uptown Urban Center**

The Uptown Urban Center includes mixed commercial and retail establishments with some residential areas. Seattle Center is the hub for the Uptown Urban Center. Local businesses provide services to Seattle Center visitors, including food and beverage establishments, entertainment facilities, and various retail outlets.

4.2.9  **Waterfront District**

The waterfront district is the portion of downtown Seattle that fronts Elliott Bay. A series of piers host restaurants, the Seattle Aquarium, the Omnidome Theatre, state ferry and cruise ship docks, and other waterborne tourist activities (City of Seattle 2003a). The Seattle Trolley runs along the waterfront, providing a shuttle for tourists.

4.2.10  **Westlake Center**

Westlake Center is a four-story retail and food pavilion located in the Seattle CBD (Westlake Center 2003). It hosts retailers of local, national, and international fame. Additional retail establishments (Nordstrom flagship store, Pacific Place Center, and the Bon Marche) are located within several blocks of Westlake Center, which makes the area a destination retail center for Seattle-area residents as well as tourists.
4.3 Employment

4.3.1 Employment by Industry

To characterize employment in the project area, several levels of analysis are compared. These economic elements will be generally discussed for the region (King-Pierce-Snohomish Counties), King County, and the City of Seattle. A closer look will be taken at three geographic areas: the Seattle CBD,\(^1\) Seattle Central,\(^2\) and the Seattle South\(^3\) (Exhibit 4-3). These geographic areas were selected based on forecast analysis zone (FAZ) groups that the project area crosses. A FAZ is composed of one or more census tracts, and a FAZ group is an aggregation of FAZs. A FAZ is the basic geographic unit for demographic data and forecasts. Local agencies, such as the Puget Sound Regional Council, use these FAZ and census tract areas to characterize historic, existing, and projected population, housing and employment trends, and land use. The following section describes the employment component of this data; further description of population and housing data is provided in Appendix I, Social Resources Technical Memorandum.

The regional economy is diverse with an emphasis on service industries. Employment derived from retail trade and government/education sectors also plays a major role in the regional economy (Exhibit 4-4).

The number of jobs has more than doubled in the region over the last three decades, with an increasing percentage of jobs gained in the services industries. In 2000, the region had 39.3 percent of its jobs in service industries; however, the City of Seattle has a higher proportion (47.5 percent) in this sector. The next highest employment sectors for the region are retail trade (18.1 percent), government/education (16.2 percent), and manufacturing (13.6 percent). Seattle’s second highest employment sector is slightly less diverse, with government/education providing 17.6 percent of the jobs.

\(^1\) The Seattle CBD is the downtown area bound by Elliott Bay to the west, Denny Way to the north, I-5 to the east, and S. Dearborn Street to the south.

\(^2\) Seattle Central is north and east of the Seattle CBD. It is bound by S. Dearborn Street/Denny Way/I-90 to the south, Lake Washington to the east, Lake Washington Ship Canal to the north, and Elliott Bay to the west.

\(^3\) Seattle South is directly south of the Seattle CBD and Seattle Central and is bound by Lake Washington to the east; generally Seola Beach Drive, SW Roxbury Street, S. 96th Street, and S. Bangor Street to the south; and Elliott Bay to the west.
<table>
<thead>
<tr>
<th></th>
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<td></td>
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<tr>
<td>King-Pierce-Snohomish Counties</td>
<td>702,522</td>
<td>976,706</td>
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<td>1,680,411</td>
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<td>19.8%</td>
<td>20.8%</td>
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<td>11.3%</td>
<td>10.2%</td>
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<tr>
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<td>13.0%</td>
<td>13.2%</td>
<td>12.6%</td>
<td>12.6%</td>
<td>12.0%</td>
<td>12.6%</td>
</tr>
<tr>
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<td>18.1%</td>
<td>18.1%</td>
<td>18.1%</td>
<td>17.4%</td>
<td>17.6%</td>
</tr>
<tr>
<td>Services</td>
<td>26.2%</td>
<td>27.9%</td>
<td>34.0%</td>
<td>39.3%</td>
<td>43.1%</td>
<td>44.5%</td>
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<td>King County</td>
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<td>1,516,898</td>
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<td>8.6%</td>
</tr>
<tr>
<td>Trade/Transport/Utilities*</td>
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<td>15.1%</td>
<td>14.4%</td>
<td>14.4%</td>
<td>13.5%</td>
<td>13.9%</td>
</tr>
<tr>
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<td>18.2%</td>
<td>14.0%</td>
<td>17.6%</td>
<td>16.5%</td>
<td>16.4%</td>
</tr>
<tr>
<td>Services</td>
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<td>13.7%</td>
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</tr>
<tr>
<td><strong>CITY</strong></td>
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<td>Seattle</td>
<td>310,288</td>
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<td>43.5%</td>
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<td>17.8%</td>
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<td>8.6%</td>
<td>9.2%</td>
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<tr>
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<td>10.5%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Services</td>
<td>44.0%</td>
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<td>64.1%</td>
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Exhibit 4-4. Employment (Number/Percent of Jobs) (continued)

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<td>Seattle Central</td>
<td>63,033</td>
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<td>111,390</td>
<td>132,883</td>
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<td>4.8%</td>
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<td>10.5%</td>
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<td>13.0%</td>
<td>12.1%</td>
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<td>Services</td>
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<td>27.7%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>13.1%</td>
<td>13.5%</td>
<td>11.3%</td>
<td>15.6%</td>
<td>15.2%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Services</td>
<td>13.4%</td>
<td>14.1%</td>
<td>18.7%</td>
<td>25.3%</td>
<td>27.3%</td>
<td>29.1%</td>
</tr>
<tr>
<td>Government/Education</td>
<td>19.0%</td>
<td>18.8%</td>
<td>15.1%</td>
<td>14.0%</td>
<td>15.3%</td>
<td>15.0%</td>
</tr>
</tbody>
</table>

Notes: CBD=Central Business District; *Trade/Transport/Utilities=Wholesale trade, transportation, communication, and utilities; Total employment does not include workers in resources (agriculture, forestry, fishing, and mining) and construction.

Employment within and near the project study area has several variations from the region- and city-level distribution of jobs across industry sectors. The majority of employment in the Seattle CBD and Seattle Central areas is in the service sector (55 to 60 percent), which is substantially higher than the regional, King County, and Seattle averages. Government/education sectors are the second leading job sectors in the CBD; however, retail trade provides an equal proportion of jobs as government/education sectors in Seattle Central.

In 2000, Seattle South had a fairly even distribution of 70 percent of jobs among three sectors: manufacturing; trade/transportation/utilities, and services. The number of services and trade/transportation/utilities sector jobs in Seattle South is projected to grow slightly, whereas the number of jobs in manufacturing is projected to decrease over time.

4.3.2 Unemployment Rates

Unemployment rates within the region have historically been lower than the statewide average rate (Exhibit 4-5). In 2003, the average civilian labor force in King County numbered 1,021,100. Approximately 67,100 (6.6 percent) were unemployed (Washington State Employment Security Department 2003a).
Over the next decade, nonagricultural employment in the state is forecast to continually grow, although at a slower rate (1.3 percent) compared to growth in the previous decade (1.8 percent) (Washington State Employment Security Department 2002b). An increasing proportion of jobs are expected in the services sector, and jobs in the government/education sector are expected to continue as the second highest sector; however, the percentage of jobs overall in this sector will be flat across the state (Washington State Employment Security Department 2002b).

**Exhibit 4-5. Unemployment Rates (Average Annual Percent)**

<table>
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<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Washington State</td>
<td>6.4</td>
<td>6.5</td>
<td>4.8</td>
<td>4.8</td>
<td>4.7</td>
<td>5.2</td>
<td>6.4</td>
<td>7.3</td>
<td>7.0</td>
</tr>
<tr>
<td>King County</td>
<td>5.2</td>
<td>4.9</td>
<td>3.3</td>
<td>3.0</td>
<td>3.2</td>
<td>3.6</td>
<td>5.1</td>
<td>6.5</td>
<td>6.6</td>
</tr>
<tr>
<td>Pierce County</td>
<td>6.2</td>
<td>6.3</td>
<td>4.5</td>
<td>4.5</td>
<td>4.6</td>
<td>5.2</td>
<td>6.4</td>
<td>7.5</td>
<td>7.7</td>
</tr>
<tr>
<td>Snohomish County</td>
<td>5.8</td>
<td>5.3</td>
<td>3.4</td>
<td>3.1</td>
<td>3.9</td>
<td>4.1</td>
<td>5.4</td>
<td>7.7</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Note: Unemployment rates for 2003 are year to date as of September 2003 (not seasonally adjusted).

### 4.4 Parking Inventory

Parking is categorized by on-street and off-street parking. The available inventory of on-street parking is provided by the City of Seattle and is quantified by the number of parking meters. According to the 2002 *Seattle Parking Management Study*, there are 8,598 parking meters citywide (as of July 2002) (Heffron 2002). The City is planning on having approximately 9,000 meters in service by the end of 2003. The total number of meters in service at any one time fluctuates depending upon construction, hoarding, and other temporary measures that remove parking meters from use. Within the Seattle CBD there are 4,545 parking meters (50 percent of the citywide total).

The available inventory of off-street parking is provided by private property owners and operators of private lots. According to the 2002 *Parking Inventory for the Central Puget Sound Region*, there were 58,538 stalls within the Seattle CBD (Puget Sound Regional Council 2003a). The 2002 occupancy rate for off-street parking within the Seattle CBD was 63.2 percent.

Within the Seattle Center area, there are six parking lots that provide 3,534 stalls (Seattle Center 2003). This represents approximately 20 percent of the total parking stalls within the Lower Queen Anne study area (Puget Sound Regional Council 2003a). The 2002 occupancy rate for off-street parking within the Lower Queen Anne study area was 46.8 percent.
4.5 Local Government Revenues

Washington State and the City of Seattle rely on a variety of taxes to fund state and local government programs. These taxes include a combined state and local sales and use tax; a business and occupation tax and public utility tax; property tax; and several other excise, real estate, and estate taxes.

4.5.1 Sales and Use Tax

A combined state and local retail sales tax is collected on the selling price of tangible personal property. A use tax is assessed on the market value of using tangible personal property and services for which the sales tax has not been paid. The retail sales and use tax applies to most items purchased by consumers, but does not apply to food items or prescription drugs.

The amount of the retail sales and use tax varies by locality. The state tax base is 6.5 percent, but each locality can assess additional tax. The combined state and local tax rate for the study area is 8.8 percent, which also includes a Regional Transit Authority tax.

For the City of Seattle’s endorsed 2004 budget, retail sales tax revenues account for $121.4 million, which is 18 percent of the General Subfund Revenue (City of Seattle 2003c). Utility services and most personal services (e.g., medical, dental, legal, barber) and real estate are not subject to these taxes. However, construction services and building materials are subject to the retail sales tax.

Within King County, sales and use taxes account for 43 percent of the total taxes collected as revenue. According to the 2002 adopted budget, King County estimated to collect $323.4 million in sales and use taxes for the 2002 fiscal year (King County Budget Office 2002).

The King County Food and Beverage tax is collected in addition to the state and local retail sales tax for restaurants, taverns, and bars. This adds 0.5 percent to the 8.8 percent sales tax levied at these types of establishments.

4.5.2 Business and Occupation Tax and Public Utility Tax Revenues

Most businesses operating in the state are subject to the business and occupation (B&O) tax. The B&O tax is typically assessed on the gross income, proceeds of sales, or value of doing business. Contractors doing construction work for federal agencies are classified as government contractors for B&O tax purposes. Contractors are subject to the B&O taxes. Typically, the measure of tax is the gross contract price (WAC 458-20-17001).

According to the City of Seattle’s endorsed 2004 budget, B&O taxes account for $113.8 million (18 percent) of the General Subfund Revenue (City of Seattle
2003c). In addition, the City levies a tax on the gross income derived from sales of utility services by privately owned utilities within Seattle, including telephone, steam, cable communications, natural gas, and refuse collection. These business tax revenues on utilities account for $116.7 million (17 percent) of the General Subfund Revenue (City of Seattle 2003c).

### 4.5.3 Property Tax Revenues

Real and personal property is subject to property tax. Real property includes land and any improvements, such as buildings, attached to the land. The primary characteristic of personal property is mobility. Examples of personal property are machinery, equipment, supplies, and furniture. Personal property tax typically applies to personal property used when conducting business.

Property tax is a combined state and local tax. The 2002 property taxes in the project area range from $13.65 to $14.42 per thousand dollars of assessed value. The state portion of these property taxes is $2.99 dollars per thousand of assessed value with the rest apportioned to many taxing districts (Washington State Department of Revenue 2003). Within King County, property taxes account for 50 percent of the total taxes collected as revenue. According to the 2002 adopted budget, King County estimated $356 million in property taxes for the 2002 fiscal year (King County Budget Office 2002). Property tax revenues in the City of Seattle’s endorsed 2004 budget account for $176.7 million, which is approximately one-quarter of the General Subfund Revenue (City of Seattle 2003c).

### 4.5.4 Other Taxes and User Fees

Various other taxes are assessed at the state and local levels, which include excise tax on hotels and motels, admission to entertainment and recreation events, food and beverages, fuels, cigarettes, tobacco products, liquor, timber, rental cars, and others. In Seattle, a Convention and Trade Center tax (7.0 percent) is levied on all lodging establishments with 60 or more rooms/spaces. This tax is also levied in Bellevue and elsewhere in King County with various tax rates.

Other local excise taxes include municipal business taxes and licenses. The sale of most real property is subject to a real estate tax that is paid by the seller. Other taxes levied by the state or local municipalities include an estate and transfer tax, vehicle licensing fee, and watercraft excise tax. No personal income tax is levied in the state of Washington.
4.5.5 Revenues from Parking Meters and Public Garages

Revenues from parking meters are deposited in the City of Seattle’s General Fund. These revenues are designated as “fees to cover the cost of installation, inspection, supervision, regulation, and maintenance involved in the control of traffic and parking upon the streets” (SMC 11.16.480). Seattle Municipal Code (SMC 11.16.300) also grants authority to the City’s Traffic Engineer to “establish parking metered areas and the time limit for parking therein; order installation or removal of parking meters where it is determined upon the basis of an engineering and traffic investigation that the installation or removal or parking meters shall be necessary to aid in the regulation, control, and inspection of the parking of vehicles.” The code was updated in January 2004 to accommodate parking ‘pay stations’ and allow their installation and maintenance.

Citywide, there are 8,598 parking meters (as of July 2002) that generated $9.67 million in revenue for the City of Seattle for the year 2002. The average annual revenue per parking meter is approximately $1,125. The parking meters within the Seattle CBD account for half of the City’s annual revenue from parking meters. Parking meters for downtown Seattle from Denny Way to S. Atlantic Street and from Interstate 5 (I-5) to Elliott Bay represented approximately 70 percent of the City’s total parking meter revenue.

The City of Seattle collects an annual license fee from operators of public garages. Public garages include both buildings and uncovered lots (SMC 6.48). The annual license fee, in addition to the business license fee, is either $13.50 per stall or $90 per 1,000 square feet of floor or ground space contained in a parking garage or lot and used for parking or storage purposes. The commercial parking license fee was estimated to raise about $0.6 million for the City of Seattle.

The City of Seattle also receives sales and B&O tax revenue from short-term and long-term off-street parking (less than 30 days). The sales tax rate is 8.8 percent and the B&O rate for parking is 0.215 percent.

4.6 Ferry and Cruise Ship Facilities

Four different areas of the Seattle CBD waterfront are used for ferry and cruise ship operations. They are:

- Terminal 30 Cruise Facility (2431 E. Marginal Way S.). This facility is located in the South project area. The facility is owned by the Port of Seattle and operated by Cruise Terminals of America and provides berths for Holland America Line and Princess Cruises. On-pier parking is available for users of the facility. Forty-two vessel calls
were scheduled at Terminal 30 for the 2003 cruise ship sailing schedule.

- Pier 50/52 Colman Dock Ferry Terminal (801 Alaskan Way). These terminals provide ferry service to and from the Seattle CBD and the communities on Bainbridge and Vashon Islands and the city of Bremerton. Vehicles queue up for the ferries on Pier 52. There is no public parking available at the terminal; parking for Washington State Ferries employees is available at the terminal.

- Pier 66/Bell Street Cruise Terminal (2225 Alaskan Way). This facility is located in the North project area. The facility is owned by the Port of Seattle and operated by Cruise Terminals of America and provides berths for Norwegian Cruise Line. On-pier parking is not available for users of the facility; parking currently occurs at the Bell Street Pier Garage, between Alaskan Way and Western Avenue. Fifty-five vessel calls were scheduled at Pier 66 for the 2003 cruise ship sailing schedule.

- Pier 69 (2711 Alaskan Way). This facility is located in the North project area. The facility is owned by the Port of Seattle and is home to the Victoria Clipper, a high-speed, passenger-only ferry operating between Seattle and Victoria, British Columbia, Canada. The facility also provides berthing to several small cruise vessels specializing in local sightseeing and expeditions to Alaska. Pier 69 is also the headquarters for the Port of Seattle.

For 2002, the Port of Seattle hosted 244,905 cruise ship passengers and 74 cruise ship vessel calls and estimated hosting approximately 400,000 passengers and 98 cruise ship calls in 2003 (Port of Seattle Records). Washington-state passengers potentially support the local Seattle economy by extending their pre- and post-cruise stays in or near the port of embarkation or using local transportation. Port-of-call passengers potentially support the local Seattle economy by visiting local attractions.

### 4.7 Inventory of Existing Businesses

The AWV Environmental Team performed a physical inventory of businesses within the area of direct effects by pedestrian reconnaissance. The area of direct effects for the inventory includes businesses within one block of proposed changes to existing facilities or proposed new facilities. Facilities include surface streets, aerial structures and tunnels, and the seawall. Primary detour routes where parking and access are likely to be affected, such as Broad Street, were included in the inventory. The physical inventory only includes that information that could be observed or inferred from pedestrian reconnaissance.
The following parameters were collected so that direct impacts to individual businesses (or groupings of individual businesses) could be assessed:

- Location and number of businesses within the area of direct effects
- Types of businesses
- Access and parking requirements for these businesses
- Estimate of number of employees.

### 4.7.1 Project-Wide Findings

Within the area of direct effects, 1,098 businesses were identified. The breakdown of the types of businesses within one block of the project is presented in Exhibit 4-6. Businesses operating in Commercial Office space accounted for over half (52.3 percent) of the type of businesses operating within the area of direct effects. Other Service accounted for 17.1 percent of businesses operating within the area of direct effects; over half (58.5 percent) of the Other Service businesses were involved in food service other than retail grocery. Commercial retail accounted for 11.7 percent of the business activity within the area of direct effects. Other represented about one-tenth of the business activity within the area of direct effects; the majority of Other activity identified was parking (46.8 percent). Residential Multi-Family use represented about 5 percent of the business activity within the area of direct effects. The sum of Industrial (both Marine and Non-Marine Dependent) and Government Service represented 3.6 percent of the business activity within the area of direct effects.

The breakdown of the size of businesses within one block of the project is presented in Exhibit 4-7. The vast majority (78.5 percent) of the businesses operating in the area of direct effects was estimated to be small (less than 20 employees). Medium-sized businesses (20 to 100 employees) accounted for 16.6 percent of the businesses operating in the area of direct effects. The remainder was almost equally split between large businesses (greater than 100 employees) at 2.6 percent and vacant businesses (no discernable business activity) at 2.3 percent.

The breakdown of primary parking requirement for the businesses surveyed is presented in Exhibit 4-8. The visual survey indicated that the majority of businesses (60.9 percent) in the area of direct effects consider street parking the major element in their customer and employee’s parking strategies. Almost a third of all businesses (32.9 percent) provide on-site parking for employees and customers. The remainder had either directly-identifiable off-street parking (5.1 percent) or had access that would be directly affected by the project (1.1 percent).
Exhibit 4-6. Types of Businesses within One Block of the Project

Exhibit 4-7. Size of Businesses within One Block of the Project
4.7.2 Breakdown of Findings by Geographic Area

The survey area was generally broken down into the same geographic areas as presented in the Technical Memoranda and PDEIS with the exception that the Broad Street Detour Route was also surveyed. Pioneer Square is a subset of the central segment. As a result of this survey, the distribution of businesses is as follows (numbers of businesses are in parenthesis):

- South Segment – South Andover Street to South King Street (92).
- Pioneer Square – South King Street to Yesler Way (194).
- Central Segment – Yesler Way to Battery Street (382).
- North Waterfront and Seawall – Pier 46 to Pier 70 (83).
- North – Alaskan Way and Battery Street to Roy Street and Aurora Avenue North (195).
- Broad Street Detour – Aurora and Broad to Alaskan Way and Broad (North Waterfront/Pier 70) and then continuing along Alaskan Way to Pier 59 (152).

South Segment

Within this segment of the project ninety-two existing businesses were identified along the east and west side of viaduct. This segment has a unique mix of business types as compared to the other segments due to the presence of industrial (marine dependent and non-marine dependent) businesses within this segment. Commercial office accounted for roughly half of existing business types, followed by industrial at 20 percent, other at 15 percent and other service at 12 percent. Only one commercial retail business was
identified in the area surveyed. There were no instances of government service or residential multi family in the area surveyed (Exhibit 4-9)

The slightly more than half of the businesses were characterized as small businesses with over 40 percent characterized as medium-sized. Only two businesses appear to be large and three businesses were vacant. Parking is approximately equally distributed between on-site, off-street, and on-street.

**Pioneer Square Portion of Central Segment**

Within this portion of the central segment of the project 194 existing businesses were identified along the east side of viaduct. Existing businesses along the west side of the viaduct were included in the Waterfront grouping. This historic area is considered a fragile economic area due to its heavy reliance upon on-street parking (see below). The mix of business types is dominated by commercial office (almost 60 percent) followed by other service (primarily non-retail food service) at 22 percent and commercial retail at almost 10 percent. No industrial (marine dependent and non-marine dependent) businesses were surveyed within this segment. There were eleven multi family residential buildings in the survey area along with three government service and two other business types (Exhibit 4-10).

Virtually all of the businesses were characterized as small businesses with only five percent characterized as medium-sized. No businesses appeared to be either large or vacant. Parking is dominated by on street with only six businesses identified as having on-site parking.

**Central Segment Between Pioneer Square and Battery Street Tunnel**

Within this portion of the central segment of the project 382 existing businesses were identified along the east side of viaduct. Existing businesses along the west side of the viaduct were included in the Waterfront grouping. This area is in the heart of Seattle’s Commercial Core/Commercial Business District as demonstrated by the density of businesses encountered. The mix of business types is dominated by commercial office (almost 70 percent) followed by commercial retail at 12 percent and other service (primarily non-retail food service) at almost 10 percent. One industrial (non-marine dependent) business was surveyed within this segment. There were seventeen multi family residential buildings in the survey area along with seventeen other and two government service business types (Exhibit 4-11).

Virtually all of the businesses were characterized as small businesses (90 percent) with about nine percent characterized as medium-sized. Three businesses appeared to be large and two were vacant. Parking is dominated by on street for two-thirds of the businesses with 27 percent providing on-site parking, and seven businesses relying on off-street parking.
Waterfront/Seawall

Within this portion of the project 83 existing businesses were identified along the west side of viaduct. Existing businesses along the east side of the viaduct were included in the Central Segment grouping. This area is considered a fragile economic area due to its heavy reliance upon tourist visitors as well as on-street parking (see below). The mix of business types is roughly evenly distributed between other service (29 percent) (primarily non-retail food service), commercial retail (27 percent) and commercial office (23 percent). No industrial (marine dependent and non-marine dependent) businesses or multi family residential buildings were surveyed within this segment. There were thirteen other business types and five government service business types within this segment (Exhibit 4-12).

Almost three-quarters of the businesses were characterized as small businesses with almost the rest being characterized as medium-sized. One business appeared to be large and there were no vacant businesses. Parking is dominated by on street with only nine businesses identified as having on-site parking.

North Segment

Within this portion of the project 195 existing businesses were identified along the north and south sides of the Battery Street Tunnel and along the east and west sides of Aurora Avenue North. The mix of business types is roughly evenly distributed between other service (27 percent) (primarily non-retail food service), commercial office (27 percent) and other (20 percent) (primarily parking lots). Commercial retail (13 percent), residential multi family (8 percent) and government service (4 percent) made up of the remaining business types. There was one industrial (non-marine dependent) business identified in this segment (Exhibit 4-13).

The majority of the businesses were characterized as small businesses (58 percent) with about 27 percent characterized as medium-sized. Ten businesses appeared to be large and eighteen were vacant. Parking slightly favors on site (54 percent) over on street (45 percent). Two businesses were relying on off-street parking.

Broad Street Detour

Within this portion of the project 152 existing businesses were identified along the north and south sides of the Broad Street between Aurora Avenue North and Alaskan Way and between Elliott Avenue and Alaskan Way between Broad Street and the intersection of Alaskan Way and the viaduct. The mix of business types is dominated by commercial office (50 percent) followed by other business types (primarily parking) (17 percent), other service (primarily non-retail food service) commercial retail (14 percent) and commercial retail
(10 percent). Residential multi family (8 percent) and government service (1 percent) made up of the remaining business types. There were no industrial (marine dependent or non-marine dependent) businesses identified in this segment (Exhibit 4-14).

Almost three-quarters of the businesses were characterized as small businesses with about 16 percent characterized as medium-sized. Thirteen businesses appeared to be large and two were vacant. Businesses substantially favor on site (68 percent) over on street (32 percent) parking. One business was relying on off-site, off-street parking.

Exhibit 4-9. Businesses Types for South Segment

Exhibit 4-10. Businesses Types for Pioneer Square
Exhibit 4-11. Businesses Types for Central Segment

Exhibit 4-12. Businesses Types for Waterfront/Seawall

Exhibit 4-13. Businesses Types for North Segment
Exhibit 4-14. Businesses Types for Broad Street Detour
Chapter 5 OPERATIONAL IMPACTS AND BENEFITS

Potential impacts and benefits associated with the long-term operation and maintenance of each proposed alternative are identified and discussed below. Impacts and benefits resulting from construction activities are discussed in Chapter 6, Construction Impacts and Benefits. For each Build Alternative, the following issues are evaluated for long-term economic impacts: transportation, access (freight, commuter, and tourist), and visibility; parking; acquired property; and loss of government revenue. Detailed information on acquired property is provided in Attachment A.

5.1 No Build Alternative

Three scenarios are evaluated as part of the No Build Alternative. These scenarios include:

- Scenario 1 – Continued operation of the viaduct and seawall with continued maintenance.
- Scenario 2 – Sudden unplanned loss of the viaduct and/or seawall but without major collapse or injury.
- Scenario 3 – Catastrophic failure and collapse of the viaduct and/or seawall.

The focus of the operational impacts and benefits below assumes the first scenario, though qualitative assessments are made for Scenarios 2 and 3.

5.1.1 Scenario 1 – Continued Operation of the Viaduct and Seawall with Continued Maintenance

Under this scenario, the viaduct and seawall would remain useable for the remainder of their operational life (approximately 15 to 25 years). At some point in the future (at the end of the operational life), the facilities would be replaced.

The No Build Alternative will maintain the existing viaduct. There are four partial interchange ramps and one complete interchange on SR 99 within the study area. There are also several right-only on and off movements to local cross streets at the north end of the study area. The highway-related measures of effectiveness that have a bearing upon the economic performance of the project area include:

- Connectivity between other streets and highways
- Pedestrian access
- Freight traffic travel time between existing industrial areas
- Freight train movements.
A discussion of the potential visibility of existing businesses by vehicle occupants from the road is presented below.

**Duwamish/ Harbor Island/SR 519 Connections** – The No Build Alternative will provide indirect connections between SR 99 and the waterfront via the First Avenue S. ramps. Direct access to and from Harbor Island from SR 99 will be provided only from southbound SR 99 and to northbound SR 99. Currently, most trucks entering or leaving the Duwamish/Harbor Island area use E. Marginal Way instead of SR 99. SR 519 is accessed via southbound SR 99 only. Access to SR 99 from SR 519 is for northbound SR 99 only. Therefore, freight entering the corridor northbound on SR 99 cannot use SR 519 to access I-5 or I-90. For all alternatives (including the No Build Alternative), the West Seattle low-level swing bridge will be used to access Harbor Island.

**Ballard Interbay Northend Manufacturing and Industrial Center** - For the No Build Alternative, the primary truck route serving the BINMIC is 15th Avenue W., the Western/Elliott couplet, and the viaduct. A drawback to this route are that it travels through sections of the Belltown neighborhood on Elliott and Western Avenues, where land uses adjacent to the Elliott/Western couplet in the Belltown area include dense, urban residential and commercial development. Also, the northbound off-ramp at Western Avenue is anticipated to be congested during peak hours in the No Build Alternative. The viaduct also provides good connections between BINMIC and the Duwamish area.

One alternative route to or from the BINMIC area is along Alaskan Way, though this route involves longer travel on surface arterials, and runs through areas where trucks are in potential conflict with urban residential and commercial land uses. A steep grade on Broad Street and an at-grade crossing with the Burlington Northern Santa Fe (BNSF) mainline present obstacles to truck use of Alaskan Way.

**Downtown Seattle Connections** – Connections to and from downtown Seattle are provided under the No Build Alternative by an off-ramp from northbound SR 99 to Seneca Street, and from Columbia Street to southbound SR 99. Both of these ramps provide access into the heart of downtown, but have geometric constraints relating to slow design speeds (under 25 miles per hour) resulting from sharp turns as the ramps leave the mainline. Additionally, the southbound on-ramp from Columbia Street connects to the mainline with a short, left side merge. These constraints somewhat limit the effectiveness of the connections provided, though in general, good access is provided to and from the south SR 99 corridor in downtown.
No access is provided downtown to northbound SR 99, nor from southbound SR 99 under the No Build Alternative. Trips into or out of downtown that use the SR 99 corridor must access the facility at the Western Avenue ramps in Belltown or at the Denny ramps in the south Lake Union area.

**Pedestrian Access** – In the No Build Alternative, pedestrian access between the waterfront and the CBD will be provided at most east–west streets between Pine and S. King Streets via crosswalks across Alaskan Way. In addition, pedestrian bridges at Bell and Marion Streets will provide above-grade crossings of Alaskan Way, and a pedestrian bridge at Lenora Street will provide access from Western Avenue and the Pike Place Market across the BNSF railroad tracks to the east side of Alaskan Way. Access in this area will be hindered psychologically by the viaduct structure.

**Travel Time** – For the No Build Alternative, the year 2030 p.m. peak hour travel time for freight traffic traveling between the Aurora Bridge and the West Seattle Bridge is about 9 minutes in the southbound direction and about 12 minutes in the northbound direction. Travel time between the Ballard Bridge and SR 519 is about 13 minutes in the southbound direction and 19 minutes in the northbound direction.

**Freight Train Movements** – With respect to freight train movements, in the No Build Alternative, the BNSF Seattle International Gateway (SIG) Yard blocks S. Royal Brougham Way and S. Atlantic Street, limiting access from Alaskan Way to SR 99 or to SR 519.

According to the Visual Quality Technical Memorandum, the views for vehicle occupants traveling northbound are substantially different from those traveling southbound. For northbound travelers, near views to the east between the Pioneer Square Historic District, the commercial core, and the Pike Place Market area tend to be of roofs or upper floors of adjacent buildings. For southbound travelers, near views are constricted by the upper deck and the height of railings on the lower deck and interrupted by columns. Neither of these views allows for immediate recognition of individual businesses while traveling on the viaduct; however, northbound travelers would be able to identify the established business districts adjacent to the viaduct.

No loss of parking spaces or conversion of property tax-paying parcels will occur in the No Build Alternative.

### 5.1.2 Scenario 2 – Sudden Unplanned Loss of the Viaduct and/or Seawall without Major Collapse or Injury

Under this scenario, the viaduct and/or seawall would be out of service for an unknown period of time, but would be repairable. An event such as a
moderate earthquake could cause sudden unplanned loss of the viaduct and/or seawall. It is assumed that the damaged area of the viaduct and/or seawall could be repaired, with eventual replacement of the facilities.

The ability of the viaduct and seawall to provide their current levels of usability would be significantly curtailed. Within this scenario, the future use of the viaduct ranges from lane restrictions to severe weight limitations (such as passenger automobile traffic only) to complete closure. In the event of complete closure, the loss of the viaduct could result in substantial increase of traffic volumes on the surface street network as well as I-5 as these roadways absorb the bulk of the north-south traffic that previously used the viaduct. The flow of goods and vehicles through this area would be disrupted. Depending upon the severity of the damage, all use of the roadway beneath the viaduct, including parking, may be taken out of service if the structure is isolated from all access for public safety reasons. Transportation agencies would then be forced to deal with this closure as a crisis, which would likely entail limited timelines and pools of resources.

Adverse economic impacts would occur both regionally to all transportation modes that use the viaduct and locally, with particular impacts on waterfront and Pioneer Square businesses that rely on the viaduct and Alaskan Way surface street to provide patrons access to their businesses. Although some contingency plans may be in place for this scenario, the City, WSDOT, and FWHA would not likely be in the position to develop thorough mitigation to minimize adverse impacts that result from this unplanned loss.

5.1.3 Scenario 3 – Catastrophic Failure and Collapse of the Viaduct and/or Seawall

A catastrophic seismic event could trigger failure of significant portions of the seawall and/or viaduct. This event would likely cause damage or collapse of piers and buildings near the seawall due to movement of liquefiable soils that extend as far east as Western Avenue. The anticipated movements could disrupt utilities, including power, sanitary and storm sewer, natural gas, oil, steam, and fiber optic utilities.

This scenario would result in the complete closure of the viaduct as well as isolating all waterfront properties from access. A number of Port of Seattle facilities may be rendered unusable due to the collapse of piers and buildings. Collateral damage to buildings and railroad facilities within and adjacent to the viaduct may occur due to falling aerial structures. Complete dismantling and removal of the entire collapsed structure would be required before access could be restored to the waterfront and use of the roadway beneath the elevated structure can be restored. The loss of the viaduct could result in
substantial increase of traffic volumes on the surface street network as well as I-5 as these roadways absorb the bulk of the north-south traffic that previously used the viaduct. The movement of goods and vehicles through this area will be severely curtailed even after the removal of the collapsed structure is completed until the seawall is rebuilt. In addition, serious personal injuries or death to people working and visiting the area could occur as the viaduct collapsed.

Adverse economic impacts would occur both regionally to all transportation modes that use the viaduct and locally, with particular impacts on waterfront and Pioneer Square businesses that rely on the viaduct and Alaskan Way surface street to provide patrons access to their businesses. The duration of this disruption and hardship on businesses would be long-term until the area is secured and stabilized and a new facility is constructed. Although some contingency plans may be in place for this scenario, the City, WSDOT, and FWHA would not likely be in the position to develop thorough mitigation to minimize adverse impacts that result from this catastrophic failure.

5.2 Impacts Common to All Build Alternatives

In the case of new projects and/or new infrastructure, O&M expenditures could provide a number of direct, indirect, and induced economic impacts. These effects could be realized to varying degrees throughout the central Puget Sound region in terms of increased economic output, employment, and earnings. The degree to which the O&M expenditures for the Alaskan Way Viaduct and Seawall Replacement Project could contribute to the regional economy is discussed below.

5.2.1 Operations and Maintenance Costs

The calculation of gross and/or net economic impacts attributable to the project implementation requires isolating the project O&M expenditures from current O&M expenditures that will occur anyway under the No Build Alternative. It is likely that current (No Build) O&M expenditures will be funded from local revenue sources, and thus, will not contribute to net economic impacts. Exhibit 5-1 presents the distribution of O&M costs by existing and alternative amounts.

The O&M costs are based on current WSDOT tunnel and bridge experience on the I-90 system and WSDOT/Seattle Department of Transportation (SDOT) expenses on the existing viaduct. Average unit O&M costs for Tunnel, Seawall, Aerial Structure, and At-Grade Structure were provided by these transportation agencies. These unit costs were converted to annual costs for
each alternative based upon the specific configurations of each roadway structure.

Exhibit 5-1. Operations and Maintenance Costs by Alternative ($millions/year)

<table>
<thead>
<tr>
<th>Alternative</th>
<th>O&amp;M Cost Estimate</th>
<th>Variance in O&amp;M Costs Over No Build Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Build</td>
<td>1.87</td>
<td>0</td>
</tr>
<tr>
<td>Rebuild</td>
<td>1.61</td>
<td>- 0.26 (-14%)</td>
</tr>
<tr>
<td>Aerial</td>
<td>1.97</td>
<td>+ 0.10 (+5%)</td>
</tr>
<tr>
<td>Tunnel</td>
<td>1.80</td>
<td>- 0.07 (-4%)</td>
</tr>
<tr>
<td>Bypass Tunnel</td>
<td>1.32</td>
<td>- 0.55 (-29%)</td>
</tr>
<tr>
<td>Surface</td>
<td>0.92</td>
<td>- 0.95 (-51%)</td>
</tr>
</tbody>
</table>

5.2.2 Economic Impacts

With the exception of the Aerial Alternative, the project will result in a decrease in O&M costs when compared to the No Build Alternative. For the Rebuild, Aerial, and Tunnel Alternatives, the O&M costs are not substantially different from the No Build Alternative and no economic impacts would likely be realized. For the Bypass Tunnel and Surface Alternatives, the annual O&M expenditures do decrease appreciably, which will provide a cost savings to those agencies that provide O&M services. However, the cost savings realized for this project would likely be absorbed by O&M needs for other transportation elements within the central Puget Sound region. Therefore, the O&M expenditures for this project are not likely to provide direct, indirect, and induced economic impacts to the region.

5.2.3 South Lake Union Sub-Area Parking Impacts

Parking impact assessments of the five AWV project alternatives have identified the potential loss of approximately 40 existing on-street parking spaces in the South Lake Union Sub-area. The parking impact occurs along Thomas Street from 6th Avenue North to Dexter Avenue North.

5.3 Rebuild Alternative

For the Rebuild Alternative, there is only one engineering concept proposed. No engineering design options are proposed for this alternative. The Rebuild Alternative includes a combination of new construction, rebuild and retrofit of the Alaskan Way Viaduct, and a rebuild of the seawall. The alignment for the Rebuild Alternative generally follows the existing SR 99 alignment from S. Holgate Street to the Battery Street Tunnel.
5.3.1 Transportation, Access, and Visibility

The Rebuild Alternative will maintain most of the existing ramp configurations with some safety improvements, including closing both the Western/Elliott southbound off-ramp and northbound on-ramp for emergency access only. The existing First Avenue ramps will be closed and a split diamond interchange will be added to S. Royal Brougham Way and S. Atlantic Street. The highway-related measures of effectiveness that have a bearing upon the economic performance of the project area include:

- Connectivity between other streets and highways.
- Pedestrian access.
- Freight traffic travel time between existing industrial areas.
- Freight train movements.

A discussion of the potential visibility of existing businesses by vehicle occupants from the road is presented below.

Duwamish/Harbor Island/SR 519 Connections – Overall, the Rebuild Alternative provides improved connections to the Duwamish area, Harbor Island, and SR 519. The Rebuild Alternative provides better access between the waterfront and SR 99 via more direct ramps at S. Royal Brougham Way and S. Atlantic Street. In addition, access between the waterfront and SR 519 is improved. In the Pioneer Square/stadium area, congested conditions are still expected, although somewhat improved compared to the No Build Alternative.

Access between SR 519 and SR 99 is provided in all directions under the Rebuild Alternative, so trucks could use SR 519 to access I-5 or I-90 from Harbor Island or other parts of the Duwamish industrial area. For all alternatives (including the Rebuild Alternative), the West Seattle low-level swing bridge will be used to access Harbor Island.

Ballard Interbay Northend Manufacturing and Industrial Center – For the Rebuild Alternative, the primary truck route serving the BINMIC is 15th Avenue W., the Western/Elliott couplet, and the AWV. Connections between the AWV and Elliott/Western are provided, and the northbound off-ramp to Western Avenue is expected to improve since the opposing southbound off-ramp is removed. The AWV also provides good connections between BINMIC and the Duwamish area.

One alternative route to or from the BINMIC area is along Alaskan Way, which runs through areas where trucks are in potential conflict with urban residential and commercial land uses. A steep grade on Broad Street and an at-grade crossing with the BNSF mainline present obstacles to truck use of Alaskan Way.
**Downtown Seattle Connections** – The Rebuild Alternative provides the same connections as the No Build Alternative, but with somewhat improved geometric conditions. As with the No Build Alternative, no access if provided to or from the north SR 99 corridor.

**Pedestrian Access** – In the Rebuild Alternative, access between the waterfront and the CBD will be provided at most east–west streets between Pine and S. King Streets via crosswalks across Alaskan Way. In addition, pedestrian bridges at Bell, Madison, and Marion Streets will provide above-grade crossings of Alaskan Way, and a pedestrian bridge at Lenora Street will provide access from Western Avenue and the Pike Place Market across the BNSF railroad tracks to the east side of Alaskan Way. Access in this area will be hindered psychologically by the structure of the viaduct.

**Travel Time** – For the Rebuild Alternative, the p.m. peak hour travel time for traffic traveling between the Aurora Bridge and the West Seattle Bridge will be about the same as for the No Build Alternative in the southbound direction (9 minutes). In the northbound direction, travel time will be slightly less than for the No Build Alternative (9 minutes, versus 12 minutes for No Build). Travel time between the Ballard Bridge and SR 519 will be about the same as for the No Build Alternative in the southbound direction (14 minutes, versus 13 minutes for No Build) and several minutes less in the northbound direction (16 minutes, versus 19 minutes for No Build).

**Freight Train Movements** – With respect to freight train movements, in the Rebuild Alternative, the new interchange at SR 519 will provide grade-separated access over the BNSF tail track. This connection will also allow access from the waterfront to SR 519.

According to Appendix D, Visual Quality Technical Memorandum, views for vehicle occupants traveling northbound on the rebuilt viaduct will be virtually unchanged from existing conditions. For northbound travelers, near views to the east between the Pioneer Square Historic District, the commercial core, and the Pike Place Market area tend to be of roofs or upper floors of adjacent buildings. For southbound travelers, near views are constricted by the upper deck and the height of railings on the lower deck and interrupted by columns. Neither of these views allows for immediate recognition of individual businesses while traveling on the viaduct; however, northbound travelers will be able to identify the established business districts adjacent to the viaduct.

### 5.3.2 Parking

A physical count of existing parking spaces within the project footprint was conducted for the project. Subsequently, estimates of potential parking were
conducted for each of the five Build Alternatives. The estimates used the Urban Design Concept Plans as a guide for on-street parking lanes and affected off-street parking areas. The Concept Plans are to be considered as preliminary guides and the actual number of displaced parking spaces may be different based upon the final design.

The Rebuild Alternative will cause the permanent removal of approximately 270 parking spaces, of which 220 will be on-street parking and 50 will be off-street parking.

Of the approximately 270 permanently lost parking spaces, the bulk of them are on-street long-term parking. Long-term spaces include unmetered and unrestricted spaces, as well as spaces designated for police and government operations. There will be a net increase of 36 metered spaces. The annual increase in City of Seattle revenues ($40,500) due to the additional metered spaces will be partially off-set by the permanent removal of 50 off-street parking spaces and their parking garage license fees.

### 5.3.3 Acquired Property

Fourteen parcels will need to be acquired in order to construct the Rebuild Alternative (Exhibit 5-2). The economic impact of acquiring these parcels will be to permanently convert these parcels from private ownership to public ownership. Parcels in public ownership are exempt from paying King County and state property taxes on the assessed value of the parcel. The total amount of non-exempt (taxable) land to be acquired is 598,681 square feet (13.74 acres). Consequently, King County and the state will lose the ability to collect taxes from properties that paid $275,295 in annual property taxes as a result of this alternative. The estimate was based upon actual tax amounts collected in 2002 by the King County Finance and Business Operations for all of the parcels that are to be acquired. This estimate is for one year and represents 0.07 percent of all property tax revenue collected by King County in 2002. This alternative will cause a slight but permanent decrease in the number of available parcels across which the property tax load can be distributed.

Eight buildings representing 413,330 square feet of built space will need to be torn down in order to construct the Rebuild Alternative. In addition to the economic impact associated with the loss of property tax revenue, the loss of parcels with buildings will result in the permanent displacement of approximately 334 workers for this alternative. The number of workers was estimated based upon the total square footage of each individual building, the use of the building (office, warehouse, manufacturing, retail), and the average square feet required per worker based upon the use of the building (U.S. workers).
The permanent displacement of 334 workers represents 0.1 percent of the total 2000 Seattle CBD workforce.

### Exhibit 5-2. Acquired Property Impacts From the Rebuild Alternative

<table>
<thead>
<tr>
<th>Property and Business Elements</th>
<th>Segment</th>
<th>Total</th>
<th>South</th>
<th>Central</th>
<th>North Waterfront</th>
<th>North</th>
<th>Seawall</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. parcels acquired</td>
<td></td>
<td>14</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No. structures acquired</td>
<td></td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Area of work space relocated or displaced (square feet)</td>
<td>413,330</td>
<td>264,463</td>
<td>148,867</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Estimated no. permanent jobs relocated or displaced</td>
<td>334</td>
<td>193</td>
<td>141</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Property tax paid by acquired parcels ($)</td>
<td>275,295</td>
<td>174,740</td>
<td>100,555</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Area of acquired tax-paying parcels (square feet)</td>
<td>598,681</td>
<td>532,727</td>
<td>65,954</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

In addition to relocated or displaced businesses and workers, potential losses in sales and use and B&O tax revenues will occur. The potential loss of these tax revenues from the general tax revenue stream may be minimized if the displaced businesses relocate within the City of Seattle (see Appendix K, Relocations Technical Memorandum). Displaced businesses that relocate within the City of Seattle will continue to pay B&O taxes. The businesses and workers for these businesses will continue to pay sales and use taxes related to the expenditure of earnings within the regional economy. Even if the relocated or displaced businesses leave the City of Seattle but remain in the region, the jurisdiction of the new location will continue to collect B&O taxes that will continue to support the regional economy. The regional economy only loses B&O revenue if the businesses close or relocate outside of the region.

#### 5.3.4 South – S. Spokane Street to S. King Street

This segment will experience the bulk of the parking and acquired property impacts associated with this alternative. The vast majority of permanently affected parking spaces will occur within the South segment with the net loss of 311 parking spaces (in the stadium region). This segment also contains half of the parcels (7 of 14) and buildings (4 of 8) to be acquired to construct the project. Two of the acquired parcels are currently exempt from property
taxes. The remaining five parcels paid $174,740 in property taxes in 2002. This segment also contains the majority of relocated or displaced workers (193 of 334), owing to the size of buildings being acquired.

**Terminal 46**

A portion of Terminal 46 adjacent to the Alaskan Way surface street will be acquired for the Rebuild Alternative. Terminal 46 currently functions primarily as the Hanjin Container Terminal and is leased and operated by Total Terminals International from the Port of Seattle. Shipping lines served at Terminal 46 include Hanjin and Senator. A list of the seven parcels that Terminal 46 comprises is presented in Section 5.2.1 of the Relocations Technical Memorandum. Properties owned by the Port of Seattle are exempt from paying property taxes; however, the Port of Seattle does collect a leasehold excise tax of 12.86 percent from its tenants and transfers the excise tax to the Department of Revenue. The Rebuild Alternative will convert 6.3 acres to roadway use and an additional 6.7 acres to vehicle staging lanes for the Washington State Ferries facilities at Colman Dock (Piers 50/52). The total converted acreage (13 acres) represents 15 percent of the total acreage (88 acres) at Terminal 46.

There are currently six buildings on Terminal 46. Two of the buildings are sewer pump stations; the remaining four buildings support terminal operations. As currently configured, the Rebuild Alternative will require the removal of five of these buildings, including both of the sewer pump stations. The estimated number of employees in these buildings is 182. It is not known at this time whether the terminal could continue to operate without these buildings and with the loss of 15 percent of its space. It is also unknown at this time whether the employees in these buildings are Port of Seattle or Total Terminals International staff, and whether these positions would be displaced or transferred. If the employees are Port of Seattle employees, they may be able to transfer to other Port facilities and remain in the region and continue to contribute to the economic activity of the region. If the employees are Total Terminals International staff, they may be displaced by this alternative; however, their ability to relocate within the region is limited by available port facilities that can accommodate the space needs of a container terminal operating company.

**5.3.5 Central – S. King Street to Battery Street Tunnel**

After the South segment, this segment will experience the remainder of the parking and acquired property impacts. This segment will experience a net increase of 35 parking spaces (a loss of 8 spaces in the Pioneer Square region and a gain of 43 spaces in the waterfront region), including 47 new on-street, short-term parking spaces. Of the seven parcels to be acquired, three are
exempt from property taxes. The remaining four parcels paid $100,555 in property taxes in 2002. Seventy-one workers will be relocated or displaced from this segment if this alternative is constructed.

Pier 48

Similar to Terminal 46, the Rebuild Alternative will require a partial take of Port of Seattle properties at Pier 48 (upland portion only) to accommodate construction staging, roadway use, and vehicle staging lanes for the Colman Dock Ferry Terminal. Pier 48 currently provides berthing for trawlers and other large vessels. Approximately 2.2 acres will be converted, representing 29 percent of the total acreage (7.48 acres) of parcel number 766620-2630, which includes the upland portion as well as about half of the over-water portion. There is a warehouse on the over water portion of this parcel. Existing berthing is not likely to be affected by the conversion of the upland portion of Pier 48.

5.3.6 North Waterfront – Pike Street to Broad Street

A net increase of six parking spaces will occur in this segment. There will be no property acquisition impacts to businesses and workers associated with this segment.

5.3.7 North – Battery Street Tunnel to Ward Street

With the exception of the South Lake Union Sub-Area parking impacts presented in Section 5.2.3 and common to all Build Alternatives, there are no parking and acquired property impacts associated with this segment specific to the Rebuild Alternative.

5.3.8 Seawall – S. King Street to Myrtle Edwards Park

There are no parking and acquired property impacts associated with this segment.

5.4 Aerial Alternative

The Aerial Alternative includes the proposed aerial concept for replacement of the roadway as well as options for the South and North segments of the roadway. The Aerial Alternative includes construction of a new aerial structure between S. Walker Street and the existing Battery Street Tunnel, retrofitting and upgrading the Battery Street Tunnel for fire/life/safety, improvements north of the Battery Street Tunnel, and rebuilding the existing seawall. The Aerial Alternative provides similar connections and lane configurations as the Rebuild Alternative, with a major difference being that
full access is provided at S. Royal Brougham Way and S. Atlantic Street, though a different design configuration will be used.

5.4.1 Traffic, Access, and Visibility

The Aerial Alternative is similar to the Rebuild Alternative. There is a full-access interchange to S. Royal Brougham Way/S. Atlantic Street. The mid-town Columbia and Seneca ramps will be maintained as in the No Build Alternative. There will also be a southbound on-ramp and northbound off-ramp to Western/Elliott Avenues. Mercer will be widened and no direct access will be available. The highway-related measures of effectiveness that have a bearing upon the economic performance of the project area include:

- Connectivity between other streets and highways.
- Pedestrian access.
- Freight traffic travel time between existing industrial areas.
- Freight train movements.

A discussion of the potential visibility of existing businesses by vehicle occupants from the road is presented below.

Duwamish/Harbor Island/SR 519 Connections – Overall, the Aerial Alternative provides improved connections to the Duwamish area, Harbor Island, and SR 519. The Aerial Alternative provides better access between the waterfront and SR 99 via more direct ramps at S. Royal Brougham Way and S. Atlantic Street. In addition, access between the waterfront and SR 519 is improved. In the Pioneer Square/stadium area, congested conditions are still expected, although somewhat improved compared to the No Build Alternative.

Access between SR 519 and SR 99 is provided in all directions under the Aerial Alternative, so trucks could use SR 519 to access I-5 or I-90 from Harbor Island or other parts of the Duwamish industrial area. For all alternatives (including the Aerial Alternative), the West Seattle low-level swing bridge will be used to access Harbor Island.

Ballard Interbay Northend Manufacturing and Industrial Center – For the Aerial Alternative, the primary truck route serving the BINMIC is 15th Avenue W., the Western/Elliott couplet, and the AWV. Connections between the AWV and Elliott/Western are provided, and the northbound off-ramp to Western Avenue is expected to improve since the opposing southbound off-ramp is removed. The AWV also provides good connections between BINMIC and the Duwamish area.

One alternative route to or from the BINMIC is along Alaskan Way, which runs through areas where trucks are in potential conflict with urban
residential and commercial land uses. A steep grade on Broad Street and an at-grade crossing with the BNSF mainline present obstacles to truck use of Alaskan Way.

**Downtown Seattle Connections** – The Aerial Alternative provides the same connections as the No Build Alternative, but with somewhat improved geometric conditions. As with the No Build Alternative, no access will be provided to or from the north SR 99 corridor.

**Pedestrian Access** – In the Aerial Alternative, access between the waterfront and the CBD will be provided at most east–west streets between Pine and S. King Streets via crosswalks across Alaskan Way. In addition, pedestrian bridges at Bell, Madison, and Marion Streets will provide above-grade crossings of Alaskan Way, and a pedestrian bridge at Lenora Street will provide access from Western Avenue and the Pike Place Market across the BNSF railroad tracks to the east side of Alaskan Way. Access in this area will be hindered psychologically by the structure of the viaduct.

**Travel Time** – For the Aerial Alternative, the p.m. peak hour travel time for traffic traveling between the Aurora Bridge and the West Seattle Bridge will be about the same as for the No Build Alternative in the southbound direction (8 minutes, versus 9 minutes for No Build). In the northbound direction, travel time will be slightly less than for the No Build Alternative (9 minutes, versus 12 minutes for No Build). Travel time between the Ballard Bridge and SR 519 will be about the same as for the No Build Alternative in the southbound direction (14 minutes, versus 13 minutes for No Build) and several minutes less than for the No Build Alternative in the northbound direction (15 minutes, versus 19 minutes for No Build).

**Freight Train Movements** – With respect to freight train movements, in the Aerial Alternative, the BNSF tail track will be relocated to the west side of SR 99. Access across Alaskan Way/E. Marginal Way as well as between AWV/E. Marginal Way and S. Atlantic Street will be blocked at times by switching activity.

According to Appendix D, Visual Quality Technical Memorandum, this alternative incorporates an aerial structure that is generally about half-again as wide as the existing viaduct with two roadway decks, one above the other, as in the existing viaduct. Spacing between vertical columns, however, is at about twice the distance as the existing viaduct. For northbound travelers, near views to the east between the Pioneer Square Historic District, the commercial core, and the Pike Place Market area tend to be roofs or upper floors of adjacent buildings. For southbound travelers, near views are constricted by the upper deck and the height of railings on the lower deck and interrupted by columns. Neither of these views allows for immediate
recognition of individual businesses while traveling on the viaduct; however, northbound travelers will be able to identify the established business districts adjacent to the viaduct.

5.4.2 Parking

This alternative will cause the permanent removal of approximately 360 parking spaces, of which 310 of them will be on-street parking and 50 will be off-street parking. Of the 360 permanently lost parking spaces, the bulk of them are on-street long-term parking. Long-term spaces include unmetered and unrestricted spaces, as well as spaces designated for police and government operations. There will be a net decrease of 84 metered spaces. The decrease in City of Seattle revenues due to the loss of metered spaces will be approximately $94,500 each year in addition to the permanent removal of 50 off-street parking spaces and their parking garage license fees.

5.4.3 Acquired Property

Eighteen parcels will need to be acquired in order to construct the Aerial Alternative (Exhibit 5-3). The total amount of non-exempt land to be acquired is 496,002 square feet (11.39 acres). Consequently, King County and the state will lose the ability to collect taxes from properties that paid $272,848 in annual property taxes as a result of this alternative. This alternative will cause a slight but permanent decrease in the number of available parcels across which the property tax load can be distributed.

<table>
<thead>
<tr>
<th>Exhibit 5-3. Acquired Property Impacts From the Aerial Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property and Business Elements</td>
</tr>
<tr>
<td>No. parcels acquired</td>
</tr>
<tr>
<td>No. structures acquired</td>
</tr>
<tr>
<td>Area of work space relocated or displaced (square feet)</td>
</tr>
<tr>
<td>Estimated no. permanent jobs relocated or displaced</td>
</tr>
<tr>
<td>Property tax paid by acquired parcels ($)</td>
</tr>
<tr>
<td>Area of acquired tax-paying parcels (square feet)</td>
</tr>
</tbody>
</table>

Eight buildings representing 304,504 square feet of built space will need to be torn down in order to construct the Aerial Alternative. In addition to the economic impact associated with the loss of property tax revenue, the loss of
parcels with buildings will result in the permanent displacement of approximately 273 workers for this alternative. The permanent displacement of 273 workers represents 0.1 percent of the total 2000 Seattle CBD workforce.

In addition to relocated or displaced businesses and workers, potential losses in sales and use and B&O tax revenues would occur. The potential loss of these tax revenues from the general tax revenue stream may be minimized if the displaced businesses relocate within the City of Seattle (see Appendix K, Relocations Technical Memorandum). Displaced businesses that relocate within the City of Seattle will continue to pay B&O taxes. The businesses and workers for these businesses will continue to pay sales and use taxes related to the expenditure of earnings within the regional economy. Even if the relocated or displaced businesses leave the City of Seattle but remain in the region, the jurisdiction of the new location will continue to collect B&O taxes that will continue to support the regional economy. The regional economy only loses B&O revenue if the businesses close or relocate outside of the region.

5.4.4 South – S. Spokane Street to S. King Street

Stacked Aerial with SR 519 Connection At-Grade

This segment will experience the bulk of the parking and half of the acquired property impacts associated with this alternative. Approximately one-third of the permanently affected parking spaces will occur within the South segment, with a net loss of 121 parking spaces (in the stadium region). This segment also contains half of 9 of 18 parcels and 4 of 8 buildings to be acquired to construct the alternative. Two of the acquired parcels are currently exempt from property taxes. The remaining seven parcels paid $142,503 in property taxes in 2002. This segment also contains almost half of relocated or displaced workers (130 of 273) and businesses.

Option: SR 99 At-Grade with SR 519 Elevated Interchange

As an option to this alternative, the Aerial Alternative in the South segment would be reconstructed as an at-grade roadway and SR 519 would be elevated. Other proposed road improvements would be the same as proposed for the alternative. This option is the same configuration as proposed for the Rebuild Alternative. As such, potential effects on parking and acquired parcels would be the same as described earlier for the Rebuild Alternative.

Terminal 46

No acquisition of Terminal 46 parcels for roadway or ferry terminal vehicle staging will be required for the Aerial Alternative.
5.4.5 Central – S. King Street to Battery Street Tunnel

After the South segment, this segment contains eight parcel and four building acquisitions. This segment will experience a loss of 245 parking spaces (88 spaces in the Pioneer Square region and 157 spaces in the waterfront region). Of the eight parcels to be acquired, three are exempt from property taxes. The remaining five parcels paid $107,285 in property taxes in 2002. One hundred forty two workers will be relocated or displaced from this segment if this alternative is constructed.

Pier 48

The Aerial Alternative will require a partial take of Port of Seattle properties at Pier 48 (upland portion only) to accommodate construction staging, roadway use, and vehicle staging lanes for the Colman Dock Ferry Terminal. As with the Rebuild Alternative, approximately 2.2 acres will be converted.

5.4.6 North Waterfront – Pike Street to Broad Street

A net increase of six parking spaces will occur in this segment. There will be no property acquisition impacts to businesses and workers associated with this segment.

5.4.7 North – Battery Street Tunnel to Ward Street

Battery Street Tunnel Improvements and Widened Mercer Underpass

With the exception of the South Lake Union Sub-Area parking impacts presented in Section 5.2.3 and common to all Build Alternatives, there are no parking impacts associated with this segment specific to this alternative. One parcel, currently used as a parking lot, will be acquired in this segment for this alternative. This parcel has no buildings, is assumed to employ one person, and paid $23,060 in property taxes in 2002.

Option: Lowered Aurora/SR 99

The proposed option in the North segment of the Aerial Alternative would include improvements to both the Battery Street Tunnel and the street grid in the south Lake Union area. Fire and life safety improvements would be made to the Battery Street Tunnel and the tunnel would be lengthened to install fans to improve ventilation. The Mercer Street underpass across Aurora Avenue N. would not be widened. Rather, to accommodate traffic during construction and operation, Aurora Avenue N. would be lowered and several new overpasses would be constructed. These overpasses across Aurora Avenue N. would be constructed at Thomas, Harrison, Republican, Mercer, and Roy Streets. All would be four-lane structures, except the Mercer Street overpass would be six lanes. In addition, Broad Street would be backfilled to grade-level from Fifth Avenue N. to Ninth Avenue N.
For this North segment option of the Aerial Alternative, the potential effects on parking and acquired parcels would be similar to those described above relating to the proposed Battery Street Tunnel Improvements. The lowering of Aurora Avenue N. and the reconnection of four streets in the local street grid, however, would result in much improved general circulation and flow of traffic in the area compared to the proposal to widen the Mercer Street underpass and add a new overpass at John Street. The benefits to traffic flow would especially be noticeable immediately following large events at the Seattle Center. The capacity of the Mercer Street overpass would be increased, and the four additional overpasses across the lowered Aurora Avenue N. would allow traffic to disperse more freely in the neighborhood, rather than compounding traffic congestion on Mercer Street.

5.4.8 Seawall – S. King Street to Myrtle Edwards Park

There will be no parking and acquired property impacts associated with this segment.

5.5 Tunnel Alternative

The Tunnel Alternative includes both the proposed engineering concept as well as an option for the South segment. The Tunnel Alternative will replace the existing SR 99 Alaskan Way Viaduct with a new six-lane roadway (three lanes in each direction) from S. Hanford Street to Pike Street, located generally along the alignment of the existing SR 99 corridor. At Pike Street, the mainline will diverge from the seawall along the waterfront with a new four-lane (two lanes in each direction) connection to the existing Battery Street Tunnel. A northbound off-ramp and southbound on-ramp to and from Alaskan Way surface street will replace the function of the existing Elliott Avenue and Western Avenue ramps. No ramps are provided in the tunnel segment to downtown. Instead, access is provided by a new northbound off-ramp and southbound on-ramp to and from Alaskan Way surface street in the vicinity of S. King Street. Traffic destined for downtown will use an expanded Alaskan Way to distribute to the grid from the new S. King Street ramps.

At S. Royal Brougham Way and S. Atlantic Street, full access will be provided using the same configuration as under the Rebuild Alternative. North of the Battery Street Tunnel, the Tunnel Alternative will have the same configuration as described for the Aerial Alternative.

5.5.1 Traffic, Access, and Visibility

The Tunnel Alternative has one full interchange and several partial interchanges. There will be a split diamond interchange at S. Atlantic Street
and S. Royal Brougham Way with access to S. King Street as well. The Seneca and Columbia ramps will be removed and the partial Elliott/Western interchange will be similar to the Rebuild Alternative, as will the modifications to the Mercer area. The highway-related measures of effectiveness that have a bearing upon the economic performance of the project area include:

- Connectivity between other streets and highways.
- Pedestrian access.
- Freight traffic travel time between existing industrial areas.
- Freight train movements.

A discussion of the potential visibility of existing businesses by vehicle occupants from the road is presented below.

**Duwamish/ Harbor Island/ SR 519 Connections** – Overall, the Tunnel Alternative provides improved connections to the Duwamish area, Harbor Island, and SR 519. The tunnel configuration provides better access between the waterfront and SR 99 via more direct ramps at S. Royal Brougham Way and S. Atlantic Street. In addition, access between the waterfront and SR 519 is improved. In the Pioneer Square/stadium area, congested conditions are still expected, although somewhat improved compared to the No Build Alternative.

Access between SR 519 and SR 99 is provided in all directions under the Tunnel Alternative, so trucks could use SR 519 to access I-5 or I-90 from Harbor Island or other parts of the Duwamish industrial area. For all alternatives (including the Tunnel Alternative), the West Seattle low-level swing bridge will be used to access Harbor Island.

**Ballard Interbay Northend Manufacturing and Industrial Center** – For the Tunnel Alternative, the AWV does not include on- or off-ramps between the AWV and Elliott/Western. Instead, ramps are provided to Alaskan Way surface street. Truck traffic to the BINMIC will use Alaskan Way surface street to a new undercrossing of BNSF tracks (which connects Alaskan Way to Elliott Avenue) at Broad Street. This new truck route is expected to be congested due to high volumes, particularly at the BNSF undercrossing.

An option to connect to Elliott/Western (rather than to Alaskan Way and on to the Broad Street Tunnel) has been developed and is included under the discussion of the Central segment (Section 5.5.5).

**Downtown Seattle Connections** – Under the Tunnel Alternative, the ramps downtown are not provided at their current locations. Instead, new ramps are provided from northbound SR 99 to Alaskan Way, and from Alaskan Way to southbound SR 99 near S. King Street. Traffic access downtown will utilize
an improved Alaskan Way (and Western Avenue northbound) to distribute to the grid in downtown. The S. King Street ramps are less centrally located to downtown than the existing ramp locations, so trips destined to the central and northern portions of downtown will have to travel further on arterial streets to access the ramps. Trips in the southern portions of downtown will find the S. King Street ramps closer to access. The S. King Street ramps also offer an advantage in that they distribute traffic to any number of streets (off of Alaskan Way) in downtown, rather than to or from a specific, single intersection. As with the No Build, Rebuild, and Aerial Alternatives, direct access is not provided between downtown and the north SR 99 corridor under the Tunnel Alternative.

**Pedestrian Access** – In the Tunnel Alternative, access between the waterfront and the CBD will be provided at most east–west streets between Pine and S. King Streets via crosswalks across Alaskan Way. In addition, pedestrian bridges at Bell, Madison, and Marion Streets will provide above-grade crossings of Alaskan Way, and a pedestrian bridge at Lenora Street will provide access from Western Avenue and the Pike Place Market across the BNSF railroad tracks to the east side of Alaskan Way. The existing AWV will be removed, providing a more pleasant pedestrian environment and eliminating the psychological barrier caused by the structure. Crossing Alaskan Way at-grade between the waterfront and the CBD will be the same as in the No Build Alternative because of the same number of lanes of traffic that must be crossed.

**Travel Time** – For the Tunnel Alternative, the p.m. peak hour travel time for traffic traveling between the Aurora Bridge and the West Seattle Bridge will be about the same as for the No Build Alternative in the southbound direction (8 minutes, versus 9 minutes for No Build). In the northbound direction, travel time will be slightly higher than for the No Build Alternative (13 minutes, versus 12 minutes for No Build). Travel time between the Ballard Bridge and SR 519 will be about the same as for the No Build Alternative in the southbound direction (14 minutes, versus 13 minutes for No Build) and in the northbound direction (18 minutes, versus 19 minutes for No Build).

**Freight Train Movements** – With respect to freight train movements, in the Tunnel Alternative, the new interchange at SR 519 will provide grade-separated access over the BNSF tail track. This connection will also allow access from the waterfront to SR 519.

According to Appendix D, Visual Quality Technical Memorandum, the Tunnel Alternative for replacement of the Alaskan Way Viaduct and Seawall shares many impacts and benefits with the Bypass Tunnel Alternative and the Surface Alternative discussed below. All of these alternatives remove the
existing aerial structure. Many of the impacts described for the Tunnel Alternative will be common to the Bypass Tunnel and Surface Alternatives. Views for vehicle occupants traveling northbound in the new tunnel will be the interior of the tunnel. The visual interest of the panoramic views from the existing viaduct will not be available.

For vehicles traveling on the Alaskan Way surface street, views for occupants will include some downtown high-rises in the distance to the north. The road will be framed by historic buildings on the east and a variety of waterfront uses on the west. Views to the west will be available to passengers and to drivers when stopped at intersections. Foreground elements of the view will include waterfront and the downtown buildings. This alternative allows for easier recognition of individual businesses while traveling on the Alaskan Way surface street but not while in the tunnel structure.

5.5.2 Parking

This alternative will cause the permanent removal of approximately 670 parking spaces, of which 600 of them will be on-street parking and 70 will be off-street parking. Of the 670 permanently lost parking spaces, 41 percent of them are on-street long-term parking. Long-term spaces include unmetered and unrestricted spaces, as well as spaces designated for police and government operations. There will be a net decrease of 324 metered spaces. The decrease in City of Seattle revenues due to the loss of metered spaces will be approximately $364,500 each year in addition to the permanent removal of 70 off-street parking spaces and their parking garage license fees.

5.5.3 Acquired Property

Twenty parcels will need to be acquired in order to construct the Tunnel Alternative (Exhibit 5-4). The total amount of non-exempt land to be acquired is 648,285 square feet (14.88 acres). Consequently, King County and the state will lose the ability to collect taxes from properties that paid $329,559 in annual property taxes as a result of this alternative. This alternative will cause a slight (0.1 percent) but permanent decrease in the number of available parcels across which the property tax load can be distributed.

Ten buildings representing 433,620 square feet of built space will need to be torn down in order to construct the Tunnel Alternative. In addition to the economic impact associated with the loss of property tax revenue, the loss of parcels with buildings will result in the permanent displacement of approximately 356 workers for this alternative. The permanent displacement of 356 workers represents 0.2 percent of the total 2000 Seattle CBD workforce.
### Exhibit 5-4. Acquired Property Impacts From the Tunnel Alternative

<table>
<thead>
<tr>
<th>Property and Business Elements</th>
<th>Segment</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>South</td>
<td>Central</td>
<td>North</td>
<td>North</td>
<td>Seawall</td>
</tr>
<tr>
<td>No. parcels acquired</td>
<td>20</td>
<td>7</td>
<td>12</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>No. structures acquired</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Area of work space relocated or displaced (square feet)</td>
<td>433,620</td>
<td>264,463</td>
<td>169,157</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Estimated no. permanent jobs relocated or displaced</td>
<td>356</td>
<td>193</td>
<td>162</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Property tax paid by acquired parcels ($)</td>
<td>329,559</td>
<td>174,740</td>
<td>131,759</td>
<td>0</td>
<td>23,060</td>
<td>0</td>
</tr>
<tr>
<td>Area of acquired tax-paying parcels (square feet)</td>
<td>648,285</td>
<td>532,727</td>
<td>92,790</td>
<td>0</td>
<td>22,768</td>
<td>0</td>
</tr>
</tbody>
</table>

In addition to relocated or displaced businesses and workers, potential losses in sales and use and B&O tax revenues would occur. The potential loss of these tax revenues from the general tax revenue stream may be minimized if the displaced businesses relocate within the City of Seattle (see Appendix K, Relocations Technical Memorandum). Displaced businesses that relocate within the City of Seattle will continue to pay B&O taxes. The businesses and workers for these businesses will continue to pay sales and use taxes related to the expenditure of earnings within the regional economy. Even if the relocated or displaced businesses leave the City of Seattle but remain in the region, the jurisdiction of the new location will continue to collect B&O taxes that will continue to support the regional economy. The regional economy only loses B&O revenue if the businesses close or relocate outside of the region.

#### 5.5.4 South – S. Spokane Street to S. King Street

**SR 99 At-Grade With SR 519 Elevated Interchange**

This segment will experience less than half of the parking impacts associated with this alternative. A net loss of 231 parking spaces (in the stadium region) will occur within the South segment. This segment also contains less than half of the parcels (7 of 20) and less than half of the buildings (4 of 10) to be acquired to construct the alternative. Two of the acquired parcels are currently exempt from property taxes. The remaining five parcels paid...
$174,740 in property taxes in 2002. This segment also contains the majority of relocated or displaced workers (193 of 286) and businesses, owing to the majority and size of buildings being acquired.

Option: Side-by-Side Aerial With SR 519 At-Grade

The option for the South segment of the Tunnel Alternative would include the construction of an at-grade structure that would transition to a new aerial structure. Between S. Hanford Street and S. Holgate Street, the roadway would be at-grade primarily in the same alignment as the existing roadway. Near S. Holgate Street, the alignment would be west of the exiting alignment to allow combining the existing Whatcom Rail Yard and the BNSF SIG Rail Yard. The roadway would transition into an aerial structure over S. Atlantic Street, S. Royal Brougham Way, and over the BNSF SIG Rail Yard. Associated with this design, ramps would descend from SR 99 to provide access to the new at-grade SR 519. This option would be similar to the proposal for the South segment of the Aerial Alternative. The exception again is that before reaching S. King Street, the roadway would descend into the tunnel.

Terminal 46

A portion of Terminal 46 adjacent to the Alaskan Way surface street will be acquired for the Tunnel Alternative. A list of the seven parcels that Terminal 46 comprises is presented in Section 5.2.1 of Appendix K, Relocations Technical Memorandum. Properties owned by the Port of Seattle are exempt from paying property taxes; however, the Port of Seattle does collect a leasehold excise tax of 12.86 percent from its tenants and transfers the excise tax to the Department of Revenue. This Build Alternative would convert 6.4 acres to roadway use and an additional 6.6 acres to vehicle staging lanes for the Washington State Ferries facilities at Colman Dock (Piers 50/52). The total converted acreage (13 acres) represents 15 percent of the total acreage (88 acres) at Terminal 46. Under the Tunnel Alternative, impacts to buildings, employees, and terminal operations would be similar to impacts for the Rebuild Alternative.

5.5.5 Central – S. King Street to Battery Street Tunnel

This segment contains twelve parcel and six building acquisitions. This segment will experience a loss of 425 parking spaces (128 spaces in the Pioneer Square region and 297 spaces in the waterfront region). Of the twelve parcels to be acquired, four are exempt from property taxes. The remaining eight parcels paid $131,759 in property taxes in 2002. One hundred sixty two workers will be relocated or displaced from this segment if this alternative is constructed.
Option: Tunnel With Ramps at Elliott and Western Avenues

An option for the Central segment of the Tunnel Alternative would be very similar to the tunnel configuration described above as the alternative. Instead of ramps at Pike Street, however, ramps would be constructed at Elliott and Western Avenues similar to current conditions.

Pier 48

This Build Alternative will require a partial take of Port of Seattle properties at Pier 48 (upland portion only) to accommodate construction staging, roadway use, and vehicle staging lanes for the Colman Dock Ferry Terminal. As with the Rebuild Alternative, approximately 2.2 acres will be converted.

5.5.6 North Waterfront – Pike Street to Broad Street

A net loss of 14 parking spaces will occur in this segment. There will be no property acquisition impacts to businesses and workers associated with this segment.

5.5.7 North – Battery Street Tunnel to Ward Street

With the exception of the South Lake Union Sub-Area parking impacts presented in Section 5.2.3 and common to all Build Alternatives, there are no parking impacts associated with this segment specific to this alternative. One parcel, currently used as a parking lot, will be acquired in this segment for this alternative. This parcel has no buildings, is assumed to employ one person, and paid $23,060 in property taxes in 2002.

5.5.8 Seawall – S. King Street to Myrtle Edwards Park

There will be no parking and acquired property impacts associated with this segment.

5.6 Bypass Tunnel Alternative

The Bypass Tunnel Alternative includes both the proposed engineering concept as well as an option for the South segment. The Bypass Tunnel Alternative will replace the existing SR 99 Alaskan Way Viaduct with an expanded Alaskan Way surface street coupled with a four-lane tunnel that accommodates the SR 99 mainline through downtown. Like the other alternatives, the Bypass Tunnel Alternative will provide full access at S. Royal Brougham Way and S. Atlantic Street. As with the Tunnel Alternative, ramps to and from S. King Street will provide access to downtown. Unique to the Bypass Tunnel Alternative is that only two lanes are provided in each direction between the S. King Street ramps and the Battery Street Tunnel, as no ramps are provided at Elliott Avenue or Western Avenue. Thus, the S.
King Street ramps and Alaskan Way surface street will also accommodate trips that formerly used the Elliott Avenue and Western Avenue ramps. North of the Battery Street Tunnel, the Bypass Tunnel Alternative will have the same configuration as described for the Aerial Alternative.

5.6.1 Traffic, Access, and Visibility

The Bypass Tunnel Alternative has one full interchange and two partial interchanges. The full interchange is the split diamond at S. Atlantic Street and S. Royal Brougham Way. One partial interchange is at S. King Street and another is at Denny Way. The other interchanges in the area will remain in their present layout. The highway-related measures of effectiveness that have a bearing upon the economic performance of the project area include:

- Connectivity between other streets and highways.
- Pedestrian access.
- Freight traffic travel time between existing industrial areas.
- Freight train movements.

A discussion of the potential visibility of existing businesses by vehicle occupants from the road is presented below.

Duwamish/ Harbor Island/SR 519 Connections – Overall, the Bypass Tunnel Alternative provides improved connections (compared to the No Build Alternative) to the Duwamish area, Harbor Island, and SR 519. The Bypass Tunnel Alternative provides better access between the waterfront and SR 99 via more direct ramps at S. Royal Brougham Way and S. Atlantic Street. In addition, access between the waterfront and SR 519 is improved. In the Pioneer Square/stadium area, congested conditions are still expected, although somewhat improved compared to the No Build Alternative.

Access between SR 519 and SR 99 is provided in all directions under the Bypass Tunnel Alternative, so trucks could use SR 519 to access I-5 or I-90 from Harbor Island or other parts of the Duwamish industrial area. For all alternatives (including the Bypass Tunnel Alternative), the West Seattle low-level swing bridge will be used to access Harbor Island.

Ballard Interbay Northend Manufacturing and Industrial Center – For the Bypass Tunnel Alternative, the AWV does not include on- or off-ramps between the AWV and Elliott and Western Avenues. Instead, trucks will have to exit at S. King Street and use Alaskan Way surface street through downtown, or continue on the corridor through the Battery Street Tunnel and access Ballard through south Lake Union (lower Queen Anne) or Fremont. This alternative routing represents a much less direct connection than today or in the No Build Alternative.
An option to connect to Elliott/Western (rather than to Alaskan Way and on to the Broad Street Tunnel) has been developed and is included under the discussion of the Central segment (Section 5.6.5).

**Downtown Seattle Connections** – Under the Bypass Tunnel Alternative, the ramps downtown are not provided at their current locations. Instead, new ramps are provided from northbound SR 99 to Alaskan Way, and from Alaskan Way to southbound SR 99 near S. King Street. Traffic access downtown will utilize an improved Alaskan Way (and Western Avenue northbound) to distribute to the grid in downtown. The S. King Street ramps are less centrally located to downtown than the existing ramp locations, so trips destined to the central and northern portions of downtown will have to travel further on arterial streets to access the ramps. Trips in the southern portions of downtown will find the S. King Street ramps closer to access. The S. King Street ramps also offer an advantage in that they distribute traffic to any number of streets (off of Alaskan Way) in downtown, rather than to or from a specific, single intersection. As with the No Build, Rebuild, and Aerial Alternatives, direct access is not provided between downtown and the north SR 99 corridor under the Bypass Tunnel Alternative.

**Pedestrian Access** – In the Bypass Tunnel Alternative, access between the waterfront and the CBD will be provided at most east–west streets between Pine and S. King Streets via crosswalks across Alaskan Way. In addition, pedestrian bridges at Bell, Madison, and Marion Streets will provide above-grade crossings of Alaskan Way, and a pedestrian bridge at Lenora Street will provide access from Western Avenue and the Pike Place Market across the BNSF railroad tracks to the east side of Alaskan Way. The existing AWV will be removed, providing a more pleasant pedestrian environment and eliminating the psychological barrier caused by the structure. However, crossing Alaskan Way at-grade will be more difficult than in the No Build Alternative because of the increased number of lanes of traffic that must be crossed, as well as the increase in traffic volumes.

**Travel Time** – For the Bypass Tunnel Alternative, the p.m. peak hour travel time for traffic traveling between the Aurora Bridge and the West Seattle Bridge will be about the same as for the No Build Alternative in the southbound direction (9 minutes both). In the northbound direction, travel time will be slightly higher than for the No Build Alternative (13 minutes, versus 12 minutes for No Build). Travel time between the Ballard Bridge and SR 519 will be much higher than for the No Build Alternative in the southbound direction (22 minutes, versus 13 minutes for No Build) due to the revised configuration. However, in the northbound direction, travel times
will be about the same as for the No Build Alternative (18 minutes, versus 19 minutes for No Build).

**Freight Train Movements** – With respect to freight train movements, in the Bypass Tunnel Alternative, the new interchange at SR 519 will provide grade-separated access over the BNSF tail track. This connection will also allow access from the waterfront to SR 519.

According to Appendix D, Visual Quality Technical Memorandum, the Bypass Tunnel Alternative shares many impacts and benefits with the Tunnel Alternative and the Surface Alternative. All of these alternatives remove the existing aerial structure. Many of the impacts described for the Bypass Tunnel Alternative will be common to the Tunnel and Surface Alternatives. Views for vehicle occupants traveling northbound in the new tunnel will be the interior of the tunnel. The visual interest of the panoramic views from the existing viaduct will not be available.

For vehicles traveling on the Alaskan Way surface street, views for occupants will include some downtown high-rises in the distance to the north. The road will be framed by historic buildings on the east and a variety of waterfront uses on the west. Views to the west will be available to passengers and to drivers when stopped at intersections. Foreground elements of the view will include waterfront and the downtown buildings. This alternative allows for easier recognition of individual businesses while traveling on the Alaskan Way surface street but not while in the tunnel structure.

**5.6.2 Parking**

This alternative will cause the permanent removal of approximately 710 parking spaces, of which 650 will be on-street parking and 60 will be off-street parking. Of the 710 permanently lost parking spaces, 39 percent of them are on-street long-term parking. Long-term spaces include unmetered and unrestricted spaces, as well as spaces designated for police and government operations. There will be a net decrease of 394 metered spaces. The decrease in City of Seattle revenues due to the loss of metered spaces will be about $443,250 each year in addition to the permanent removal of 60 off-street parking spaces and their parking garage license fees.

**5.6.3 Acquired Property**

Twenty parcels will need to be acquired in order to construct the Bypass Tunnel Alternative (Exhibit 5-5). The total amount of non-exempt land to be acquired is 648,285 square feet (14.88 acres). Consequently, King County and the state will lose the ability to collect taxes from properties that paid $329,559 in annual property taxes as a result of this alternative. This alternative will
cause a slight (0.09 percent) but permanent decrease in the number of available parcels across which the property tax load can be distributed.

**Exhibit 5-5. Acquired Property Impacts From the Bypass Tunnel Alternative**

<table>
<thead>
<tr>
<th>Property and Business Elements</th>
<th>Total</th>
<th>South</th>
<th>Central</th>
<th>North Waterfront</th>
<th>North</th>
<th>Seawall</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. parcels acquired</td>
<td>20</td>
<td>7</td>
<td>12</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>No. structures acquired</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Area of work space relocated or displaced (square feet)</td>
<td>433,620</td>
<td>264,463</td>
<td>169,157</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Estimated no. permanent jobs relocated or displaced</td>
<td>356</td>
<td>193</td>
<td>162</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Property tax paid by acquired parcels ($)</td>
<td>329,559</td>
<td>174,740</td>
<td>131,759</td>
<td>0</td>
<td>23,060</td>
<td>0</td>
</tr>
<tr>
<td>Area of acquired tax-paying parcels (square feet)</td>
<td>648,285</td>
<td>532,727</td>
<td>92,790</td>
<td>0</td>
<td>22,768</td>
<td>0</td>
</tr>
</tbody>
</table>

Ten buildings representing 433,620 square feet of built space will need to be torn down in order to construct the Bypass Tunnel Alternative. In addition to the economic impact associated with the loss of property tax revenue, the loss of parcels with buildings will result in the permanent displacement of approximately 356 workers for this alternative. The permanent displacement of 356 workers represents 0.2 percent of the total 2000 Seattle CBD workforce.

In addition to relocated or displaced businesses and workers, potential losses in sales and use and B&O tax revenues would occur. The potential loss of these tax revenues from the general tax revenue stream may be minimized if the displaced businesses relocate within the City of Seattle (see Appendix K, Relocations Technical Memorandum). Displaced businesses that relocate within the City of Seattle will continue to pay B&O taxes. The businesses and workers for these businesses will continue to pay sales and use taxes related to the expenditure of earnings within the regional economy. Even if the relocated or displaced businesses leave the City of Seattle but remain in the region, the jurisdiction of the new location will continue to collect B&O taxes that will continue to support the regional economy. The regional economy only loses B&O revenue if the businesses close or relocate outside of the region.
5.6.4 South – S. Spokane Street to S. King Street

This segment will experience one-third of the parking impacts associated with this alternative. A net loss of 231 parking spaces (in the stadium region) will occur within the South segment. This segment also contains less than half of the parcels (7 of 20) and less than half of the buildings (4 of 10) to be acquired to construct the alternative. Two of the acquired parcels are currently exempt from property taxes. The remaining five parcels paid $174,740 in property taxes in 2002. This segment also contains the majority of relocated or displaced workers (193 of 356) and businesses, owing to the majority and size of buildings being acquired.

Terminal 46

A portion of Terminal 46 adjacent to the Alaskan Way surface street will be acquired for this Build Alternative. A list of the seven parcels that Terminal 46 comprises is presented in Section 5.2.1 of Appendix K, Relocations Technical Memorandum. Properties owned by the Port of Seattle are exempt from paying property taxes; however, the Port of Seattle does collect a leasehold excise tax of 12.86 percent from its tenants and transfers the excise tax to the Department of Revenue. The Bypass Tunnel Alternative will convert 7.1 acres to roadway use and an additional 6.8 acres to vehicle staging lanes for the Washington State Ferries facilities at Colman Dock (Piers 50/52). The total converted acreage (13.9 acres) represents 16 percent of the total acreage (88 acres) at Terminal 46. The Bypass Tunnel Alternative’s impacts to buildings, employees, and terminal operations would be similar to impacts for the Rebuild Alternative.

5.6.5 Central – S. King Street to Battery Street Tunnel

This segment contains twelve parcel and 6 building acquisitions. This segment will experience a loss of 485 parking spaces (148 spaces in the Pioneer Square region and 337 spaces in the waterfront region). Of the twelve parcels to be acquired, four are exempt from property taxes. The remaining eight parcels paid $131,759 in property taxes in 2002. One hundred sixty two workers will be relocated or displaced from this segment if this alternative is constructed.

Option: Tunnel With Ramps at Elliott and Western Avenues

An option for the Central segment of the Bypass Tunnel Alternative would be very similar to the tunnel configuration described above as the alternative. Instead of ramps at Pike Street, however, ramps would be constructed at Elliott and Western Avenues similar to current conditions.
Pier 48
This Build Alternative will require a partial take of Port of Seattle properties at Pier 48 (upland portion only) to accommodate construction staging, roadway use, and vehicle staging lanes for the Colman Dock Ferry Terminal. As with the Rebuild Alternative, approximately 2.2 acres will be converted.

5.6.6 North Waterfront – Pike Street to Broad Street
A net increase of six parking spaces will occur in this segment. There will be no property acquisition impacts to businesses and workers associated with this segment.

5.6.7 North – Battery Street Tunnel to Ward Street
With the exception of the South Lake Union Sub-Area parking impacts presented in Section 5.2.3 and common to all Build Alternatives, there are no parking impacts associated with this segment specific to this alternative. One parcel, currently used as a parking lot, will be acquired in this segment for this alternative. This parcel has no buildings, is assumed to employ one person, and paid $23,060 in property taxes in 2002.

5.6.8 Seawall – S. King Street to Myrtle Edwards Park
There will be no parking and acquired property impacts associated with this segment.

5.7 Surface Alternative
The Surface Alternative includes a proposed engineering concept plus options for both the South and North segments of the roadway. For this alternative, the seawall will be rebuilt. The Surface Alternative will replace the existing SR 99 Alaskan Way Viaduct with a surface urban arterial through downtown. An expanded Alaskan Way surface street will replace SR 99 between S. King Street and Pike Street. The surface arterial will consist of eight lanes (four lanes in each direction) south of Yesler Way, and six lanes between Yesler Way and Pike Street. A new intersection near Pike Street will connect the northern segment of Alaskan Way to the SR 99 mainline. North of Pike Street, the mainline will climb to the Battery Street Tunnel, with a northbound off-ramp and southbound on-ramp provided at Western Avenue and Elliott Avenue respectively.

South of downtown, the Surface Alternative will transition to a limited-access design similar to the Rebuild, Tunnel, and Bypass Tunnel Alternatives. A full interchange will provide access in all directions at S. Royal Brougham Way and S. Atlantic Street. North of the Battery Street Tunnel, the Surface
Alternative will have the same configuration as described for the Aerial Alternative.

5.7.1 Traffic, Access, and Visibility

The Surface Alternative puts SR 99 on the surface parallel to Alaskan Way with signalized intersections at several major cross streets. The split diamond interchange at S. Atlantic Street and S. Royal Brougham Way as in the Rebuild Alternative will still be built with an aerial structure. The Elliott and Western Avenue ramps to the south will remain as in the Rebuild Alternative. The highway-related measures of effectiveness that have a bearing upon the economic performance of the project area include:

- Connectivity between other streets and highways.
- Pedestrian access.
- Freight traffic travel time between existing industrial areas.
- Freight train movements.

A discussion of the potential visibility of existing businesses by vehicle occupants from the road is presented below.

**Duwamish/ Harbor Island/SR 519 Connections** – Overall, the Surface Alternative provides improved connections (compared to the No Build Alternative) to the Duwamish area, Harbor Island, and SR 519. The Surface Alternative provides better access between the waterfront and SR 99 via more direct ramps at S. Royal Brougham Way and S. Atlantic Street. In addition, access between the waterfront and SR 519 is improved. In the Pioneer Square/stadium area, congested conditions are still expected, although somewhat improved compared to the No Build Alternative.

Access between SR 519 and SR 99 is provided in all directions under the Surface Alternative, so trucks could use SR 519 to access I-5 or I-90 from Harbor Island or other parts of the Duwamish industrial area. For all alternatives (including the Surface Alternative), the West Seattle low-level swing bridge will be used to access Harbor Island.

**Ballard Interbay Northend Manufacturing and Industrial Center** – For the Surface Alternative, the primary truck route serving the BINMIC is 15th Avenue West, the Western/Elliott couplet, and Alaskan Way surface street. Connections between Alaskan Way surface street and Elliott and Western Avenues are provided with an undercrossing of the BNSF railroad at Broad Street. However, this still represents decreased connectivity since the mainline is a surface arterial through the highly congested waterfront area.

**Downtown Seattle Connections** – Access in the downtown area under the Surface Alternative is provided at intersections on the SR 99 mainline. As
with the Tunnel and Bypass Tunnel Alternatives, traffic could use a number of connecting arterials to distribute into or out of downtown. Also, the Surface Alternative is unique in that it does provide access to and from the north SR 99 corridor at the intersections on the mainline.

While providing access to the SR 99 corridor from all directions on SR 99, the Surface Alternative does not provide the same quality of access, as traffic must travel through a number of congested intersections on the mainline to reach downtown. Therefore, while the Surface Alternative provides greater access possibilities to SR 99 than other alternatives, it also relies on less efficient and lower quality connections than the other alternatives. As such, overall connectivity in the downtown area was rated equivalent to the other alternatives.

**Pedestrian Access** – In the Surface Alternative, access between the waterfront and the CBD will be provided at most east–west streets between Pine and S. King Streets via crosswalks across Alaskan Way. In addition, pedestrian bridges at Bell, Madison, and Marion Streets will provide above-grade crossings of Alaskan Way, and a pedestrian bridge at Lenora Street will provide access from Western Avenue and the Pike Place Market across the BNSF railroad tracks to the east side of Alaskan Way. The existing AWV will be removed, providing a more pleasant pedestrian environment and eliminating the psychological barrier caused by the structure. However, crossing Alaskan Way at-grade will be more difficult than in the No Build Alternative because of the increased number of lanes of traffic that must be crossed, as well as the significant increase in traffic volumes.

**Travel Time** – Travel times for the Surface Alternative will be much higher than for the No Build Alternative due to the need to use congested surface streets. For the Surface Alternative, the p.m. peak hour travel time for traffic traveling between the Aurora Bridge and the West Seattle Bridge will be 16 minutes (compared to 9 minutes for No Build). In the northbound direction, travel time will be much higher than for the No Build Alternative (33 minutes, versus 12 minutes for No Build). Travel between the Ballard Bridge and SR 519 will also be much higher than for the No Build Alternative in the southbound direction (22 minutes, versus 13 minutes for No Build) due to the need to use surface streets. In the northbound direction, travel times will also be much higher than for the No Build Alternative (27 minutes, versus 19 minutes for No Build).

**Freight Train Movements** – With respect to freight train movements, in the Surface Alternative, the new interchange at SR 519 will provide grade-separated access over the BNSF tail track. This connection will also allow access from the waterfront to SR 519.
According to Appendix D, Visual Quality Technical Memorandum, the Bypass Tunnel Alternative shares many impacts and benefits with the Tunnel Alternative and the Surface Alternative. All of these alternatives remove the existing aerial structure. Many of the impacts described for the Bypass Tunnel Alternative will be common to the Tunnel and Surface Alternatives. Views for vehicle occupants traveling northbound in the new tunnel will be the interior of the tunnel. The visual interest of the panoramic views from the existing viaduct will not be available.

For vehicles traveling on the Alaskan Way surface street, views for occupants will include some downtown high-rises in the distance to the north. The road will be framed by historic buildings on the east and a variety of waterfront uses on the west. Views to the west will be available to passengers and to drivers when stopped at intersections. Foreground elements of the view will include waterfront and the downtown buildings. This alternative allows for easier recognition of individual businesses while traveling on the Alaskan Way surface street.

5.7.2 Parking

This alternative will cause the permanent removal of approximately 720 parking spaces, of which 600 of them will be on-street parking and 120 will be off-street parking. Of the 720 permanently lost parking spaces, 33 percent of them are on-street long-term parking. Long-term spaces include unmetered and unrestricted spaces, as well as spaces designated for police and government operations. There will be a net decrease of 364 metered spaces. The decrease in City of Seattle revenues due to the loss of metered spaces will be about $409,500 each year in addition to the permanent removal of 120 off-street parking spaces and their parking garage license fees.

5.7.3 Acquired Property

Thirty-three parcels will need to be acquired in order to construct the Surface Alternative (Exhibit 5-6). The total amount of non-exempt land to be acquired is 1,065,285 square feet (24.46 acres). Consequently, King County and the state will lose the ability to collect taxes from properties that paid $455,391 in annual property taxes as a result of this alternative. This alternative will cause a slight (0.1 percent) but permanent decrease in the number of available parcels across which the property tax load can be distributed.

Twenty buildings representing 752,794 square feet of built space will need to be torn down in order to construct the Surface Alternative. Many displacements are required in the south because the tail track used by railroads would be relocated to the south near S. Royal Brougham Way. If the tail track were kept north of S. Royal Broughan Way, displacements would be
similar to the Tunnel or Bypass Tunnel Alternatives. In addition to the economic impact associated with the loss of property tax revenue, the loss of parcels with buildings will result in the permanent displacement of approximately 581 workers for this alternative. The permanent displacement of 581 workers represents 0.3 percent of the total 2000 Seattle CBD workforce.

Exhibit 5-6. Acquired Property Impacts From the Surface Alternative

<table>
<thead>
<tr>
<th>Property and Business Elements</th>
<th>Segment</th>
<th>Total</th>
<th>South</th>
<th>Central</th>
<th>North Waterfront</th>
<th>North</th>
<th>Seawall</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. parcels acquired</td>
<td></td>
<td>33</td>
<td>23</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>No. structures acquired</td>
<td></td>
<td>20</td>
<td>16</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Area of work space relocated or displaced (square feet)</td>
<td></td>
<td>752,794</td>
<td>616,366</td>
<td>136,428</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Estimated no. permanent jobs relocated or displaced</td>
<td></td>
<td>581</td>
<td>473</td>
<td>107</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Property tax paid by acquired parcels ($)</td>
<td></td>
<td>455,391</td>
<td>341,736</td>
<td>90,595</td>
<td>0</td>
<td>23,060</td>
<td>0</td>
</tr>
<tr>
<td>Area of acquired tax-paying parcels (square feet)</td>
<td></td>
<td>1,065,285</td>
<td>968,531</td>
<td>73,986</td>
<td>0</td>
<td>22,768</td>
<td>0</td>
</tr>
</tbody>
</table>

In addition to relocated or displaced businesses and workers, potential losses in sales and use and B&O tax revenues would occur. The potential loss of these tax revenues from the general tax revenue stream may be minimized if the displaced businesses relocate within the City of Seattle (see Appendix K, Relocations Technical Memorandum). Displaced businesses that relocate within the City of Seattle will continue to pay B&O taxes. The businesses and workers for these businesses will continue to pay sales and use taxes related to the expenditure of earnings within the regional economy. Even if the relocated or displaced businesses leave the City of Seattle but remain in the region, the jurisdiction of the new location will continue to collect B&O taxes that will continue to support the regional economy. The regional economy only loses B&O revenue if the businesses close or relocate outside of the region.

5.7.4 South – S. Spokane Street to S. King Street

SR 99 At Grade With Elevated SR 519 Interchange

This segment will experience one-third of the parking and acquired property impacts associated with this alternative. A net loss of 241 parking spaces (in
the stadium region) will occur within the South segment. This segment also contains three-quarters of the parcels (23 of 33) and most of the buildings (16 of 20) to be acquired to construct the alternative. Seven of the acquired parcels are currently exempt from property taxes. The remaining 16 parcels paid $341,736 in property taxes in 2002. This segment also contains the majority of relocated or displaced workers (473 of 581) and businesses, owing to the majority of buildings being acquired.

**Option: SR 99 At-Grade With SR 519 Interchange At-Grade**

The option for the South segment of the Surface Alternative would be similar to the proposed South segment alternative described above, but access to SR 519 would be from an at-grade intersection. As such, both SR 99 and SR 519 would be at-grade compared to grade separation for the two roadways proposed for all other project alternatives. Signalized intersections would be established at S. Atlantic Street and S. Royal Brougham Way. For this option, the BNSF SIG Rail Yard would be reconfigured to incorporate the Whatcom Rail Yard, and the BNSF tail track would be shifted south and east of SR 99. To make these changes, the reconfigured rail yard would be expanded to the south of S. Spokane Street.

The potential effects of this option would be similar to the effects described above for the Surface Alternative. The difference of having an at-grade intersection with SR 519 would not result in new or different effects on parking or acquired parcels.

**Terminal 46**

A portion of Terminal 46 adjacent to the Alaskan Way surface street will be acquired for this Build Alternative. A list of the seven parcels that Terminal 46 comprises is presented in Section 5.2.1 of Appendix K, Relocations Technical Memorandum. The Surface Alternative will convert 4.7 acres to roadway use and an additional 7.2 acres to vehicle staging lanes for the Colman Dock Ferry Terminal facilities at Piers 50/52. The total converted acreage (11.9 acres) represents 14 percent of the total acreage (88 acres) at Terminal 46. The Surface Alternative impacts on buildings, employees, and terminal operations would be similar to those for the Rebuild Alternative.

**5.7.5 Central – S. King Street to Battery Street Tunnel**

This segment contains nine parcel and four building acquisitions. This segment will experience a loss of 485 parking spaces (148 spaces in the Pioneer Square region and 337 spaces in the waterfront region). Of the nine parcels to be acquired, three are exempt from property taxes. The remaining six parcels paid $90,595 in property taxes in 2002. One hundred seven workers will be relocated or displaced from this segment if this alternative is constructed.
Pier 48
The Surface Alternative will require a partial take of Port of Seattle properties at Pier 48 (upland portion only) to accommodate construction staging, roadway use, and vehicle staging lanes for the Colman Dock Ferry Terminal. As with the Rebuild Alternative, approximately 2.2 acres will be converted.

5.7.6 North Waterfront – Pike Street to Broad Street
A net increase of six parking spaces will occur in this segment. There will be no property acquisition impacts to businesses and workers associated with this segment.

5.7.7 North – Battery Street Tunnel to Ward Street
With the exception of the South Lake Union Sub-Area parking impacts presented in Section 5.2.3 and common to all Build Alternatives, there are no parking impacts associated with this segment specific to this alternative. One parcel, currently used as a parking lot, will be acquired in this segment for this alternative. This parcel has no buildings, is assumed to employ one person, and paid $23,060 in property taxes in 2002.

Option: Existing SR 99 With Added Signals at Roy, Republican, and Harrison Streets
The option for the North segment of the Surface Alternative calls for improving both the Battery Street Tunnel and the Aurora Avenue N. corridor. Fire and life safety improvements would be installed and the tunnel would be lengthened to improve ventilation as described for the alternative. Different from previously described alternatives for the North segment, this option would maintain the existing configuration of the Mercer Street underpass crossing of Aurora Avenue N. New at-grade intersections with Aurora Avenue N. would be constructed at Republican, Harrison, and Roy Streets. These new at-grade intersections on Aurora Avenue N. would be controlled by traffic signals typical of most downtown local street intersections. This design would reflect the at-grade arterial boulevard concept in the Central segment. In addition, Broad Street would be closed and backfilled to grade level from Fifth Avenue N. to Ninth Avenue N. These improvements would reconnect some of the local streets in the south Lake Union area similar to the Lowered Aurora/SR 99 Option for the Aerial Alternative. The difference of having an at-grade intersection with Aurora Avenue N. would not result in new or different effects on parking or acquired parcels.

5.7.8 Seawall – S. King Street to Myrtle Edwards Park
There will be no parking and acquired property impacts associated with this segment.
5.8 Comparison of Alternatives

5.8.1 Traffic, Access, Parking, and Visibility

Freight connections between SR 99, SR 519, and the waterfront will be improved in all alternatives other than the No Build Alternative. Freight connections to and from the BINMIC area will be degraded in the Bypass Tunnel and Surface Alternatives, as trucks will be required to travel on Alaskan Way surface street for all or portions of the waterfront area. Travel times for the two primary freight routes are improved or similar compared to No Build for all alternatives except the Bypass Tunnel (Ballard/Interbay trips) and Surface (both primary freight routes) Alternatives.

The Rebuild, Aerial, and Tunnel Alternatives provide the best travel times of the alternatives studied. Revised downtown access under the Tunnel and Bypass Tunnel Alternatives results in travel times that are similar to those provided by the current ramp locations. The Surface Alternative is forecast to result in significantly longer travel times, particularly for trips that travel through (rather than to) downtown.

The No Build, Rebuild, and Aerial Alternatives include elevated structures that impose a psychological barrier to pedestrians accessing the waterfront from the CBD. The Bypass Tunnel and Surface Alternatives include an increased number of lanes on Alaskan Way, providing a more cumbersome crossing of that street for pedestrians. The Bypass Tunnel and Surface Alternatives are anticipated to result in increased traffic volumes on Alaskan Way, imposing an additional burden to pedestrians crossing the street.

The Tunnel, Bypass Tunnel, and Surface Alternatives allow for easier recognition of individual businesses while traveling on the Alaskan Way surface street.

The Rebuild Alternative will result in the fewest parking spaces taken out of service, while the Surface Alternative will result in the most permanently lost parking spaces (Exhibit 5-7). The impacts associated with the Tunnel, Bypass Tunnel, and Surface Alternatives are roughly equal with respect to the approximate number of parking spaces lost while the Aerial Alternative results in impacts that are greater than the Rebuild Alternative but less than the Tunnel, Bypass Tunnel, and Surface Alternatives.

5.8.2 Acquired Property

The Rebuild, Aerial, Tunnel, and Bypass Tunnel Alternatives will result in approximately equivalent economic impacts related to acquired parcels (by square-footage), area of work space relocated or displaced, and number of permanent jobs relocated or displaced (Exhibit 5-8). Adoption of the Surface
Alternative will result in greater economic impacts related to acquired parcels, area of workspace relocated or displaced, and number of permanent jobs relocated or displaced when compared to the other four Build Alternatives.

Exhibit 5-7. Comparison of Traffic and Parking Impacts

<table>
<thead>
<tr>
<th>Traffic and Parking Impacts Summary Table</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Property and Business Elements</strong></td>
</tr>
<tr>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Southbound travel time between Ballard Bridge and SR 519 (p.m. peak hour) (min.)</td>
</tr>
<tr>
<td>Northbound travel time between Ballard Bridge and SR 519 (p.m. peak hour) (min.)</td>
</tr>
<tr>
<td>Net change in parking</td>
</tr>
<tr>
<td>On-street short-term parking</td>
</tr>
<tr>
<td>On-street long-term parking</td>
</tr>
<tr>
<td>Off-street parking</td>
</tr>
</tbody>
</table>

Exhibit 5-8. Comparison of Acquired Property Impacts

<table>
<thead>
<tr>
<th>Acquired Property Impacts Summary Table</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Property and Business Elements</strong></td>
</tr>
<tr>
<td>----------------------------------------</td>
</tr>
<tr>
<td>No. parcels acquired</td>
</tr>
<tr>
<td>No. structures acquired</td>
</tr>
<tr>
<td>Area of work space relocated or displaced (square feet)</td>
</tr>
<tr>
<td>Estimated no. permanent jobs relocated or displaced</td>
</tr>
<tr>
<td>Property tax paid by acquired parcels in 2002 ($)</td>
</tr>
<tr>
<td>Area of acquired tax-paying parcels (square feet)</td>
</tr>
</tbody>
</table>

5.8.3 Local Government Revenues

Four of the five Build Alternatives will result in a permanent decrease in annual local government revenues; the Rebuild Alternative will result in a very slight gain in revenue, owing to a net increase in metered parking spaces (Exhibit 5-9). The Bypass Tunnel Alternative will result in the largest loss of annual revenue owing to the largest net decrease in metered parking spaces.
Potential mitigation measures for the loss of this revenue are presented in Chapter 8, Operational Mitigation.

Exhibit 5-9. Comparison of Parking Meter Revenue Impacts

<table>
<thead>
<tr>
<th>Parking meters</th>
<th>Rebuild</th>
<th>Aerial</th>
<th>Tunnel</th>
<th>Bypass Tunnel</th>
<th>Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Increase (+) or Decrease (-) For Each Alternative ($)</td>
<td>+40,500</td>
<td>-94,500</td>
<td>-364,500</td>
<td>-443,250</td>
<td>-409,500</td>
</tr>
</tbody>
</table>

5.9 Operational Benefits

Improved freight mobility will be the major economic benefit of implementing the Rebuild, Aerial, and Tunnel Alternatives as compared to the Bypass Tunnel, Surface, and No Build Alternatives. Freight connections within the southern portion of the project would be improved in all Build Alternatives compared to the No Build Alternative. Operation costs associated with the Build Alternatives would not be substantially different from current costs, and maintenance costs will be decreased with a new facility.

5.9.1 Transportation, Access, and Visibility

Freight connections between SR 99, SR 519, and the waterfront would be improved in all alternatives other than the No Build Alternative. Travel times for the two primary freight routes are improved or similar compared to the No Build Alternative for all Build Alternatives except the Bypass Tunnel (BINMIC trips) and Surface (both primary freight routes) Alternatives.

The Rebuild, Aerial, and Tunnel Alternatives provide the best travel times of the alternatives studied. Revised downtown access under the Tunnel and Bypass Tunnel Alternatives results in travel times that are similar to those provided by the current ramp locations. The Rebuild and Aerial Alternatives provide the same connections from SR 99 mainline and downtown Seattle as the No Build Alternative, but with somewhat improved geometric conditions. The Surface Alternative would provide an increase in the number of connecting arterials between the SR 99 mainline and downtown Seattle.

The Tunnel, Bypass Tunnel, and Surface Alternatives allow for easier recognition of individual businesses while traveling on the Alaskan Way surface street.

5.9.2 Parking

The Rebuild Alternative will result in an increase of 36 short-term on-street parking spaces compared with the No Build Alternative.
5.9.3 Operation and Maintenance Costs

With the exception of the Aerial Alternative, the project would result in a decrease in O&M costs when compared to the No Build Alternative. For the Rebuild, Aerial, and Tunnel Alternatives, the O&M costs are not substantially different from the No Build Alternative and no economic impacts would be likely. For the Bypass Tunnel and Surface Alternatives, the annual O&M expenditures would decrease appreciably, which would provide a cost savings to those agencies that provide O&M services.

5.9.4 Secondary Benefits

Economic benefits could result from implementing any of the Build Alternatives; however, the degree to which economic benefits will become manifest will depend upon the final design of the facility. It is expected that a surface structure (Surface Alternative) or a subsurface structure (Tunnel or Bypass Tunnel Alternatives) would have less visual and audio impact than an elevated structure (Rebuild and Aerial Alternatives). This could help facilitate more pedestrian activity along the alignment and a less inhibited environment for reinvestment. The economic benefits would be manifest in the form of increased investment, vitality, and development opportunity. Each of the Build Alternatives will provide differing degrees of investment opportunity to different groups providing reinvestment capital.

These benefits would occur over time with the revitalization and reinvestment in the project area, particularly in the central waterfront, once construction activities are complete. Revitalization and reinvestment could increase property values, stimulate more economic activity, enable opportunities for new or expanded business and employment, and generate more tax revenues. This revitalization and redevelopment could result in substantially increased economic activity compared to the No Build Alternative.
Chapter 6 CONSTRUCTION IMPACTS AND BENEFITS

6.1 Impacts Common to All Build Alternatives

6.1.1 Regional Economic Activity

Significant regional and state economic impacts will result from the construction of any of the Build Alternatives relative to the No Build Alternative. The intent of this analysis is to assess the likely overall economic impacts that would be attributed to construction, as measured by increases in regional and state activity, employment, and associated job earnings.

Terminology and Methods

To analyze the economic impacts of the Alaskan Way Viaduct and Seawall Replacement Project capital investment, it is necessary to examine the economic reactions that an increase in the demand for construction goods and services creates. Economists use input-output (I-O) models to analyze how changes in the production of a specific firm or industry alter the flow of funds into and out of all other industries as well as households. By tracing how production in one economic sector consumes the output of other sectors as production inputs and how each of these other sectors in turn influences the demand for the output of yet other sectors, input-output analysis facilitates the calculation of multipliers. These multipliers provide a quantitative estimate of changes in economic activity, employment, and job earnings within the local economy (state or region) that compound from initial new expenditures.

Defining the following terms aids in understanding how project construction would lead to multiplied economic impacts on the economies of the central Puget Sound region and the state of Washington.

- **Direct Impacts**: The increase in demand for roadway construction and related materials and services within a defined regional or state economy arising from undertaking the Alaskan Way Viaduct and Seawall Replacement Project; usually measured as construction expenditures, but also can be expressed in the number of new construction jobs or job earnings.

- **Indirect Impacts**: The sum of all inter-firm and inter-industry transactions that filter through the regional or state economy resulting from the purchase of material and labor inputs by the firms directly affected in the course of producing their construction-related output.
• **Induced Impacts**: The increase in household consumption of goods and services of all firms within the regional or state economies by the workers who receive additional earnings resulting from either the direct or indirect impacts of construction.

• **Total Impacts**: The sum of the direct, indirect, and induced economic impacts as measured by the overall increase in economic activity, employment, and/or earnings within the regional or state economies; also referred to as the total multiplied impacts, where the multiplier is the factor ratio of total to direct impacts.

• **Gross Impacts**: The economic effects of total project expenditures—in terms of direct, indirect, and induced impacts—prior to assessing what proportion of those expenditures and subsequent impacts would likely have still occurred in some other manner in the absence of the project being evaluated.

• **Net or “New Money” Impacts**: Only those economic effects—in terms of direct, indirect, and induced impacts—attributable to funds that are uniquely available for expenditure on the subject project, and would otherwise not enter the regional or state economies. Economists tend to place more emphasis on the net or new money impacts as more accurate measures of the true increases in output, employment, and earnings.

Construction expenditures will occur over a number of years, directly creating new demand for construction materials and labor inputs. These direct impacts will then lead to indirect or secondary impacts, as the production of output by firms in other industries increase to supply the demand for inputs to the construction industry. Both the direct and indirect impacts of construction expenditures cause firms in all industries to employ more workers to meet increases in demand; this leads to induced impacts as the additional wages and salaries paid to workers lead to higher consumer spending.

The economic impacts at the regional and state levels due to influx of capital construction funds are quantified as direct and indirect impacts. The direct and indirect impacts are calculated using multipliers provided by the U.S. Department of Commerce Bureau of Economic Analysis’ Regional Input Output Modeling System (RIMS II) for the central Puget Sound region and the state of Washington. The central Puget Sound region is defined as King, Pierce, and Snohomish Counties. The detailed application of these RIMS II multipliers is presented below.
**Economic Impacts**

For purposes of assessing the economic impacts on output, earnings, and employment, the focus is placed on the project capital costs (construction and right-of-way acquisition) of the various Build Alternatives as an accurate measure of the capital investment that would likely occur for the project. It is assumed that no project capital costs would be incurred in the No Build Alternative (Scenario 1 only).

The project capital cost estimates (Exhibits 6-1 and 6-2) are based on possible ranges of construction and right-of-way costs based on overall risk. The process used to estimate project costs and durations for this project is called the Cost Estimate Validation Process (CEVP). The cost estimates presented in this document represent the 90th percentile of costs calculated through the CEVP process. This means that 90 percent of the time, a construction activity will cost the same or less as what is estimated. (These estimates will be refined once a Preferred Alternative is selected and additional information is known regarding project design and funding. Individual CEVP reports for the Alaskan Way Viaduct Build Alternatives can be viewed at http://www.wsdot.wa.gov/projects/cevp/.)

**Exhibit 6-1. Capital Costs and Funding Sources by Alternative**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Capital Cost Estimate ($ million)</th>
<th>Federal ($ million and Share)</th>
<th>State ($ million and Share)</th>
<th>Regional ($ million and Share)</th>
<th>City ($ million and Share)</th>
<th>Other/Gap ($ million and Share)</th>
<th>Tacoma-Seattle Region ($ million and Share)</th>
<th>State ($ million and Share)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuild</td>
<td>2933</td>
<td>250–650 (9–22%)</td>
<td>187–207 (6–7%)</td>
<td>1,000–2,000 (34–68%)</td>
<td>200–500 (7–17%)</td>
<td>up to 1,296 (up to 44%)</td>
<td>200–550 (7–19%)</td>
<td>200–550 (7–19%)</td>
</tr>
<tr>
<td>Aerial</td>
<td>2996</td>
<td>250–650 (8–22%)</td>
<td>187–207 (6–7%)</td>
<td>1,000–2,000 (33–67%)</td>
<td>200–500 (7–17%)</td>
<td>up to 1,359 (up to 45%)</td>
<td>200–550 (7–19%)</td>
<td>200–550 (7–19%)</td>
</tr>
<tr>
<td>Tunnel</td>
<td>3648</td>
<td>250–650 (7–18%)</td>
<td>187–207 (5–6%)</td>
<td>1,000–2,000 (27–55%)</td>
<td>200–500 (6–14%)</td>
<td>up to 2,011 (up to 55%)</td>
<td>200–550 (6–15%)</td>
<td>200–550 (6–15%)</td>
</tr>
<tr>
<td>Bypass Tunnel</td>
<td>2723</td>
<td>250–650 (9–24%)</td>
<td>187–207 (7–8%)</td>
<td>1,000–2,000 (37–73%)</td>
<td>200–500 (7–19%)</td>
<td>up to 1,086 (up to 40%)</td>
<td>200–550 (7–20%)</td>
<td>200–550 (7–20%)</td>
</tr>
<tr>
<td>Surface</td>
<td>2319</td>
<td>250–650 (11–29%)</td>
<td>187–207 (8–9%)</td>
<td>1,000–2,000 (43–86%)</td>
<td>200–500 (9–22%)</td>
<td>up to 682 (up to 29%)</td>
<td>200–550 (9–24%)</td>
<td>200–550 (9–24%)</td>
</tr>
</tbody>
</table>

*Gap = Amount of funding that is likely needed for which no funding source has been identified.*
Exhibit 6-2. Capital Costs by Industry Expenditure/Multiplier Categories

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Capital Cost Estimate ($ million)</th>
<th>Expenditure by Multiplier Categories ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Construction Cost</td>
<td>Right-of-Way Acquisition</td>
</tr>
<tr>
<td>Rebuild</td>
<td>2,933</td>
<td>2,839</td>
</tr>
<tr>
<td>Aerial</td>
<td>2,996</td>
<td>2,876</td>
</tr>
<tr>
<td>Tunnel</td>
<td>3,648</td>
<td>3,541</td>
</tr>
<tr>
<td>Bypass Tunnel</td>
<td>2,723</td>
<td>2,576</td>
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<tr>
<td>Surface</td>
<td>2,319</td>
<td>2,175</td>
</tr>
</tbody>
</table>

Exhibit 6-1 lists the project capital cost estimates, distribution of funding sources, and regional and state new money estimates for each of the five Build Alternatives. The distribution of funding sources has been developed by the design team and is only a preliminary list of potential funding mechanisms currently available. Percentage shares of the capital cost estimates are also provided. For purposes of examining the regional economic impacts, all of the federal earmark grants and federal general funding are assumed to be new money that would otherwise not be spent either regionally or within the state in the absence of the project. Federal formula funding is not included in the new money total as this money would be expected to be otherwise spent in the region in the absence of this project. All state, regional, and city funding sources are assumed to be expended with or without this project as these are tax-based funding of local and/or state residents specifically earmarked for transportation projects within the region or state. The difference between the capital cost and new money net direct impact for each alternative is assumed to be expended with or without the project, thereby qualifying the difference only as a gross impact.

Application of RIMS II Multipliers

Three classes of RIMS II final demand multipliers and one class of direct effect multipliers were used to estimate the gross and net impacts:

- Final Demand Output Multipliers translated the initial project capital expenditures (demand) for construction outputs to the total multiplied effect on the demand for output of all firms/industries (in dollars) within the regional and state economies.
- Final Demand Earnings Multipliers translated the same direct project expenditures into the total multiplied effect on wage and salary earnings within the regional and state economies.
- Final Demand Employment Multipliers converted project expenditures into the total multiplied effect on employment within the
regional and state economies, expressed in person-year jobs. This is generally used when there is no estimate of direct employment available.

- Direct Effect Employment Multipliers translated direct employment into the total multiplied effect on employment within the regional and state economies, expressed in person-year jobs.

For application of the RIMS II final demand multipliers, capital costs were divided into two categories. Exhibit 6-2 presents the capital cost distribution for each alternative by two industry expenditure/multiplier categories. Exhibit 6-3 presents final demand multipliers, as well as the direct effect multipliers, for both the central Puget Sound region and the entire state of Washington. All procurement of construction labor, construction materials, and right-of-way acquisition was assumed to be obtained locally.

The gross total (direct, indirect, and induced) impacts on output and earnings can be calculated by multiplying the expenditure in millions of dollars by category in Exhibit 6-2 by the appropriate final demand multiplier in Exhibit 6-3.

### Exhibit 6-3. Capital Costs Multipliers

<table>
<thead>
<tr>
<th>Expenditure Category</th>
<th>BEA RIMS II Multiplier Industry Classification &amp; No.</th>
<th>Final Demand Multipliers</th>
<th>Direct Effect Multipliers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Output (dollars)</td>
<td>Earnings (dollars)</td>
</tr>
<tr>
<td>State of Washington Multipliers</td>
<td>Construction 11.0400 Highways and Streets</td>
<td>2.1764</td>
<td>0.6486</td>
</tr>
<tr>
<td></td>
<td>Right-of-Way 71.0201 Real Estate Agents, Managers, Operators, and Lessors</td>
<td>1.5792</td>
<td>0.2508</td>
</tr>
<tr>
<td>Central Puget Sound Regional Multipliers</td>
<td>Construction 11.0400 Highways and Streets</td>
<td>2.0627</td>
<td>0.6093</td>
</tr>
<tr>
<td></td>
<td>Right-of-Way 71.0201 Real Estate Agents, Managers, Operators, and Lessors</td>
<td>1.592</td>
<td>0.2517</td>
</tr>
</tbody>
</table>
Using the Rebuild Alternative as an example, expenditures of $2,839 million in the construction category would yield a gross output impact on all regional economy industries of 

\[(\$2,839 \text{M} \times 2.0627) = \$5,856 \text{M}.\]

However, some of this regional economic output would have occurred anyway without construction of a project. The more realistic measure of net impacts on economic output can be assessed by multiplying the gross output impact by the average of the percentages of general construction expenditures in representing new money to the region listed in Exhibit 6-1. This gives 

\[(\$2,839 \text{M} \times 13\% \times 2.0627) = \$761 \text{M},\]

which represents the net increase in economic output attributable to new money entering the central Puget Sound region. Note that the gross and net impacts form the upper and lower boundaries within which the true impacts will likely fall, with net impacts being the lower bound. Though the true magnitude of the impacts will be closer to the net impacts, in the absence of this project, some of the non-new money tax and/or consumer dollars spent elsewhere may result in smaller multipliers than with this project. Similar calculations can be performed for the other expenditure categories.

**Summary of Economic Impacts**

The gross and net total impacts on output and earnings for both the central Puget Sound region and the state are exhibited in the following tables. The gross and net impacts on employment are presented in Section 6.1.4. Exhibit 6-4 presents the gross total economic impacts for both the central Puget Sound region and the entire state. Under the Rebuild Alternative, new demand for construction would generate gross direct impacts equal to the capital cost of $2,933 million in mid-year (midpoint) of construction dollars. Adding in the indirect and induced impacts on the output of other regional firms, the gross multiplied impact on output would total approximately $6,006 million over the construction period. In addition, $1,753 million would be paid to workers as wage and salary earnings for the jobs generated. By defining a larger boundary for the affected economy and therefore capturing a greater portion of the multiplied impacts before the funds leak out, the statewide figures exceed the regional economic impacts projected in Exhibit 6-4.
Exhibit 6-4. Gross Total Regional and Statewide Economic Impacts

<table>
<thead>
<tr>
<th>Alternative &amp; Expenditure Category</th>
<th>Direct Gross Expenditures ($ millions)</th>
<th>Seattle-Tacoma Region Gross Total Impacts</th>
<th>Statewide Gross Total Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Output ($ millions)</td>
<td>Earnings ($ millions)</td>
<td>Output ($ millions)</td>
</tr>
<tr>
<td>Rebuild</td>
<td>2,933</td>
<td>6,006</td>
<td>1,753</td>
</tr>
<tr>
<td>Construction</td>
<td>2,839</td>
<td>5,856</td>
<td>1,730</td>
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<tr>
<td>Right-of-Way</td>
<td>94</td>
<td>150</td>
<td>24</td>
</tr>
<tr>
<td>Aerial</td>
<td>2,996</td>
<td>6,123</td>
<td>1,783</td>
</tr>
<tr>
<td>Construction</td>
<td>2,876</td>
<td>5,932</td>
<td>1,752</td>
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<tr>
<td>Right-of-Way</td>
<td>120</td>
<td>191</td>
<td>30</td>
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<tr>
<td>Tunnel</td>
<td>3,648</td>
<td>7,474</td>
<td>2,184</td>
</tr>
<tr>
<td>Construction</td>
<td>3,541</td>
<td>7,304</td>
<td>2,158</td>
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<tr>
<td>Right-of-Way</td>
<td>107</td>
<td>170</td>
<td>27</td>
</tr>
<tr>
<td>Bypass Tunnel</td>
<td>2,723</td>
<td>5,548</td>
<td>1,607</td>
</tr>
<tr>
<td>Construction</td>
<td>2,576</td>
<td>5,314</td>
<td>1,570</td>
</tr>
<tr>
<td>Right-of-Way</td>
<td>147</td>
<td>234</td>
<td>37</td>
</tr>
<tr>
<td>Surface</td>
<td>2,319</td>
<td>4,716</td>
<td>1,361</td>
</tr>
<tr>
<td>Construction</td>
<td>2,175</td>
<td>4,486</td>
<td>1,325</td>
</tr>
<tr>
<td>Right-of-Way</td>
<td>144</td>
<td>229</td>
<td>36</td>
</tr>
</tbody>
</table>

a: Includes only impacts directly associated with the expenditure of construction and right-of-way funds and does not include secondary economic benefits presented in Section 5.9.4.

Exhibit 6-5 presents the net total economic impacts attributable to new money for both the central Puget Sound region and the entire state. Under the Rebuild Alternative, the same new demand for construction expenditures would generate net direct impacts equal to $381 million (13 percent of $2,933 million) in mid-year construction dollars after accounting for local funds that would otherwise still be spent in the regional economy with similar multiplied impacts. Adding in the indirect and induced impacts on the output of other regional firms, the net multiplied impact on output would total $781 million over the construction period. Of this amount, $228 million would be paid to workers as wage and salary earnings for the net new jobs created. As with the gross economic impact, the statewide figures exceed the regional economic impacts projected in Exhibit 6-5.
Exhibit 6-5. Net New Money Total Economic Impacts

<table>
<thead>
<tr>
<th>Alternative &amp; Expenditure Category</th>
<th>Direct Gross Expenditures ($ millions)</th>
<th>Average Percent Contribution Due to New Money Funds</th>
<th>Seattle-Tacoma Region Net Total Impacts</th>
<th>Statewide Net Total Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Output ($ millions)</td>
<td>Earnings ($ millions)</td>
</tr>
<tr>
<td>Rebuild</td>
<td>2,933</td>
<td>13</td>
<td>781</td>
<td>228</td>
</tr>
<tr>
<td>Construction</td>
<td>2,839</td>
<td></td>
<td>761</td>
<td>225</td>
</tr>
<tr>
<td>Right-of-Way</td>
<td>94</td>
<td></td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Aerial</td>
<td>2,996</td>
<td>13</td>
<td>796</td>
<td>232</td>
</tr>
<tr>
<td>Construction</td>
<td>2,876</td>
<td></td>
<td>771</td>
<td>228</td>
</tr>
<tr>
<td>Right-of-Way</td>
<td>120</td>
<td></td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>Tunnel</td>
<td>3,648</td>
<td>11</td>
<td>822</td>
<td>240</td>
</tr>
<tr>
<td>Construction</td>
<td>3,541</td>
<td></td>
<td>803</td>
<td>237</td>
</tr>
<tr>
<td>Right-of-Way</td>
<td>107</td>
<td></td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Bypass Tunnel</td>
<td>2,723</td>
<td>14</td>
<td>777</td>
<td>225</td>
</tr>
<tr>
<td>Construction</td>
<td>2,576</td>
<td></td>
<td>744</td>
<td>220</td>
</tr>
<tr>
<td>Right-of-Way</td>
<td>147</td>
<td></td>
<td>33</td>
<td>5</td>
</tr>
<tr>
<td>Surface</td>
<td>2,319</td>
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<td>802</td>
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<tr>
<td>Construction</td>
<td>2,175</td>
<td></td>
<td>763</td>
<td>225</td>
</tr>
<tr>
<td>Right-of-Way</td>
<td>144</td>
<td></td>
<td>39</td>
<td>6</td>
</tr>
</tbody>
</table>

Note: Includes only impacts directly associated with the expenditure of construction and right-of-way funds and does not include secondary economic benefits presented in Section 5.9.4.

While the gross total economic impacts are useful for examining the overall magnitude of the project, the net total economic impact measures represent more generally accepted and appropriate estimates of the true economic impacts that would arise solely from project construction. Note that the gross and net impacts form the upper and lower boundaries within which the true impacts will likely fall, with net impacts being the lower bound. Though the true magnitude of the impacts will be closer to the net impacts, in the absence of this project, some of the non-new money tax and/or consumer dollars spent elsewhere may result in smaller multipliers than with this project.

Summary of Benefits for Regional Economic Activity

This discussion of benefits only includes benefits directly associated with the expenditure of construction and right-of-way funds during the construction period and does not include secondary economic benefits after construction is completed as presented in Section 5.9.4. The cost associated with construction of any of the Build Alternatives will result in additional (gross) activity throughout all economic sectors within the Puget Sound region and the state of Washington. This gross economic activity is derived from the multiplication effects on the capital expenditures for the project.
Examples of capital expenditures include the direct hiring of temporary construction workers, the purchase of construction materials and equipment, and the expenditure of capital funds to acquire new right-of-way. The alternative with the highest estimated capital cost (Tunnel Alternative) will generate the greatest amount of economic activity within the Puget Sound region. The alternative with the lowest estimated capital cost (Surface Alternative) will generate the least amount of economic activity within the Puget Sound region.

The amount of new economic activity directly associated with these alternatives that are the result of new money entering the Puget Sound regional economy is roughly equivalent for all Build Alternatives and ranges between $777 million and $822 million. The amount of new earnings (wages) entering the Puget Sound regional economy ranges from $225 million to $240 million. This is due to the fact that the amount of new money is assumed to be fixed (equal across all alternatives) and that the portion of new money to overall construction costs ranges from 11 to 17 percent depending upon the Build Alternative. All other fund sources are coming from within either the state or the Puget Sound region and would likely be spent in the local economy, even in the absence of this project.

6.1.2 Temporary Economic Effects to Businesses, Including Construction Expenditures on Sales Tax Revenue

Sales Tax Revenue

Sales taxes will be generated through the purchase of goods and materials related to construction. Exhibit 6-6 lists the estimated amount of sales tax generated for each alternative based upon construction costs only. Sales tax estimates were not generated for non-construction costs such as right-of-way acquisition and engineering.

The project sales tax estimates are based on the CEVP that was used to generate the construction cost estimates presented in Section 6.1.1. The tax estimates presented in this document represent the 90th percentile of durations calculated through the CEVP. These estimates will be refined once a Preferred Alternative is selected and additional information is known regarding project design and funding.

These sales tax estimates are only related to direct construction expenditures. This analysis does not include an evaluation of the change in sales tax revenue collected by businesses in the project area that potentially would be affected by construction activities.
## Exhibit 6-6. Total Construction Costs and Sales Tax Generated ($ million)

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Total Construction Cost</th>
<th>Total Sales Tax Generated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuild</td>
<td>2,839</td>
<td>177</td>
</tr>
<tr>
<td>Aerial</td>
<td>2,876</td>
<td>172</td>
</tr>
<tr>
<td>Tunnel</td>
<td>3,541</td>
<td>207</td>
</tr>
<tr>
<td>Bypass Tunnel</td>
<td>2,576</td>
<td>163</td>
</tr>
<tr>
<td>Surface</td>
<td>2,175</td>
<td>132</td>
</tr>
</tbody>
</table>

## Disruption to Businesses and Neighborhoods

Any major construction project, public or private, inconveniences or disturbs the residents, businesses, and business customers adjacent to that construction project. As a result of the inventory of existing businesses (Section 4.7) within one block of the existing alignment and proposed Broad Street detour route, the design team has identified 1,098 businesses (including multi-family residential structures) adjacent to the construction project that would be disrupted. These temporary effects include:

- Presence of construction workers and materials.
- Temporary road closures, traffic diversions, and alterations to property access (see Appendix C, Transportation Discipline Report).
- Loss of parking, especially on-street short term parking (Section 6.1.6).
- Airborne dust (see Appendix Q, Air Quality Discipline Report).
- Noise and vibrations from construction equipment and vehicles (see Appendix F, Noise and Vibration Discipline Report).
- Loss of visibility of businesses to their customers.

Up to 132 active commercial and industrial structures are located within 50 feet of the project alignment that are not candidates for acquisition. Many of these structures in the Central Segment have multiple businesses occupying them. Some businesses located in these structures may suffer little or no adverse impacts, while others may experience a noticeable decline in sales or increase in costs and/or decrease in efficiency.

Without proper planning and implementation of controls, these construction-related effects could adversely affect the comfort and daily life of residents and inconvenience or disrupt the flow of customers, employees, and materials and supplies to and from businesses. Construction impact controls will be integrated into the Project Management Plan and the project’s contract specifications.
6.1.3 Temporary Change in Vehicular, Transit, and Pedestrian Access to Existing Businesses in the Construction Area

A detailed analysis of the impacts on the existing roadway system during construction is presented in Appendix C, Transportation Discipline Report. In general, all Build Alternatives will cause severe traffic impacts during construction in the corridor. The Bypass Tunnel and Tunnel Alternatives will cause the least traffic impacts, followed by the Aerial, Rebuild, and Surface Alternatives based upon loss of lane capacity.

The Bypass Tunnel and Tunnel Alternatives will have similar levels of traffic impacts. The Bypass Tunnel Alternative appears to be slightly better in that (1) the accumulative capacity loss is consistently less than that of the Tunnel Alternative, and (2) it will be easier to complete the construction of the northbound on-ramp at SR 519, which is an important replacement for the existing First Avenue S. on-ramp. The Aerial Alternative is the alternative with the longest construction period, due to the need to build lengthy temporary viaduct for traffic diversion. Considerably worse traffic conditions may be expected for the Rebuild Alternative, as further lane reduction and ramp closure may be necessary during construction. The traffic impacts caused by the Surface Alternative will be the most severe, because no new limited-access facility will be provided.

6.1.4 Temporary Jobs Created During Construction

With adoption of any of the alternatives, with the exception of the No Build Alternative, temporary jobs will be created to construct the project. The duration of these temporary jobs varies by alternative but will be at least 8 years and at most 11 years.

A hybrid approach was used to estimate the gross and net increases in employment attributable to new money entering the central Puget Sound region and the state of Washington. Both direct effect and final demand multipliers (Exhibit 6-3) were used to estimate employment impacts for each of the Build Alternatives. Direct effect multipliers were used on the estimates of the direct labor force to be employed in constructing each alternative, as presented in Exhibit 6-7. Final demand multipliers were used to estimate capital costs for right-of-way acquisition, as no direct labor estimates have been generated by the project design team for this expenditure category.

Estimates of the direct labor force needed to construct the project were prepared for each alternative. The estimates of the direct jobs generated by the project were calculated based upon the approximate cost for construction contracts, assuming that 35 percent of the total construction cost will be absorbed by labor and that the average labor rate in 2005 will be $45/hour.
(with an escalation for inflation in later years). The direct effect of these temporary construction jobs on the regional and state economies will cause the indirect or secondary effect of creating additional jobs throughout the central Puget Sound region and state. Using the direct effect multipliers for highway and street construction presented in Exhibit 6-3, we can calculate the secondary impact of regional and statewide job creation in the same manner used to calculate the gross output and earnings using only the direct gross expenditures.

No estimate of the direct labor force to perform right-of-way acquisition was prepared by the project design team for the alternatives; consequently, the capital costs associated with this task are used to quantify employment impacts in the same manner that gross output and earnings were estimated for all capital costs using final demand multipliers in Section 6.1.1.

Using the Tunnel Alternative as an example, direct gross expenditures of $107 million in the right-of-way category will yield a gross employment impact on all regional industries of

\[(107 \text{ M} \times 10.1) = 1,081\]

person-year jobs. For the construction expenditure category, a direct generation of 11,850 person-year jobs will yield a gross employment impact on all regional economies of

\[(11,850 \text{ person-year jobs} \times 2.6392) = 31,275\]

person-year jobs. Summing these gross employment impacts together yields the total gross employment impact to the central Puget Sound regional economy of 32,356 person-year jobs.

However, some of these jobs would have occurred anyway without construction of the viaduct. The more realistic measure of net impacts on employment can be assessed by multiplying the gross total employment impact by the percentage of capital expenditures in representing new money to the region listed in Exhibit 6-1. This gives

\[((107 \text{ M} \times 10.1) + (11,850 \text{ person-year jobs} \times 2.6392)) \times 11\%\] = 3,559

person-year jobs, which represents the net increase in employment attributable to new money entering the central Puget Sound region.
### Exhibit 6-7. Gross Regional and Statewide Total Employment Impacts and Net New Money Total Employment Impacts

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuild</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24,940</td>
<td>25,828</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>13</td>
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</tr>
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<td>27,343</td>
<td>14</td>
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<td></td>
</tr>
<tr>
<td>Tunnel</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>22,304</td>
<td>23,069</td>
<td>17</td>
<td>3,792</td>
<td>3,922</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
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<td>1,317</td>
<td>9.0</td>
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<td>31,275</td>
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<td></td>
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<tr>
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<td>1,081</td>
<td>1,070</td>
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<td>147</td>
<td>1,485</td>
<td>1,470</td>
<td>208,070</td>
<td>210,470</td>
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<tr>
<td>Bypass Tunnel</td>
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<td>25,873</td>
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<tr>
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<td>9,450</td>
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<td>25,873</td>
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<td>1,470</td>
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<td>27,343</td>
<td>14</td>
<td>3,700</td>
<td>3,828</td>
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<td>8.0</td>
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<tr>
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<td>1,454</td>
<td>1,440</td>
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<td>23,069</td>
<td>17</td>
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</table>

*prs-yr jobs = person-year jobs.

Central Puget Sound Region is defined as King, Pierce, and Snohomish Counties.

Final Demand Employment shows the translation from right-of-way gross expenditures into direct, indirect, and induced employment.

Direct Effect Employment shows the translation from temporary construction employment into direct, indirect, and induced employment.

Gross Employment is the sum of Final Demand Employment and Direct Effect Employment. Gross Employment is all direct, indirect, and induced employment.

Net Employment is that fraction of Gross Employment that represents all direct, indirect, and induced employment associated with new money.
Summary of Benefits for Employment

The employment associated with construction of any of the Build Alternatives will result in additional (gross) employment throughout all economic sectors within the Puget Sound region and the state of Washington. This gross employment is derived from the multiplication effects on the capital expenditures for the project. Examples of capital expenditures include the direct hiring of temporary construction workers, the purchase of construction materials and equipment, and the expenditure of capital funds to acquire new right-of-way. The alternative with the highest estimated capital cost (Tunnel Alternative) will generate the most direct, indirect, and induced jobs within the Puget Sound region. The alternative with the lowest estimated capital cost (Surface Alternative) will generate the fewest direct, indirect, and induced jobs within the Puget Sound region.

The number of new jobs directly associated with these alternatives that are the result of new money entering the Puget Sound regional economy is roughly equivalent for all alternatives and ranges between 3,500 and 4,000 jobs. This is due to the fact that the amount of new money is assumed to be fixed (equal across all alternatives) and that the portion of new money to overall construction costs ranges from 11 to 17 percent depending upon the Build Alternative. All other fund sources are coming from within either the state or the Puget Sound region and would likely be spent in the local economy even without this project.

6.1.5 Economic Impacts to Ferries and Cruise Ships

The Alaskan Way Viaduct Project includes the construction of an over-water pier between S. King Street and Yesler Way. A parallel service road called the Colman Dock Ferry Terminal Access Road will be built on the pier. The roadway is needed for all alternatives during construction to maintain access/egress for ferry operations and to accommodate construction staging activities from the Pier 48 uplands. Once construction is completed, this over-water pier may or may not continue to operate as a ferry terminal access roadway. If it continues to operate as a ferry access roadway it may be used to connect to off-site ferry holding. It would also help to improve traffic operations on Alaskan Way by separating ferry traffic on Alaskan Way. If it does not continue to operate as a separated ferry access roadway, the pier could provide shoreline access and viewing and pedestrian and/or bicycle access to the historic Washington Street Boat Landing.

This access road requires that an over-water structure be built to support the roadway and to facilitate the relocation of the historic Washington Street Boat Landing from its current location at the toe of S. Washington Street further
west to the northwest edge of Pier 48. Pedestrian access to the Washington Street Boat Landing will be provided.

The proposed Colman Dock Ferry Terminal Access Road will not preclude the Washington State Ferries’ planned expansion of the Colman Dock Ferry Terminal. The proposed Colman Dock Ferry Terminal Access Road will accommodate a wide range of potential ferry expansion plans and will not rely on any of these plans to be constructed prior to viaduct and seawall construction. The proposed access road could accommodate the existing 650-car capacity Colman Dock, an expanded 1,000-car Colman Dock, or a 1,200-car Colman Dock. The access road will also allow a connection to several proposed off-site ferry holding areas under various alternatives, including those proposed under the viaduct, east of SR 99, or on Terminal 46. See Appendix C – Transportation for details of surface street movements relating to ferry operations access/egress.

It is expected that the access road will be constructed as part of the preliminary site preparation activities, prior to any major viaduct and seawall construction (anticipated for January 2008).

People traveling to and from ferries may experience delays if they are driving due to reduced lanes. Pedestrian access may be rerouted at times; however, pedestrian access to and from the Colman Dock Ferry Terminal will always be maintained throughout construction. In addition, to maintain Washington State Ferries operations, all Build Alternatives include a plan to build a roadway between Yesler and S. Washington, west of the existing Alaskan Way surface street on Pier 48.

For the cruise ship terminals, pedestrian access will be maintained and roadway access on the Alaskan Way surface street will always be provided with one lane in each direction. The locations for pedestrian access and bus and taxi cab pickups will likely move around throughout construction to accommodate construction activities.

6.1.6 Economic Impacts of the Potential Loss of Available Parking

Based upon an inventory of all existing parking spaces within the project footprint, it was determined that 2,038 spaces will be lost for the entire construction period. These spaces include a mix of short-term on-street (metered), long-term on-street, and off-street spaces. The 2,038 existing spaces are broken down as follows:

- South segment – 831 total spaces split between on-street short-term (93), on-street long-term (261), and off-street (477).
• Central segment – 839 total spaces split between on-street short-term (543), on-street long-term (15), off-street (247), and other (34).
• North Waterfront - 368 total spaces split between on-street short-term (178), off-street (176), and other (14).

The loss of on-street parking will result in the annual loss of approximately $0.92 million of parking meter revenue for the City of Seattle. This loss will occur each year for the duration of the construction phase of the project. The City will also lose revenue associated with parking garage license fees associated with off-street parking.

Specific business districts that rely heavily upon available on-street parking, as presented in Section 4.7 (Inventory of Existing Businesses), include Pioneer Square, the Waterfront, and the Central segment/Commercial Core. Each of these districts relied on on-street parking as their primary parking requirement for at least 50 percent of the existing businesses within the district. All three of these districts will be impacted by the loss of the 839 total spaces counted within the Central segment.

The project design team has tentatively identified the Fifth Avenue parking lot at the Seattle Center to be used for project-related parking during construction, except during peak activity periods and scheduled events at Seattle Center. The lot has 1,286 spaces and is currently underutilized during low-demand periods, including daytime business hours. One possible use would be to provide long-term parking for employees of businesses within the CBD, similar to what is currently occurring. It is expected that the employees would park and ride the Monorail to the Westlake Center. Another possible use would be to provide parking for construction workers, who would likely be shuttled to the project area by the contractors. It is expected that this additional use of the Fifth Avenue parking lot would be for the duration of the construction phase of the project. All use of the Fifth Avenue parking lot by the construction workers would be coordinated with the City of Seattle.

The additional use of the Fifth Avenue parking lot may have a negative impact on Seattle Center by limiting the availability of parking, which could result in decreased attendance at the numerous facilities and festivities at the Seattle Center. There may be an offsetting positive impact due to increased utilization of the existing parking which would generate additional parking fee income for Seattle Center. An indirect positive impact would be increased exposure to the facilities, festivals, events, and attractions at the Seattle Center, which could lead to increased attendance.
6.2 Rebuild Alternative

Potential construction-related effects for the Rebuild Alternative will not likely go beyond the general types of effects described above for all of the alternatives. Traffic will continue to be able to use SR 99 throughout the construction activities. No major detours are anticipated. As such, no additional construction-related effects are anticipated.

With respect to disruption to businesses, approximately 83 active commercial and industrial structures are located within 50 feet of the project alignment for the Rebuild Alternative that are not candidates for acquisition. Many of these structures in the Central segment have multiple businesses occupying them. These are a subset of the 1,098 businesses identified within one block of the existing alignment that will be impacted during construction. Some businesses located in these structures may suffer little or no adverse impacts, while others may experience economic hardships, such as a noticeable decline in sales, increase in costs, and/or decrease in efficiency. Altogether, the Rebuild Alternative has fewer construction passes, or discrete periods, than other alternatives.

6.3 Aerial Alternative

The Aerial Alternative will have all of the same construction-related effects described above for the various economic factors plus additional effects related to the temporary bridge that runs along the waterfront. This temporary bridge will have the effect of further isolating the waterfront businesses. In addition, the proposed alternative has two major traffic detours. A detour (Broad Street Detour) and an optional detour (Battery Street Flyover Detour) have been proposed to reroute traffic during the construction activities associated with the aerial structure between Pike Street and the south portal of the Battery Street Tunnel. In addition, there is a detour and an optional detour to reroute traffic from Mercer Street construction activities. For simplicity, these detours and the potential construction impacts are discussed below as if the entire length of these detours were located entirely in the North segment of the project corridor.

With respect to disruption to businesses, approximately 107 active commercial and industrial structures are located within 50 feet of the project alignment for the Aerial Alternative that are not candidates for acquisition. Many of these structures in the Central segment have multiple businesses occupying them. These are a subset of the 1,098 businesses identified within one block of the existing alignment that will be impacted during construction. Some businesses located in these structures may suffer little or no adverse impacts, while others may experience economic hardships, such as a noticeable decline...
in sales, increase in costs, and/or decrease in efficiency. Altogether, the Aerial Alternative has the most construction passes, or discrete construction periods, of the alternatives.

6.3.1 Battery Street Tunnel Construction Detours

The proposed detour to take SR 99 traffic away from the Battery Street Tunnel while it is under construction is the Broad Street Detour. The optional detour is called the Battery Street Flyover Detour.

Broad Street Detour

The proposed Broad Street Detour will take SR 99 traffic away from the Battery Street Tunnel during construction upgrades of the tunnel as well as construction of the new aerial structure between the Battery Street Tunnel and Pike Street. This detour will take southbound traffic off of SR 99 just north of the north portal of the Battery Street Tunnel. Traffic will be rerouted onto Broad Street, routed westward on Broad Street, and continue using a temporary trestle (over Elliott Avenue and the BNSF railroad tracks) on the east side of Alaskan Way surface street. The traffic will then merge with traffic on Alaskan Way surface street. Broad Street is currently a four-lane principal arterial.

Along the proposed Broad Street Detour route 152 existing businesses were identified. The mix of business types is dominated by commercial office (50 percent) followed by other business types (primarily parking) (17 percent), other service (primarily non-retail food service) commercial retail (14 percent) and commercial retail (10 percent) (Table 16). Residential multi family (8 percent) and government service (1 percent) made up the remaining business types. There were no industrial (marine dependent or non-marine dependent) businesses identified in this segment. Impacts to businesses along Broad Street will be similar to those described in Section 6.1.3.

Option: Battery Street Flyover Detour

An alternative to the Broad Street Detour would be the construction of the Battery Street Flyover Detour. This detour would convey both northbound and southbound traffic on SR 99 from the south portal of the Battery Street Tunnel onto a temporary aerial structure west of the existing structure and then connect to a temporary viaduct along the waterfront. The flyover structure would go over existing buildings between Blanchard and Bell Streets located west of the existing aerial structure. The structure would be in place for several years. This detour would be a significant adverse effect on these businesses within the project area as the temporary structure would be much closer in proximity to the buildings than the existing aerial structure of the Alaskan Way Viaduct.
6.3.2 Mercer Street Underpass Construction Detours

Thomas Street Bridge Detour
The proposed Aerial Alternative includes widening of the Mercer Street underpass, which will require traffic to be detoured during these construction activities. The proposal is to construct a bridge across Aurora Avenue N. at Thomas Street. Traffic will be routed on this bridge and through the primarily light industrial land uses of the south Lake Union neighborhood to access I-5. A specific route for this detour has yet to be determined and will be determined as part of project permitting or through negotiations between the contractor and the City of Seattle.

Option: Thomas, Harris, Republican, and Roy Street
The option to the proposed single new bridge crossing at Thomas Street is to construct several new overcrossings across Aurora Avenue N. This detour would be required for the construction of the Lowered Aurora/99 Option for the North segment of the Aerial Alternative. As part of this proposal, new bridges across Aurora Avenue N. would be constructed at Thomas, Harris, Republican, and Roy Streets. During the construction of these bridges, traffic would continue to use the Mercer Street underpass. After completion, traffic would be diverted to the new bridges while construction occurred to convert the existing Mercer Street underpass to a bridge structure across Aurora Avenue N. The construction of these several new crossings across Aurora Avenue N. would allow traffic to have several alternative pathways across this primarily industrial and commercial neighborhood south of Lake Union. Specific routing of the detoured traffic during the construction period is undecided at this time. These details will be determined as part of the project permitting or in negotiations between the City of Seattle and the contractor.

6.4 Tunnel Alternative
The Tunnel Alternative will have all of the same construction-related effects described above for the various economic factors. In addition, construction of this alternative includes the same proposed and optional detours described above—the Broad Street Detour and the Battery Street Flyover Detour. At the far north end of the project corridor, the alternative includes the proposal to widen the existing Mercer Street underpass. This will be accomplished using the proposed Thomas Street bridge detour described above. The construction-related effects on economic factors for these detours will be the same as described above for the Aerial Alternative.

With respect to disruption to businesses, approximately 116 active commercial and industrial structures are located within 50 feet of the project alignment for the Tunnel Alternative that are not candidates for acquisition. Many of these
structures in the Central segment have multiple businesses occupying them. These are a subset of the 1,098 businesses identified within one block of the existing alignment that will be impacted during construction. Some businesses located in these structures may suffer little or no adverse impacts, while others may experience economic hardships, such as a noticeable decline in sales, increase in costs, and/or decrease in efficiency.

### 6.5 Bypass Tunnel Alternative

For the Bypass Tunnel Alternative, potential construction-related effects on economic factors will include all of the potential effects described above common to all of the Build Alternatives. In addition, construction of this alternative will include the same detour and option described above—the Broad Street Detour and the Battery Street Flyover Detour, respectively. At the far north end of the project corridor, the Bypass Tunnel Alternative includes the proposal to widen the existing Mercer Street underpass, the same action described for the Tunnel Alternative. This will be accomplished using the proposed Thomas Street bridge detour described above. The option to construct multiple bridges across Aurora Avenue N. is not proposed for the Bypass Tunnel Alternative. Overall, the construction-related effects on economic factors for these detours will be the same as described above for the Aerial Alternative.

With respect to disruption to businesses, approximately 113 active commercial and industrial structures are located within 50 feet of the project alignment for the Bypass Tunnel Alternative that are not candidates for acquisition. Many of these structures in the Central segment have multiple businesses occupying them. These are a subset of the 1,098 businesses identified within one block of the existing alignment that will be impacted during construction. Some businesses located in these structures may suffer little or no adverse impacts, while others may experience economic hardships, such as a noticeable decline in sales, increase in costs, and/or decrease in efficiency.

### 6.6 Surface Alternative

For the Surface Alternative, potential construction-related effects on economic factors will include all of the potential effects described above common to all of the Build Alternatives. In addition, construction of this alternative will include the same proposed and optional detours described above—the Broad Street Detour and the Battery Street Tunnel Detour, respectively. Like the Tunnel and Bypass Tunnel Alternatives, the Surface Alternative also includes the proposal to widen the existing Mercer Street underpass. This will be accomplished using the proposed Thomas Street Bridge detour described
above. The option to construct multiple bridges across Aurora Avenue N. is not proposed for this alternative. Overall, the construction-related effects on economic factors for these detours will be the same as for the alternatives described above.

With respect to disruption to businesses, approximately 132 active commercial and industrial structures are located within 50 feet of the project alignment of the Surface Alternative that are not candidates for acquisition. Many of these structures in the Central segment have multiple businesses occupying them. These are a subset of the 1,098 businesses identified within one block of the existing alignment that will be impacted during construction. Some businesses located in these structures may suffer little or no adverse impacts, while others may experience economic hardships, such as a noticeable decline in sales, increase in costs, and/or decrease in efficiency.

### 6.7 Construction Benefits

Increased employment and economic stimulation for the local economy from construction activities and supplies would be the primary economic benefit from implementing any of the Build Alternatives.

Sales taxes would be generated through the purchase of goods and materials related to construction. The project would generate sales tax ranging from $132 million for the Surface Alternative at the low end to $207 million for the Tunnel Alternative at the high end.

Employment and economic activity associated with construction of any of the Build Alternatives will result in additional (gross) employment and activity throughout all economic sectors within the Puget Sound region and the state of Washington. This gross employment and economic activity is derived from the multiplication effects on the capital expenditures for the project. Examples of capital expenditures include the direct hiring of temporary construction workers, the purchase of construction materials and equipment, and the expenditure of capital funds to acquire new right-of-way. The alternative with the highest estimated capital cost (Tunnel Alternative) will generate the most direct, indirect, and induced jobs and activity within the Puget Sound region. The alternative with the lowest estimated capital cost (Surface Alternative) will generate the fewest direct, indirect, and induced jobs and activity within the Puget Sound region.

The number of new jobs directly associated with these alternatives that are the result of new money entering the Puget Sound regional economy is roughly equivalent for all alternatives and ranges between 3,500 and 4,000 jobs. The amount of new earnings (wages) entering the Puget Sound regional economy ranges from $225 million to $240 million.
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Chapter 7 SECONDARY AND CUMULATIVE IMPACTS

7.1 Secondary Impacts

Economic benefits could result from implementing any of the Build Alternatives; however, the degree to which economic benefits will become manifest will depend upon the final design of the facility. It is expected that a surface structure (Surface Alternative) or a subsurface structure (Tunnel or Bypass Tunnel Alternatives) would have less visual and audio impact than an elevated structure (Rebuild and Aerial Alternatives). This could help facilitate more pedestrian activity along the alignment and a less inhibited environment for reinvestment. The economic benefits would be manifest in the form of increased investment, vitality, and development opportunity.

These benefits would occur over time with the revitalization and reinvestment in the project area, particularly in the central waterfront, once construction activities are complete. Revitalization and reinvestment could increase property values, stimulate more economic activity, enable opportunities for new or expanded business and employment, and generate more tax revenues. This revitalization and redevelopment could result in substantially increased economic activity compared to the No Build Alternative.

In all Build Alternatives, the project will acquire properties that currently pay property taxes. As a result, there will be fewer properties across which to distribute the property tax burden. Consequently, the annual amounts that the remaining properties within King County pay for property taxes will increase in order to provide the required government revenue. This increase is expected to be quite small.

As described in Appendix G, Land Use and Shorelines Technical Memorandum, depending on the alternative selected, replacement of the viaduct may influence future land uses in the project area. Although the project may not result in creating large areas of land for redevelopment, changes in land uses may be encouraged by the overall improvement associated with the new roadway. This redevelopment could result in substantially increased economic activity compared to the No Build Alternative.

Depending upon the alternative selected, the change in the parking supply may decrease the number of parking spaces within the project area. The decrease in parking spaces may change the current pricing structure beyond what would be expected in the No Build Alternative. An increase in parking rates may have a secondary impact on the CBD and downtown economy by
limiting the number of vehicles that would choose to enter the CBD to conduct business. This may have the secondary effect of changing the mix or types of businesses that would continue to be located or would decide to locate in the future within the CBD.

7.2 Cumulative Impacts

The Build Alternatives will contribute to impacts on adjacent businesses in addition to impacts from other projects that may occur along, or near, the proposed project route. Other key development projects located within the proposed study area include the following:

- Central Link Light Rail
- Colman Dock Ferry Terminal Expansion
- Mercer Street Corridor
- Seattle Monorail Project
- Seattle Aquarium and Waterfront Park
- SR 519
- Terminal 46

These key development projects are anticipated to add to the economic effects in the project area that will be experienced during project construction. In addition, other smaller private development projects along the project route, such as Belltown/Queen Anne Proposed Development, Seattle Downtown Proposed Development, and South Lake Union Redevelopment, will be expected to occur during the construction period for any of the proposed Build Alternatives. Although the timelines of these projects will be staggered, taken together it can be expected that there will be disruptions to adjacent businesses, as have been described for the AWV project construction. At this time, it is unknown how these projects might be expected to affect the project area in the long term when considered cumulatively. Some of the long-term effects will depend on local and regional economic cycles of growth and downturns.

It is anticipated that improvements to the roadway network in the project area, as a result of the completion of the Alaskan Way Viaduct and Seawall Replacement, SR 519, and Colman Dock Ferry Terminal projects, will have a net beneficial cumulative effect on transportation-related measures of effectiveness (MOEs) in the project area as described in Chapter 5. These improvements to the roadway network should result in a net positive effect on the economic performance of the project area. For additional discussion of these transportation changes, please see Appendix C, the Transportation Discipline Report.
Chapter 8 OPERATIONAL MITIGATION

The mitigation measures proposed below are general in nature. Specific mitigation measures will need to be determined based on the expected cost effectiveness, specific needs of individual businesses, and resiliency of individual businesses to endure the impacts associated with each alternative. A detailed mitigation plan will need to be developed as project design plans are finalized.

Potential mitigation measures to reduce permanent adverse economic effects include:

- Minimize the extent and number of businesses, jobs, and access that will be permanently affected.
- Compensate for right-of-way acquisition, displacement and relocation of businesses, and loss of property value per the Uniform Relocation Assistance and Real Property Acquisition Policies Act and applicable state and local policies.
- Consider temporary relocation of displaced businesses during construction and permanent return to a place in the Seattle CBD after construction for those businesses that will be permanently affected.
- Increase utilization of off-street parking, especially in the South end of the project area to mitigate the loss of on-street short-term parking from the Central segment.
- Provide additional off-street parking opportunities or build replacement short-term parking spaces to mitigate for lost on-street short-term parking for those areas where off-street parking is currently at or near capacity or where business districts (such as Pioneer Square and the waterfront) rely heavily on on-street metered parking.
- Consider raising parking meter rates or installing additional meters to mitigate the annual loss of revenue associated with loss of short-term on-street parking for all Build Alternatives except for the Rebuild Alternative.
- For the South Lake Union Sub-Area, the most probable parking mitigation option would include increasing the utilization of existing parking facilities in the area. Surrounding arterials, such as, 6th Avenue North and Harrison Avenue have short-term on-street parking. Additionally, most businesses in the area of impact, have their own on-site parking lots.
WSDOT and the City of Seattle will work closely with affected business owners to minimize the level of disruption that may be caused by displacements and relocations along the project route. Every effort will be made to assist business owners in finding suitable replacement locations, especially those that will be near the project route. Where businesses will be required to relocate, lead agency staff will work with owners to ensure that moves could be made in a timely manner, thereby reducing the overall expenses, inconveniences, and the amount of time a business must remain closed during the move.
Chapter 9 CONSTRUCTION MITIGATION

The mitigation measures proposed below are general in nature. Specific mitigation measures will need to be determined based on the expected cost effectiveness, specific needs of individual businesses, and resiliency of individual businesses to endure the construction impacts associated with each alternative.

A detailed and strategic mitigation plan will need to be developed as project construction plans are finalized. Commercial activity within the project area will be adversely affected by the duration of construction activities, the physical extent of the project area, the complexity of construction, and the accumulation of direction construction impacts. While these impacts will not be permanent, they will be comparatively long-term for a public works project.

In order to mitigate construction impacts related to changes in vehicular, transit, and pedestrian access within the corridor, the following measures are proposed:

- Flexible transportation strategies that include measures for construction mitigation will be required starting from the construction stage to help reduce or manage traffic demand in and around construction sites as well as on detoured routes. Refer to full discussion of Flexible Transportation Strategies in Appendix C, Transportation Discipline Report.
- On SR 99, two lanes of traffic in each direction will be maintained during construction or a comparable detour will be provided.
- Access to SR 99 at S. Royal Brougham Way and S. Atlantic Street will be maintained during periods when downtown access is closed.
- Increase utilization of off-street parking, especially in the South end of the project area to mitigate the loss of on-street short-term parking from the Central segment during construction.
- Provide additional off-street parking opportunities or build replacement short-term parking spaces to mitigate for lost on-street short-term parking during construction for those areas where off-street parking is currently at or near capacity or where business districts (such as Pioneer Square and the waterfront) rely heavily on on-street metered parking.
• Consider raising parking meter rates or installing additional meters to mitigate the annual loss of revenue associated with loss of short-term on-street parking during construction.

• On the Alaskan Way surface street/E. Marginal Way, one lane of traffic in each direction will be maintained during construction or a comparable detour will be provided. This will help provide access to the waterfront piers and businesses will be maintained during construction.

• The Waterfront Streetcar will be removed for the duration of construction and will be replaced as part of the surface street improvement work. Transit services will be provided during construction to allow access for commuters and construction workers to either waterfront businesses or construction work sites.

Potential mitigation to reduce adverse economic hardships to existing businesses in the project area during construction activities include:

• Initiate public information campaigns to reassure people that businesses are open during construction and to encourage their continued patronage.

• Minimize the extent and number of businesses, jobs, and access affected during construction.

• Consider temporary relocation of businesses during construction and permanent return to a place in the Seattle CBD after construction for those businesses that will be significantly affected.

• Coordinate the timing of temporary facility closures to minimize impacts to business activities, especially those related to seasonal or high-sales periods, to the extent practicable.

• Minimize the duration of modified or lost access to businesses.

• Minimize navigational obstructions or delays in the routes to reach cruise ships and ferry terminals.

• Provide signage, lighting, or other information to indicate that businesses are open.

• Provide public information (e.g., press releases, newsletters) on construction activities and ongoing business activities. This should include advertisements in print and on television and radio.

• Maintain access for pedestrians, bicyclists, passenger vehicles, and trucks during business hours and during important business seasons.

• Provide advance notice if utilities will be disrupted, and schedule major utility shut-offs during non-business hours.
• Phase construction in each segment to allow vehicular and pedestrian access to individual businesses.
• Implement dust, noise, and vibration mitigation during business hours.

If multiple transportation projects will have overlapping construction schedules, the City will lead a coordination effort to minimize construction impacts on businesses, residents, and other visitors to Seattle. Organizational tools may be used to effectively plan and implement mitigation plans. These tools include developing a tracking system for mitigation efforts, defining an adaptive mitigation management structure, establishing an independent oversight committee, including affected parties in mitigation planning, and leveraging unique aspects of the project setting to offset impacts (refer to the Draft Technical Memorandum on Construction Impact Mitigation Strategic Planning Approaches, 2003).
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Chapter 10 REFERENCES


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ATTACHMENT A

List of Properties with Structures to be Acquired
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<td>Office space</td>
<td>1</td>
<td>16,129</td>
<td>4,372</td>
<td>2,128,100.00</td>
<td>42</td>
<td>22,689</td>
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<td>S42</td>
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<td>Office Space</td>
<td>1</td>
<td>6,460</td>
<td>13,100</td>
<td>1,442,000.00</td>
<td>17</td>
<td>15,374</td>
</tr>
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</table>
## Building or Parcel Number | Tax Parcel ID Number | Current Use | Number of Structures Acquired | Building Size (sqft) | Parcel Size (sqft) | King County Building & Land Assessed Values (2002) ($) | Estimated Number of Permanent Jobs Displaced | Property Tax Lost From Acquired Parcels (2002) ($) |
--- | --- | --- | --- | --- | --- | --- | --- | --- |
Fire Station 766620 2500 | Fire Station | 1 | 5,868 | 36,540 | 1,688,800.00 | 8 | Exempt |
7666202380 | Parking Garage | 0 | 0 | 13,249 | 1,457,300 | 1 | 15,537 |
7666202505 | Parking Lot | 0 | 0 | 35,233 | 4,404,100 | 2 | 46,955 |
**TOTALS FOR REBUILDING PLAN – CENTRAL SECTION** 7 parcels | 4 | 148,867 | 65,954 non-exempt | 141 | 100,555 |
- **Rebuild Plan – North Section**
  | 0 parcels |
- **Aerial Plan – South Section**
S50 766620 6955 | Office space, industry | 1 | 58,492 | 37,550 | 2,204,200.00 | 34 | 23,501 |
S54 766620 7012 | Warehouse | 1 | 11,880 | 32,545 | 977,300 | 7 | 10,420 |
S118 766620 6950 | Warehouse, office | 1 | 61,633 | 302,305 | 9,070,100.00 | 55 | 96,703 |
7666206941 766620 6941 | Parking lot | 0 | 0 | 7,327 | 183,100 | 1 | 1,952 |
7666207001 766620 7001 | Terminal | 0 | 0 | 70,600 | 2,119,000 | 19 | Exempt |
7666207005 766620 7005 | Vacant | 0 | 0 | 1,500 | 45,000.00 | 0 | 480 |
## Attachment A-1. List of Properties and Structures To Be Acquired – Economic Analysis – Operational Impacts and Benefits (continued)

<table>
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<tr>
<th>Building or Parcel Number</th>
<th>Tax Parcel ID Number</th>
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<th>Parcel Size (sqft)</th>
<th>King County Building &amp; Land Assessed Values (2002) ($)</th>
<th>Estimated Number of Permanent Jobs Displaced</th>
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<td>8,636,600</td>
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<td>4,372</td>
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### Attachment A-1. List of Properties and Structures To Be Acquired – Economic Analysis – Operational Impacts and Benefits (continued)

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<th>Tax Parcel ID Number</th>
<th>Current Use</th>
<th>Number of Structures Acquired</th>
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<th>Parcel Size (sqft)</th>
<th>King County Building &amp; Land Assessed Values (2002) ($)</th>
<th>Estimated Number of Permanent Jobs Displaced</th>
<th>Property Tax Lost From Acquired Parcels (2002) ($)</th>
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### Attachment A-1. List of Properties and Structures To Be Acquired – Economic Analysis – Operational Impacts and Benefits (continued)

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<th>Building or Parcel Number</th>
<th>Tax Parcel ID Number</th>
<th>Current Use</th>
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<th>Parcel Size (sqft)</th>
<th>King County Building &amp; Land Assessed Values (2002) ($)</th>
<th>Estimated Number of Permanent Jobs Displaced</th>
<th>Property Tax Lost From Acquired Parcels (2002) ($)</th>
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<td>Parcel Size (sqft)</td>
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<td>Estimated Number of Permanent Jobs Displaced</td>
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<td>37,550</td>
<td>2,204,200.00</td>
<td>34</td>
<td>23,501</td>
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</tbody>
</table>
## Attachment A-1. List of Properties and Structures To Be Acquired – Economic Analysis – Operational Impacts and Benefits (continued)

<table>
<thead>
<tr>
<th>Building or Parcel Number</th>
<th>Tax Parcel ID Number</th>
<th>Current Use</th>
<th>Number of Structures Acquired</th>
<th>Building Size (sqft)</th>
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<th>King County Building &amp; Land Assessed Values (2002) ($)</th>
<th>Estimated Number of Permanent Jobs Displaced</th>
<th>Property Tax Lost From Acquired Parcels (2002) ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S72</td>
<td>766620 7627</td>
<td>Data and administrative center</td>
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<td>120,706</td>
<td>174,400</td>
<td>4,342,600.00</td>
<td>70</td>
<td>46,300</td>
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<tr>
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<td>34,950</td>
<td>45,978</td>
<td>2,222,700.00</td>
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<td>21,895</td>
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<tr>
<td>S74</td>
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<td>Office space, Corn Sweetener, industry</td>
<td>1</td>
<td>9,781</td>
<td>33,180</td>
<td>772,500.00</td>
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<td>8,236</td>
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<td>S75</td>
<td>132730 0005</td>
<td>Warehouse</td>
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<td>49,914</td>
<td>97,600</td>
<td>2,438,700.00</td>
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<td>Exempt</td>
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<td>S76</td>
<td>766620 7580</td>
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<td>636,000.00</td>
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<td>6,781</td>
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<td>302,305</td>
<td>9,070,100.00</td>
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<td>96,703</td>
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</table>
## Attachment A-1. List of Properties and Structures To Be Acquired – Economic Analysis – Operational Impacts and Benefits (continued)

<table>
<thead>
<tr>
<th>Building or Parcel Number</th>
<th>Tax Parcel ID Number</th>
<th>Current Use</th>
<th>Number of Structures Acquired</th>
<th>Building Size (sqft)</th>
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<th>King County Building &amp; Land Assessed Values (2002) ($)</th>
<th>Estimated Number of Permanent Jobs Displaced</th>
<th>Property Tax Lost From Acquired Parcels (2002) ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S139</td>
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<td>39,861</td>
<td>1,945,200.00</td>
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<td>20,739</td>
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<td>766620 7591</td>
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<td>766620 7620</td>
<td>Right-of-Way/Utility</td>
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<td><strong>non-exempt</strong></td>
<td><strong>473</strong></td>
<td><strong>341,736</strong></td>
</tr>
</tbody>
</table>

### Surface Plan – Central Section

<p>| PIER 48                   | 766620 2630          | Storage/warehouse   | 1                             | 120,410              | 325,828           | 8,636,600                                              | 70                                         | Exempt                                           |</p>
<table>
<thead>
<tr>
<th>Building or Parcel Number</th>
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</tr>
</thead>
<tbody>
<tr>
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<td>065400 0230</td>
<td>Parking lot</td>
<td>0</td>
<td>0</td>
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<td>792,000.00</td>
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<td>Restaurant</td>
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<td>3,690</td>
<td>3,792</td>
<td>380,200.00</td>
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<td>4,054</td>
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<td>1,442,000.00</td>
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<td>15,374</td>
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<td>Fire Station</td>
<td>1</td>
<td>5,868</td>
<td>36,540</td>
<td>1,688,800.00</td>
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<td>766620 2575</td>
<td>Parking Lot</td>
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<td>734,500.00</td>
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<td>7,831</td>
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<tr>
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<td>766620 2566</td>
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<td>766620 2380</td>
<td>Parking Garage</td>
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**Surface Plan – North Section**

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<th>Building or Parcel Number</th>
<th>Tax Parcel ID Number</th>
<th>Current Use</th>
<th>Number of Structures Acquired</th>
<th>Building Size (sqft)</th>
<th>Parcel Size (sqft)</th>
<th>King County Building &amp; Land Assessed Values (2002) ($)</th>
<th>Estimated Number of Permanent Jobs Displaced</th>
<th>Property Tax Lost From Acquired Parcels (2002) ($)</th>
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</thead>
<tbody>
<tr>
<td>1991200650</td>
<td>199120 0650</td>
<td>Parking Lot</td>
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<td>22,768</td>
<td>2,162,900</td>
<td>1</td>
<td>23,060</td>
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</table>