4.3 Economics

4.3.1 Introduction to Resources and Regulatory Requirements

Transit projects like East Link can change patterns of regional and local mobility and access, which in turn might affect aspects of the regional or local economies such as development patterns, employment opportunities, business accessibility, and/or retail sales. Prior to construction, most of the project alternatives would relocate businesses and displace employees. Section 4.1, Acquisitions, Displacements, and Relocations addresses potential relocation of residences and displacement of residents associated with the East Link Project. The East Link Project also might have economic impacts on cities and counties in the area.

The purpose of this economic impacts analysis is to identify the potential adverse and beneficial impacts of the East Link Project on the local and regional economies. Sound Transit evaluated economic impacts in a study area consisting of three different scales:

- **Regional:** Economic impacts on the regional economy (such as effects on employment, traffic mobility, and congestion) were analyzed for a study area consisting of the four counties in the Puget Sound region: King, Kitsap, Pierce, and Snohomish.
- **City level:** Economics impacts of the project on the tax revenue were assessed for cities with property acquisition (Bellevue and Redmond).
- **Site-specific:** Site-specific impacts were evaluated for a study area of 0.5 mile around the light rail route and stations.

This analysis summarizes the anticipated direct and indirect impacts of the No Build Alternative and the East Link Project alternatives from business displacements, changes in tax revenue, and regional transportation of goods and services during operation and construction.

4.3.2 Affected Environment

4.3.2.1 Regional Demographic and Economic Trends

This section provides demographic and economic regional forecasts for the four-county Puget Sound Region.

Population

The historical and forecast population data for the region and for King, Kitsap, Pierce, and Snohomish Counties individually show that by 2030 the region will grow by over 1.2 million inhabitants to 4.5 million inhabitants (see Appendix F4.3, Table F4.3-1). Between 2000 and 2030, population in the region is expected to increase at an average annual growth rate of 1.1 percent. The greatest average annual growth is forecast to occur in Snohomish County, at approximately 1.6 percent, followed by Pierce, Kitsap, and King Counties at 1.2, 1.2, and 0.8 percent, respectively.

Households

The historical and forecast household data for the region and for King, Kitsap, Pierce, and Snohomish Counties individually show that between 2000 and 2030, the number of households in the region is expected to increase at an average annual growth rate of 1.4 percent (see Appendix F4.3, Table F4.3-2). Like the population growth forecast, the most rapid annual rate of household formation, at 1.9 percent, is expected to occur in Snohomish County. Pierce, Kitsap, and King Counties are forecast to have average annual growth rates of 1.5, 1.5, and 1.1 percent, respectively.

Between 2000 and 2030, the growth rate for new household formation is forecast to exceed the growth rate for population in each of the four counties. This implies that the average number of persons per household will decline. This is relevant because travel demand typically correlates more closely to household formation than to population.

Regionally, the mix of households is expected to change between 2000 and 2030, as shown in Appendix F4.3, Table F4.3-2. The percentage of multifamily households is forecast to increase from 31 percent in 2000 to 35 percent in 2030, while the percentage of single-family households is expected to decline from 69 percent in 2000 to 65 percent in 2030. This trend to multifamily households is forecast to occur in all four Puget Sound counties.

Income

Median household income in King, Kitsap, Pierce, and Snohomish Counties is higher than the state average. According to the U.S. Census Bureau, King County had the highest median household income in the region, at approximately $70,193 in 2008, which is an increase of 32 percent from 1999. In 2008, median household income was $59,333 in Kitsap County, $58,217 in Pierce County, and $66,701 in Snohomish County. Nominal income levels in Kitsap, Pierce, and Snohomish Counties have increased by 27, 29, and 26 percent, respectively, when compared with 1999 U.S. Census levels. However, when adjusted for inflation, Kitsap, Pierce, and Snohomish Counties show a slight decrease in income levels between 1999

and 2008. Within King County, there was a slight increase in inflation-adjusted income over the same time period.

Employment

Between 2000 and 2030, employment in the region is expected to grow at an average annual rate of 1.2 percent. Snohomish County is expected to experience the highest rate of increase in job growth, at an average annual rate of 1.6 percent (see Appendix F4.3, Table F4.3-3). Pierce, King, and Kitsap Counties follow with average annual growth rates of 1.1, 1.1, and 1.0 percent, respectively. Snohomish County's relative share of regional employees is forecast to increase from 12 percent in 2000 to 14 percent in 2030, while the relative shares of King, Kitsap, and Pierce Counties are expected to decline slightly.

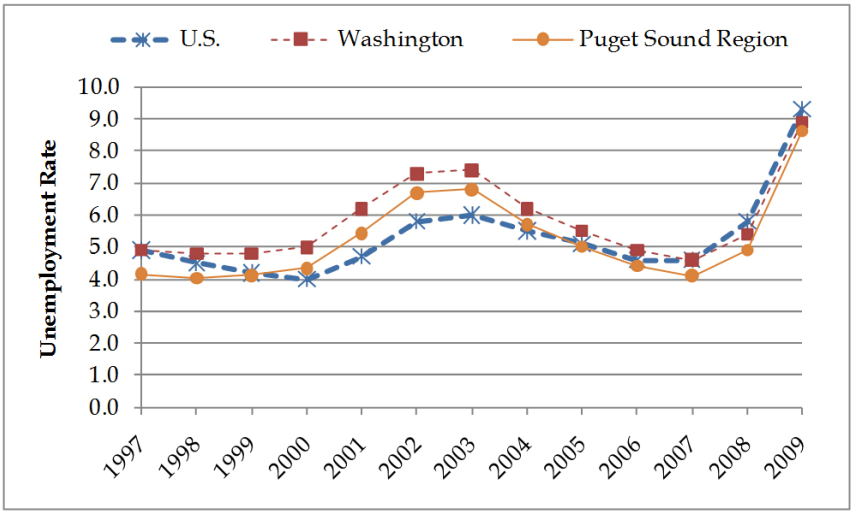

EXHIBIT 4.3-1
Unemployment Rates, 1997 to 2009

Note: Regional unemployment was calculated using an employee-weighted average of the Seattle-Tacoma-Bellevue, Washington, Metropolitan Statistical Area (includes King, Snohomish, and Pierce counties) and the Bremerton-Silverdale, Washington, Metropolitan Statistical Area (includes Kitsap County) annual unemployment rates.

Source: Bureau of Labor Statistics, 2010.

Table F4.3-4 in Appendix F4.3 presents historical and forecast employment by sector, in total, and on a percentage basis, for the region and King, Kitsap, Pierce, and Snohomish Counties. Regionally, the finance, insurance, real estate, and services sector (FIRES) of the economy is forecast to grow the most rapidly. This is also true for King, Pierce, and Snohomish Counties. In Kitsap County, the wholesale trade, transportation services, communication, and utilities sector (WTCU) is forecast to grow most rapidly.

Unemployment

As shown in Exhibit 4.3-1, which charts unemployment rate trends for the region, Washington, and the United States, the region's unemployment rate was lower than that of the state and of the nation from 1997 to 1998. However, between 1999 and 2005, it was higher than the nation but lower than the state. Since 2005, the region's unemployment rate has tended to be lower than the state and the nation. Additionally, since 2000, the unemployment rate within the Cities of Seattle, Bellevue, and Redmond has tended to be lower than that of the Puget Sound region.

4.3.2.2 Demographic and Economic Trends in Study Area

Table 4.3-1 shows the population, household, and employment trends for each segment. The same data for each alternative are available in Appendix F4.3, Table F4.3-5. The tables in Appendix F4.3 provide estimates for 2000 and 2030 forecasts. The estimates for Segment A are based on Seattle Transportation Analysis Zone projections from the City of Seattle; for the remaining segments, the estimates are based on Transportation Analysis Zone projections from the Puget Sound Regional Council (PSRC). As shown in Table 4.3-1, by 2030, Segment C is forecast to have the largest population (52,170) and most households (18,120) and employees (97,540) of the five project segments. Segment C is also forecast to experience the most rapid growth in population, households, and employment, both in total and as a percentage.

The cities within the study area—Seattle, Mercer Island, Bellevue, and Redmond—rely heavily on property tax and sales tax revenues to fund general services to their respective jurisdictions. Revenues collected by each city, other than taxes, consist of funding from state and local sources, internal transfers, and various types of fees collected from government-operated facilities and from issuing licenses and permits. In addition to funding city programs, property tax levies also provide funds for county programs, fire prevention, libraries, schools, and other governmental services.

Table 4.3-2 breaks down funding sources for each city in the study area. Property tax revenues as a percentage of total general fund revenues for the cities range between a low of 9.4 percent for Bellevue and a high of 41.4 percent in Mercer Island. Sales tax revenues, as a percentage of total general fund revenues, range between a low of 10.7 percent in Bellevue to a high of 29.2 percent in Redmond.

TABLE 4.3-1
Population, Household, and Employment Forecasts by Segment

Segment	2000[a]	2030[a]	Average Annual Growth Rate 2000 to 2030 (percent)
Segment A, Interstate 90			
Population	9,240	13,350	1.2
Housing units	3,520	4,930	1.1
Employment	12,550	17,450	1.1
Segment B, South Bellevue			
Population	10,490	13,400	0.8
Housing units	4,110	5,170	0.8
Employment	7,000	9,430	1.0
Segment C, Downtown Bellevue			
Population	15,970	52,170	4.0
Housing units	5,740	18,120	3.9
Employment	51,080	97,540	2.2
Segment D, Bel-Red/Overlake			
Population	16,710	25,170	1.4
Housing units	5,930	8,820	1.3
Employment	64,000	95,310	1.3
Segment E, Downtown Redmond			
Population	19,120	41,780	2.6
Housing units	6,860	14,600	2.6
Employment	23,090	39,900	1.8

[a] Estimates rounded to the nearest 10.
Source: King County Department of Assessments, 2010; City of Seattle, 2007a; PSRC, 2006.

Note: Data were tabulated to fit the study area.

TABLE 4.3-2
Revenue Sources: Percent of Total Revenues by City

City (Budget Year)	Property Tax	Sales Tax	Other Sources
Seattle (2010)	27.6	16.4	55.9
Mercer Island (2010)	41.4	14.1	44.6
Bellevue (2009-2010)	9.4	10.7	79.9
Redmond (2009-2010)	19.5	29.2	51.2

Source: City of Seattle, 2010; City of Mercer Island, 2010; City of Bellevue, 2010; City of Redmond, 2010.

4.3.2.3 Regional Transportation of Goods and Services

In Segment A, I-90 is an important link for regional and interstate commerce. This section describes existing truck trips on I-90 and its current and future importance to the region's economy. A recent study (Sommers, 2003) notes that future growth in the region forecasted by PSRC will be based mainly on the expansion of technology industries and the accompanying expansion of financial and service industries. Long-term growth in King County is projected to be concentrated in the two downtown centers (Seattle and Bellevue) to a much greater extent than in the rest of King County. The growth of the technology sector in Seattle will likely enhance regional economic linkages across Lake Washington to Bellevue and other Eastside communities, where these industries are also well established. The technology and the financial and service industries have a tendency to cluster in downtown areas and dense office parks; they have strong mutual business linkages and tend to locate near each other. These industries will require expansion of both transportation systems and electronic communications infrastructure to carry out their work, suggesting a need for expanded road, transit, and communications capacity between Downtown Bellevue and Downtown Seattle.

Another recent study (Washington State Department of Transportation [WSDOT], 2007) provides insight into how congestion is constraining economic development in the region. Longer travel times, increased costs, and less reliable pick-up and delivery times for truck operators could result in businesses being forced to move all or part of their business to less congested regions or avoid the Puget Sound region altogether. In an effort to avoid moving away from the region, some transport companies are working with their customers to arrange deliveries in nonpeak hours; however, many smaller customers do not find it cost-effective to extend their hours of operation. Congestion also limits access to labor and affects location decisions; as a result, companies might look to less congested parts of the metropolitan region or to other cities entirely for future expansion. The results of a recent Washington State freight movement study (WSDOT, 2005) indicate the following:

- Fourteen billion dollars ($14 billion) in state-originated exports pass through Puget Sound ports, equating to 63 million metric tons of cargo.
- Freight volumes in Washington are growing twice as fast as the state's population and are expected to continue growing rapidly in the future.

- On an average weekday in 2000, congestion in the Puget Sound region resulted in more than 45,000 hours of truck delay.

These results indicate that roadway congestion increases the cost of doing business in the region, particularly for businesses and industries highly dependent on the shipment of goods.

In the Puget Sound region, I-90 is the main highway route for east-west commerce and the secondmost heavily used highway for truck movements in Washington (WSDOT, 2005) after I-5, with over 5,000 truck trips per day, many of which travel over the I-90 bridge en route to the Port of Seattle or other destinations. According to a study of freight movement on Washington state highways (Peterson, et al., 2006), five industries comprise more than half of the freight traffic on I-90: food and related products, crops, lumber and wood products, mixed freight, and transportation equipment. These five industries are particularly vulnerable to delay and unreliable travel times.

PSRC forecasts show that the average annual growth of freight traffic on the I-90 bridge will slow by 2030 during AM and PM peak periods (Table F4.3-6 in Appendix F4.3). (Peak travel time for this analysis is for all vehicles traveling between 7 and 9 a.m. and between 4 and 6 p.m.) This is because, by 2030, traffic congestion on I-90 will be much worse than it is today, and a higher percentage of freight is expected to cross the bridge during off-peak times (peak travel times for freight are generally between the hours of 9 a.m. and 1 p.m.). However, as shown in Appendix F4.3, Table F4.3-6, overall freight movement in the I-90 corridor is still expected to grow annually 1.2 percent in the PM peak hour, which is greater than the region's expected annual population growth rate of 1.1 percent. The overall freight movement in the AM peak hour is expected to grow at a slower pace, 0.3 percent, relative to the region's expected annual population growth.

4.3.3 Environmental Impacts

A new light rail system like East Link can cause changes in the local business environment and surrounding neighborhoods. These changes, in turn, might change the success of existing businesses and influence future economic opportunity in the area. Direct economic impacts of each alternative could include business and employee displacements and the corresponding potential tax impacts, potential changes in development patterns and regional freight mobility, and potential impacts on businesses and property near the routes and stations. Indirect impacts could result from proximity impacts, including changes in parking availability, noise, visual effects, and access. This section evaluates these impacts for each alternative and station.

4.3.3.1 No Build Alternative

The No Build Alternative consists primarily of funded or committed roadway and transit actions by the state and by regional and local agencies; these include other projects that are considered likely to be implemented. Under the No Build Alternative, future economic development or redevelopment would not likely be the same as it would be with the East Link Project. Under the No Build Alternative, planned land use changes in the Bel-Red and Overlake neighborhoods could occur more slowly or might not reach the full density permitted under the zoning regulation. Congestion also would likely worsen and there would be fewer alternatives to single-occupancy vehicle travel, which could impact future economic development.

4.3.3.2 Direct Impacts during Operation

The following subsections discuss direct impacts related to displacing businesses and employees and initial impacts on the local tax base for each alternative and maintenance facility.

Displacements

Table 4.3-3 provides estimates of the number of businesses located at properties that would be partially or fully acquired by the East Link Project alternatives and lists the estimated number of employees at those businesses. The estimates were prepared based on field verification of business names and information included in Section 4.1, Acquisitions, Displacements, and Relocations. PSRC employment data and square foot per employee estimates (Pflum, et al., 2004) were used to estimate the number of employees displaced within each alternative, based on the type of business: civic and quasipublic, commercial, industrial, office, and retail.

To provide a perspective on the relative magnitude of the business displacement impact, Table 4.3-4 compares the number of employees estimated to be displaced with the total forecast average annual growth in employment in each segment. Total employment estimates are not available at the alternative level; therefore, segment-level data were used. As shown for the high employee displacement estimates, in all segments except Segment C, the project would displace more jobs than are added annually in a typical year; however, for the low estimates, the project would displace fewer jobs than are added annually in a typical year.

TABLE 4.3-3
Property Acquisition Impacts on Businesses and Employees

Alternative		Full Displacements		Commercial, Public, and Institutional Property Acquisitions	
		Business	Employees	Partial	Full
Segment A, Interstate 90					
Preferred Interstate 90 Alternative (A1)		0	0	0	0
Segment B, South Bellevue					
Preferred 112th SE Modified Alternative (B2M)	To *Preferred Alternative C11A*	0	0	11	1
	To *Preferred Alternative C9T*	0	0	11	1
Bellevue Way Alternative (B1)		2	10	17	3
112th NE At-Grade Alternative (B2A)		0	0	10	1
112th NE Elevated Alternative (B2E)		0	0	8	1
112th SE Bypass Alternative (B3)		0	0	9	1
B3 – 114th Extension Design Option		14	170	12	2
BNSF Alternative (B7)		6	160	8	6
Segment C, Downtown Bellevue					
Preferred 108th NE At-Grade Alternative (C11A)[a]		39 (39 to 40)	330 (330 to 380)	24 (24 to 27)	19 (19 to 20)
Preferred 110th NE Tunnel Alternative (C9T)[a, b]		17 to 18	160 (160 to 300)	14 (14 to 16)	10 (10 to 11)
Bellevue Way Tunnel Alternative (C1T)		21	250	24	11
106th NE Tunnel Alternative (C2T)		13 to 20	170 to 240	15 to 17	7 to 14
108th NE Tunnel Alternative (C3T)		15 to 22	180 to 270	8 to 11	10 to 17
Couplet Alternative (C4A)		36 to 37	490 to 550	15 to 16	19 to 21
112th NE Elevated Alternative (C7E)		29 to 30	670 to 730	11 to 12	3
110th NE Elevated Alternative (C8E)		33	750	12	9
110th NE At-Grade Alternative (C9A)		17 to 18	170 to 230	10 to 11	10 to 11
114th NE Elevated Alternative (C14E)		24	390	13	10
Segment D, Bel-Red/Overlake					
Preferred NE 16th At-Grade Alternative (D2A)[c]		34	550	40	8
D2A - NE 24th Design Option		69	1,060	49	13
NE 16th Elevated Alternative (D2E)		42	920	25 to 27	16
NE 20th Alternative (D3)		74	1,590	77 to 79	17
SR 520 Alternative (D5)		79	480	29 to 31	2
Segment E, Downtown Redmond					
Preferred Marymoor Alternative (E2)		8	290	8	7
E2 - Redmond Transit Center Design Option		23	350	18	11
Redmond Way Alternative (E1)		7	210	13	5
Leary Way Alternative (E4)		7	120	12	3

TABLE 4.3-3 CONTINUED

Property Acquisition Impacts on Businesses and Employees

Alternative	Full Displacements		Commercial, Public, and Institutional Property Acquisitions	
	Business	Employees	Partial	Full
Maintenance Facilities				
116th Maintenance Facility (MF1)				
Preferred NE16th At-Grade (D2A), NE 16th Elevated (D2E), and NE 20th (D3) Alternatives	77	890	5	15
SR 520 Alternative (D5)	82	630	4	17
BNSF Maintenance Facility (MF2)				
Preferred NE16th At-Grade (D2A), NE 16th Elevated (D2E), and NE 20th (D3) Alternatives	5	450	5	3
SR 520 Alternative (D5)	6	850	1	5
SR 520 Maintenance Facility (MF3)				
Preferred NE16th At-Grade (D2A) and NE 16th Elevated (D2E) Alternatives	60	890	4	9
NE 20th Alternative (D3)	56	840	7	8
SR 520 Alternative (D5)	57	870	0	9
SE Redmond Maintenance Facility (MF5)				
Redmond Way Alternative (E1)	38	410	3	13
Preferred Marymoor Alternative (E2)	16	310	4	7
Leary Way Alternative (E4)	16	310	1	7

Note: Estimates rounded to the nearest 10.

[a] The value before the parentheses indicates impacts associated when the alternative connects to *Preferred Alternative B2M*. The value in parentheses indicates range of impacts associated with the Segment C preferred alternative connections to Segment B alternatives, including *Preferred Alternative B2M*.

[b] The C9T - East Main Station Design Option connecting from *Preferred Alternative B2M* would not result in a change to impacts for either *Preferred Alternative C9T* or *B2M.*

[c] Impacts associated with D2A - 120th Station Design Option are the same as for the *Preferred Alternative D2A*.

TABLE 4.3-4

Comparison of Annual Average Employment Growth and Total Employees Displaced by Segment

Segment	Employment		Average Annual Growth		Employment Displacements (Total)	
	2000	2030	Percent	New Jobs	Low	High
A, Interstate 90	No business displacements					
B, South Bellevue	7,002	9,431	1.0	70	20	170
C, Downtown Bellevue	51,079	97,330	2.2	1,110	160	750
D, Bel-Red/Overlake	63,996	97,264	1.4	899	475	1,590
E, Downtown Redmond	23,087	37,016	1.6	366	250	350

Note: Excludes displacements from maintenance facilities.

Source: Employment forecasts from PSRC (2006); employment displacements from Table 4.3-3.

More jobs would be added in Segment C annually than would be displaced by the project. Table 4.3-3 also shows the alternatives for which there would be many employees displaced with few property acquisitions. The number of employees displaced would be approximately 2 percent or less of total employment for all segments.

The number of affected employees does not necessarily mean jobs that would be lost, because Sound Transit would provide relocation assistance to displaced businesses. Therefore, it is likely that many of the displaced jobs would be relocated and not lost. However, some displaced businesses and jobs, particularly industrial businesses in the Bel-Red Corridor, would probably relocate outside the City of Bellevue because of the land use and zoning changes planned for that area.

Segment A
As shown in Table 4.3-3, Sound Transit would not acquire any private property for *Preferred Interstate 90 Alternative (A1)*; therefore, no businesses or employees associated with *Preferred Alternative A1* would be displaced.

Segment B
Neither of the *Preferred 112th SE Modified Alternative (B2M)* variations (i.e., connection to *Preferred C11A* or *Preferred C9T*) would displace any businesses or employees. However, the *Preferred Alternative B2M* would displace 1 residence and partially acquire up to 11 properties; these partial acquisitions would not displace any businesses or employees.

The impacts to employees and businesses associated with many of the other Segment B alternatives are similar to the impacts of *Preferred Alternative B2M*. The 112th SE At-Grade (B2A), 112th SE Elevated (B2E), and 112th SE Bypass (B3) Alternatives would not displace any businesses or employees. The B3 – 114th Design Option would acquire 14 businesses and displace 170 employees, the most businesses and highest number of employee displacements of any Segment B alternative. The businesses displaced would be associated with acquiring a parcel containing office buildings in the Bellefield Office Park; these displacements would only occur if the B3 - 114th Design Option were implemented. The BNSF Alternative (B7) would acquire 6 businesses and displace 160 employees, the second most employees displaced of any Segment B alternative.

Segment C
Preferred 108th NE At-Grade Alternative (C11A) would displace 39 businesses and 330 employees, which is fewer than many of the other alternatives within Segment C. *Preferred 110th NE Tunnel Alternative (C9T)* would displace 17 to 18 businesses and between 160 and 330 employees, which is similar to the other Segment C tunnel alternatives (Bellevue Way Tunnel [C1T], 106th NE Tunnel [C2T], and 108th NE Tunnel [C3T] Alternatives).

Business displacements that would occur with the other Segment C alternatives would range between a low of 13 associated with Alternative C2T and a high of 37 associated with Couplet Alternative (C4A). The displaced employees associated with other Segment C alternatives range between a low of 170 associated with Alternatives C2T or C9A and a high of 750 associated with 110th NE Elevated Alternative (C8E).

Segment D
Preferred NE 16th At-Grade Alternative (D2A) would displace about 34 businesses and about 550 employees, which is higher than SR 520 Alternative (D5) but lower than all other Segment D alternatives. D2A - 120th Station Design Option would have impacts on businesses and employees that would be similar to *Preferred Alternative D2A;* D2A - NE 24th Design Option would displace about 69 businesses and about 1,060 employees, the second highest number of employee displacement of all Segment D alternatives.

Business displacements related to other Segment D alternatives would range between a low of about 42 associated with NE 16th Elevated Alternative (D2E) and a high of 79 associated with Alternative D5. Displaced employees associated with property acquisition for other Segment D alternatives range between a low of 480 associated with Alternative D5 and a high of 1,590 with NE 20th Alternative (D3).

Segment E
Preferred Marymoor Alternative (E2) would displace about 8 businesses and about 290 employees, which would be similar to the other Segment E alternatives. However, the E2 - Redmond Transit Center Design Option would have the highest overall impact on businesses (23) and employees (350) of any Segment E alternative. The City of Redmond has plans to locate a stormwater pipe and trail within the former BNSF railway, in downtown Redmond, which would reduce the amount of space available for the light rail. This constraint may require that light rail be shifted to accommodate the stormwater pipe and trail, which may require the partial acquisition of properties on the north side of the railway to accommodate all proposed facilities as well as the train. If the alignment is shifted north, it would have no impact on businesses in this area. The two other Segment E alternatives (Redmond Way [E1] and Leary Way [E4] Alternatives) would

each displace about 7 businesses, each alternative would displace 210 and 120 employees, respectively.

Maintenance Facilities
The 116th Maintenance Facility (MF1), with access from Alternative D5, would have the most full property acquisitions: it would relocate 82 businesses and 630 employees from 10 properties. The SR 520 Maintenance Facility (MF3), with access from *Preferred Alternative D2A* and Alternative D2E, would result in the highest overall impact on employees (890) of any of the maintenance facilities.

The SE Redmond Maintenance Facility (MF5), along *Preferred Alternative E2* and Alternative E4, would displace the fewest number of employees (385 employees from 16 businesses located on 7 properties). Although these employees would be displaced through these property acquisitions, Sound Transit estimates that 115 to 144 new jobs, including operators and maintenance staff, would be created at the maintenance facility. As noted above, the number of affected employees does not necessarily mean jobs that would be lost because Sound Transit would provide relocation assistance to displaced businesses. Thus, it is likely that many of the displaced jobs would be relocated, not lost.

Impacts of Displacements on Tax Base of Cities

In each alternative other than *Preferred Alternative A1*, Sound Transit would acquire residential and commercial properties. Table 4.3-5 presents the 2010 initial property tax impacts on cities resulting from property acquisitions and includes potential impacts from full acquisitions. The property tax impacts are annual estimates based on 2010 levy rates and 2009 assessed values. The City of Bellevue would be affected by alternatives in Segments B, C, and D, and the City of Redmond would be affected by alternatives in Segments D and E. When referring to the property tax impacts of acquisitions, the term "initial property tax impacts" is used because the extent of the long-term fiscal impact of the system is uncertain. Initially, property taxes would no longer be collected from full acquisitions along the route. As a result, the rates charged to remaining taxpayers could increase slightly to recover budgeted funds, or budgets for essential government services could be reduced accordingly.

In the long run, some of the excess land purchased by Sound Transit for system construction likely would be released for development once the project is built; this is particularly likely for the staging areas in Segment C. Between 23 percent and 45 percent of the property tax impacts in Segment C would result from purchasing land for staging areas that would likely become available for redevelopment after the project is built. Further, some displaced businesses are likely to rebuild at a new location elsewhere within the jurisdiction's boundary. In addition, the East Link Project might serve as a catalyst for future private development and investment. Thus, the East Link Project's long-term property tax impacts would likely be less, potentially zero, or even beneficial once existing businesses are reestablished, staging areas are released for development, and new development consistent with this project occurs. For example, new development is expected to occur in Segment D where both Bellevue and Redmond have adopted new land use plans to increase density and promote mixed use development. These positive fiscal impacts could be offset somewhat by the absence of new construction that might have occurred on properties acquired and retained by Sound Transit. Thus, the long-term property tax impacts are uncertain but are highly likely to be less than the initial property tax impacts.

Segment A
As shown in Table 4.3-5, Sound Transit would not acquire any private property for Segment A; therefore, there would not be any initial property tax impacts associated with *Preferred Alternative A1*.

Segment B
For both variations of the *Preferred Alternative B2M*, Sound Transit would acquire one residential property, which is located on Mercer Slough Blueberry Farms lot (publicly owned land) and exempt from property taxes.

Sound Transit would acquire private properties for other alternatives within Segment B, which would result in property tax impacts. The B3 - 114th Extension Design Option and Alternative B7 would have the greatest property tax impact of any Segment B alternative, resulting in initial impacts of $17,500 and $14,500, respectively. However, these impacts are relatively small (about 0.03 percent) when compared with the 2010 estimated property tax revenues for the City of Bellevue.

Segment C
Preferred Alternative C11A would fully acquire about 28 private properties and result in an initial property tax impact to the City of Bellevue of about $68,500 (0.10 percent of total city property tax revenues). *Preferred Alternative C9T* would fully acquire about 18 private properties and would result in an initial property tax of about $45,000 (0.07 percent of total city property tax revenues). If the optional station at Main Street for *Preferred Alternative C9T* were selected, it would not have any additional impacts and may add benefit to nearby businesses.

TABLE 4.3-5
Initial Property Tax Impacts on Cities by Alternative

Alternative	Annual Initial Property Tax Impact		Percent of Budgeted City 2009-2010 Property Tax Revenues	
	Low	High	Low	High
Segment A, Interstate 90				
Preferred Interstate 90 Alternative (A1)	0		0.00	
Segment B, South Bellevue				
Preferred 112th SE Modified Alternative (B2M) (connecting to *C11A* or *C9T*)	0		0.00	
Bellevue Way Alternative (B1)	$7,000		0.01	
112th SE At-Grade Alternative (B2A)	$1,500		Less than 0.01	
112th SE Elevated Alternative (B2E)	$500		Less than 0.01	
112th SE Bypass Alternative (B3)	$1,500		Less than 0.01	
B3 – 114th Extension Design Option	$17,500		0.03	
BNSF Alternative (B7)	$15,500		0.02	
Segment C, Downtown Bellevue				
Preferred 108th NE At-Grade Alternative (C11A)	$68,500		0.10	
Preferred 110th NE Tunnel Alternative (C9T)[b]	$45,000		0.07	
Bellevue Way Tunnel Alternative (C1T)	$88,500		0.13	
106th NE Tunnel Alternative (C2T)	$33,000	$53,000	0.05	0.08
108th NE Tunnel Alternative (C3T)	$33,500	$53,500	0.05	0.08
Couplet Alternative (C4A)	$56,000	$71,500	0.08	0.11
112th NE Elevated Alternative (C7E)	$41,000	$56,000	0.06	0.08
110th NE Elevated Alternative (C8E)	$95,000		0.14	
110th Avenue NE At-Grade Alternative (C9A)	$22,000	$37,000	0.03	0.06
114th Avenue NE Elevated Alternative (C14E)	$40,000		0.06	
Segment D, Bel-Red/Overlake				
Preferred NE 16th At-Grade Alternative (D2A) [a]	$45,500 to $60,500		0.06 to 0.09	
D2A - 120th Station Design Option	$60,500		0.09	
D2A - NE 24th Design Option	$45,500	$60,500	0.06	0.09
NE 16th Elevated Alternative (D2E) [a]	$71,500		0.08	
NE 20th Alternative (D3)	$64,500		0.10	
SR 520 Alternative (D5)	$8,500		0.01	
Segment E, Downtown Redmond				
Preferred Marymoor Alternative (E2)	$32,500		0.12	
E2 - Redmond Transit Center Station	$75,500		0.27	
Redmond Way Alternative (E1)	$22,500		0.08	
Leary Way Alternative (E4)	$13,000		0.05	

TABLE 4.3-5 CONTINUED
Initial Property Tax Impacts on Cities by Alternative

Alternative	Annual Initial Property Tax Impact		Percent of Budgeted City 2009-2010 Property Tax Revenues	
	Low	High	Low	High
Maintenance Facilities				
116th Maintenance Facility (MF1)	$53,000 to $56,000		0.08	
BNSF Maintenance Facility (MF2)	$31,500 to $58,000		0.05 to 0.09	
SR 520 Maintenance Facility (MF3)	$42,500 to $49,500		0.06 to 0.07	
SE Redmond Maintenance Facility (MF5)	$37,000 to $54,000		0.13 to 0.19	

[a] Includes both impacts to Cities of Bellevue and Redmond.

[b] The C9T - East Main Station Design Option connecting from *Preferred Alternative B2M* would not result in a change to impacts for either *Preferred Alternative C9T* or *B2M.*

Source: King County Department of Assessments, 2010; City of Bellevue, 2010; City of Redmond, 2010.

The other Segment C alternatives would result in a range of property tax impacts between a low of $22,000 associated with Alternative C9A and a high of $95,000 associated with Alternative C8E. The range of impact to the City's 2010 estimated property tax revenues would be between 0.03 percent and 0.14 percent.

Segment D

Preferred Alternative D2A would fully acquire about eight private properties and result in an initial property tax of about $45,500 (0.07 percent). The D2A - NE 24th Design Option would fully acquire an additional five properties and result in an initial property tax impact of about $60,500. Many Segment D alternatives would result in full acquisitions and property tax impacts to both the City of Bellevue and Redmond; however, the properties acquired for *Preferred Alternative D2A* would only impact the City of Bellevue (the D2A – NE 24th Design Option would impact both jurisdictions).

The other Segment D alternatives would result in a range of property tax impacts between a low of $8,500 associated with Alternative D5 and a high of $71,500 associated with the Alternative D2E. Of the $71,500, about $60,000 would impact the City of Bellevue's 2010 property tax revenue and about $11,500 would impact the City of Redmond's 2010 property tax revenue.

Segment E

Preferred Alternative E2 would fully acquire about nine private properties and result in an initial property tax of about $32,500 (0.12 percent). This impact would be relatively higher than most other Segment E alternatives. But the E2 - Redmond Transit Center Design Option would result in the highest overall property tax impact with a $75,000 annual impact, which would account for 0.27 percent of 2009-2010 city revenues.

The other Segment E alternatives would result in a range of property tax impacts between a low of $13,000 associated with Alternative E4 and a high of $22,500 associated with the Alternative E1. Similar to property tax impacts, the long-run tax impacts from other taxes are uncertain. There might be some lost sales taxes or revenue from other taxes and fees if displaced businesses do not relocate within the same city. These types of losses would be offset to the extent that existing businesses relocate and business activity increases and/or new businesses are attracted to the area. Local jurisdictions are likely to receive some sales tax revenues from purchases related to project construction.

Impacts on Regional Transportation of Goods and Services

This section discusses the project impacts project on the regional transportation of goods and services. The main impacts would result from changes in freight mobility on the I-90 bridge.

Compared with the No Build Alternative, the East Link Project is expected to allow greater total 2030 peak-period freight volumes on I-90 across Lake Washington and improved overall 2030 peak-period travel times. However, most trucks do not use I-90 during peak hours, and the travel time during off-peak hours would remain unaffected. Improved truck travel times during peak periods would lower the cost

of shipping goods and services across I-90. Thus, the proposed project is expected to benefit regional freight mobility, with associated benefits for the regional economy. Support for this conclusion is presented in Table 4.3-6 where PM peak-period travel times (volume-weighted) between 4 and 6 p.m. are expected to be on average 5 minutes faster under the project by 2030. The AM peak-period travel times (volume-weighted) between 7 and 9 a.m. are expected to remain relatively unchanged, on average. Volume-weighted travel times during the sum of the AM and PM peak periods are expected to average approximately 3 minutes faster than under the No Build Alternative. The lower forecasted travel times are mainly because there would be fewer commuters on I-90 with the project because many of them are expected to use light rail as an alternative transportation mode. Chapter 3 Transportation Environment and Consequences fully describes I-90 transportation impacts.

Volume-weighted travel time

Volume-weighted travel time considers the number of trucks traveling at one time in each direction during the peak period. As an example, if there are seven trucks westbound that take 10 minutes each and five trucks eastbound that take 8 minutes each, the volume-weighted travel time would be 9.2 minutes (7x10 + 5x8)/12.

4.3.3.3 Indirect Impacts during Operation

The evaluation of the potential for indirect economic impacts of the alternatives is based on field observations of each alternative, on the number of housing units and employees to be served by the stations (see Table F4.3-5 in Appendix F4.3), and on information presented in Chapter 3, Transportation Environment and Consequences.; Section 4.2, Land Use; Section 4.5, Visual and Aesthetic Resources; and Section 4.7, Noise and Vibration.

Both positive and negative indirect economic impacts can result from East Link Project operation. Positive indirect economic effects from light rail projects can result in increased development and redevelopment potential adjacent to stations. Negative indirect economic effects on business are disturbances that might change access, traffic flow, business sales, or value of adjacent property. Local negative indirect effects include access restrictions, decreased parking availability, noise, and visual impacts on land uses. The following subsections analyze these impacts.

Positive Indirect Impacts

The availability of light rail increases transit access and pedestrian activity, especially in areas surrounding the stations and between important nodes of economic activity. Improved transit access can improve the convenience, visibility, and desirability of surrounding residential and commercial properties. Increased pedestrian activity can increase the patronage of adjacent retail uses. This might result in the synergy of business and employee interest in locating where there is convenient access to the light rail line, leading to more dense land uses around stations and, therefore, resulting in increased economic activity at stations. This pattern is referred to as transit-oriented development (TOD) and is addressed further in the Section 4.2, Land Use. The economic impacts are summarized here.

TABLE 4.3-6
Current and Forecast 2-Hour Peak-Period Freight Truck Volumes and Travel Times across the I-90 Bridge

Period	Direction	Base Year		2030 No Build [a]		2030 No Build [b]		2030 Build	
		Number of Trucks [c]	Travel Time (minutes) [d]	Number of Trucks [c]	Travel Time (minutes) [d]	Number of Trucks [c]	Travel Time (minutes) [d]	Number of Trucks [c]	Travel Time (minutes) [d]
AM Peak	Westbound	480	13	410	30	440	27	430	25
	Eastbound	470	16	480	18	570	21	620	22
AM Peak Total		**950**	**14**	**890**	**24**	**1,010**	**24**	**1,060**	**23**
PM Peak	Westbound	430	20	450	33	470	32	660	25
	Eastbound	360	19	340	21	570	22	370	20
PM Peak Total		**790**	**20**	**790**	**27**	**1,040**	**27**	**1,020**	**22**
AM and PM Peak Total		**1,740**	**17**	**1,680**	**25**	**2,050**	**26**	**2,080**	**23**

[a] With Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project.
[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.
[c] Screenline 2 data from the VISSIM analysis. Based on I-90 throughput at the I-90 Lake Washington bridge.
[d] Travel times are between I-405 and I-5 (Seattle).

Recent studies indicate that residential and commercial property values near light rail transit stations typically increase and are valued higher than similar properties that are not near the transit stations. In Denver, for instance, a recent market analysis of the apartment market conducted by Grubb & Ellis indicated that people are willing to pay approximately 4 percent more per month to rent an apartment within a 0.25 radius of a light rail station. The analysis also found that, from 2006 to 2010, developers have paid an average of 25 percent more for unimproved apartment land within a 0.25 radius of an existing or planned transit stop (Jackson, 2010) In Buffalo, a 2007 study suggested that homes within a quarter-mile radius of a light rail station typically have an increased property value of 2 to 5 percent of the city's median home value (Hess and Almeida, 2007). Additional studies have suggested similar trends in cities across the country, including Washington D.C., San Francisco, Portland, and various other cities (Parsons Brinckerhoff, 2001).

It should be noted that these payoffs are not automatic, and property-value increases generally require a strong demand for real estate, locations in neighborhoods free from signs of stagnation and distress, and public policies such as zoning bonuses that further leverage TOD and transit system expansion that produces the spillover benefits of a highly integrated transportation network. Property values are also affected by external forces and might change in response to fluctuations in the economy, consumer confidence, and local development pressures. In addition, because TOD takes time to evolve, property value benefits will also take time to accrue (TRB, 2004). While this effect is likely to occur in all segments, the benefits might be most realized in Segment D, where both Bellevue and Redmond have adopted supportive plans for TOD and market conditions appear strong. Each alternative in Segment D except the SR 520 Alternative (D5) is anticipated to cause positive indirect impacts on adjacent economic activity. The length of Alternative D5 adjacent to SR 520 includes fewer stations near planned intensification of land uses; this might cause Alternative D5 to have a smaller positive indirect impact on adjacent economic activity.

Negative Indirect Impacts

As described in the previous section, studies have found property value impacts from light rail transit to be usually positive. However, there are also other studies that have documented decreased property values for properties located near transit stations. A 2009 study in Atlanta, based on an analysis of properties near five stations, suggests that proximity to transit had minimal impact on property values there (Lambert, 2009). Moreover, in the area surrounding Atlanta's only station in a true TOD setting, property values actually increased as the distance from the station increased. In addition, the 2007 Buffalo study found that—despite positive proximity affects overall—low-income station areas actually had negative proximity effects. In other words, in low-income areas, property values decreased as proximity to stations increased. Proximity to a light rail route, rather than a station, might also result in decreased property values (TRB, 2004). Disruptive noise levels; light, shadow, and view impacts; and reductions in vehicle access and parking can affect property values and sales for businesses that depend on vehicular access. Negative impacts on property values are most likely to occur when the light rail project results in noise or visual impacts noticeably greater than what currently exists. These impacts are more often associated with elevated, and to a lesser degree, at-grade alternatives, and are generally negligible for tunnel alternatives. Most of the East Link alternatives are at-grade or elevated.

As with potential positive indirect impacts, potential negative indirect impacts are by no means a guarantee. The same external forces described above—real-estate demand, local zoning, and economic climate, for example—can combine in different ways to result in either positive or negative indirect impacts.

Section 4.5, Visual and Aesthetic Resources, and Section 4.7, Noise and Vibration, suggest that there is relatively little potential for these impacts to be of a sufficient magnitude to result in negative property value impacts. The visual quality analysis (Section 4.5) indicates that residential properties in some alternatives would experience impacts on currently high-quality views, resulting in a permanent change in visual quality. This impact would not occur under *Preferred Alternative B2M* but would occur under the following other alternatives: Alternatives B1, B2A, B2E, B3, C9A, and E4. Of these alternatives, Alternative B2E would have the most potential for impacts. Those impacts may occur at a few residential properties, located along Bellevue Way between the park-and-ride lot and the intersection with 112th Avenue SE, having views that would be directly affected. However, for all of these alternatives, there would be no sensitive views blocked, no solar access impacts, and no light and glare impacts. With the Alternative C14E, if tent structures are used for the elevated Bellevue Transit Center Station and the pedestrian bridge, then views of the Cascade Mountains might be blocked from some locations on NE 6th Street and 110th Avenue NE (such as the City Hall Plaza, the Meydenbauer Conference Center, and

the existing Bellevue Transit Center). However, this impact would not affect any residential viewers, and these structures would not be out of scale or character with existing urban development in the general area.

Noise and vibration impacts on residential and commercial properties would potentially occur in a number of alternatives. Noise impacts would be mitigated (see Section 4.7 Noise and Vibration), thus reducing substantially the likelihood that noise or vibration would contribute to negative property value effects. Some residual vibration impacts would occur that may not be mitigated in the following alternatives:

- One commercial location each for Alternatives C8E, C9A, and C14E when connecting to the Alternative B3 or B7 in Segment B
- One multifamily residential location for Alternative C8E
- Two multifamily locations for Alternative C4A
- Two multifamily locations for Alternative C9A
- One single-family residence each for *Preferred Alternative E2*, Alternative E1, and E2 - Redmond Transit Center Design Option

Displaced off-street parking due to partial property acquisitions might reduce business opportunities. The value of displaced parking depends on the quantity of spaces lost and the business type.

Segment A
There would be no negative indirect vehicle access or off-street parking impacts associated with *Preferred Alternative A1*.

Segment B
For *Preferred Alternative B2M*, business access would be maintained at intersections and major ingresses and egresses. When *Preferred Alternative B2M* connects to *Preferred Alternative C9T,* the east approach at SE 15th Street to the Bellefield Office Park would close.

Alternative B1 would reduce drivers' ability to make left-hand turns in the median, affecting some businesses. This change and reduced parking would have a minimal impact on the operation of these businesses. Impacts from the other Segment B alternatives would be similar to the impacts discussed for *Preferred Alternative B2M* above (i.e., business access would be maintained at intersections and major ingress and egresses).

Segment C
There would likely be no adverse economic impacts related to access, off-street customer parking or traffic circulation associated with *Preferred Alternative C11A*. *Preferred Alternative C11A* would remove on-street parking and limit left-turn access to some office complexes and retail businesses. This could potentially economically impact the retail businesses that profit from convenient on-street parking. However, the affected streets are dominated by high-rise buildings that contain underground parking; therefore, this impact would be limited to few businesses. Some of this adverse impact would be offset by improved visibility of some businesses by transit riders.

There would not likely be adverse economic impacts related to access, off-street customer parking, or traffic circulation associated with the *Preferred Alternative C9T*.

Most other Segment C alternatives are grade-separated—tunneled or elevated—with the exceptions of Alternatives C4A and C9A and some short, retained-cut portions of Alternative C1T. These alternatives would not likely result in adverse economic impacts related to access, off-street customer parking, or traffic circulation. Alternatives C4A and C9A would remove on-street parking and limit left-turn access to some office complexes and retail businesses. This could potentially result in similar limited indirect economic impacts to those described under *Preferred Alternative C11A* above.

Segment D
Preferred Alternative D2A would reduce off-street parking and restrict left-turn access due to the at-grade route associated with it. These conflicts could cause some adverse economic impact. However, these conflicts are not located along business frontages except for fairly short distances, because only a short portion of the NE 16th Street corridor currently exists. Indirect economic impacts associated with D2A - 120th Station Design Option would be the same as without this design option. D2A - NE 24th Design Option would result in the same indirect economic impacts as *Preferred Alternative D2A* but would also include access restrictions along NE 24th Street and 152nd Avenue NE.

Similar to the *Preferred Alternative D2A*, portions of Alternatives D2E andD3 would reduce the number of off-street parking stalls and restrict left-turn access. For Alternative D3, the restaurants and retail businesses along NE 20th Street would experience a greater impact relative the impacts cited for the *Preferred Alternative D2A*. In Segment D, the Alternative D5 would have the least adverse economic impact when compared to the other alternatives in Segment D.

Segment E

Preferred Marymoor Alternative (E2) would not be likely to result in adverse economic impacts during operation because most of the alternative is either adjacent to SR 520 or along the former BNSF Railway corridor. However, some restaurants and retail businesses along 161st Avenue NE would experience reduced left-turn access which could result in reduced economic activity for these businesses. Similar to the reasons cited above for the *Preferred Alternative E2*, the other Segment E alternatives would not likely result in adverse economic impacts during operation.

4.3.3.4 Impacts During Construction

This section considers the positive and negative economic impacts that might occur during project construction. Construction brings money into the economy with construction jobs, purchasing of local goods and services for construction, and the money spent by construction crews in the community where construction occurs. On the negative side, constructing any alternative could result in economic impacts by blocking visibility and access to businesses, causing traffic delays, and rerouting traffic on detours that increase travel times and make access to some locations difficult.

Potential Positive Economic Impacts from Construction

Constructing any alternative would result in increased employment and spending in the project vicinity during construction. The extent of these impacts depends on the source of project funding and the makeup of work crews used during project construction.

In economic impact analysis, typically only inflows of funds from outside a region are considered "new money" that will lead to new employment and income in that region. Funds from local or regional sources are transfers that could be spent by residents and businesses on other economic activities. Excepting an estimated $93 million of federal grant funds, the funds required for project construction are anticipated to be raised in the communities benefiting from the project (Sound Transit, 2007a), which seems to imply that there would be relatively little "new money" available for spin-off economic benefits to the region. However, project construction would lead to positive economic effects beyond just the federal grants. Sound Transit would issue bonds to pay for project construction, and this money would go primarily to businesses located within the region within a relatively short period of time. Principal and interest on the bonds would be repaid over many years using a variety of funding mechanisms. Some of the future repayments are likely to be made in the form of taxes on visitors to the region, which represent additional inflows of funds to the region. Thus, there would be a temporal impact because bonded funds would be spent over approximately 8 years stimulating direct and indirect construction spending in the region. This would be offset in the long run by a negative impact on economic activity from added taxes to pay for the project, but some of the negative impact would be offset by taxes on visitors to the region.

Quantifying the economic impacts from project construction is complex, but some indication of the magnitude of the economic stimulus that would result from the project's preferred alternative is shown in Table 4.3-7. This table provides an estimate range of the direct expenditures and the proportion of project employment that would be hired from the three-county region as a result of the low- or high-cost projects. The table also provides ranges within the high and low cost estimates to reflect the two variations in how *Preferred Alternative B2M* connects to Segment C. As shown, the high-cost estimate of the preferred alternative would result in approximately $1.86 billion to $2.00 billion of spending in the region, and 1,925 to 2,075 direct jobs per year in the region over an assumed 8-year period for project design and construction. The low-cost estimate of the preferred alternative would result in approximately $1.61 billion to $1.74 billion of spending in the region and approximately 1,670 to 1,800 direct jobs per year in the region during the 8-year period for project design and construction. In addition to these direct effects, additional indirect benefits would occur when the output of firms in other industries increases to supply the demand for inputs to the construction industry. Wages paid to workers in construction trades or supporting industries would be spent on other goods and services; these are referred to as induced impacts. Direct, indirect, and induced impacts would occur in the region from project construction. The indirect and induced impacts are often called "multiplier" impacts. Multiplier estimates for the three-county region (Minnesota Implan Group, Inc. 2007) suggest that an additional 46 percent of value added (i.e., payments made by industry to workers, interest, profits, and indirect business taxes) would result from new direct construction spending in the region, and an additional 1.56 new jobs would be created for every direct job associated with the project, increasing the potential number of jobs generated in the region to approximately 34,150 to 42,500.

TABLE 4.3-7
Direct Expenditures and Direct Employment in Three-County Region from East Link Construction of Preferred Alternative

	Project Construction	Right-of-Way	Total
High-Cost Estimate			
Direct Expenditures			
Total direct expenditures (million 2007 $)[a]	$2,850 to $3,073	$149 to $161	**$2,999 to $3,234**
Percent in three-county region[b]	60	100	**N/A**
Three-county direct expenditures (million 2007 $)	$1,710 to $1,844	$149 to $161	**$1,859 to $2,004**
Direct Employment			
Total direct employment[b]	21,039 to 22,685	669 to 721	**21,708 to 23,406**
Percent in three-county region[b]	70	100	**N/A**
Three-county direct employment	14,728 to 15,880	669 to 721	**15,396 to 16,601**
Annual direct employment	1,841 to 1,985	84 to 90	**1,925 to 2,075**
Low-Cost Estimate			
Direct Expenditures			
Total direct expenditures (million 2007 $)[a]	$2,471 to $2,665	$129 to $139	**$2,600 to $2,804**
Percent in three-county region[b]	60	100	
Three-county direct expenditures (million 2007 $)	$1,483 to $1,599	$129 to $139	**$1,612 to $1,738**
Direct Employment			
Total direct employment[b]	18,244 to 19,675	580 to 625	**18,823 to 20,300**
Percent in three-county region[b]	70	100	**N/A**
Three-county direct employment	12,770 to 13,772	580 to 625	**13,350 to 14,397**
Annual direct employment	1,596 to 1,722	74 to 78	**1,670 to 1,800**

[a] Sound Transit, 2007a.
[b] Sound Transit, 2007b.

Although the typical methodology for economic impact analysis would count only the $93 million of federal grant funding as new spending for the purposes of determining economic impacts, the actual benefits would be greater and are difficult to determine precisely. Regardless of the specific method used to quantify economic impacts, it is clear that the project would result in substantial short-term economic activity in the region during construction.

Potential Negative Economic Impacts from Construction

The following subsections document the types of activities that could potentially occur during the various phases of construction and their relative impacts on local businesses within each segment. Construction activity can result in impacts on local businesses because of the associated changes in traffic circulation, access, parking, noise, and visual effects. Along any given area of the project, civil construction is anticipated to last approximately 3 to 5 years.

Segment A

In Segment A, *Preferred Alternative A1* would use existing right-of-way with an at-grade trackway throughout the segment. Temporary construction along 5th and 23rd Avenues South in Seattle would affect circulation with minimal impact on parking garages, office, or retail businesses. This would not likely result in a substantial adverse economic impact. No short-term construction impacts are expected on Mercer Island because local traffic circulation would not substantially change in the short term.

Segment B

In Segment B, *Preferred Alternative B2M* would be constructed on the east side of Bellevue Way and either on the east side or in the median of 112th Avenue SE, depending on whether it connects to *Preferred Alternative C11A* or *C9T*. This would avoid roadway reconstruction except where necessary to accommodate additional traffic turn lanes and to restore areas disrupted by construction activities. Project construction would temporarily relocate the Mercer Slough Blueberry Farm sales office and the

Winters House activities within Bellevue, but it would not result in long-term closure of these enterprises. The Eastside Heritage Center is a nonprofit organization and a tenant of the Winters House, which is owned by the City of Bellevue. Alternative B1 runs completely at-grade along Bellevue Way. The other Segment B alternatives, except for Alternatives B1 and B7, run along Bellevue Way and 112th Avenue SE and would substantially reconstruct these roadways. This construction activity would cause temporary detours and lane closures, which would increase congestion on Bellevue Way and 112th Avenue SE. Most businesses along each alternative are professional offices that do not rely heavily on drive-by traffic to attract customers; however, along Alternative B1, there are a few retail businesses that would be likely to suffer adverse impacts during construction. These construction-related impacts would not occur with Alternative B7, as this alternative avoids Bellevue Way and 112th Avenue SE and travels east parallel to I-90, then north along the former BNSF Railway corridor parallel to I-405. Construction at 118th Station could result in minor traffic delays for businesses located south on 118th Avenue SE, but these business do not rely on pass-by traffic.

Segment C

Preferred Alternative C11A would partially close roads along 112th Avenue SE, Main Street, 108th Avenue NE, and NE 6th Street. This would result in reduced accessibility, construction-related noise, and dust during site preparation and construction. Businesses in this area are primarily large office buildings with support services such as restaurants and cafes. Few retail businesses that depend on drive-by traffic are located in this area of downtown.

Preferred Alternative C9T would require a cut-and-cover tunnel, affecting businesses along 110th Avenue NE between Main and NE 6th Streets; however, traffic access would be maintained to the extent possible. Construction noise would be experienced during site preparation and construction.

Alternatives that require cut-and-cover tunnel construction would result in the most substantial adverse economic impacts on local businesses because this construction method requires relatively deep excavation of streets and typically results in access restrictions to businesses near the construction until covers can be installed over the construction area. Alternatives C1T and C2T would require the largest amount of cut-and-cover tunnel construction along Bellevue Way and NE 6th Street and along commercial areas of Main Street, 106th Avenue NE, and NE 6th Street, respectively. Bored tunnels would also have impacts, although they would be smaller than the cut-and-cover alternatives. Because it is mostly a bored tunnel, Alternative C3T could likely have fewer adverse business impacts because surface disruptions on traffic, utilities, and buildings would be minimized during boring; however, construction would result in high noise impacts, truck congestion, and traffic lane closures at tunnel access portals. Types of businesses located along the three tunnel alternatives include offices, retail, and restaurants. Those businesses that rely on drive-by traffic to attract customers would be adversely affected.

Along elevated routes in Segment C, most businesses along each alternative are professional offices that do not rely heavily on drive-by traffic to attract customers; however, there are a few retail businesses that may be adversely affected during construction. For Alternative C8E, there are a number of retail and restaurant businesses between NE 2nd and NE 12th Streets, and these businesses would likely experience more pronounced impacts than would be expected for businesses along the elevated sections of the other alternatives. Businesses along the at-grade portion of Alternative C4A would experience a shorter construction period with fewer disruptions; therefore, impacts on these businesses would likely be less severe than those of any other section of the alternatives. Constructing Alternative C14E along 114th Avenue NE would reduce this road to one lane of traffic between Main Street and NE 6th Street, but business and emergency access would be maintained. Construction noise impacts on local businesses would occur during the site preparation and project construction. At-grade construction activities for Alternative C9A would include detour routes, short-term and long-term lane closures, and loss of on street parking.

Segment D

Construction impacts associated with *Preferred Alternative D2A* would include short-term and long-term lane closures and the loss of on-street parking. Construction activities would close the Overlake Transit Center to construct the light rail station, transit loop, and multilevel parking garage. Under D2A - NE 24th Design Option, lane closures would temporarily affect businesses along portions of NE 24th Street and 152nd Avenue NE. Noise, vibration, vegetation removal, dust, loss of parking, construction traffic, and lane closures would temporarily affect businesses along portions of NE 16th Street and 136th Place NE for *Preferred Alternative D2A*. The D2A - NE 24th Design Option would add NE 24th Street and 152nd Avenue NE to the list of affected roadways.

The preferred storage track within the former BNSF Railway corridor might require temporary easements through business parking lots, but it is not anticipated to impede access or reduce business activities for adjacent businesses.

Similar to *Preferred Alternative D2A*, the other alternatives within Segment D would cause temporary detours and lane closures, but for relatively short periods of time, except for Alternative D3. Alternative D3 would travel in the median of NE 20th Street, both at-grade and retained cut, causing longer impacts on more businesses than any of the other Segment D alternatives, including *Preferred Alternative D2A*. The businesses that would most likely experience a decline in sales during construction are those that rely heavily on drive-by traffic to attract customers, such as fast food restaurants and other retail businesses. Alternative D2E would have impacts similar to those of *Preferred Alternative D2A*, but these impacts would more heavily affect the south side of NE 24th Street, as opposed to the north side with *Preferred Alternative D2A*. All access on NE 24th Street to the Overlake Shopping Center would be closed during construction, possibly resulting in additional economic impacts on these businesses relative to the other Segment D alternatives. Alternative D2E would also cause additional disruption as it turns to the north across NE 24th Street to run along 152nd Avenue NE. Alternative D5 would be constructed adjacent to SR 520 and behind retail businesses; therefore, the impacts on access, parking, and circulation would probably be minor.

Segment E

Preferred Alternative E2 might require temporarily closing some roadway crossings of the former BNSF Railway corridor during station and track construction. Construction noise would occur during the site preparation and project construction. Although there would not likely be any substantial impacts on businesses, because there are roadways on either side of the former BNSF Railway corridor that provide a buffer to adjacent business and preserve accessibility during construction, there might be minor dust, noise, and congestion impacts along side streets. Under E2 - Redmond Transit Center Design Option, construction along 161st Avenue NE could remove several businesses, as well as cause effects from noise, dust, and congestion. Businesses could also experience reduced access and parking during construction.

From the Overlake Transit Center to the West Lake Sammamish Parkway NE interchanges, alternatives in Segment E travel between businesses and SR 520 but would not affect access or parking. However, there might be minor dust, noise, and congestion impacts along side streets. The construction impacts for other Segment E alternatives would be similar to the impacts cited for the *Preferred Alternative E2,* above. Elevated portions of the alternatives over the West Lake Sammamish Parkway NE interchange might result in night closures of SR 520 or short-term detours without causing an adverse impact on traffic. Construction equipment might affect parking and business activity for businesses north of SR 520 for the Alternatives E1 and E4.

Maintenance Facilities

Each maintenance facility is located within existing industrial areas of Segments D and E that support a number of warehousing, industrial, and transportation facilities, except for the SR 520 Maintenance Facility (MF3), which is located on a mix of retail and industrial property north of Northup Way. Businesses in the area require good vehicular, truck, and/or rail freight access. The levels of business and transportation activity, and the likely adverse construction economic impacts, would be greatest for maintenance facilities in Segment D because they are located along already congested streets. The SE Redmond Maintenance Facility (MF5) would probably have the lowest traffic-related construction economic impacts of the four sites because of the presence of fewer nonindustrial businesses and transportation facilities.

4.3.4 Potential Mitigation Measures

Adverse impacts are more likely to occur for businesses near surface construction activities. The cut-and-cover tunnels and stations in Segment C would likely have the greatest impact on nearby businesses in terms of noise, dust, and restricted access. Noise and vibration mitigation is provided in Section 4.7, Noise and Vibration, and mitigation for displaced businesses is discussed in Section 4.1, Acquisition, Relocations, and Displacements. As described in Section 4.3.3.4, construction might cause adverse impacts on businesses due to reduced access or general construction activity. Transportation mitigation is provided in Chapter 3, Transportation Environment and Consequences.

To minimize or limit impacts, Sound Transit would dedicate staff to work specifically with affected businesses during construction to minimize the associated impacts. Construction mitigation plans would be developed to address the needs of businesses and could include, but are not limited to, the following elements:

- Provide a 24-hour construction telephone hotline.
- Provide business cleaning services on a case by case basis.
- Provide detour, open for business, and other signage as appropriate.
- Establish effective communications with the public through measures such as meetings and construction updates, alerts, and schedules.
- Implement promotion and marketing measures to help affected business districts maintain their customer base, to the extent possible, during construction.
- Maintain access as much as possible to each business and coordinate with businesses during times of limited access.
- Provide a community ombudsman.

Please refer to the arterials and local streets construction mitigation measures in Section 3.6.5 of Chapter 3 for additional measures that would help mitigate economics impacts.