LINK LIGHT RAIL OPERATIONS AND MAINTENANCE SATELLITE FACILITY

DRAFT ENVIRONMENTAL IMPACT STATEMENT

APPENDIX E.1

Transportation Technical Report

May 2014

SOUNDTRANSIT

CENTRAL PUGET SOUND
REGIONAL TRANSIT AUTHORITY

U.S. Department of Transportation
Federal Transit Administration

Appendix E-1

LINK OPERATIONS & MAINTENANCE SATELLITE FACILITY

Task 6.4 – R00

Transportation Technical Report

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SOUNDTRANSIT

CENTRAL PUGET SOUND
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PROJECT DESCRIPTION

Sound Transit is implementing a system-wide expansion of Link light rail transit service throughout its service area. This expansion is part of the ST2 Plan of transit investments that includes light rail extensions from Seattle to Redmond, Lynnwood, and Kent/Des Moines. To accommodate the ST2 expansion, Sound Transit will increase its light rail vehicle fleet to approximately 180 vehicles by 2023. The existing Sound Transit Link Light Rail Operations and Maintenance Facility (OMF), (at 3407 Airport Way S) south of Downtown Seattle, can serve 104 vehicles. Sound Transit will require additional operations and maintenance facility capacity to support the future light rail vehicle storage and maintenance needs. The design year for the proposed OMSF project is 2035.

Four site alternatives have been selected for concept design and environmental review. The sites were identified to support operations and deployment of vehicles to serve the entire Link system. Three of the site alternatives are located within the City of Bellevue; one is located in the City of Lynnwood. Figure 1 shows the location of the site alternatives. The alternative site locations are described below.

- **No Build**, would not construct a new OMSF at any of the sites identified, but would instead rely on the existing OMF located at S Forest Street in Seattle to serve the entire systems of Link light rail including the existing Central Link, and extensions to Lynnwood, Overlake Transit Center and Kent/Des Moines..
- **Alternative 1 – Lynnwood**, has three design options (C1, C2, and C3) that each require about 24 acres but have slightly different site boundaries and affected parcels, although all are bounded on the west by 52nd Avenue W/Cedar Valley Road, on the south by Pacific Northwest Traction Co. right-of-Way, and by private parcels to the north and east. Design option C1 would acquire about 37 acres and have about 9 acres of surplus land; design option C2 would acquire about 41 acres and have about 9 acres of surplus land; design option C3 would acquire about 39 acres and have about 13 acres of surplus land. The site parcels are currently occupied by a mix of uses including office buildings, light industrial buildings, retail stores, and undeveloped land planned for future use as the Edmonds School District's support center, warehouse, and school bus maintenance and storage facility. In addition, Alternative 1 – Lynnwood would require a separate light rail vehicle (LRV) storage area for approximately 32 cars on a site that would require acquisition of 11 acres adjacent to the former BNSF line (now Sound Transit right-of-way) located between 116th and 120th Avenues NE at about NE 19th Street in Bellevue. The BNSF Storage tracks site would also have surplus land (about 10 acres). The site plans for each design option of the Lynnwood component are shown on Figure 2, Figure 3, and Figure 4; the site plan for the BNSF Storage Tracks in Bellevue is shown on Figure 5.

- **Alternative 2 – BNSF**, shown on Figure 6, consists of 9 parcels (about 27 acres) located on the east side of the former BNSF railway corridor west of 120th Avenue NE, south of SR 520 and Northup Way, and north of NE 12th Street in the City of Bellevue. The site parcels are currently occupied by a mix of uses including warehouses, office buildings, light industrial buildings, and parking. This Alternative would result in about 4 acres of surplus land.
- **Alternative 3 – BNSF Modified**, shown on Figure 7, consists of 16 parcels (about 34 acres) located on both sides of the former BNSF railway corridor west of 120th Avenue NE, south of SR 520 and Northup Way, and north of NE 12th Street in the City of Bellevue. The site parcels are currently occupied by a mix of uses including warehouses, office buildings, light industrial buildings, fire training center, parking, and an educational facility. This Alternative would result in about 8 acres of surplus land.
- **Alternative 4 – SR 520**, shown on Figure 8, consists of 11 parcels (about 25 acres) bounded on the north by SR 520, on the south by NE 20th Street, on the west by 130th Avenue NE, and on the east by private commercial parcels (near 136th Place NE). The site parcels are currently occupied by a mix of uses including office buildings, light industrial buildings, retail stores, automobile sales facilities, and auto service center uses. This Alternative would not result in any surplus land.

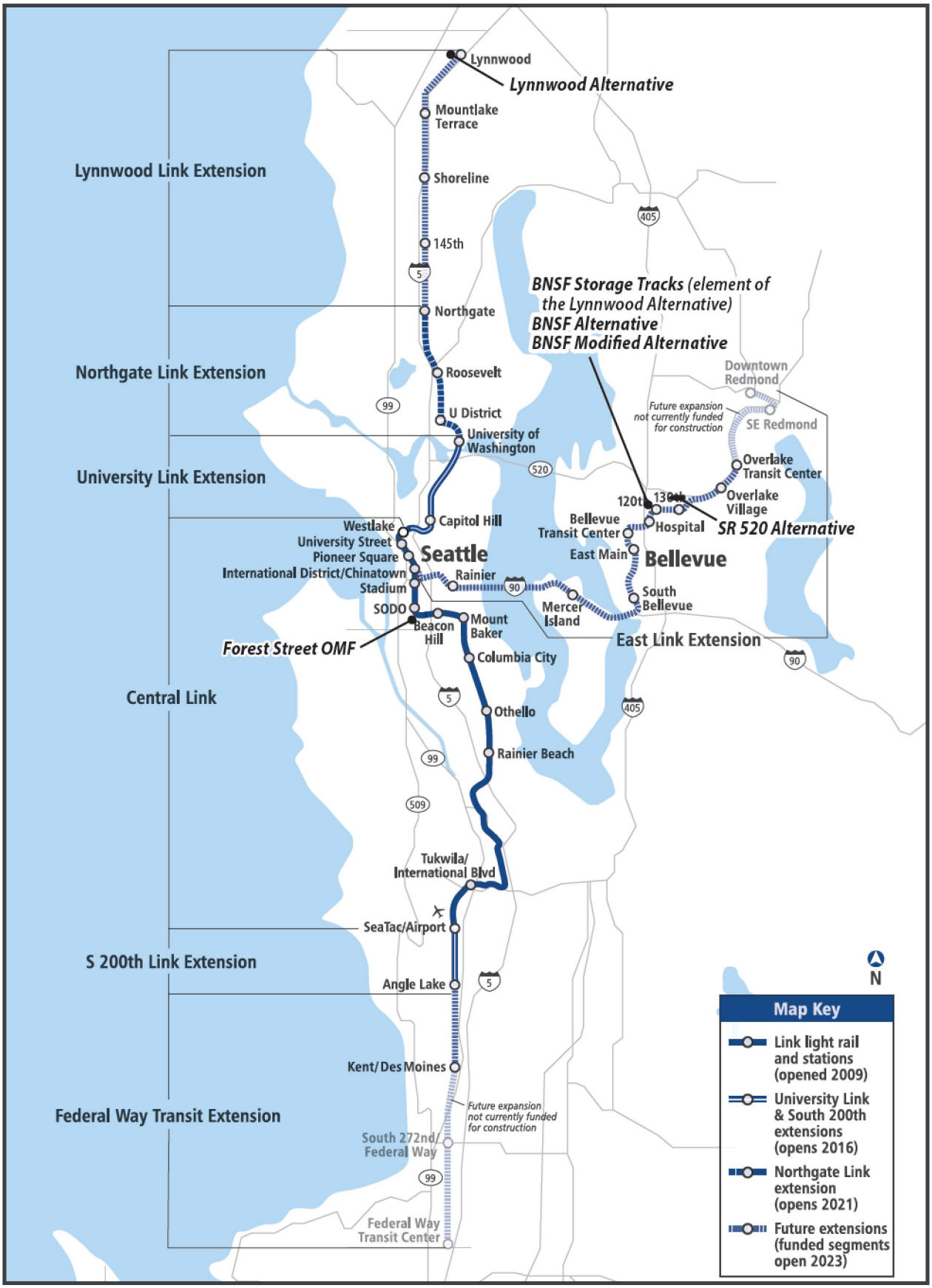


Figure 1. Regional Setting for the Build Alternatives
Sound Transit Link Light Rail OMSF Draft EIS

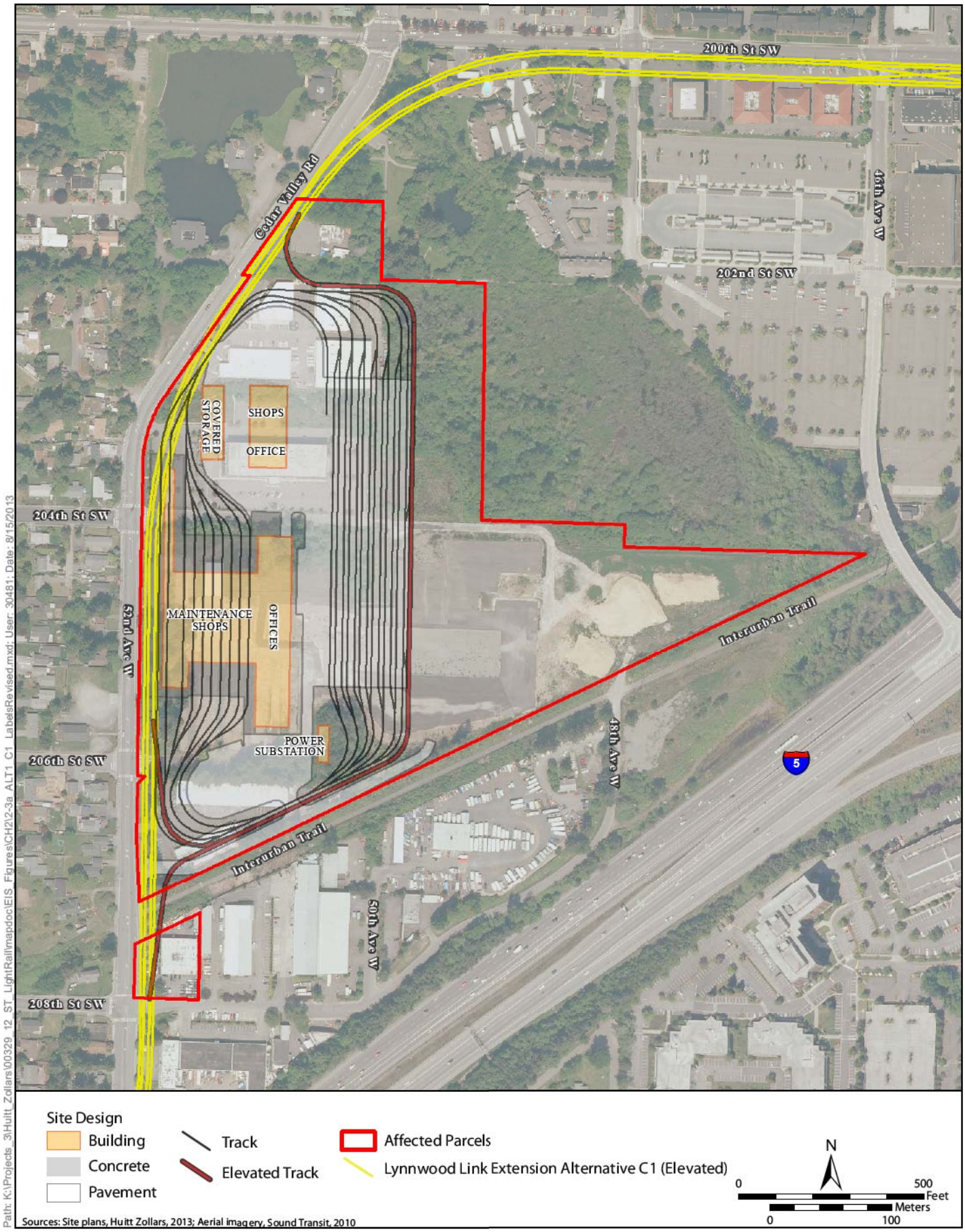


Figure 2. Lynnwood Alternative, Design Option C1
Sound Transit Link Light Rail OMSF Draft EIS

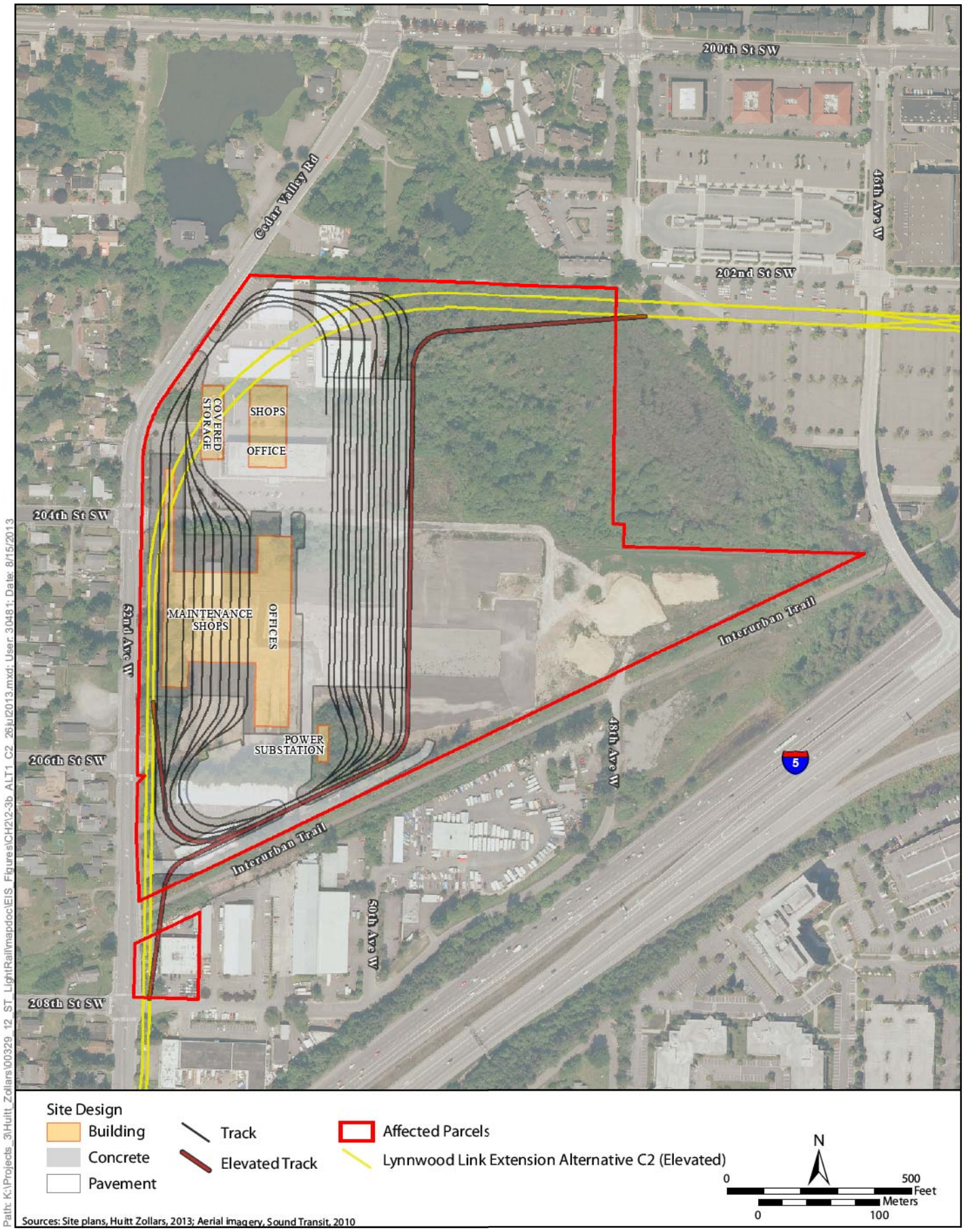


Figure 3. Lynnwood Alternative, Design Option C2
Sound Transit Link Light Rail OMSF Draft EIS

Figure 4. Lynnwood Alternative, Design Option C3
Sound Transit Link Light Rail OMSF Draft EIS

Figure 5. Lynnwood Alternative, BNSF Storage Tracks*
Sound Transit Link Light Rail OMSF Draft EIS
*The BNSF Storage Tracks are located in Bellevue

Figure 6. BNSF Alternative
Sound Transit Link Light Rail OMSF Draft EIS

Figure 7. BNSF Modified Alternative
Sound Transit Link Light Rail OMSF Draft EIS

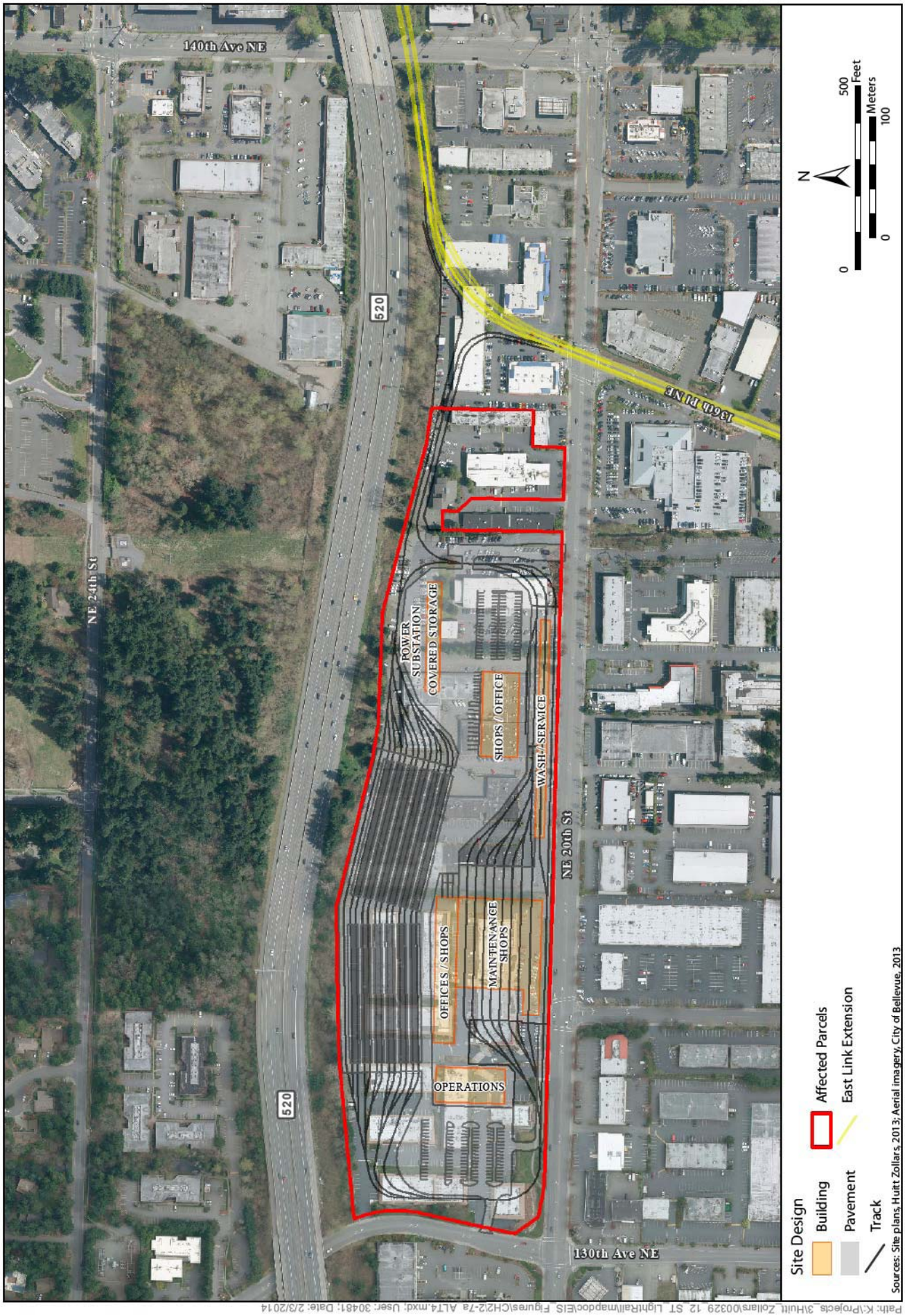


Figure 8. SR 520 Alternative
Sound Transit Link Light Rail OMSF Draft EIS

REPORT PURPOSE

This report presents traffic and access analyses to support the Concept Design Report and environmental review for the Sound Transit Link Light Rail Operations and Maintenance Satellite Facility (OMSF). It includes trip generation estimates for the proposed project, traffic operations analyses of automobile access points, and evaluations of potential impacts to safety, transit, and non-motorized transportation for each of the four site alternatives.

INTRODUCTION TO RESOURCES AND REGULATORY REQUIREMENTS

As part of each agency's comprehensive planning efforts, agency transportation goals and level of service (LOS) standards are developed. Level of service is a qualitative measure used to characterize traffic operating conditions. Six letter designations, "A" through "F," are used to define level of service. LOS A is the best and represents good traffic operations with little or no delay to motorists. LOS F is the worst and indicates poor traffic operations with long delays. While each agency accepts different levels of congestion, a delay-based intersection LOS analysis has been preliminarily accepted by each agency. Delay is expressed in terms of average delay per vehicle, in seconds, experienced during an analysis hour. The LOS standards typically apply to the PM peak hour, which is the hour between 4:00 and 6:00 P.M. when weekday traffic is typically highest for the overall roadway network. The following outlines the LOS standards for the jurisdictions containing the site alternatives.

City of Lynnwood – The City's Comprehensive Plan outlines its level of service standard to measure the overall transportation system's ability to move people and goods. Different standards apply for City Center arterials, state facilities, and the rest of the city. The City's LOS standards are as follows:

- LOS C for local streets at all times.
- LOS D for State Highways during the PM peak hour based on WSDOT's LOS standard for urban arterials.
- LOS D for non-City Center arterials and non-State Highways during the PM peak hour.
- LOS E for City Center arterials during the PM peak hour.

The City of Lynnwood also allows 20 percent of the City's signalized intersections to be deficient before the LOS concurrency standard is considered to be violated. There are 56 signals currently installed within the City, so a maximum of 11 signalized intersections are allowed to be deficient.

City of Bellevue – The City of Bellevue's traffic level-of-service standards are outlined in its Traffic Standards Code (TSC), which are presented in the Bellevue City Code (BCC) section 14.10. Within the City, PM peak period (averaged) level-of-service standards are tailored for each mobility management area (distinct areas with boundaries based on factors such as area-specific mobility target), reflecting distinct conditions and multiple community objectives, with an area-average approach used to measure system adequacy. As outlined in BCC section 14.10.030, the average level-of-service of the system intersections within each area is calculated. There is a congestion allowance specified for each mobility management area which defines the maximum number of system intersections allowed to exceed the area-average level-of-service standard set for a mobility management area. The area-average level-of-service standard

and the congestion allowance for the Bel-Red/Northup/Area #12 mobility management area (the one that contains the potential OMSF site alternatives) are:

- Area-Average LOS Standard (Maximum volume-to-capacity ratio) = 0.950; Congestion Allowance = 7

However, it should also be noted that BCC section 14.10.020 public transportation facilities are except from the requirements of the Traffic Standards Code.

Overall, if a given intersection's operations are better than the LOS standard for each agency with the build alternative, then that intersection is considered to meet the agency's standard and does not require mitigation. In situations where the intersection operates worse than the agency's LOS standard without the build alternative, then mitigation may be required if the City's standards apply to the proposed development and intersection delay and/or LOS degrades further with the build alternative.

STUDY AREA AND ANALYSIS PERIODS

The transportation study area for each alternative site was defined based on standard transportation and traffic impact analysis practices as well as the requirements of the two local jurisdictions where the site alternatives are located. The analysis approach and study areas for each site reflect locally-adopted impact analysis guidelines. As will be described later, regardless of the site selected, the OMSF is projected to generate lower levels of daily and peak hour traffic than the land uses that would be displaced from each site. Therefore, the project would result in a net decrease in trips on roadways surrounding each of the sites compared to conditions without the OMSF project. As a result, traffic impact analysis standards do not require analysis of off-site intersections and the operations analyses were limited to the vehicular site access driveways at each site. Since the OMSF alternatives would not result in new off-site impacts, the descriptions of the Affected Environment (including transit, pedestrian, and bicycle facilities) are presented in tabular format rather than on maps. Data required for the site access analyses were compiled from new traffic counts performed at each access location including new daily counts adjacent to each site. For site access, the peak traffic flows would occur early in the morning (4:00 to 5:00 A.M.) and midday (10:30 to 11:30 A.M.) when the largest numbers of light rail vehicle (LRV) operators and maintenance facility employees would arrive and depart the facility.

AFFECTED ENVIRONMENT

This section presents a summary of existing conditions at each of the alternative sites without the proposed Sound Transit Link light rail OMSF.

Alternative 1 – Lynnwood

The following sections describe the transportation network for the Lynnwood study area evaluated as part of the analysis of Alternative 1—Lynnwood. As described previously, Alternative 1—Lynnwood would also require development of a LRV overnight storage yard (the BNSF Storage Tracks) in Bellevue. Because the BNSF Storage Tracks site is included within the larger sites being considered for Alternative 2—BNSF and Alternative 3—BNSF Modified, the transportation network for the Bellevue portion of Alternative 1—Lynnwood (the BNSF Storage Tracks) is the same as that presented for those alternatives, unless specifically noted in the following sections.

Transportation Network

Characteristics, such as street classification, speed limits, traffic control, non-motorized facilities, parking, and other attributes of the key roadways and intersections in the Lynnwood site vicinity are summarized in Table 1.

Table 1. Summary of Study Area Roadway Characteristics – Alternative 1 – Lynnwood

Characteristic	52nd Avenue W / Cedar Valley Rd	204th Street SW	208th Street SW	120th Avenue NE (Bellevue)
Street Classification	Minor Arterial [1]	Collector Arterial [1]	Collector Arterial [1]	Collector Arterial [2]
Speed Limit (mph)	30	30	30	30
Lanes	3	2	2/3	2 (1 each direction plus turn lanes added at key intersections)
Street-Edge Condition	Curb, gutter, sidewalk, and bike lanes on both sides	Curb, gutter, and sidewalk on both sides	Curb, gutter, sidewalk and bike lanes on both sides	Mostly paved or gravel shoulder with segments of curb, gutter, and sidewalk on west side;
Bike Lanes	Both sides	None	Both sides	None
Parking	None	Parallel both sides	Parallel on north side west of 54th Ave W	Along some segments of gravel shoulder
Lane Restrictions	None	None	None	None
Transit Stops	Both sides at 204th and 208th Streets SW	None	None	None
Traffic Control & Signal Locations	Signal at 200th Street SW	Stop signs at 52nd Ave W	Stop signs at 52nd Ave W	Signals at NE 20th St (Northup Way) and NE 12th Street

Source: Heffron Transportation, Inc., February 2013.

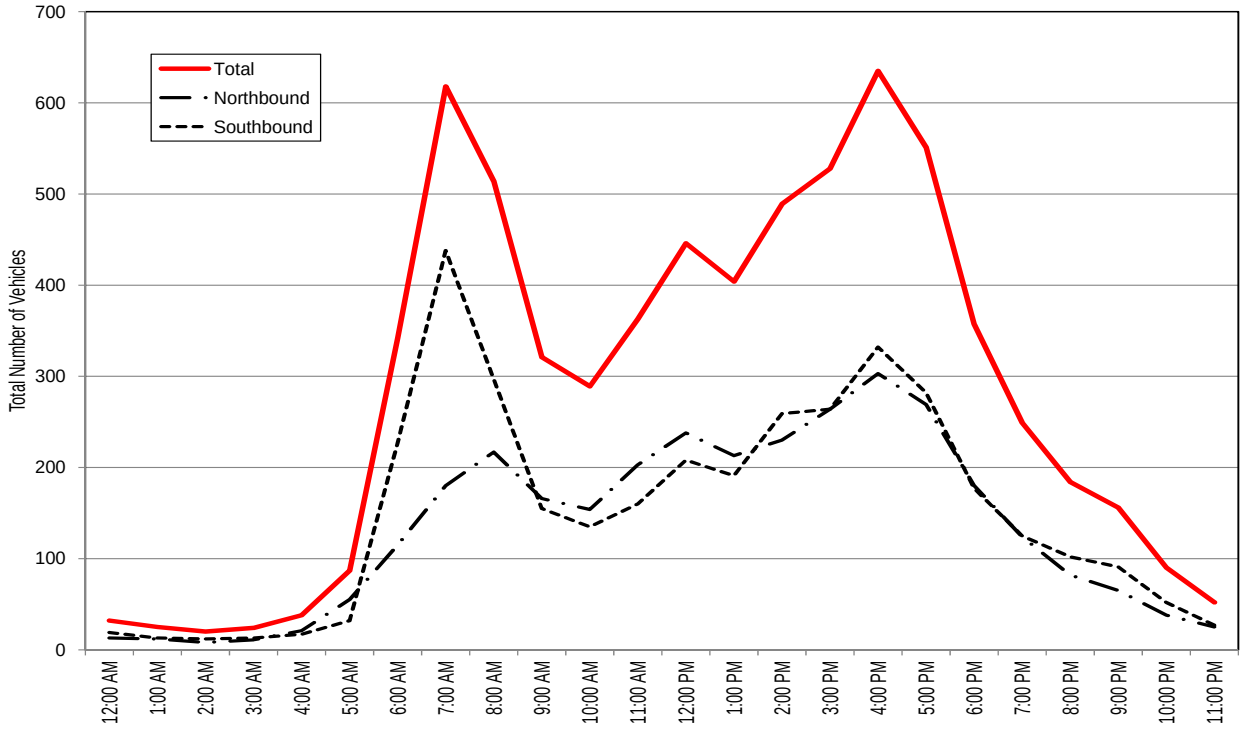
1. *City of Lynnwood 2020 Comprehensive Plan, Revised: July 11, 2011, Transportation Element – Arterial Roadway System Plan.*
2. *City of Bellevue – Arterial Classification Map; March 9, 2009. http://www.bellevuewa.gov/pdf/IT/street_classification_a.pdf*

The City of Lynnwood Six Year TIP 2013-2018 and the City's 20-Year Long Range Transportation Improvement List were reviewed to determine if any planned improvement projects would affect study area roadways or intersections. Within the project study area, one non-motorized improvement is included in the six-year TIP—Interurban Trail Improvement in the vicinity of 208th Street SW and 52nd Avenue W. The 20-year list includes bicycle projects along 52nd Avenue W (#B32 from 204th Street SW to the south City limits) and 208th Street SW (#B106 from SR 99 to 52nd Avenue W). No other projects were identified that would alter the existing transportation system near the site.

Roadway Traffic Volumes

In Lynnwood, new 48-hour traffic counts were performed on 52nd Avenue W north of 208th Street SW on January 22nd and 23rd, 2013. Figure 9 shows the average weekday hourly traffic volumes by direction on 52nd Avenue W, which carries an average of about 6,800 vehicles per day. The figure shows a directional traffic pattern on 52nd Avenue W in which peak southbound flows occur in the morning and peak northbound flows occur in the afternoon. The highest volume on 52nd Avenue W occurs between 4:00 and 5:00 P.M. (the PM peak hour) with 635 vehicles per hour (305 northbound, 330 southbound); the AM peak hour flow of about 620 vehicles (180 northbound, 440 southbound) occurs between 7:00 and 8:00 A.M.

Figure 9. Hourly Traffic Volumes on 52nd Avenue W in Alternative 1—Lynnwood Site Vicinity



Source: All Traffic Data Service, Inc., January 2013.

Existing Site Generated Traffic Volumes

Depending on the design option (C1, C2, and C3), the Lynnwood site has six or seven existing buildings that, according to Snohomish County Assessor records, contain general office space (75,016 sf), light industrial space (between 43,436 sf and 45,596 sf), and warehouse/storage space (30,600 sf). These buildings would be eliminated if the site were developed for the maintenance base. In addition, the site includes a vacant parcel owned by the Edmonds School District that was previously occupied by the Scriber Lake Alternative School and is currently planned to house the District's consolidated central support center functions. The planned Edmonds School District project was to include an Educational Services Center (ESC) providing administrative and training functions, a bus base and vehicle maintenance facilities, building and facilities maintenance, and District warehouse operations. The site also include four parcels that are either vacant or contain accessory parking for one or more buildings on other parcels.

To estimate the traffic generated by the existing uses on the site, standard trip generation rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*[1] were applied. Rates published for General Office (Land Use Code 710), General Light Industrial (Land Use Code 110), and Warehousing (Land Use Code 150) were applied to each existing use based on the sizes available from the County's Assessor records and listed above. Table 2 presents the trip generation estimates for the existing uses on the site. As shown, existing uses on the site are estimated to generate 1,240 trips per day, 166 AM peak hour trips, and 164 PM peak hour trips. It should also be noted that the planned Edmonds School District Support Center project was expected to generate about 2,500 trips per day, 190 AM peak hour trips, and 325 PM peak hour trips.[2] If this project were developed as planned, the combined site being considered for the OMSF would generate 3,740 trips per day, 356 AM peak hour trips, and 489 PM peak hour trips.

ITE trip generation rates were also applied to the existing uses that could be displaced to accommodate the BNSF Storage Tracks project component in Bellevue. Rates published for General Office (Land Use Code 710) and Warehousing (Land Use Code 150) were applied to the existing uses based on the sizes available from King County's Assessor records. As also shown in Table 2, the office (4,528-sf) and warehouse (169,632-sf) uses (a vacant former International Paper building) on the parcel that would be part of the BNSF Storage Tracks if occupied are estimated to generate 650 trips per day, 58 AM peak-hour trips, and 61 PM peak-hour trips.

[1] ITE, 9th Edition, 2012.
[2] Edmonds School District, Edmonds School District No. 15 – Environmental Checklist District Support Center, Appendix I, pg 19, April 2007.

Table 2. Alternative 1 – Lynnwood [1] – Existing Site Trip Generation Estimates

Trip Type	Size	Daily Trips	AM Peak Hour Trips [2]			PM Peak Hour Trips [3]		
			In	Out	Total	In	Out	Total
Lynnwood Site								
General Office (LU 710)	75,016 sf	830	103	14	117	19	93	112
Light Industrial (LU 110)	43,436 sf	300	35	5	40	5	37	42
Warehouse (LU 150)	30,600 sf	110	7	2	9	3	7	10
Total Trips		1,240	145	21	166	27	137	164
BNSF Storage Tracks (Bellevue)								
General Office (LU 710)	4,528 sf	50	6	1	7	1	6	7
Warehouse (LU 150)	169,632 sf	600	40	11	51	14	40	54
Total Trips		650	46	12	58	15	46	61

Source: Heffron Transportation, Inc., January 2013 using rates published in ITE's Trip Generation Manual, 9th Edition, 2012.

1. *Sizes and traffic estimates listed are for parcels that would be affected by Design Options C2 and C3. Design Option C1, would displace about 2,000-sf of additional light industrial space and trip estimates would be higher by 20 daily trips, and 2 peak hour trips.*
2. *AM Peak Hour typically occurs during one hour between 7:00 and 9:00 A.M.*
3. *PM Peak Hour typically occurs during one hour between 4:00 and 6:00 P.M.*

Traffic Safety

Collision data along the site frontage of 52nd Avenue W and its nearest intersections were obtained from WSDOT to determine if there are any traffic safety conditions that could affect or be affected by the OMSF project. Data were obtained for the most recent three-year period available, which spanned January 1, 2009 to December 31, 2011. Collision data for this period are summarized in Table 3. As shown, the largest number of collisions occurred at the 52nd Avenue W/208th Street SW intersection, which is located south of the project site. During the three-year period, there was an average of 3.3 collisions per year. Of the 10 reported collisions, 7 were listed as angle collisions. No other collisions were identified along the site frontage of 52nd Avenue W. Based on these data, there are not unusual traffic safety conditions in the site vicinity. Data were also obtained for 120th Avenue NE near the BNSF Storage Tracks site. As shown, the largest number of collisions occurred at the 120th Avenue NE/NE 12th Street intersection. During the three-year period, there was an average of 2.3 collisions per year. Of the seven reported collisions, three were listed as rear-end collisions. The data indicated that no collisions occurred along the site frontage of 120th Street NE. Based on these data, there are no unusual traffic safety conditions in the site vicinity.

Table 3. Study Area Collision Summary – Alternative 1 – Lynnwood

Intersection	Number of Collisions by Type								3-Year Total	Average/Year
	Head On	Rear End	Side-Swipe	Right Turn	Left Turn	Right Angle	Ped/Bicycle	Other		
Lynnwood Site										
52nd Avenue W / 206th Street SW	0	1	0	0	0	0	1	0	2	0.7
52nd Avenue W / 208th Street SW	0	2	0	0	0	7	0	1	10	3.3
Roadway Segment										
52nd Avenue W (Cedar Valley Road) along site frontage	0	0	0	0	0	0	0	0	0	0.0
BNSF Storage Tracks (Bellevue)										
120th Avenue NE / NE 12th Street	0	3	2	0	0	1	0	1	7	2.3
120th Avenue NE / Lowes Dwy [a]	0	0	0	0	0	1	0	0	1	0.3
Roadway Segment										
120th Avenue NE along site frontage	0	0	0	0	0	0	0	0	0	0.0

Source: WSDOT, January 2013.

Transit

Transit service closest to the Lynnwood site is provided by Community Transit. The closest transit stops are located on 52nd Avenue W at 204th and 208th Streets SW adjacent to the site. These stops are served by Community Transit Route 130, which provides connections between the Lynnwood Transit Center, Mountlake Terrace, Shoreline, and Edmonds Station. It operates weekdays from about 5:20 A.M. to about 9:50 P.M. with roughly 30-minute headways (time between consecutive buses). It also operates on Saturdays with one-hour headways.[3]

Near the BNSF Storage Tracks site in Bellevue, King County Metro owns and operates two bus base facilities for dispatch, operations, maintenance, and storage of transit vehicles on the eastside. Metro's East Base is located between 120th and 124th Avenues NE at approximately NE 18th Place. Metro's Bellevue Base is located on the east side of 124th Avenue NE south of NE 18th Place. Both the East Base and Bellevue Base have primary access from 124th Avenue NE; however, the East Base has one secondary gated access on 120th Avenue NE.

[3] Community Transit Online Trip Planner, Dec. 2012. http://www.commtrans.org/schedule/130/

Non-Motorized Facilities

There is sidewalk along both sides of 52nd Avenue W as well as along 204th and 208th Streets SW. There are bike lanes along both sides of 52nd Avenue W and 208th Street SW. The improvements planned for 52nd Avenue W and 208th Street SW described previously are bicycle facility projects.

Parking

No parking is permitted along 52nd Avenue W. Parallel parking occurs along the north side of 208th Street SW west of 54th Avenue W (about 14 spaces between 54th and 56th Avenues W and many more west of 56th Avenue W). Off-street parking is also provided in lots adjacent to offices, warehouses, and light industrial buildings in the site vicinity.

Site Access

There are four existing site access driveways along the east side of 52nd Avenue W plus the east legs of 204th Street SW and 206th Street SW that extend into the project site and provide access to the subject parcels. All the access points are stop-sign controlled.

Freight Mobility and Access

Freeways, arterials, and local roadways carry freight near the study area. The Washington State Freight and Goods Transportation System (FGTS) classifies highways, county roads, and city streets according to the average annual gross truck tonnage they carry. Classifications range from T-1, which includes roadways that carry over 10 million tons per year, to T-5, which includes roadways that carry over 20,000 tons in 60 days. Within the City of Lynnwood, none of the study area roadways are classified in this system. However, the arterial roadways such as 52nd Avenue W provide local access for trucks to serve nearby commercial and industrial properties including the existing site uses.

Adjacent to the BNSF Storage Tracks component site, 120th Avenue NE between Bellevue-Redmond Road and Northup Way is classified as a T2 roadway, meaning it carries between 4 million and 10 million tons per year. Several industrial and warehouse properties in the area likely generate truck traffic along 120th Avenue NE in the site vicinity.

Alternative 2 – BNSF

Transportation Network

Characteristics of the key roadways and intersections in the BNSF site vicinity, including street classification, speed limits, traffic control, non-motorized facilities, parking, and other attributes, are summarized in Table 4.

Table 4. Summary of Study Area Roadway Characteristics – Alternative 2 – BNSF

Characteristic	120th Avenue NE
Street Classification	Collector Arterial [1]
Speed Limit (mph)	30
Lanes	2 (1 each direction plus lanes added at key intersections
Street-Edge Condition	Mostly paved or gravel shoulder with segments of curb, gutter, and sidewalk on west side
Bike Lanes	None
Parking	Along some segments of gravel shoulder
Lane Restrictions	None
Transit Stops	None
Traffic Control & Signal Locations	Signals at NE 20th St (Northup Way) and NE 12th Street

1. *Source: City of Bellevue – Arterial Classification Map; March 9, 2009.* http://www.bellevuewa.gov/pdf/IT/street_classification_a.pdf

The *City of Bellevue 2013-2018 Transportation Improvement Program (TIP),*[4] the *2013-2019 Capital Investment Program Plan (CIP)*,[5] and the *2013-2024 Transportation Facilities Plan: Preliminary Project Priority List (TFP)*[6] include several projects in the study area that will likely alter the existing transportation network near the site before the 2035 design year. Several of the projects are listed in more than one plan, but with different identification numbers as noted.

120th Avenue NE Improvements (Stage 2 & 3) – NE 8th Street to Northup Way (TIP #15, CIP #R-164, TFP #208). *This project will extend, realign and widen 120th Avenue NE from NE 8th Street to south of NE 12th Street and widen 120th Avenue NE from south of NE 12th Street to Northup Way (Stage 3). Stage 2 of the project includes all intersection improvements at NE 8th Street and Old Bel-Red Road. Stage 3 of the project includes all intersection improvements at NE 12th Street, Northup Way, and an enhanced intersection with the proposed NE 15th Street to accommodate the proposed alignment of Sound Transit's East Link light rail route. The roadway cross-section will consist of five lanes, including two travel lanes in each direction with turn pockets or a center turn lane. The project will improve, or install where missing, bike lanes, curb, gutter and sidewalk on both sides, illumination, landscaping, irrigation, storm drainage, and water quality treatment.*

[4] City of Bellevue, Adopted May 21, 2012 – Resolution No. 8396.
[5] City of Bellevue, 2013.
[6] City of Bellevue, Approved by the Transportation Commission June 14, 2012.

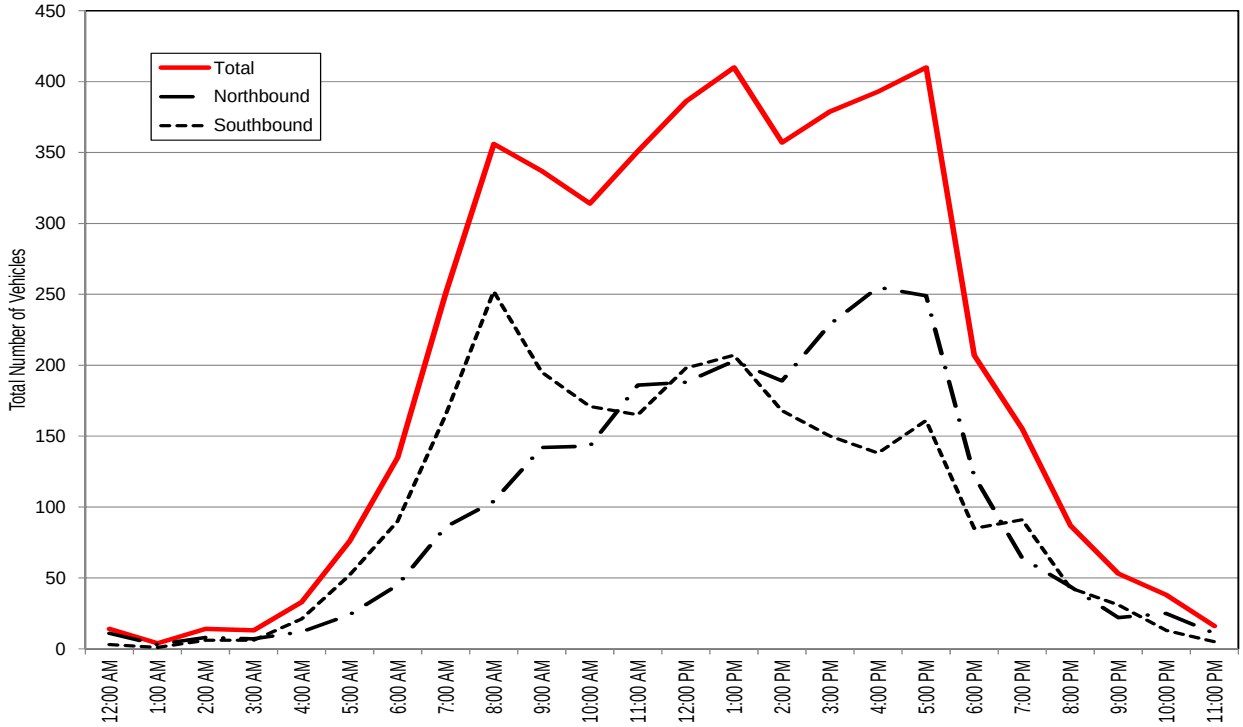
120th Avenue NE (stages 3 and 4)/ NE 12th Street to 18th Street and to Northup Way (TC #4, Prelim. TFP Map #RI-157, CIP #R-164). *Stage 3 will widen 120th Avenue NE from NE 12th Street to NE 16th Street alignment and re-profile the roadway in conjunction with Sound Transit's East Link project. The roadway cross section for stage 3 will consist of five lanes, with two travel lanes in each direction and center turn lane or turn pockets; bike lanes, curb, gutter and sidewalk both sides. Stage 4, from NE 16th Street to Northup Way will widen the roadway and transition from a 5-lane section to a 4-lane section in proximity of NE 18th Street. Stage 4 north of NE 18th Street will consist of two northbound through lanes, a center turn lane and one southbound lane with sidewalks on both sides and separated bike path on west site.*

NE 15th Street Multi-Modal Corridor (Segment I) - NE 12th Street to 124th Avenue NE (TIP #14, CIP #R-163, TFP #209). *This project will implement a new multi-modal corridor consisting of two general purpose travel lanes in each direction; turn lanes at designated intersections; curbs, gutters and sidewalks on both sides; bicycle facilities incorporated within or adjacent to the corridor with regional trail connections; illumination; and storm drainage and detention. Other features may include provisions for local street connections and interim on-street parking. Accommodation for light rail guide ways, a light rail station at approximately 121st Avenue NE, and other utility infrastructure needs will be included within the design of the project corridor. The project may also incorporate "green" elements, including urban open spaces, tree canopy with enhanced landscaping features, and natural drainage elements where practical. The project will modify existing or construct new signalized intersections at 116th Avenue NE, the reconnection of NE 12th Street, 120th Avenue NE, and 124th Avenue NE. Project implementation will be coordinated with existing and potential development, the Sound Transit East Link project, planned improvements to 120th and 124th Avenues NE, and future NE 15th/16th Street improvements east of 124th Avenue NE.*

Roadway Traffic Volumes

New 48-hour traffic counts were performed on 120th Avenue NE at approximately the location of the planned primary access driveway on January 22nd and 23rd, 2013. Figure 10 shows the average weekday hourly traffic volumes by direction on 120th Avenue NE, which carries an average of about 4,800 vehicles per day. The figure shows a directional traffic pattern on 120th Avenue NE in which peak southbound flows (away from Northup Way and SR 520) occur in the morning and peak northbound flows (toward NE 12th Street) occur in the afternoon. The highest volumes on 120th Avenue NE occurs between 1:00 and 2:00 P.M. and again between 5:00 and 6:00 P.M. (the midday and PM peak hours, respectively), with about 410 vehicles per hour for both directions. As described later in the *Potential Impacts* section, OMSF-generated trips that overlap the commuter AM peak hour would be highest from 7:00 to 8:00 A.M.; during that hour, about 250 vehicles use 120th Avenue NE (85 northbound, 165 southbound).

Figure 10. Hourly Traffic Volumes on 120th Avenue NE near Alternative 2—BNSF Site



Source: All Traffic Data Services, Inc., January 2013.

Existing Site Generated Traffic Volumes

The BNSF site consists of nine parcels with several buildings that, according to King County Assessor records, contain general office space (58,022 sf), retail space (8,788 sf), and warehouse space (281,353 sf). The site includes two vacant parcels and one parcel used for parking associated with an adjacent Barrier Audi auto dealership that is not part of the BNSF site.

Traffic generated by the existing uses on the site was estimated using standard trip generation rates published in ITE's *Trip Generation Manual*. Rates published for General Office (Land Use Code 710), Retail Shopping Center (Land Use Code 820), and Warehousing (Land Use Code 150) were applied to each existing use based on the sizes available from the County's Assessor records and listed above. Table 5 presents the trip generation estimates for the existing uses on the site. As shown, the site is estimated to generate 2,020 trips per day, 183 AM peak hour trips, and 209 PM peak hour trips.

Table 5. Alternative 2 – BNSF – Existing Site Trip Generation Estimates

Trip Type	Size	Daily Trips	AM Peak Hour Trips [1]			PM Peak Hour Trips [2]		
			In	Out	Total	In	Out	Total
General Office (LU 710)	58,022 sf	640	80	11	91	15	71	86
General Retail (LU 820)	8,788 sf	380	5	3	8	16	17	33
Warehouse (LU 150)	281,353 sf	1,000	66	18	84	23	67	90
Total Trips		2,020	151	32	183	54	155	209

Source: Heffron Transportation, Inc., January 2013 using rates published in ITE's Trip Generation Manual, 9th Edition, 2012.

1. AM Peak Hour typically occurs during one hour between 7:00 and 9:00 A.M.

2. PM Peak Hour typically occurs during one hour between 4:00 and 6:00 P.M.

Traffic Safety

Collision data along the site frontage of 120th Avenue NE and its nearest intersections were obtained from WSDOT to determine if there are any traffic safety conditions that could affect or be affected by the OMSF project. Data were obtained for the most recent three-year period available, which spanned January 1, 2009 to December 31, 2011. Collision data for this period are summarized in Table 6. As shown, the largest number of collisions occurred at the 120th Avenue NE/NE 12th Street intersection. During the three-year period, there was an average of 2.3 collisions per year. Of the seven reported collisions, three were listed as rear-end collisions. The data indicated that no collisions occurred along the site frontage of 120th Street NE. Based on these data, there are no unusual traffic safety conditions in the site vicinity.

Table 6. Intersection Collision Summary – Alternative 2 – BNSF

Intersection	Number of Collisions by Type								3-Year Total	Average/Year
	Head On	Rear End	Side-Swipe	Right Turn	Left Turn	Right Angle	Ped/Bicycle	Other		
120th Avenue NE / NE 12th Street	0	3	2	0	0	1	0	1	7	2.3
120th Avenue NE / Lowes Dwy [a]	0	0	0	0	0	1	0	0	1	0.3
Roadway Segment										
120th Avenue NE along site frontage	0	0	0	0	0	0	0	0	0	0.0

Source: WSDOT, January 2013.

a. Intersection is located about 400 feet north of Alternative 2 – BNSF site.

Transit

Transit service closest to the BNSF site is provided by King County Metro. The closest transit stop is located on Northup Way at 120th Avenue NE, approximately one-quarter mile north of the site. The stop is served by Metro Route 249, which provides daily service between the South Bellevue Park-and-Ride lot and the Overlake Transit Center. It operates weekdays from about 6:20 A.M. to about 8:20 P.M. with roughly 30-minute headways (time between consecutive buses). It also operates on Saturdays and Sundays with 45-minute headways.[7]

Near the BNSF site, King County Metro owns and operates two bus base facilities for dispatch, operations, maintenance, and storage of transit vehicles on the eastside. Metro's East Base is located between 120th and 124th Avenues NE at approximately NE 18th Place. Metro's Bellevue Base is located on the east side of 124th Avenue NE south of NE 18th Place. Both the East Base and Bellevue Base have primary access from 124th Avenue NE; however, the East Base has one secondary gated access on 120th Avenue NE.

Non-Motorized Facilities

There is sidewalk along the western side of 120th Avenue NE for about 1,165 feet south of Northup Way. There is also sidewalk along the west side of the roadway for about 665 feet north of NE 12th Street. There is no sidewalk along the east side or the remainder of the west side (about 2,040 feet) of 120th Aveune NE. There are no other non-motorized facilities along the roadway.

The improvements and widening planed for 120th Avenue NE described previously would include sidewalks and bicycle lanes along both sides of the roadway.

Parking

Some parallel and 90-degree angle parking occurs along the gravel shoulders on both sides of 120th Avenue NE. Parked vehicles include automobiles as well as large trucks or truck trailers. Off-street parking is also provided in lots adjacent to offices, warehouses, and light industrial buildings in the site vicinity.

Site Access

There are seven existing site access driveways along the west side of 120th Avenue NE that provide access to the parcels east of the former BNSF rail tracks.

Freight Mobility and Access

Adjacent to the Alternative 2—BNSF site, 120th Avenue NE between Bellevue-Redmond Road and Northup Way is classified as a T2 roadway within the FGTS. This means it carries between 4 million and 10 million tons per year. Several industrial and warehouse properties in the area likely generate truck traffic along 120th Avenue NE in the site vicinity.

[7] Metro Online Trip Planner, Dec. 2012. http://metro.kingcounty.gov/tops/bus/schedules/s249_0_.html

Alternative 3 – BNSF Modified

The background conditions for the BNSF Modified site alternative are nearly identical to those presented previously for the BNSF site alternative. The primary difference between the two alternative sites relates to the parcels that would make up each. The BNSF Modified alternative would include all but one of the parcels identified for the BNSF alternative plus eight additional parcels on the west side of the former BNSF right of way. Since the site access locations for the BNSF Modified alternative site would be the same as those described for the BNSF site, the conditions described for the Transportation Network, Roadway Traffic Volumes, Safety, Transit, Non-Motorized Facilities, Parking and Site Access are also the same. The one key difference is the Existing Site Generated Traffic, which is described below.

Existing Site Generated Traffic Volumes

The Alternative 3 – BNSF Modified site consists of 16 parcels with numerous buildings that, according to King County Assessor records, contain general office space (55,634 sf), retail space (8,788 sf), and warehouse space (310,665 sf). The site includes three parcels that are used as a fire department training center, four vacant parcels, and one parcel that is used for parking associated with an adjacent Barrier Audi auto dealership that is not part of the BNSF site.

Traffic generated by the existing uses on the site was estimated using standard trip generation rates published in ITE's *Trip Generation Manual*. Rates published for General Office (Land Use Code 710), Retail Shopping Center (Land Use Code 820), and Warehousing (Land Use Code 150) were applied to each existing use based on the sizes available from the County's Assessor records and listed above. Table 7 presents the trip generation estimates for the existing uses on the site. As shown, the site is estimated to generate 2,100 trips per day, 188 AM peak hour trips, and 215 PM peak hour trips.

Table 7. Alternative 3 – BNSF Modified – Existing Site Trip Generation Estimates

Trip Type	Size	Daily Trips	AM Peak Hour Trips [1]			PM Peak Hour Trips [2]		
			In	Out	Total	In	Out	Total
General Office (LU 710)	55,634 sf	610	77	10	87	14	69	83
General Retail (LU 820)	8,788 sf	380	5	3	8	16	17	33
Warehouse (LU 150)	310,665 sf	1,110	73	20	93	25	74	99
Total Trips		2,100	155	33	188	55	160	215

Source: Heffron Transportation, Inc., January 2013 using rates published in ITE's Trip Generation Manual, 9th Edition, 2012.

1. AM Peak Hour typically occurs during one hour between 7:00 and 9:00 A.M.

2. PM Peak Hour typically occurs during one hour between 4:00 and 6:00 P.M.

Alternative 4 – SR 520

Transportation Network

Characteristics, such as street classification, speed limits, traffic control, non-motorized facilities, parking, and other attributes of the key roadways and intersections in the SR 520 site vicinity are summarized in Table 8.

Table 8. Summary of Study Area Roadway Characteristics – Alternative 4 – SR 520

Characteristic	NE 20th Street (Northup Way)	130th Avenue NE	136th Place NE
Street Classification	Minor Arterial [1]	Collector Arterial [1]	Collector Arterial [1]
Speed Limit (mph)	35 in site vicinity	30 in site vicinity	25
Lanes	5 (2 each direction plus center turn lane); turn lanes added at some intersections	3 (1 each direction plus center turn lane); turn lanes added at some intersections	2
Street-Edge Condition	Curbs, gutters, and sidewalks on both sides	Curbs, gutters, and sidewalks on both sides	Intermittent gravel shoulder; grass ditch, small segments of curb, gutter, and sidewalk
Bike Lanes	None	None	None
Parking	None	None	Along some segments of gravel shoulder
Lane Restrictions	None	None	None
Transit Stops	Both sides at 136th Place NE, 132nd Avenue NE, and 130th Avenue NE	None	None
Traffic Control & Signal Locations	Signals at 130th Ave NE, 132nd Ave NE, 136th Place NE; 140th Ave NE, 14300 Block, & 148th Ave NE	Signal at NE 20th Street (Northup Way)	Signal at NE 20th Street (Northup Way)

1. *Source: City of Bellevue – Arterial Classification Map; March 9, 2009. http://www.bellevuewa.gov/pdf/IT/street_classification_a.pdf*
2. *Highways of Statewide Significance (HSS), designated under RCW 47.06.140, include interstate highways and other principal arterials that are needed to connect major communities in the state.*
3. *HOV = high occupancy vehicle.*

The *City of Bellevue 2013-2018 Transportation Improvement Program (TIP),*[8] the *2013-2019 Capital Investment Program Plan (CIP),*[9] and the *2013-2024 Transportation Facilities Plan: Preliminary Project Priority List (TFP)*[10] include several projects in the study area that will likely alter the existing transportation network near the site before the 2035 design year. Several of the projects are listed in more than one plan, but with different identification numbers as noted.

Northup Way Corridor Improvements (TIP #8, CIP #R-146, TFP #079). *This project will construct bike lane and sidewalk improvements on Northup Way between NE 24th Street and 108th Avenue NE, a center turn lane and planting strips may also be included. This project is a continuation of the City's*

[8] City of Bellevue, Adopted May 21, 2012 – Resolution No. 8396.
[9] City of Bellevue, 2013.
[10] City of Bellevue, Approved by the Transportation Commission June 14, 2012.

Northup Way Corridor Study, completed in 2008. The proposed improvements on Northup Way will also serve as an a interim regional trail connecting the existing SR 520 trail terminus (near NE 24th Street) to 108th Avenue NE where a new regional pedestrian and bicycle path will be built by Washington State Department of Transportation (WSDOT), as part of the SR 520 project. This project is a partnership between the City and WSDOT. This project may also incorporate other work such as fish passage enhancements and culvert replacement, bridge widening, traffic calming, driveway access management, and pedestrian crossings at key locations to be determined during the design phase.

NE 15th/16th Street (Phase II)/124th Avenue NE to 136th Place NE and 136th Place NE/NE 16th to 20th Streets (TIP #52, TFP #215). *Extend five lane roadway from 124th Avenue NE to 136th Place NE with a key intersection at 130th Avenue NE. Widen 136th Place NE five to three-lanes between NE 16th Street and NE 20th Street (reduction occurs at the intersection); add a double westbound left turn on NE 20th Street.*

130th Avenue NE/NE 20th to NE Bel-Red Road (TIP #55, TFP #218). *Construct turn lanes, shared bike lanes, on-street parking and sidewalks between NE 16th and NE 20th Streets and widen to three lanes with shared bike lanes and sidewalks between NE 16th Street and Bel-Red Road. Key intersections at NE 20th, NE 16th and Bel-Red Road. Project implementation will be coordinated with potential future private development in the immediate vicinity..*

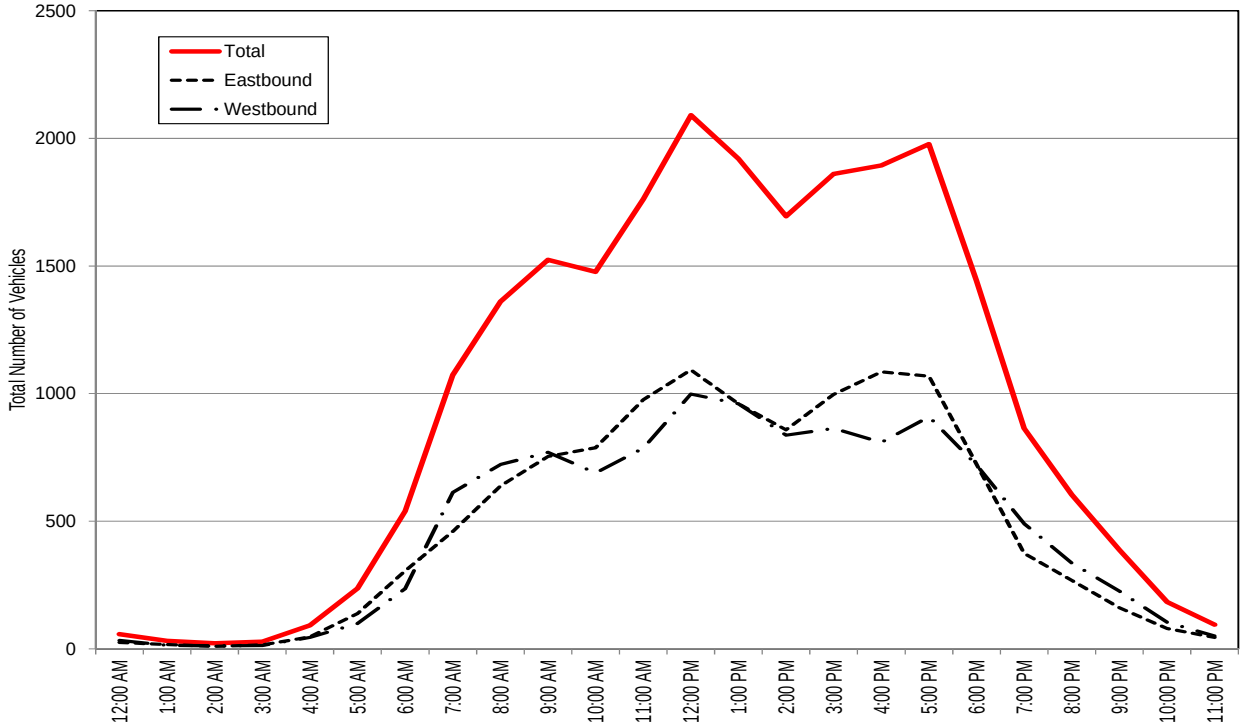
NE 16th Street/130th Avenue NE to 136th Place NE and 136th Place NE/NE 16th to 20th Streets (TC #7, Prelim. TFP Map #RI-135). *Construct multimodal corridor from 130th Avenue NE to 132nd Avenue NE. Design as needed for coordination with East Link for segment 132nd Avenue NE to 136th Place and 136th Place to NE 20th Street. Coordinate with East Link, which will bifurcate the eastbound and westbound travel lanes. Project will provide one travel lane in each direction, buffered bike lanes, landscape strip and sidewalk on both sides.*

130th Avenue NE/NE 20th to NE Bel-Red Road (TC #24, Prelim. TFP Map #RI-137). *Initiate design for roadway improvements. Segment NE 20th Street to NE 16th Street to include two travel lanes, bike lanes, on-street parking, landscape strip and sidewalks both sides. Segment NE 16th Street to Bel-Red Road to include one through lane each direction, center turn lane, landscape strip and sidewalks both sides. Project to be coordinated with Sound Transit East Link.*

Roadway Traffic Volumes

New 48-hour traffic counts were performed on NE 20th Street (Northup Way) west of 136th Place NE on January 22nd and 23rd, 2013. Figure 11 shows the average weekday hourly traffic volumes by direction on 120th Avenue NE, which carries an average of about 23,220 vehicles per day. The figure shows a relatively balanced directional traffic pattern on NE 20th Street with eastbound and westbound volumes that are similar throughout the day. The highest volume on NE 20th Street occurs between noon and 1:00 P.M. (midday peak hour) with about 2,090 vehicles per hour in both directions. The PM peak hour volume is slightly lower (1,975 vehicles per hour between 5:00 and 6:00 P.M.); the AM peak hour flow from 7:00 to 8:00 A.M. is about 1,075 vehicles per hour (615 westbound, 460 eastbound). Volume on NE 20th Street are higher during the 8:00 to 9:00 A.M. hour; however, as described later, the OMSF would generate more trips between 7:00 and 8:00 A.M., so the analyses focused on that hour during the morning peak period.

Figure 11. Hourly Traffic Volumes on NE 20th Street (Northup Way) near Alt. 4—SR 520 Site



Source: All Traffic Data Services, Inc., January 2013.

Existing Site Generated Traffic Volumes

The SR 520 site consists of 14 parcels with several buildings that, according to King County Assessor records and field observations, contain general office space (224,955 sf), retail space (55,387 sf), automobile sales space (20,639 sf), and automobile care and service space (30,301 sf).

Traffic generated by the existing uses on the site was estimated using standard trip generation rates published in ITE's *Trip Generation Manual*. Rates published for General Office (Land Use Code 710), Retail Shopping Center (Land Use Code 820), Automobile Sales (Land Use Code 841), and Automobile Care (Land Use Code 942) were applied to each existing use based on the sizes available from the County's Assessor records and listed above. Table 9 presents the trip generation estimates for the existing uses on the site. As shown, the site is estimated to generate 6,460 trips per day, 512 AM peak hour trips, and 688 PM peak hour trips.

Table 9. Alternative 4 – SR 520 – Existing Site Trip Generation Estimates

Trip Type	Size	Daily Trips	AM Peak Hour Trips [1]			PM Peak Hour Trips [2]		
			In	Out	Total	In	Out	Total
General Office (LU 710)	224,955 sf	2,480	309	42	351	57	278	335
General Retail (LU 820)	55,387 sf	2,370	33	20	53	98	107	205
Auto Sales (LU 841)	20,639 sf	670	30	10	40	22	32	54
Auto Care (LU 942)	30,301 sf	940	45	23	68	45	49	94
Total Trips		6,460	417	95	512	222	466	688

Source: Heffron Transportation, Inc., January 2013 using rates published in ITE's Trip Generation Manual, 9th Edition, 2012..
1. AM Peak Hour typically occurs during one hour between 7:00 and 9:00 A.M.
2. PM Peak Hour typically occurs during one hour between 4:00 and 6:00 P.M.

Traffic Safety

Collision data along the site frontage of NE 20th Street and its nearest intersections were obtained from WSDOT to determine if there are any traffic safety conditions that could affect or be affected by the OMSF project. Data were obtained for the most recent three-year period available, which spanned January 1, 2009 to December 31, 2011. Collision data for this period are summarized in Table 10. As shown, the largest number of collisions occurred at the signalized intersection of NE 20th Street and 130th Avenue NE. During the three-year period, there was an average of 4.3 collisions per year. Of the 13 reported collisions, 7 were listed as left-turn collisions. Given the volume of traffic served along NE 20th Street, the number and type of collisions at the nearby signalized intersections and along the frontage near the planned access location do not indicate any unusual traffic safety conditions.

Table 10. Intersection Collision Summary – Alternative 4 – SR 520

Intersection	Number of Collisions by Type								3-Year Total	Average/Year
	Head On	Rear End	Side-Swipe	Right Turn	Left Turn	Right Angle	Ped/Bicycle	Other		
NE 20th Street / 130th Avenue NE[a]	0	1	0	0	7	4	0	1	13	4.3
NE 20th Street / 136th Avenue NE[a]	0	2	0	0	1	2	0	0	5	1.7
Roadway Segment										
130th Avenue NE along site frontage	0	0	0	0	0	0	0	1	1	0.3
NE 20th Street within 500 feet of planned OMSF primary access	1	1	1	1	0	4	0	1	9	3.0

Source: WSDOT, January 2013.
a Signalized intersection

Transit

Transit service closest to the SR 520 site is provided by King County Metro. The closest transit stop is located on NE 20th Street (Northup Way) at 136th Place NE, adjacent to the site. Stops are also located along NE 20th Street at 132nd Avenue NE and 130th Avenue NE. The stops are served by Metro Route 249, which provides daily service between the South Bellevue Park-and-Ride lot and the Overlake Transit Center. It operates weekdays from about 6:20 A.M. to about 8:20 P.M. with roughly 30-minute headways (time between consecutive buses). It also operates on Saturdays and Sundays with 45-minute headways.[11]

Non-Motorized Facilities

There is sidewalk along both sides of NE 20th Street (Northup Way) and 130th Avenue NE. Along 136th Place NE, there are short segments of sidewalk; however, most of the roadway does not have sidewalk. There are no other non-motorized facilities along the roadways near the site.

The improvements and widening planed for NE 20th Street, 130th Avebue NE, and 136th Place NE described previously would include sidewalks and bicycle lanes.

Parking

No parking is permitted along NE 20th Street; however, parallel parking occurs along the gravel shoulders on both sides of 130th Avenue NE and 136th Place NE. Off-street parking is also provided in lots adjacent to retail buildings, offices, warehouses, and light industrial buildings in the site vicinity.

Site Access

There are nine existing site access driveways along the north side of NE 20th Street that provide access to the parcels that make up the SR 520 site; there are two site access driveways long the east side of 130th Avenue NE. All but one of the access driveways are stop-sign controlled; the driveway located opposite 136th Place NE is controlled by a traffic signal.

Freight Mobility and Access

Near the Alternative 4—SR 520 site, NE 20th Street/Northup Way between 116th Avenue NE and 148th Avenue NE is classified as a T2 roadway within the FGTS. This means it carries between 4 million and 10 million tons per year. Several industrial, warehouse, and retail properties in the area likely generate truck traffic along NE 20th Street and Northup Way in the site vicinity.

[11] Metro Online Trip Planner, Dec. 2012. http://metro.kingcounty.gov/tops/bus/schedules/s249_0_.html

POTENTIAL IMPACTS

This chapter describes the conditions that are expected to exist at each of the alternative sites with the proposed Sound Transit Link Light Rail Operations and Maintenance Satellite Facility (OMSF). Each section describes the methodology and assumptions used to determine project trip generation for each site and the transportation impacts of the proposed facility on the surrounding transportation network. The impacts of each action alternative are determined as compared to conditions with the No Build Alternative.

No Build

This alternative would not construct a new OMSF at any of the sites identified and the existing land uses would remain. At the Alternative 1—Lynnwood site, a vacant parcel owned by the Edmonds School District, previously occupied by the Scriber Lake Alternative School, is currently planned to house the district's consolidated central support center functions. The district support services center is planned to include administrative offices and training facilities; a school bus base for storage, fueling, and vehicle maintenance facilities; building and facilities maintenance; and district warehouse operations. The planned Edmonds School District Support Center project is expected to generate about 2,500 trips per day, 190 AM peak hour trips, and 325 PM peak hour trips.[12]

Without the proposed OMSF, Sound Transit would instead rely on the existing OMF located at S Forest Street in Seattle to serve the entire systems of Link light rail including the existing Central Link, and extensions to Lynnwood, Overlake Transit Center and Kent/Des Moines.. As a result, this alternative would result in no local traffic or access impacts in the vicinity of any of the sites.

However, this alternative would have adverse impacts on the Link light rail service and operations. With this alternative, Sound Transit would be constrained to a fleet of 104 vehicles—the current storage, service and maintenance capacity of the Forest Street OMF. Based on that constraint, Sound Transit developed a "least-worst" light rail operating scenario with a 104-vehicle system, which would consist of the following:

- 3-car trains
- 11-minute headways on each operating line
- Passenger load factor at maximum passenger load point in 2035 of 4.0 (4 passengers per seat)

With this operating scenario, Sound Transit estimates that passenger loads would greatly exceed the capacity of the vehicles to carry passengers. With the No Build alternative, trains would be deployed from the Forest Street OMF and the planned storage tracks in the BNSF corridor, which can accommodate four trains. In order to establish full morning service on the east side, it is likely some trains would need to be deployed from Forest Street OMF and turn back at the International District/Chinatown Station to reach the east line, creating operational disruptions and inefficiency. This alternative could result in secondary impacts to bus transit service in those corridors planned to be served by Link light rail. This alternative could also result in fewer commuters using transit and instead continue using automobiles.

[12] Edmonds School District, Edmonds School District No. 15 – Environmental Checklist District Support Center, Appendix I, pg 19, April 2007.

Alternative 1 – Lynnwood

Construction Traffic Impacts

It is estimated that overall construction at the Lynnwood site would require approximately 40 months (3.3 years); overall construction at the BNSF Storage Tracks site in Bellevue would require approximately 5 months.[13] The most noticeable construction activity in terms of transportation-related elements will likely be related to the import and export of material to and from the site. The existing structures on the site would be demolished and material will be removed from the site. The demolition is expected to require removal of about 5,600 cubic yards of material over about a month. Assuming an average of about 20 yards per truck, 20 working days in the month, and a typical eight-hour construction work day, this demolition activity could generate about 14 truckloads per day and an average of two truckloads per hour. With two truck trips for each truckload (one in and one out), the demolition activity would generate about 28 truck trips per day with four truck trips per hour.

Construction of any of the three design options (C1, C2, and C3) for the OMSF at the Lynnwood site is also expected to require earthwork that would involve cut of up to 191,000 cubic yards (cy) and fill of up to 200,000 cy of material. It is not known at this time how much of the cut material can be reused on site for fill as part of site balancing. Therefore, the earthwork could result in transport of up to 390,000 cy of material that would generate truck trips on the local City of Lynnwood roadway system. This material is expected to be moved using trucks that can carry about 20 cy each and could result in about 19,500 truckloads (39,000 truck trips) if all cut and fill material has to be transported to and from the site. The excavation and embankment activity is expected to require about six months. Assuming an average of about 20 working days in the month and a typical eight-hour construction work day, the excavation and embankment activity could generate about 165 truckloads per day and an average of 21 truckloads per hour. With two truck trips for each truckload (one in and one out), the earthwork activity would generate about 330 truck trips per day with 42 truck trips per hour.

Construction of the BNSF Storage Tracks facility in Bellevue is expected to require earthwork that would involve cut of up to 3,600 cubic yard (cy) and fill of up to 3,300 cy of material. Therefore, the earthwork could result in transport of up to 6,900 cy of material that would generate truck trips on the local City of Bellevue roadway system. The earthwork is expected to occur with some periods of higher activity than others. Truck trips would most likely occur during daytime hours (8:00 A.M. through 4:00 P.M.). Most construction transportation is stopped by 4:00 P.M. to avoid unnecessary delay to truck drivers from peak hour congestion.

Building materials (including concrete for foundations, asphalt for parking facilities, and structural elements) would be transported to the Lynnwood Alternative site and the BNSF Storage Tracks site regularly throughout the construction period. The number of deliveries each day would vary depending on the phase of construction.

Construction of any of the three design options being considered for the Lynnwood Alternative (including

[13] William P. Ott Construction Consultants, *Sound Transit – Operation and Maintenance Satellite Facility – Conceptual Schedules*, April 9, 2013.

the BNSF Storage Tracks in Bellevue) would also require employees and equipment that would generate traffic to and from the sites. Construction at the sites would likely occur Monday through Friday. It is anticipated that construction workers would arrive at the construction sites before the AM peak traffic period on local area streets and depart the site prior to the PM peak period; construction work shifts typically begin by 7:00 A.M. and end by 4:00 P.M., while the corresponding peak traffic periods typically occur slightly later. The number of workers at the project sites at any one time would vary depending upon the nature and construction phase of the project. Based on past experience with construction of other facilities, the number of construction employees on the Lynnwood site is estimated to range from a low of 20 workers (during early site work) to a peak of about 300 workers (during periods with many trades working within the buildings). The presence of a temporary construction work force would also generate demand for parking spaces around the Lynnwood site and the BNSF Storage Tracks site. It is expected that construction employees would be able to park in on-site staging areas or in new parking lots constructed on site for the project as they become available.

The Lynnwood Alternative would likely generate a noticeable amount of construction-related traffic on surrounding roadways. Construction worker vehicles and trucks carrying materials to and from the site would be most noticeable on 52nd Avenue W in Lynnwood and on 120th Avenue NE in Bellevue (for the BNSF Storage Tracks). The truck traffic is not expected to degrade operations of study area intersections during off-peak hours. A construction transportation management plan (CTMP) addressing site access, traffic control, hauling routes, construction employee parking, and pedestrian and bicycle control in the area would be prepared per City of Lynnwood and City of Bellevue (for the BNSF Storage Tracks) requirements. Construction haul routes would be determined as part of the CTMP and will depend on the origin and destination of material; however, the routes are likely to include 52nd Avenue W, 200th Street SW, 196th Street SW, 44th Avenue W, 220th Street SW and I-5 in Lynnwood. Routes to and from the BNSF Storage Tracks site are likely to include 120th Avenue NE, Northup Way, and SR 520 in Bellevue.

Transportation Network

The proposed project would not change the existing transportation network in the Lynnwood or Bellevue (for the BNSF Storage Tracks) site vicinities and no adverse impacts to the surrounding roadway networks are anticipated.

Traffic Volumes

Trip generation for new development projects is typically determined using national studies of similar types of facilities published in the *Trip Generation Manual* by the Institute of Transportation Engineers (ITE).[14] The *Trip Generation Manual* does not include data for a light rail maintenance facility. ITE recommends in its *Trip Generation Handbook*,[15] "*If the description of a site is not covered by the land use classifications presented in Trip Generation, the analysis should collect local data and establish a local rate*." Therefore, project-specific information was collected from Sound Transit to develop trip generation estimates for the OMSF.

[14] ITE, 9th Edition, 2012.
[15] ITE, 2nd Edition, June 2004.

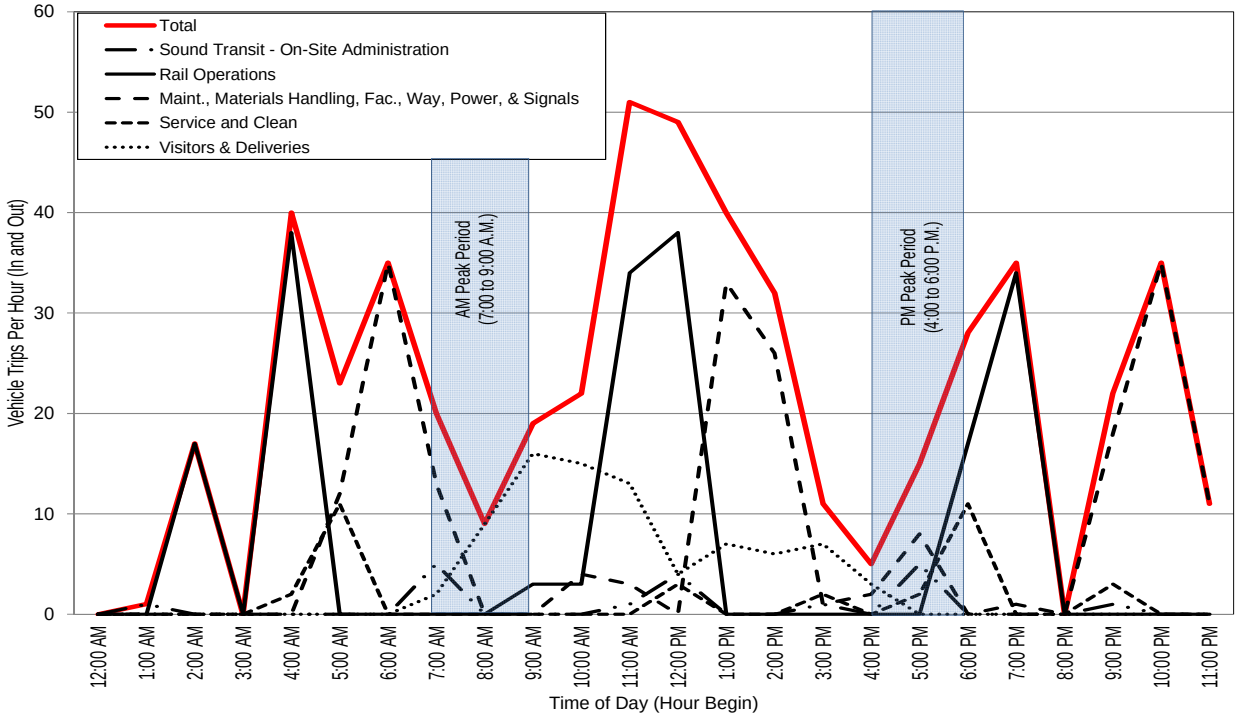
The facility program and operational information provided by Sound Transit were compiled into a detailed spreadsheet model to estimate trips generated by train operators, maintenance employees, visitors, deliveries, and other activities. A total of 206 employees are expected to work at the Lynnwood site over three shifts each day. Anticipated employee shift times were estimated from information provided by Sound Transit based on operations of its existing OMF, the *Link Operations & Maintenance Satellite Facility – OMSF Program Requirements*,[16] and a shift analysis for the planned OMSF building occupancy.[17] The actual employee shift times could vary from these estimates based on OMSF operational needs, negotiated labor contracts, or other factors, but represent the best information currently available.

The resulting trip estimates account for all vehicle trips expected to be generated by the proposed OMSF. Although the Alternative 1—Lynnwood site has a transit stop within a quarter mile, the trip generation estimates assume that no trips would occur by transit. This assumption allows for a worst-case evaluation of potential automobile traffic impacts and acknowledges that a large number of trips made to the facility would occur outside of the current service hours for transit near the site. Figure 12 depicts the total number of trips by hour of day and includes details about each type of trip (e.g. administration staff, rail operations, visitors, etc.). The AM (7:00 to 9:00 A.M.) and PM (4:00 to 6:00 P.M.) commuter peak periods are also shown. During the commuter peak periods, the highest volume of OMSF traffic (15 trips) would occur between 5:00 and 6:00 P.M. The figure demonstrates that most of the project trips would occur outside of typical commute periods.

Alternative 1 – Lynnwood would also require a 32-car LRV overnight storage yard in Bellevue in order to meet the service requirements of the overall system. The BNSF Storage Tracks would be located along the Sound Transit-owned former BNSF railroad corridor between 116th and 120th Avenues NE south of SR 520 and at about NE 19th Street in Bellevue. The facility would include a small building (between 4,000 and 5,000 sf), a parking lot, and the LRV storage tracks. The support building and parking lot would be located on the 10.5-acre parcel located at 1899 – 120th Avenue NE. This parcel is occupied by a former International Paper warehouse building (169,632 sf) with office space (4,528 sf); the building is currently vacant. The Sound Transit BNSF Storage Tracks would require a total of 22 maintenance staff for LRV cleaning, minor maintenance, and repairs. In addition, a total of 31 operations staff would work at the site, including base administration, dispatch, and 20 operators that would dispatch from the site. With security staff, a total of 56 employees are expected at this site each day. A detailed trip generation spreadsheet model was also developed for the BNSF Storage Tracks based on operational and staffing information provided by Sound Transit.[18] Figure 13 depicts the total number of trips by hour of day and includes details about each type of trip (e.g. administration staff, rail operations, visitors, etc.).

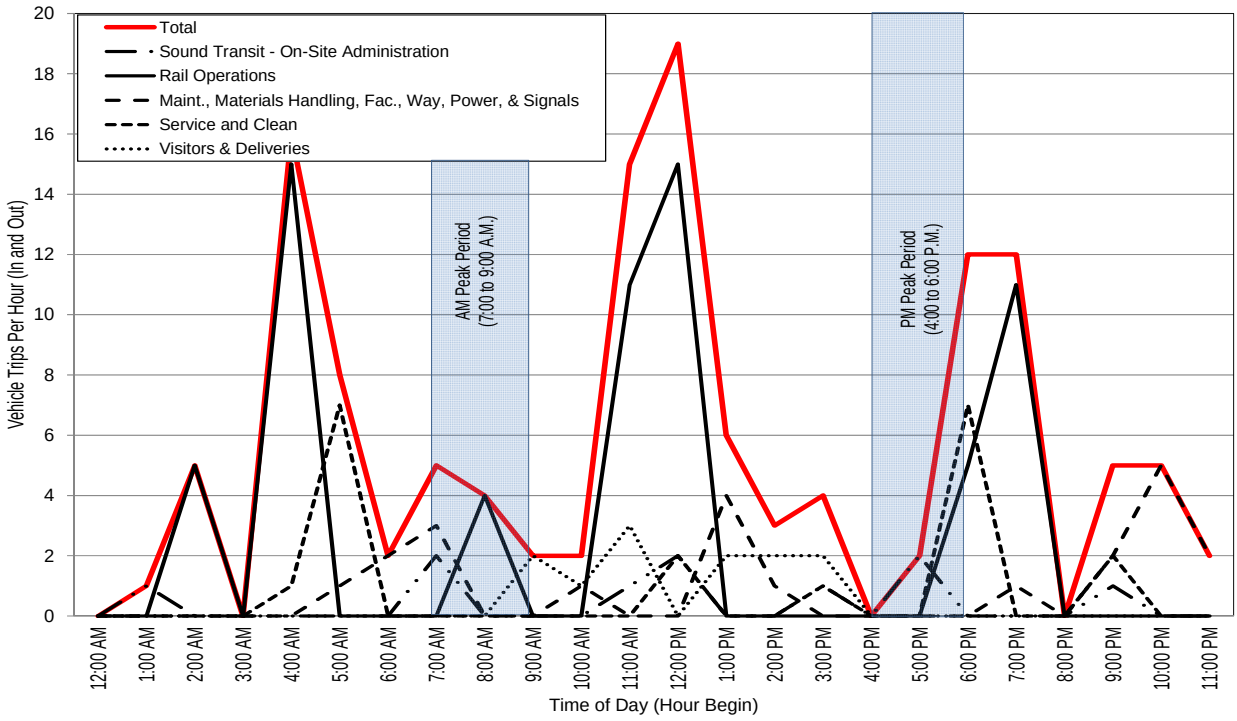
[16] Huitt-Zollars, September 2012: Appendix B.
[17] MDG, LLC, February 2012.
[18] Sound Transit, *Review of Maintenance and Operational Staffing Requirements For BNSF East Layover*, January 11, 2013

Figure 12. Alternative 1—Lynnwood Estimated Trip Generation by Hour and Type of Generator



Source: Heffron Transportation, Inc., March 2013.

Figure 13. Alternative 1—Lynnwood BNSF Storage Tracks Estimated Trip Generation by Hour



Source: Heffron Transportation, Inc., April 2013.

Table 11 summarizes vehicle trips that are projected to result from the proposed OMSF if it is located at the Alternative 1 – Lynnwood site. As shown, the project is expected to result in 520 daily vehicle trips (260 in, 260 out). The highest hourly volumes during the commuter peak periods would occur from 7:00 to 8:00 A.M. (20 trips) and from 5:00 to 6:00 P.M. (15 trips).

The proposed OMSF Alternative 1—Lynnwood would generate the highest volume of hourly traffic outside of the peak hours for the adjacent roadway network. For example, the highest hourly trip generation is estimated to occur midday between 11:00 A.M. and 1:00 P.M.

As also shown in Table 11, the BNSF Storage Tracks are expected to result in 130 daily vehicle trips (65 in, 65 out) with 5 trips in the AM peak hour (from 7:00 to 8:00 A.M.), and 2 trips in the PM peak hour (5:00 to 6:00 P.M.).

Table 11. Light Rail OMSF Trip Generation – Alternative 1 – Lynnwood

Project Element / Functional Groups	Daily Trips	AM Peak Hour Trips [1]			PM Peak Hour Trips [1]		
		In	Out	Total	In	Out	Total
Lynnwood Site							
Sound Transit On-Site Administration	18	5	0	5	0	5	5
Rail Operations	184	0	0	0	0	0	0
Vehicle Maintenance	112	0	0	0	3	3	6
Service and Clean	34	0	0	0	1	1	2
Maint. Service Ctr/Materials Handling	8	0	0	0	0	1	1
Facilities, Way, Power, & Signals	82	0	13	13	1	0	1
Visitors	52	2	0	2	0	0	0
Deliveries	30	0	0	0	0	0	0
Total Trips	520	7	13	20	5	10	15
BNSF Storage Tracks (Bellevue)							
Sound Transit On-Site Administration	10	2	0	2	0	2	2
Rail Operations	66	0	0	0	0	0	0
Vehicle Maintenance	10	0	0	0	0	0	0
Service and Clean	20	0	0	0	0	0	0
Maint. Service Ctr/Materials Handling	2	0	0	0	0	0	0
Facilities, Way, Power, & Signals	10	0	3	3	0	0	0
Visitors	4	0	0	0	0	0	0
Deliveries	8	0	0	0	0	0	0
Total Trips	130	2	3	5	0	2	2

Source: Heffron Transportation, Inc., March 2013.

1. The highest hourly volumes during the commuter peak periods would occur from 7:00 to 8:00 A.M. and from 5:00 to 6:00 P.M.

When compared to the daily and peak hour traffic estimates for the existing uses on the Alternative 1 – Lynnwood site that would be removed and replaced by the OMSF, the proposed project would result in a decrease in daily and peak hour traffic on the surrounding City of Lynnwood roadway network. The BNSF

Storage Tracks would also result in a decrease in daily and peak hour traffic on the surrounding City of Bellevue roadway network, when compared to the daily and peak hour traffic estimates that could be generated by the existing uses on the site (the vacant former International Paper facility). Table 12 presents the estimated net change in site trip generation with Alternative 1 – Lynnwood (both the Lynnwood and Bellevue elements).

Table 12. Light Rail OMSF Net Change in Site Trip Generation – Alternative 1 - Lynnwood

Site Condition	Daily Trips	AM Peak Hour Trips [1]			PM Peak Hour Trips [2]		
		In	Out	Total	In	Out	Total
Lynnwood Site							
Proposed OMSF Project	520	7	13	20	5	10	15
Displacement of Existing Site Uses	-1,240	-145	-21	-166	-27	-137	-164
Net Change	-720	-138	-8	-146	-22	-127	-149
BNSF Storage Tracks (Bellevue)							
Proposed OMSF Storage Tracks	130	2	3	5	0	2	2
Displacement of Existing Site Uses	-650	-46	-12	-58	-15	-46	-61
Net Change	-520	-44	-9	-53	-15	-44	-59

Source: Heffron Transportation, Inc., April 2013.

1. *AM peak hour of adjacent roadways typically occurs during one hour between 7:00 and 9:00 A.M.*
2. *PM peak hour of adjacent roadways typically occurs during one hour between 4:00 and 6:00 P.M.*

Traffic Safety

A review of collision data in the site vicinity did not indicate any unusual traffic safety conditions that would affect or be affected by the proposed project. The proposed OMSF would result in a net decrease in daily and peak hour traffic on surrounding roadways. It would also reduce the number of site access driveways that exist along 52nd Avenue W/Cedar Valley Road.

A review of collision data in the vicinity of the BNSF Storage Tracks site also did not indicate any unusual traffic safety conditions that would affect or be affected by the proposed project. The proposed BNSF Storage Tracks facility is expected to decrease daily and peak-hour traffic on surrounding roadways. As a result, the proposed project is not expected to result in any adverse impacts to traffic safety.

Transit

It is possible that some employees working at the OMSF Alternative 1 – Lynnwood site could use transit for their daily commutes. However, the employees that use transit are likely to be ones with work schedules that best coincide with transit service provided nearby during the hours between 5:30 A.M. and 9:30 P.M. Based on mode-of-travel survey data compiled by the Puget Sound Regional Council (PSRC) from the *2000 Census Journey-to-Work Characteristics for Snohomish County* (the most recent data available) for the transportation analysis zone where the site is located, about 3% of workers regularly take transit to work. Based on this percentage and the number of employee trips expected during current transit service hours, the proposed

project could result in about 6 employees taking transit to and from the site each day (6 in, 6 out). This level of transit demand would not represent an adverse impact. The removal of the existing site uses could also reduce transit demand near the site.

At the BNSF Storage Tracks component of Alternative 1—Lynnwood, it is possible that some workers could use transit for their daily commutes. However, due to the anticipated shift times and small number of works at the site, it is unlikely. As a result, Alternative 1—Lynnwood is not expected to generate new transit demand that would represent an adverse impact. The removal of the existing site uses in Lynnwood and Bellevue could also slightly reduce transit demand near the sites in Bellevue and Lynnwood.

As described previously, the BNSF Storage Tracks site component of Alternative 1—Lynnwood is located near King County Metro Transit's Bellevue Base and East Base. Both of Metro's transit bases have primary access on 124th Avenue NE. With the project, the BNSF Storage Yard would generate less traffic than would be expected from the uses that currently occupy the site; therefore, no adverse impacts to the Metro transit bases would occur. The small number of OMSF trips that would use the access driveway serving the BNSF Storage Tracks on 120th Avenue NE would also not result in any adverse impacts to either base.

Non-Motorized Facilities

The proposed project could generate a few pedestrian trips on adjacent sidewalks by employees walking from nearby bus stops or walking during midday breaks. However, the volume of pedestrian activity is expected to be small and would not result in adverse impacts to the surrounding non-motorized facilities.

Sound Transit would provide frontage improvements along public right of way to meet City of Lynnwood roadway design standards. The City of Lynnwood has indicated that the OMSF, if located at the Lynnwood site, would likely require a conditional use permit under current zoning and that potential frontage improvements would be discussed at that time specific to the details of the proposed project.

The BNSF Storage Tracks component could generate a few pedestrian trips by employees walking from bus stops or walking during midday breaks. However, the volume of pedestrian activity is expected to be very small and would not result in adverse impacts on the surrounding non-motorized facilities.

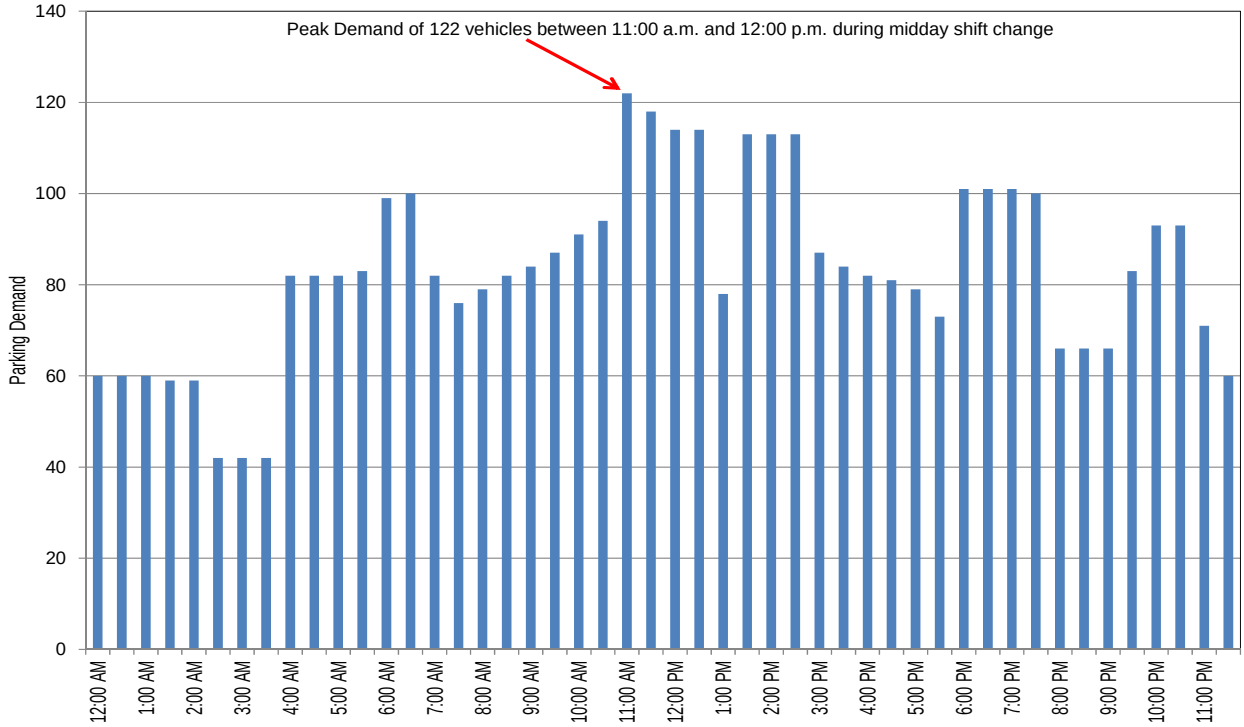
Per Bellevue City Code 16.60.110, the city has the authority to require new developments to make frontage improvements along public streets adjacent to the developments. Sound Transit would provide frontage improvements along public rights-of-way to meet City of Bellevue roadway design standards. These improvements could include half street improvements with new curb, gutter, sidewalk, planter strip, street trees, street illumination, street furniture, and landscaping per applicable standards and roadway plans. The city provided preliminary concept plans of improvements that could be required along 120th Avenue NE. The roadway section may include four or five lanes, including a center two-way-left-turn lane, a 10-foot bike trail on the west side, 8-foot sidewalks, and a planter strip (5 to 16 feet wide).

Parking

Parking demand for new development projects is typically determined using national studies of similar types of facilities published in *Parking Generation* by ITE.[19] *Parking Generation* does not include data for a light rail maintenance facility; therefore, a parking accumulation model was developed using the same information described to estimate trip generation. The detailed spreadsheet model accounts for the arrivals and departures expected during each half hour of the day and predicts a peak employee parking demand of 122 vehicles sometime between 11:00 A.M. and 11:30 A.M. during a midday shift change. As described for trip generation, variations in employee shifts could result in slightly different peak parking demand results. Based on the range of potential shift times, peak employee parking demand could range up to 140 vehicles during the midday between 11:00 A.M. and 1:30 P.M. Smaller peaks are expected during an early evening shift change (101 vehicles between 6:00 and 7:00 P.M.) and during an early morning shift change (100 vehicles between 6:30 and 7:00 A.M.).

Figure 14 shows the parking demand estimates by time of day and demonstrates the expected peak demand levels. In addition to employee parking demand, there would be parking demand generated by OMSF non-revenue vehicles provided for Rail Operations staff (6 vehicles), Vehicle Maintenance staff (12 vehicles), and maintenance trucks. If the non-revenue OMSF vehicles were all on site at the same time as the midday shift change, the total peak parking demand could range from 140 to 158 vehicles plus 8 maintenance trucks. The project would be designed to accommodate this parking demand.

Figure 14. OMSF Alternative 1—Lynnwood Estimated Employee Parking Demand by Time

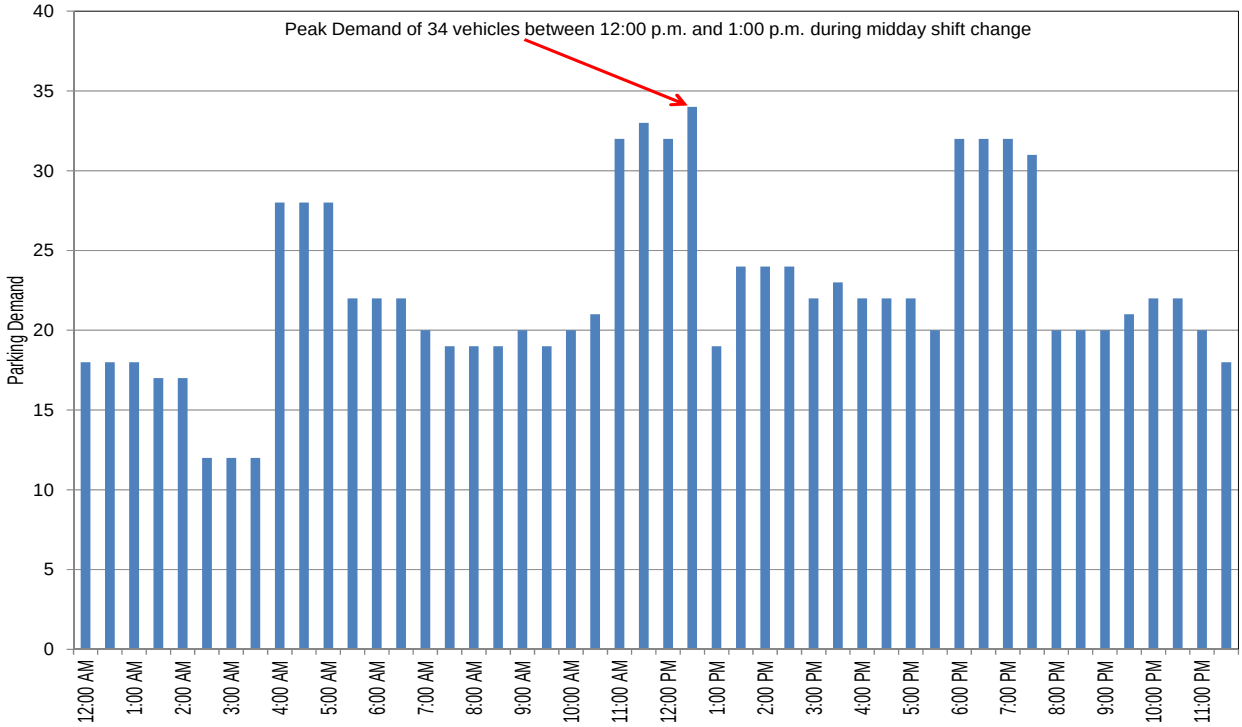


Source: Heffron Transportation, Inc., March 2013.

[19] ITE, 4th Edition, 2008.

A parking accumulation model was also developed for the BNSF Storage Tracks in Bellevue that would be required as part of Alternative 1 – Lynnwood. The detailed spreadsheet model predicts a peak employee parking demand of 34 vehicles between noon and 1:00 P.M. during a midday shift change. Figure 15 shows the parking demand estimates by time of day and demonstrates the expected peak demand levels. In addition to employee parking demand, there would be parking demand generated by OMSF non-revenue vehicles provided for staff. A total of 10 non-revenue vehicles are expected to park at the site. If the non-revenue vehicles were all on site at the same time as the midday shift change, the total peak parking demand would be 44 vehicles. The BNSF Storage Tracks facility would be designed to accommodate this peak parking demand.

Figure 15. OMSF Alternative 1—Lynnwood BNSF Storage Tracks Estimated Parking Demand



Source: Heffron Transportation, Inc., April 2013.

Site Access

The proposed project would eliminate the four existing private site access driveways and the eastern legs of 204th Street SW and 206th Street SW along 52nd Avenue W. The proposed project would construct a new primary access driveway on the east side of 52nd Avenue W about 300 feet south of the 206th Street SW intersection. A secondary access would be provided at the northwest corner of the site on Cedar Valley Road about 540 feet north of the 204th Street SW intersection.

Level of service analyses were performed for the primary site access driveway that would serve OMSF. Levels of service for the site access were determined using methodologies presented in the *Highway Capacity*

Manual 2010 (HCM 2010).[20] All level of service calculations were performed with Trafficware's *Synchro 8.0* analysis software. Results are reported using the *Highway Capacity Manual 2010* module. The attachment presents the level of service thresholds and definitions for signalized and unsignalized intersections.

Forecast traffic volumes on 52nd Avenue W at the planned site access location were estimated for year 2035. PM peak hour forecasts for 52nd Avenue W were obtained from the *Lynnwood Link Extension DEIS Transportation* analysis.[21] As described in the DEIS, "*Forecast year 2035 traffic volumes were developed using the Lynnwood Link Extension Travel Demand Model, which reflects PSRC's current population and land use forecasts, and traffic forecast data provided by the Cities of Shoreline and Lynnwood.*" The forecasts for 52nd Avenue W, north of 208th Street SW reflect 2.9% compound annual growth in northbound traffic and 2.5% annual growth in southbound traffic between 2012 and 2035. For analyses of the OMSF access driveway during other peak hours, these growth rates were applied to the existing (2013) traffic volumes described previously. Year 2035 forecasts were developed for the AM peak hour of the OMSF facility, the AM peak hour of the adjacent street, the midday peak hour of the OMSF facility, and the PM peak hour of the adjacent street. Existing trips that would be eliminated under the Lynnwood Alternative were not subtracted from the roadway network; therefore, the analysis likely represents a worst-case condition.

LOS analyses were performed for the primary site access driveway that would serve the OMSF. LOS analyses were performed according to the methodology outlined in the *Highway Capacity Manual 2010*[22] using Trafficware's *Synchro* traffic operations analysis software and the HCM 2010 reporting module. Table 13 presents the projected 2035 levels of service for the site access driveway during morning, midday, and afternoon peak hours. As shown, all turning movements at the proposed access are projected to operate at LOS C or better during all peak hours. The BNSF Storage Tracks facility in Bellevue would be accessed from a single driveway on the west side of 120th Avenue NE at roughly NE 18th Place. As shown in Table 13, all turning movements to and from the driveway are expected to operate at LOS C or better during all hours. Therefore, the proposed project is not expected to result in any adverse traffic operational impacts at the site access driveway for either the Lynnwood or Bellevue components.

[20] Transportation Research Board, April 2011.
[21] Sound Transit. In press. Lynnwood Link Extension Draft Environmental Impact Statement Chapter 3, Synchro model files. Prepared by North Corridor Transit Partners, Seattle, WA. Prepared for Sound Transit, Seattle, WA.
[22] Transportation Research Board, 2010.

Table 13. Site Access Level of Service Summary – Alternative 1 – Lynnwood Site

Intersection	OMSF AM Peak Hour [1]		AM Peak Hour [1]		OMSF Midday Peak Hour [1]		PM Peak Hour [1]	
	LOS [2]	Delay [3]	LOS	Delay	LOS	Delay	LOS	Delay
Lynnwood Site								
52nd Avenue W / OMSF Site Access	A	1.3	A	0.4	A	0.6	A	0.2
Westbound Turns from Site	A	0.0	B	14.0	B	12.1	C	16.7
Southbound Turns into Site	A	7.5	A	8.1	A	8.3	A	9.3
BNSF Storage Tracks (Bellevue)								
120th Avenue NE / OMSF Site Access	A	0.2	A	0.1	A	0.5	A	0.1
Eastbound Turns from Site	A	0.0	B	13.9	C	18.9	C	16.9
Northbound Turns into Site	A	7.6	A	8.3	A	8.5	A	0.0

Source: Heffron Transportation, February 2013.

1. *OMSF AM Peak hour is expected to occur from 4:00 to 5:00 A.M.; AM peak hour of adjacent roadways occurs during one hour between 7:00 and 9:00 A.M.; OMSF midday peak hour is expected to occur from 10:30 to 11:30 A.M.; PM peak hour of adjacent roadways occurs during one hour between 4:00 and 6:00 P.M.*
2. *LOS = Level of service.*
3. *Delay = Average seconds of delay per vehicle.*

The concept design options for Alternative 1 – Lynnwood would allow all light rail trains to enter and exit the Lynnwood facility and the BNSF Storage Tracks in Bellevue along exclusive right-of-way. This alternative would not construct any new at-grade crossings of roadways. Therefore, this site alternative would not result in any new at-grade train crossings that would affect levels of service.

Freight Mobility and Access

The OMSF Alternative 1—Lynnwood would result in a net reduction in traffic on study area roadways and would not result in any new at-grade train crossings that would affect levels of service. Therefore, it is not expected to result in any adverse impacts to freight mobility or access in either the Lynnwood or Bellevue study areas.

Mitigation

The proposed project is expected to result in a net decrease in traffic generated on City of Lynnwood and City of Bellevue roadways and would not result in any adverse impacts to traffic operations or the surrounding transportation facilities. Frontage improvements are likely to be required as part of the permitting process. Both the City of Lynnwood and City of Bellevue typically collect transportation impact fees for new development; however, the city codes of both cities exempt buildings or structures constructed by a regional transit authority pursuant to RCW 82.02.090.[23] Therefore, the proposed facility would be exempt from transportation impact fees. No transportation mitigation is necessary to accommodate the OMSF at the Alternative 1 – Lynnwood site.

[23] Lynnwood Municipal Code section 3.105.080 & Bellevue City Code section 22.16.070.

Alternative 2 – BNSF

Construction Traffic Impacts

It is estimated that overall construction at the BNSF site would require approximately 34 months (2.8 years). The most noticeable construction activity in terms of transportation-related elements will likely be related to the import and export of material to and from the site. The existing structures on the site would be demolished and material will be removed from the site. The demolition is expected to require removal of about 16,000 cubic yards of material over about three months. Assuming an average of about 20 yards per truck, 20 working days in the month, and a typical eight-hour construction work day, this demolition activity could generate about 14 truckloads per day and an average of two truckloads per hour. With two truck trips for each truckload (one in and one out), the demolition activity would generate about 28 truck trips per day with four truck trips per hour.

Construction of the OMSF at the BNSF site is also expected to require earthwork that would involve cut of up to 55,335 cy and fill of up to 55,855 cy of material. It is not known at this time how much of the cut material can be reused on site for fill as part of site balancing. Therefore, the earthwork could result in transport of up to 111,190 cy of material that would generate truck trips on the local City of Bellevue roadway system. This material is expected to be moved using trucks that can carry about 20 cy each and could result in about 5,560 truckloads (11,120 truck trips) if all cut and fill material has to be transported to and from the BNSF Alternative site. The site grading activity is expected to require about three months. Assuming an average of about 20 working days per month and a typical eight-hour construction work day, the site grading activity could generate about 95 truckloads per day and an average of 12 truckloads per hour. With two truck trips for each truckload (one in and one out), the earthwork activity would generate about 190 truck trips per day with 24 truck trips per hour.

The earthwork is expected to occur with some periods of higher activity than others. Truck trips would most likely occur during daytime hours (8:00 a.m. through 4:00 p.m.). Most construction transportation is stopped by 4:00 p.m. to avoid unnecessary delay to truck drivers from peak hour congestion.

Building materials (including concrete for foundations, asphalt for parking facilities, and structural elements) would be transported to the site regularly throughout the construction period. The number of deliveries each day would vary depending on the phase of construction.

Construction of the project would also require employees and equipment that would generate traffic to and from the site. Construction at the site would likely occur Monday through Friday. It is anticipated that construction workers would arrive at the construction site before the AM peak traffic period on local area streets and depart the site prior to the PM peak period; construction work shifts typically begin by 7:00 A.M. and end by 4:00 P.M., while the corresponding peak traffic periods typically occur slightly later. The number of workers at the project site at any one time would vary depending upon the nature and construction phase of the project. Based on past experience with construction of other facilities, the number of construction employees on site is estimated to range from a low of 20 workers (during early site work) to a peak of about 250 workers (during periods with many trades working within the buildings). The presence of a temporary construction work force would also generate demand for parking spaces around the project site. It is

expected that construction employees would be able to park in on-site staging areas or in new parking lots constructed on site for the project as they become available.

The proposed project would likely generate a noticeable amount of construction-related traffic on surrounding roadways. Construction worker vehicles and trucks carrying materials to and from the site would be most noticeable on 120th Avenue NE. The truck traffic is not expected to degrade operations of study area intersections during off-peak hours. A construction transportation management plan (CTMP) addressing site access, traffic control, hauling routes, construction employee parking, and pedestrian and bicycle control in the area would be prepared per City of Bellevue requirements. Construction haul routes would be determined as part of the CTMP and will depend on the origin and destination of material; however, the routes are likely to include 120th Avenue NE, Northup Way, and SR 520 in Bellevue.

Transportation Network

The proposed project would not change the existing transportation network in the site vicinity and no adverse impacts to the surrounding roadway network are anticipated.

Traffic Volumes

Trip generation for the proposed project at the Alternative 2 – BNSF site is expected to be slightly higher than that presented previously for Alternative 1 – Lynnwood. The proposed project is expected to employ a total of 230 employees and result in 570 daily vehicle trips (285 in, 285 out) with 20 trips occurring in the AM peak hour (from 7:00 to 8:00 A.M.), and 15 trips during the PM peak hour (5:00 to 6:00 P.M.). The highest hourly trip generation is estimated to occur midday between 10:30 and 11:30 A.M. when a total of 62 trips (46 in, 16 out) are expected. During the early morning hour, the background traffic volumes along 120th Avenue NE would be much lower (about 78%) than during the AM peak hour. During the midday hour, background traffic volumes on 120th Avenue NE would be about the same as the PM peak hour volumes, although the directional distribution would be evenly split between northbound and southbound traffic.

When compared to the daily and peak hour traffic estimates for the existing uses on the Alternative 2 – BNSF site that would be removed and replaced by the OMSF, the proposed project would result in a decrease in daily and peak hour traffic on the surrounding City of Bellevue roadway network. Table 14 presents the estimated net change in site trip generation with Alternative 2 – BNSF.

Table 14. Light Rail OMSF Net Change in Site Trip Generation – Alternative 2 - BNSF

Site Condition	Daily Trips	AM Peak Hour Trips [1]			PM Peak Hour Trips [2]		
		In	Out	Total	In	Out	Total
Proposed OMSF Project	570	7	13	20	5	10	15
Displacement of Existing Site Uses	-2,020	-151	-32	-183	-54	-155	-209
Net Change	-1,450	-144	-19	-163	-49	-145	-194

Source: Heffron Transportation, Inc., February 2013.

1. *AM peak hour of adjacent roadways typically occurs during one hour between 7:00 and 9:00 A.M.*
2. *PM peak hour of adjacent roadways typically occurs during one hour between 4:00 and 6:00 P.M.*

Traffic Safety

A review of collision data in the site vicinity did not indicate any unusual traffic safety conditions that would affect or be affected by the proposed project. The proposed OMSF would result in a net decrease in daily and peak hour traffic on surrounding roadways. It would also reduce the number of site access driveways that exist along 120th Avenue NE. As a result, the proposed project is not expected to result in any adverse impacts to traffic safety.

Transit

It is possible that some employees working at the OMSF Alternative 2 – BNSF site could use transit for their daily commutes. However, the employees that use transit are likely to be ones with work schedules that best coincide with transit service provided nearby during the hours between 6:30 A.M. and 8:00 P.M. Based on mode-of-travel survey data compiled by the Puget Sound Regional Council (PSRC) from the *2000 Census Journey-to-Work Characteristics for King County* (the most recent data available) for the transportation analysis zone where the site is located, only about 1% of workers regularly take transit to work. Based on this percentage and the number of employee trips expected during current transit service hours, the proposed project could result in about 2 employees taking transit to and from the site each day (2 in, 2 out). This level of transit demand would not represent an adverse impact. The removal of the existing site uses could also reduce transit demand near the site.

As described previously, Alternative 2—BNSF is located near King County Metro Transit's Bellevue Base and East Base. Both of Metro's transit bases have primary access on 124th Avenue NE. Alternative 2—BNSF would generate less traffic than would be expected from the uses that currently occupy the site; therefore, no adverse impacts to the Metro transit bases would occur. The small number of OMSF trips that would use the access driveways serving the site on 120th Avenue NE would also not result in any adverse impacts to either base.

Non-Motorized Facilities

The proposed project could generate a few pedestrian trips on adjacent sidewalks by employees walking from bus stops or walking during midday breaks. However, the volume of pedestrian activity is expected to be small and would not result in adverse impacts to the surrounding non-motorized facilities.

Per the Bellevue City Code 16.60.110, the City has the authority to require new developments to make frontage improvements along public streets adjacent to the developments. Sound Transit would provide frontage improvements along public right of way to meet City of Bellevue roadway design standards. These improvements could include half street improvements with new curb, gutter, sidewalk, planter strip, street trees, street illumination, street furniture, and landscaping per applicable standards and roadway plans. The City provided preliminary concept plans of improvements that could be required along 120th Avenue NE. The roadway section may include a total of four/five lanes (including a center two-way-left-turn lane, a 10-foot bike trail on the west side, eight-foot sidewalks, and a planter strip (5 to 16 feet in width).

Parking

Parking demand for the OMSF at the Alternative 2 – BNSF site would be slightly higher than the estimates described for the Alternative 1 – Lynnwood site. The parking demand model developed for the project

predicts a peak employee parking demand of 132 vehicles sometime between 11:00 A.M. and 11:30 A.M. during a midday shift change. Variations in employee shifts could result in slightly different peak parking demand results ranging up to 150 vehicles during the midday between 11:00 A.M. and 1:30 P.M. In addition to employee parking demand, there would be parking demand generated by OMSF non-revenue vehicles provided for Rail Operations staff (6 vehicles), Vehicle Maintenance staff (12 vehicles), and maintenance trucks. If the non-revenue OMSF vehicles were all on site at the same time as the midday shift change, the total peak parking demand could range from 150 to 168 vehicles plus 8 maintenance trucks. The project would be designed to accommodate this parking demand.

Site Access

The proposed project would eliminate the seven existing private site access driveways along the west side of 120th Avenue NE. The proposed project would include construction of a new primary access driveway at the northeast corner of the site about 820 feet south of the Northup Way intersection. A secondary access would be provided at the southeast corner of the site on 120th Avenue NE about 1,900 feet north of the NE 12th Street intersection.

Level of service analyses were performed for the primary site access driveway that would serve OMSF using the same methodology described previously for Alternative 1 – Lynnwood. Forecast traffic volumes on 120th Avenue NE at the planned site access location were estimated for year 2035 by applying a 3% compound annual growth rate to the existing (2013) traffic volumes. This growth rate was selected based a comparison of the existing traffic volumes and forecast 2030 traffic volumes included in the *Sound Transit East Link Project Final EIS – Appendix H1 – Transportation Technical Report*[24] for Segment D in the vicinity of the site. Forecasts were developed for the AM peak hour of the OMSF facility, the AM peak hour of the adjacent street, the midday peak hour of the OMSF facility, and the PM peak hour of the adjacent street. It is noted that existing trips that would be eliminated by the project were not subtracted from the roadway network; therefore, the analysis likely represents a worst-case condition.

Table 15 presents the projected 2035 levels of service for the site access driveway during morning, midday, and afternoon peak hours. Although 120th Avenue NE could be widened to five lanes by 2035 as part of TIP project #15 (described previously in section), the majority of the funding for this project is currently unsecured. Therefore, the existing roadway configuration was assumed as a worst case for operational analyses. As shown, all turning movements at the proposed access are projected to operate at LOS C or better during all peak hours. Therefore, the proposed project is not expected to result in any adverse traffic operational impacts at the site access driveway. Since Alternative 2—BNSF would effectively reduce the volume of PM peak hour traffic generated at the site, it would not degrade the mobility management area nor affect the congestion allowance.

[24] Sound Transit, July 2011, 2030 PM D2A Synchro Reports.

Table 15. Site Access Level of Service Summary – Alternative 2 – BNSF Site

Intersection	OMSF AM Peak Hour [1]		AM Peak Hour [1]		OMSF Midday Peak Hour [1]		PM Peak Hour [1]	
	LOS [2]	Delay [3]	LOS	Delay	LOS	Delay	LOS	Delay
120th Avenue NE / OMSF Site Access	A	0.6	A	0.5	A	0.7	A	0.3
Eastbound Turns from Site	A	0.0	B	13.2	C	20.2	C	15.5
Northbound Turns into Site	A	7.7	A	8.3	A	8.7	A	8.1

Source: Heffron Transportation, February 2013.

1. *OMSF AM Peak hour is expected to occur from 4:00 to 5:00 A.M.; AM peak hour of adjacent roadways occurs during one hour between 7:00 and 9:00 A.M.; OMSF midday peak hour is expected to occur from 10:30 to 11:30 A.M.; PM peak hour of adjacent roadways occurs during one hour between 4:00 and 6:00 P.M.*
2. *LOS = Level of service.*
3. *Delay = Average seconds of delay per vehicle.*

The concept design for Alternative 2 – BNSF would allow all light rail trains to enter and exit the facility along exclusive right-of-way. This alternative would not construct any new at-grade crossings of roadways. Therefore, this site alternative would not result in any new at-grade train crossings that would affect levels of service near the proposed OMSF site.

Freight Mobility and Access

The OMSF Alternative 2—BNSF would result in a net reduction in traffic on study area roadways and would not result in any new at-grade train crossings that would affect levels of service. Therefore, it is not expected to result in any adverse impacts to freight mobility or access.

Mitigation

The proposed project is expected to result in a net decrease in traffic generated on City of Bellevue roadways and would not result in any adverse impacts to traffic operations or the surrounding transportation facilities. Frontage improvements are likely to be required as part of the permitting process. The City of Bellevue typically collects transportation impact fees for new development; however, the city code exempts public transportation facilities and buildings or structures constructed by a regional transit authority pursuant to RCW 82.02.090.[25] Therefore, the proposed facility would be exempt from transportation impact fees. Therefore, no transportation mitigation is necessary to accommodate the OMSF at the Alternative 2 – BNSF site.

Alternative 3 – BNSF Modified

Construction Traffic Impacts

It is estimated that overall construction at the BNSF Modified site would require approximately 45 months (3.8 years). The most noticeable construction activity in terms of transportation-related elements will likely be related to the import and export of material to and from the site. The existing structures on the site would be demolished and material will be removed from the site. The demolition is expected to require

[25] Bellevue City Code section 22.16.070.

removal of about 16,000 cubic yards of material over about three months. Assuming an average of about 20 yards per truck, 20 working days in the month, and a typical eight-hour construction work day, this demolition activity could generate about 14 truckloads per day and an average of two truckloads per hour. With two truck trips for each truckload (one in and one out), the demolition activity would generate about 28 truck trips per day with four truck trips per hour.

Construction of the OMSF at the BNSF Modified site is also expected to require earthwork that would involve cut of up to 67,965 cy and fill of up to 215,090 cy of material. It is not known at this time how much of the cut material can be reused on site for fill as part of site balancing. Therefore, the earthwork could result in transport of up to 283,055 cy of material that would generate truck trips on the local City of Bellevue roadway system. This material is expected to be moved using trucks that can carry about 20 cy each and could result in about 14,155 truckloads (28,310 truck trips) if all cut and fill material has to be transported to and from the BNSF Modified Alternative site. The site grading activity is expected to require about five months. Assuming an average of about 20 working days per month and a typical eight-hour construction work day, the site grading activity could generate about 140 truckloads per day and an average of 18 truckloads per hour. With two truck trips for each truckload (one in and one out), the earthwork activity would generate about 280 truck trips per day with 36 truck trips per hour.

The earthwork is expected to occur with some periods of higher activity than others. Truck trips would most likely occur during daytime hours (8:00 a.m. through 4:00 p.m.). Most construction transportation is stopped by 4:00 p.m. to avoid unnecessary delay to truck drivers from peak hour congestion.

Building materials (including concrete for foundations, asphalt for parking facilities, and structural elements) would be transported to the site regularly throughout the construction period.

Construction of the BNSF Modified Alterative would also require employees and equipment that would generate traffic to and from the site. Construction at the site would likely occur Monday through Friday. It is anticipated that construction workers would arrive at the construction site before the AM peak traffic period on local area streets and depart the site prior to the PM peak period; construction work shifts typically begin by 7:00 A.M. and end by 4:00 P.M., while the corresponding peak traffic periods typically occur slightly later. The number of workers at the project site at any one time would vary depending upon the nature and construction phase of the project. Based on past experience with construction of other facilities, the number of construction employees on site is estimated to range from a low of 20 workers (during early site work) to a peak of about 260 workers (during periods with many trades working within the buildings). The presence of a temporary construction work force would also generate demand for parking spaces around the project site. It is expected that construction employees would be able to park in on-site staging areas or in new parking lots constructed on site for the project as they become available.

The BNSF Modified Alterative would likely generate a noticeable amount of construction-related traffic on surrounding roadways. Construction worker vehicles and trucks carrying materials to the site would be most noticeable on 120th Avenue NE. The truck traffic is not expected to degrade operations of study area intersections during off-peak hours. A construction transportation management plan (CTMP) addressing site access, traffic control, hauling routes, construction employee parking, and pedestrian and bicycle

control in the area would be prepared per City of Bellevue requirements. Construction haul routes would be determined as part of the CTMP and will depend on the origin and destination of material; however, the routes are likely to include 120th Avenue NE, Northup Way, and SR 520 in Bellevue.

Transportation Network

The proposed project would not change the existing transportation network in the site vicinity and no adverse impacts to the surrounding roadway network are anticipated.

Traffic Volumes

Trip generation for the proposed project at the Alternative 3 – BNSF Modified site is expected to be identical to that presented previously for Alternative 2 – BNSF. When compared to the daily and peak hour traffic estimates for the existing uses on the Alternative 3 – BNSF site that would be removed and replaced by the OMSF, the proposed project would result in a decrease in daily and peak hour traffic on the surrounding City of Bellevue roadway network. Table 16 presents the estimated net change in site trip generation with Alternative 3 – BNSF Modified.

Table 16. Light Rail OMSF Net Change in Site Trip Generation – Alt. 3 – BNSF Modified

Site Condition	Daily Trips	AM Peak Hour Trips [1]			PM Peak Hour Trips [2]		
		In	Out	Total	In	Out	Total
Proposed OMSF Project	570	7	13	20	5	10	15
Displacement of Existing Site Uses	-2,100	-155	-33	-188	-55	-160	-215
Net Change	-1,530	-148	-20	-168	-50	-150	-200

Source: Heffron Transportation, Inc., February 2013.

1. *AM peak hour of adjacent roadways typically occurs during one hour between 7:00 and 9:00 A.M.*
2. *PM peak hour of adjacent roadways typically occurs during one hour between 4:00 and 6:00 P.M.*

Traffic Safety

A review of collision data in the site vicinity did not indicate any unusual traffic safety conditions that would affect or be affected by the proposed project. The proposed OMSF would result in a net decrease in daily and peak hour traffic on surrounding roadways. It would also reduce the number of site access driveways that exist along 120th Avenue NE. As a result, the proposed project is not expected to result in any adverse impacts to traffic safety.

Transit

The potential for employees taking transit to and from Alternative 3 – BNSF Modified would be identical to that described for Alternative 2 – BNSF. The proposed project could result in about 2 employees taking transit to and from the site each day (2 in, 2 out). This level of transit demand would not represent an adverse impact. The removal of the existing site uses could also reduce transit demand near the site.

As described previously, Alternative 3—BNSF Modified is located near King County Metro Transit's Bellevue

Base and East Base. Both of Metro's transit bases have primary access on 124th Avenue NE. Alternative 3—BNSF Modified would generate less traffic than would be expected from the uses that currently occupy the site; therefore, no adverse impacts to the Metro transit bases would occur. The small number of OMSF trips that would use the access driveways serving the site on 120th Avenue NE would also not result in any adverse impacts to either base.

Non-Motorized Facilities

The potential for pedestrian and bicycle trips at Alternative 3 – BNSF Modified would be identical to that described for Alternative 2 – BNSF.

The required frontage improvements for Alternative 3 – BNSF Modified are expected to be identical to those that would be required for Alternative 2 – BNSF.

Parking

Parking demand for the OMSF at the Alternative 3 – BNSF Modified site would be identical to that described previously for Alternative 2—BNSF.

Site Access

The site access conditions and operations for Alternative 3 – BNSF Modified would be identical to those described for Alternative 2 – BNSF. The site access would operate at an acceptable level of service. Since Alternative 3—BNSF Modified would effectively reduce the volume of PM peak hour traffic generated at the site, it would not degrade the mobility management area nor affect the congestion allowance.

The concept design for Alternative 3 – BNSF Modified would allow all light rail trains to enter and exit the facility along exclusive right-of-way. This alternative would not construct any new at-grade crossings of roadways. Therefore, this site alternative would not result in any new at-grade train crossings near the proposed OMSF site.

Freight Mobility and Access

The OMSF Alternative 3—BNSF modified would result in a net reduction in traffic on study area roadways and would not result in any new at-grade train crossings. Therefore, it is not expected to result in any adverse impacts to freight mobility or access.

Mitigation

The proposed project is expected to result in a net decrease in traffic generated on City of Bellevue roadways and would not result in any adverse impacts to traffic operations or the surrounding transportation facilities. Frontage improvements are likely to be required as part of the permitting process. The proposed facility would be exempt from transportation impact fees. Therefore, no transportation mitigation is necessary to accommodate the OMSF at the Alternative 3 – BNSF Modified site.

Alternative 4 – SR 520

Construction Traffic Impacts

It is estimated that overall construction at the SR 520 site would require approximately 40 months (3.3 years). The most noticeable construction activity in terms of transportation-related elements will likely be related to the import and export of material to and from the site. The existing structures on the site would be demolished and material will be removed from the site. The demolition is expected to require removal of about 11,800 cubic yards of material over about two months. Assuming an average of about 20 yards per truck, 20 working days per month, and a typical eight-hour construction work day, this demolition activity could generate about 15 truckloads per day and an average of two truckloads per hour. With two truck trips for each truckload (one in and one out), the demolition activity would generate about 30 truck trips per day with four truck trips per hour.

Construction of the OMSF at the SR 520 site is also expected to require earthwork that would involve cut of up to 190,600 cy and fill up to 85,150 cy of material. It is not known at this time how much of the cut material can be reused on site for fill as part of site balancing. Therefore, the earthwork could result in transport of up to 275,750 cy of material that would generate truck trips on the local roadway system. This material is expected to be moved using trucks that can carry at least 20 cy each and could result in about 13,790 truckloads (27,575 truck trips) if all cut and fill material has to be transported to and from the SR 520 Alternative site. The excavation and embankment activity is expected to require about five months. Assuming an average of about 20 working days per month and a typical eight-hour construction work day, the excavation and embankment activity could generate about 140 truckloads per day and an average of 18 truckloads per hour. With two truck trips for each truckload (one in and one out), the earthwork activity would generate about 280 truck trips per day with 36 truck trips per hour.

The earthwork is expected to occur with some periods of higher activity than others. Truck trips would most likely occur during daytime hours (8:00 a.m. through 4:00 p.m.). Most construction transportation is stopped by 4:00 p.m. to avoid unnecessary delay to truck drivers from peak hour congestion.

Building materials (including concrete for foundations, asphalt for parking facilities, and structural elements) would be transported to the site regularly throughout the construction period. The number of deliveries each day would vary depending on the phase of construction.

Construction of the project would also require employees and equipment that would generate traffic to and from the site. Construction at the site would likely occur Monday through Friday. It is anticipated that construction workers would arrive at the construction site before the AM peak traffic period on local area streets and depart the site prior to the PM peak period; construction work shifts typically begin by 7:00 A.M. and end by 4:00 P.M., while the corresponding peak traffic periods typically occur slightly later. The number of workers at the project site at any one time would vary depending upon the nature and construction phase of the project. Based on past experience with construction of other facilities, the number of construction employees on site is estimated to range from a low of 20 workers (during early site work) to a peak of about 260 workers (during periods with many trades working within the buildings). The presence of a temporary construction work force would also generate demand for parking spaces around

the project site. It is expected that construction employees would be able to park in on-site staging areas or in new parking lots constructed on site for the project as they become available.

The proposed project would likely generate a noticeable amount of construction-related traffic on surrounding roadways. Construction worker vehicles and trucks carrying materials to and from the site would be most noticeable on NE 20th Street. The truck traffic is not expected to degrade operations of study area intersections during off-peak hours. A construction transportation management plan (CTMP) addressing site access, traffic control, hauling routes, construction employee parking, and pedestrian and bicycle control in the area would be prepared per City of Bellevue requirements. Construction haul routes would be determined as part of the CTMP and will depend on the origin and destination of material; however, the routes are likely to include NE 20th Street (Northup Way), 148th Avenue NE, and SR 520 in Bellevue.

Transportation Network

The proposed project would not change the existing transportation network in the site vicinity and no adverse impacts to the surrounding roadway network are anticipated.

Traffic Volumes

Trip generation for the proposed project at the Alternative 4 – SR 520 site is expected to be identical to that presented previously for Alternatives 2 and 3 (BNSF and BNSF Modified). The proposed project is expected to result in 570 daily vehicle trips (285 in, 285 out) with 20 trips occurring in the AM peak hour (from 7:00 to 8:00 A.M.), and 15 trips during the PM peak hour (5:00 to 6:00 P.M.).

When compared to the daily and peak hour traffic estimates for the existing uses on the Alternative 4 – SR 520 site that would be removed and replaced by the OMSF, the proposed project would result in a decrease in daily and peak hour traffic on the surrounding City of Bellevue roadway network. Table 17 presents the estimated net change in site trip generation with Alternative 4 – SR 520.

Table 17. Light Rail OMSF Net Change in Site Trip Generation – Alternative 4 – SR 520

Site Condition	Daily Trips	AM Peak Hour Trips [1]			PM Peak Hour Trips [2]		
		In	Out	Total	In	Out	Total
Proposed OMSF Project	570	7	13	20	5	10	15
Displacement of Existing Site Uses	-6,460	-417	-95	-512	-222	-466	-688
Net Change	-5,890	-410	-82	-492	-217	-456	-673

Source: Heffron Transportation, Inc., April 2013.

1. *AM peak hour of adjacent roadways typically occurs during one hour between 7:00 and 9:00 A.M.*
2. *PM peak hour of adjacent roadways typically occurs during one hour between 4:00 and 6:00 P.M.*

Traffic Safety

A review of collision data in the site vicinity did not indicate any unusual traffic safety conditions that would affect or be affected by the proposed project. The proposed OMSF would result in a net decrease in daily and peak hour traffic on surrounding roadways. It would also reduce the number of site access driveways that exist along NE 20th Street. The proposed project is not expected to result in any adverse impacts to traffic safety.

Transit

The potential for employees taking transit to and from Alternative 4 – SR 520 would be identical to that described for Alternatives 2 and 3. The proposed project could result in about 2 employees taking transit to and from the site each day (2 in, 2 out). This level of transit demand would not represent an adverse impact. The removal of the existing site uses could also reduce transit demand near the site.

Non-Motorized Facilities

The proposed project could generate a few pedestrian trips on adjacent sidewalks by employees walking from bus stops or walking to local businesses during midday and lunch breaks. However, the volume of pedestrian activity is expected to be small and would not result in adverse impacts on the surrounding non-motorized facilities.

Per the Bellevue City Code 16.60.110, the City has the authority to require new developments to make frontage improvements along public streets adjacent to the developments. Sound Transit would provide frontage improvements along public right of way to meet City of Bellevue roadway design standards. These improvements could include half street improvements with new curb, gutter, sidewalk, planter strip, street trees, street illumination, street furniture, and landscaping per applicable standards and roadway plans.

The City's adopted Pedestrian & Bike Plan includes Project B-111-N, which identifies five-foot bike lanes along the north side of NE 20th Street. The Bel-Red Corridor Land Use Code section 20.25.D identifies six-foot wide sidewalks with a five-foot wide planter strip and street trees (the current sidewalk width is six feet with no planter strip). Based on these guidelines, the frontage improvement would necessitate realignment of the north curb approximately five to eight feet north of its existing position. Frontage improvement requirements could also include half-street pavement restoration (full grind and overlay). Since the existing sidewalk adjacent to the SR 520 site has been deemed "defective" by the City of Bellevue, the minimum frontage requirement would include replacement of sidewalk to meet current city and ADA standards.

Parking

Parking demand for the OMSF at the Alternative 4 – SR 520 site would be identical to that described for Alternatives 2 and 3 (BNSF and BNSF Modified). The parking demand model developed for the project predicts a peak employee parking demand of 132 vehicles sometime between 11:00 A.M. and 11:30 A.M. during a midday shift change. Variations in employee shifts could result in slightly different peak parking demand results ranging up to 150 vehicles during the midday between 11:00 A.M. and 1:30 P.M. In addition to employee parking demand, there would be parking demand generated by OMSF non-revenue vehicles provided for Rail Operations staff (6 vehicles), Vehicle Maintenance staff (12 vehicles), and maintenance

trucks. If the non-revenue OMSF vehicles were all on site at the same time as the midday shift change, the total peak parking demand could range from 150 to 168 vehicles plus 8 maintenance trucks. The project would be designed to accommodate this parking demand.

Site Access

The proposed project would eliminate the nine existing private site access driveways along the north side NE 20th Street and the two on the east side of 130th Avenue NE. The proposed project would include construction of a new primary access driveway on the north side of NE 20th Street about 780 feet west of the 136th Place NE intersection. The secondary access would be provided on the west side of the site on 130th Avenue NE about 180 feet north of the NE 20th Street (Northup Way) intersection.

Level of service analyses were performed for the primary site access driveway that would serve OMSF using the same methodology described previously for the other alternatives. Forecast PM peak hour traffic volumes on NE 20th Street at the planned site access location were estimated for year 2035 by applying a 0.85% compound annual growth rate to the existing (2013) eastbound traffic volumes and a 2.7% compound annual growth rate to westbound traffic volumes. These growth rate were selected based a comparison of the existing traffic volumes and forecast 2030 traffic volumes included in the *Sound Transit East Link Project Final EIS – Appendix H1 – Transportation Technical Report*[26] for Segment D on NE 20th Street west of 136th Place NE. Forecasts were developed for the AM and midday peak hours by applying a 3% compound annual growth rate to both directions. It is noted that existing trips that would be eliminated by the project were not subtracted from the roadway network; therefore, the analysis likely represents a worst-case condition.

Table 18 presents the projected 2035 levels of service for the site access driveway during morning, midday, and afternoon peak hours. Although the City of Bellevue has identified improvements that could add capacity to some intersections along NE 20th Street (such as TIP projects #52 and #55 described previously in section), the funding for these projects is currently unsecured. Therefore, the existing roadway configuration was assumed as a worst case for operational analyses. As shown, all turning movements at the proposed access are projected to operate at LOS D or better during all peak hours. Since Alternative 4—SR 520 would effectively reduce the volume of PM peak hour traffic generated at the site, it would not degrade the mobility management area nor affect the congestion allowance. Therefore, the proposed project is not expected to result in any adverse traffic operational impacts at the site access driveway.

[26] Sound Transit, July 2011, 2030 PM D2A Synchro Reports.

Table 18. Site Access Level of Service Summary – Alternative 4 – SR 520 Site

Intersection	OMSF AM Peak Hour [1]		AM Peak Hour [1]		OMSF Midday Peak Hour [1]		PM Peak Hour [1]	
	LOS [2]	Delay [3]	LOS	Delay	LOS	Delay	LOS	Delay
NE 20th Street / OMSF Site Access	A	0.4	A	0.2	A	0.3	A	0.2
Southbound Turns from Site	A	0.0	C	22.0	C	21.1	D	27.8
Eastbound Turns into Site	A	7.9	B	14.7	C	15.1	C	17.0

Source: Heffron Transportation, February 2013.

1. *OMSF AM Peak hour is expected to occur from 4:00 to 5:00 A.M.; AM peak hour of adjacent roadways occurs during one hour between 7:00 and 9:00 A.M.; OMSF midday peak hour is expected to occur from 10:30 to 11:30 A.M.; PM peak hour of adjacent roadways occurs during one hour between 4:00 and 6:00 P.M.*
2. *LOS = Level of service.*
3. *Delay = Average seconds of delay per vehicle.*

This alternative would not construct any new at-grade crossings of roadways and would not result in any new at-grade train crossings that would affect levels of service.

Freight Mobility and Access

The OMSF Alternative 4—SR 520 would result in a net reduction in traffic on study area roadways and would not result in any new at-grade train crossings. Therefore, it is not expected to result in any adverse impacts to freight mobility or access.

Mitigation

The proposed project is expected to result in a net decrease in traffic generated on City of Bellevue roadways and would not result in any adverse impacts to traffic operations or the surrounding transportation facilities. Frontage improvements are likely to be required as part of the permitting process. The proposed facility would be exempt from transportation impact fees. Therefore, no transportation mitigation is necessary to accommodate the OMSF at the Alternative 4 – SR 520 site.

INDIRECT AND CUMULATIVE IMPACTS

Indirect Impacts

The OMSF project has the potential to have indirect transportation impacts; the primary source of potential indirect impacts would likely be related to the possible redevelopment of surplus land that would be acquired for the project by Sound Transit but not required for the operation of the OMSF. As outlined in the indirect impacts discussion in Land Use section (3.3), all build alternatives, except the SR 520 Alternative site, would result in surplus land not required for operation of the proposed project. These surplus lands could be made available for redevelopment consistent with corresponding zoning and/or conditions of the Conditional Use Permit required from the respective local municipality to develop the OMSF. Such future development of surplus property would result in new traffic generation and parking demand that would be evaluated in detail as part of the SEPA review and permitting process at that time.

Cumulative Impacts

The transportation access analysis presented in the previous sections reflects conditions with assumed growth in background traffic between existing conditions and the design year (2035). The traffic growth assumptions also reflect changes in traffic volumes that are projected in the traffic forecasts prepared for the *Sound Transit Lynnwood Link Extension Draft Environmental Impact Statement* and the *Sound Transit East Link Extension Final Environmental Impact Statement*. As a result, the traffic analyses reflect the cumulative impacts of these Sound Transit Link extensions as well as other planned and unforeseen development and associated increases in traffic within the study areas for each build alternative. In addition, future trips that would otherwise be generated by the existing site uses and would be removed with the project alternatives were not subtracted from the future traffic forecasts; therefore, the analysis likely represents a worst-case condition in terms of cumulative effects on transportation.

It is possible that construction of the OMSF facility could occur simultaneously with construction of the Lynnwood Link Extension (LLE) and/or the East Link Extension (ELE). Construction for the LLE is planned to occur from 2018 to 2023 and construction for ELE is planned from 2016 to 2022, both of which would overlap the planned construction period for the OMSF between 2017 and 2020. Based on information from the Lynnwood Link Extension DEIS Transportation analysis, potential construction staging areas and truck haul routes for Segments B and C could include the roadway adjacent to the OMSF Alternative 1 site (52nd Avenue W) and could include staging areas on the Alternative 1 site. Based on information from the Sound Transit East Link Project Final EIS – Appendix H1 – Transportation Technical Report, potential construction impacts within segment D (the segment in which the OMSF Alternatives are located) could include some short-term lane closures, transit route changes, and temporary sidewalk closures near one or more of the OMSF alternative sites. The haul routes for earthwork and/or construction materials could also be the same as those that could be used for OMSF construction.

POTENTIAL MITIGATION MEASURES

No transportation or traffic mitigation is warranted for any of the build alternatives. Frontage improvements are likely to be required for each of the four build alternatives as part of the permitting process. Both the City of Bellevue and the City of Lynnwood typically collect transportation impact fees for new development; however, the city codes of both cities exempt buildings or structures constructed by a regional transit authority pursuant to RCW 82.02.090.[27] Therefore, the proposed facility would be exempt from transportation impact fees regardless of the alternative selected.

[27] Lynnwood Municipal Code section 3.105.080 & Bellevue City Code section 22.16.070.

Attachment

Level of Service Definitions & Thresholds

Levels of service (LOS) are qualitative descriptions of traffic operating conditions. These levels of service are designated with letters ranging from LOS A, which is indicative of good operating conditions with little or no delay, to LOS F, which is indicative of stop-and-go conditions with frequent and lengthy delays. Levels of service for this analysis were developed using procedures presented in the *Highway Capacity Manual* (Transportation Research Board, 2010).

Level of service for signalized intersections is defined in terms of delay. Delay can be a cause of driver discomfort, frustration, inefficient fuel consumption, and lost travel time. Specifically, level of service criteria are stated in terms of the average delay per vehicle in seconds. Delay is a complex measure and is dependent on a number of variables including: the quality of progression, cycle length, green ratio, and a volume-to-capacity ratio for the lane group or approach in question. Table A-1 shows the level of service criteria for signalized intersections from the *Highway Capacity Manual.*

Table A-1. Level of Service Criteria

Level of Service	Average Delay Per Vehicle	General Description
A	Less than 10.0 Seconds	Free flow
B	10.1 to 20.0 seconds	Stable flow (slight delays)
C	20.1 to 35.0 seconds	Stable flow (acceptable delays)
D	35.1 to 55.0 seconds	Approaching unstable flow (tolerable delay—occasionally wait through more than one signal cycle before proceeding.
E	55.1 to 80.0 seconds	Unstable flow (approaching intolerable delay)
F	Greater than 80.0 seconds	Forced flow (jammed)

Source: Transportation Research Board, Highway Capacity Manual, 2010.

For unsignalized two-way-stop-controlled, all-way-stop-controlled, and roundabout intersections, level of service is based on the average delay per vehicle. The level of service for a two-way, stop-controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. Delay is related to the availability of gaps in the main street's traffic flow, and the ability of a driver to enter or pass through those gaps. The delay at an all-way, stop-sign (AWSC) controlled intersection is based on saturation headways, departure headways, and service times. Delay at roundabouts is based on entry flow rates and flow rate capacity. Table A-2 shows the level of service criteria for unsignalized intersections from the *Highway Capacity Manual*.

Table A-2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Delay (seconds per vehicle)
A	Less than 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

Source: Transportation Research Board, Highway Capacity Manual, 2010.