Appendix D

Transportation

Transportation

1 Affected Environment

1.1 Street System

Regional Street System

Regional access to Children's and the Hartmann site is provided by I-5 to the west and SR 520 to the south. Roadways in the immediate vicinity of Children's consist primarily of residential streets, minor arterials, and principal arterials. Intersections of arterial streets generally have traffic signals while intersections of local access streets are stop controlled. Table 1 summarizes the characteristics of the major corridors within the study area.

Table 1
Characteristics of Major Roadways in Study Area

Name	Classification	Number of Lanes	Posted Speed
NE 65th Street	Minor Arterial	2	30 mph
NE 55th Street	Collector Arterial	2	30 mph
NE 50th Street	Access Street	2	30 mph
NE 45th Street (I-5 to Sand Point Way NE)	Principal Arterial	4	30 mph
NE 45th Street (Sand Point Way NE to 48th Avenue NE)	Collector Arterial	2	30 mph
Montlake Boulevard NE	Principal Arterial	4	30 mph
25th Avenue NE	Principal Arterial	5	35 mph
35th Avenue NE	Minor Arterial	2	35 mph
40th Avenue NE	Collector Arterial	2	30 mph
Sand Point Way NE	Principal Arterial	4	35 mph

Source: Seattle Department of Transportation and The Transpo Group, November 2007

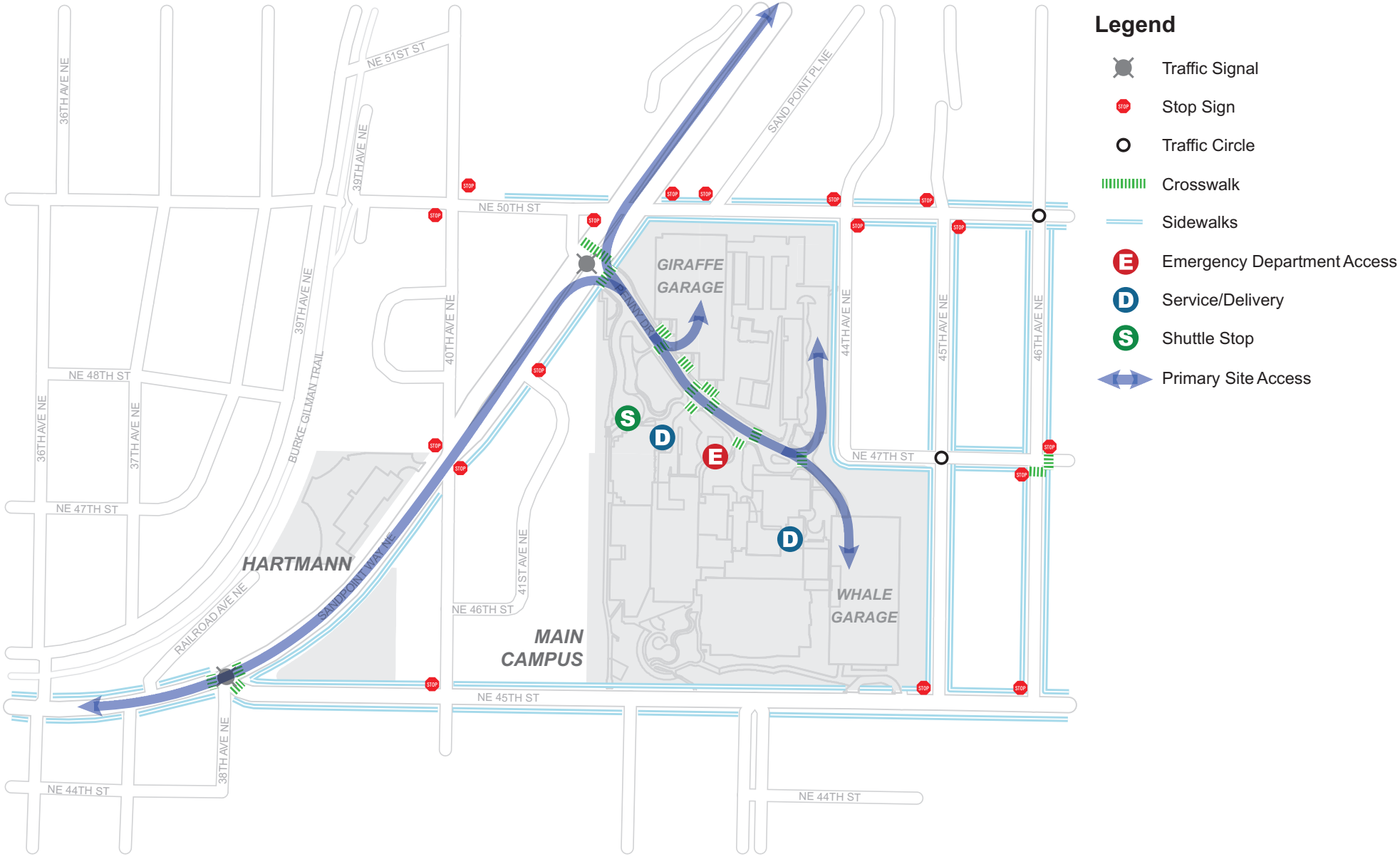
Figure 1 shows the overall study area for the analysis. The analysis area was determined in recognition of primary travel patterns for Children's traffic. Based on current information, the study area includes the Montlake Boulevard corridor to SR 520 and the NE 45th Street corridor to I-5. The ensuing traffic analysis fully encompasses these corridors and includes the evaluation of thirty-five study intersections.

Local Streets

Figure 2 illustrates the street system in the immediate site vicinity. It depicts key access streets, existing traffic control devices, and shuttle/emergency delivery dropoff and pickup locations. The non-motorized components of the current site and the adjacent local streets (including NE 45th Street, NE 47th Street, NE 50th Street, 40th Avenue NE, 44th Avenue NE, and 45th Avenue NE) are discussed later in Section 1.6.

Source: The Transpo Group

Figure 1
Study Area and Key Intersections



Source: The Transpo Group

Figure 2
Existing Local Street System and Traffic Control

Sand Point Way NE is the primary arterial serving Children's and is classified as a principal arterial by the City. The portion of this roadway from NE 45th Street to NE 65th Street, inclusive of Sand Point Way NE along the project frontage, is State Route (SR) 513 which is under the Washington State Department of Transportation (WSDOT) jurisdiction. In the vicinity of the hospital, sidewalks and parking are provided on the east side of this four lane roadway. Travel patterns in the immediate vicinity of the site are affected by restricted turning movements at the Sand Point Way NE intersections with 40th Avenue NE and 41st Avenue NE. These restricted movements include the allowance of right turns only from 40th Avenue NE on both the northbound and southbound approaches, and no left turns are allowed from Sand Point Way NE on the eastbound or westbound approach. Southbound traffic from 41st Avenue NE (at Penny Drive) onto Sand Point Way NE is also restricted to right turns only. Although this restriction normally prohibits vehicles from entering the Children's driveway from 41st Avenue NE, some vehicles make this movement.

NE 45th Street forms the southern boundary of the hospital. In the vicinity of Children's, NE 45th Street is classified as a collector arterial. Sidewalks are provided on both sides of this roadway from Sand Point Way NE to Laurelhurst Elementary School. Shared bicycle lanes are provided east of 43rd Avenue NE to Sand Point Way NE, and parking is provided from Sand Point Way NE to 45th Avenue NE.

NE 47th Street forms a northern boundary of Children's. It is classified as a residential access street by the City. This two-lane roadway has sidewalks on the south side and parking on the north side. A traffic circle is provided at its intersection with 45th Avenue NE.

NE 50th Street forms the northern boundary of Children's, and is classified as a residential access street by the City. Parking and sidewalks are provided on both sides of the roadway. A traffic circle is located at the intersection of 46th Avenue NE with the intent of slowing traffic. A 20 mile per hour (mph) school zone, for Villa Academy, starts at 48th Avenue NE which is four blocks south of Children's and ends beyond the school. NE 50th Street currently does not provide access to Children's.

40th Avenue NE is a 30 mph collector arterial. Between Sand Point Way NE and NE 45th Street it is adjacent to the Laurelon Terrace property west of Children's. Between NE 50th Street and NE 45th Street, sidewalks and parking are provided on both sides of this roadway. As discussed previously, at its intersection with Sand Point Way NE only right turns are allowed. Stop signs control the intersection of 40th Ave NE and NE 45th Street.

44th Avenue NE forms an eastern boundary of Children's. It is classified as a residential access street by the City. This two-lane roadway has sidewalks on the west side and parking on the east side. Stop signs control the intersection of 44th Avenue NE and NE 50th Street.

45th Avenue NE forms an eastern boundary of Children's near the Whale Garage. It is classified as a residential access street by the City. This two-lane roadway has sidewalks on both sides and parking on the east side. Stop signs control the intersection of 45th Avenue NE and NE 50th Street. As discussed previously, a traffic circle is provided at its intersection with NE 47th Street.

Children's Access and Circulation

Vehicle Access

Primary access to Children's is provided via the signalized Sand Point Way/Penny Drive intersection which is located approximately 200 feet south of the Sand Point Way NE/NE 50th Street intersection. The inpatient and outpatient facilities are located on the southwest side of Penny Drive. On the northeast side are parking, administrative offices, a plant nursery, and cooling towers. Soon after entering the site, Penny Drive becomes three lanes with multiple points of access to vehicular parking (Giraffe Garage), drop off areas, Children's shuttle stops, and the emergency department. It culminates at the Whale garage, where patient and visitor parking is provided.

An additional access point exists on NE 45th Street near the southeast corner of Children's. It is currently not used for general traffic; service vehicles can enter the Whale Garage via a secured gate. In addition, an apron at this location allows King County Metro buses to layover on a driveway on Children's property. This driveway also provides access to a fire lane on the south side of the Melinda French Gates Ambulatory Care Building.

Children's owns or leases other sites along Sand Point Way NE (i.e., Hartmann, Springbrook Office Building, and the 70th Avenue NE/Sand Point Way NE office) that are related to hospital operations. The Hartmann property, located at the intersection of 40th Avenue NE and Sand Point Way NE, is proposed for redevelopment as part of the Master Plan. Access to the Hartmann site is provided via two driveways on Sand Point Way NE. One of the driveways is close to the unsignalized Sand Point Way NE/40th Avenue NE intersection.

Emergency Access

The primary access for all vehicles, including emergency vehicles, is via Sand Point Way NE at Penny Drive. The entry to the emergency department is located south of Penny Drive and is accessed at the third driveway. Both emergency vehicles and patients accessing the emergency department enter and exit via the same driveway. In front of the emergency entrance, there are three parking spaces for ambulances, two patient drop-off parking spaces, and four patient parking spaces. In addition, the secondary access along 45th Street NE provides fire vehicle access to the south side of Children's.

Shuttle Access

Currently, Children's shuttles use the signalized Sand Point Way NE/Penny Drive intersection to access the hospital. They drop off and pick up passengers near the Giraffe entrance of the hospital which has a turnaround at the end of a driveway off Penny Drive. Figure 2 illustrates the location of the shuttle drop off area on campus.

Service and Deliveries

Similar to emergency access, service and deliveries access the hospital via Sand Point Way NE at Penny Drive. Two loading dock areas are provided south of Penny Drive: one for service vehicle access via the second driveway south of Penny Drive at the C-Wing, and one for food delivery access via the third driveway south of Penny Drive at the G-Wing. Figure 2 illustrates the current location of campus loading docks.

1.2 Traffic Volumes

Transportation to and from the study sites (i.e., Children's campus, off-site parking areas, and Hartmann) were examined from a multi-modal perspective. Existing vehicular trips to and from the study sites were determined based on existing person trips by mode. Table 2 shows the existing single occupancy vehicle (SOV), transit, bike/walk, and other trips pertaining to the hospital and Hartmann.

Table 2
Existing Person Trips by Mode

Mode	Daily	AM Peak Hour	PM Peak Hour
SOV	8,600	680	640
Carpool	1,110	230	150
Vanpool	280	80	60
Transit	810	130	100
Bike/walk	660	130	90
Total	**11,460**	**1,250**	**1,040**

Source: The Transpo Group, March 2008

As shown in the table, a majority of the travel occurs via vehicle with transit and bike/walk accounting for about 20 percent of the total person trips during the peak hours and about 15 percent of the total person trips on a daily basis. Attachment T-1 provides additional detail on the travel characteristics and demand of Children's.

Based on the person trips shown in Table 2, SOV, carpool, and vanpool person trips were converted into vehicle trips considering the average occupancy for each vehicle. Children's generates approximately 9,200 daily vehicle trips, with about 800 trips occurring during the AM peak hour and 720 trips occurring during the PM peak hour[1] (see Attachment T-1 for additional detail). The traffic evaluation focuses on existing vehicle trip generation to and from the hospital, off-site parking, and the Hartmann site. Person trips were used to determine existing vehicle trips, and account for persons who make more than one trip to the sites per day or during the peak hours (e.g., traveling to and from the sites for lunch or a meeting). These figures were calibrated against driveway and shuttle ridership counts.

Study area traffic volume data were compiled to characterize existing weekday traffic conditions during the AM and PM peak hours. Intersection turning movement counts were conducted in October 2007 when the University of Washington was in full session. Figures showing existing traffic volumes at the study intersections during both the AM and PM peak hours are provided in Attachment T-2; intersection turning movement data collection sheets are contained in Attachment T-3.

[1] Based on traffic counts conducted in February 2007 at Penny Drive and Children's shuttle ridership information collected at the remote parking areas in October 2007 as well as the calibrated trip generation model.

Figures 3 and 4 illustrate the existing AM and PM peak hour Children's traffic impact at the study intersections (see also Attachment T-4). As shown in the figures, trips generated by Children's account for less than 5 percent and up to about 50 percent of peak hour traffic volumes. At intersections closer to Children's and along the access corridors, Children's trips represent a larger percentage of overall traffic than at intersections farther from the site.

Approximately 25 percent of the existing Children's traffic uses the Montlake Boulevard corridor to access the campus or the Hartmann site during the peak periods. This traffic generally represents about 10 percent of the existing traffic volumes along Montlake Boulevard during the peak periods. Approximately 25 percent of the existing Children's traffic uses NE 45th Street to access the hospital or the Hartmann site during the peak periods. Children's traffic generally represents approximately 15 percent of the existing traffic along the NE 45th Street corridor during the peak periods.

1.3 Traffic Operations

This section reviews current operational conditions at intersections, and along key corridors serving Children's access. The intersection analysis reflects the traditional basis of SEPA review for traffic impacts. The key corridor evaluation adds the unique characteristics associated with the study area, and specifically addresses congested conditions along the Montlake Boulevard and NE 45th Street corridors, which experience delays during peak periods and slow overall progression of traffic.

Intersections

The operational characteristics of intersections are determined by calculating intersection level of service (LOS). The intersection as a whole and its individual turning movements can be described with a range of levels of service (A through F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. At signalized and all-way stop controlled intersections, LOS is measured in average total delay per vehicle and is typically reported for the intersection as a whole. At side-street stop controlled intersections, LOS is measured in average movement delay per vehicles and is typically reported for the worst movement. Attachment T-5 provides a more detailed explanation of intersection LOS.

LOS for the study intersections were calculated based on the *Highway Capacity Manual* (TRB 2000) methodology. The 2000 *Highway Capacity Manual* represents the most current methodology published and provides the ability to account for total vehicle delay, a measure that quantifies several intangible factors, including driver discomfort, frustration, and lost travel time. Figure 5 summarizes the existing AM and PM peak hour levels of services. A detailed summary is provided in Attachment T-4.

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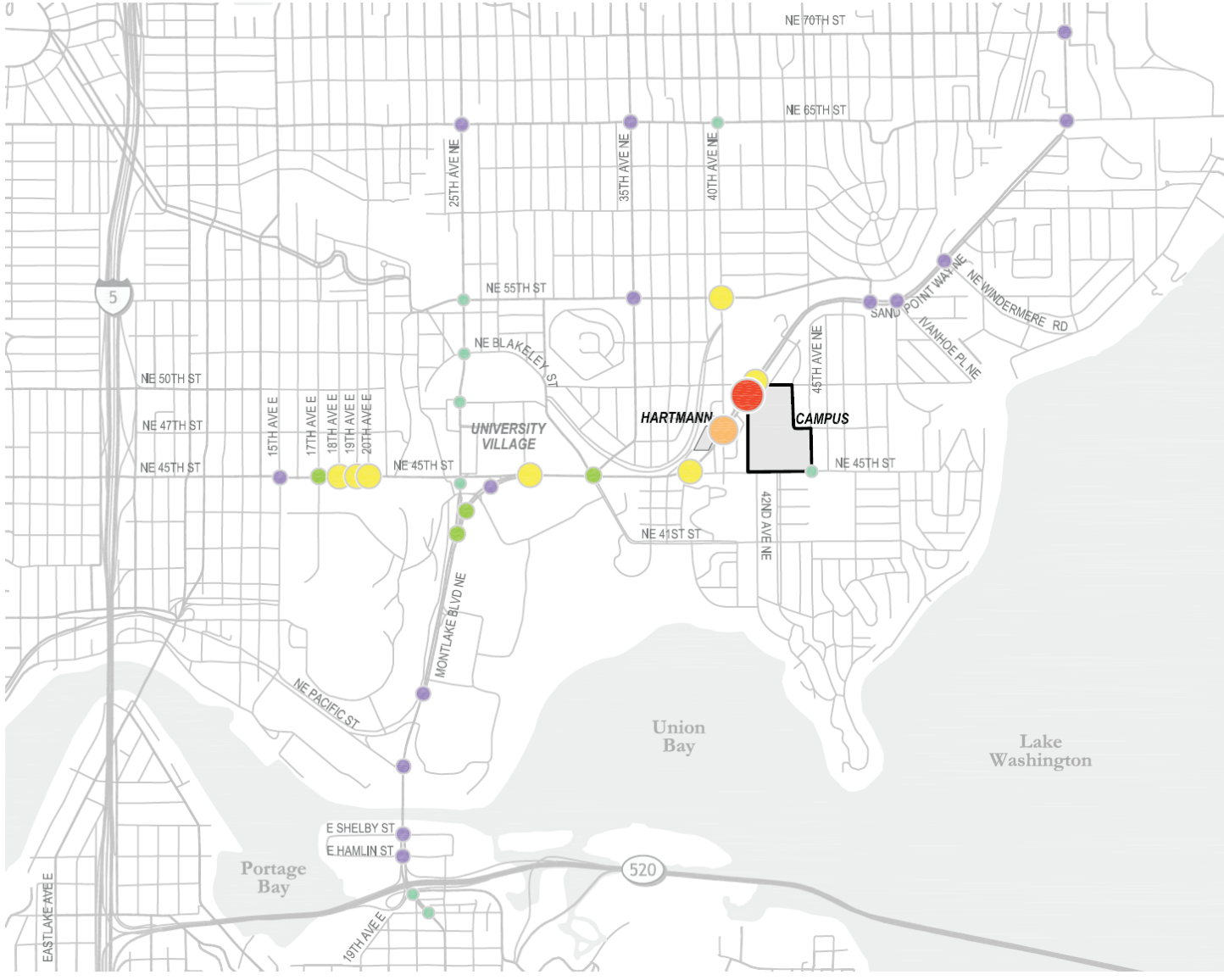

NOT TO SCALE

LEGEND

- = 0 - 5%
- = 6 - 10%
- = 11 - 15%
- = 16 - 25%
- = 26 - 35%
- = 36% +

Source: The Transpo Group

Figure 3

Existing AM Peak Hour Children's Traffic Volume Effects

Seattle Children's Hospital
Major Institution Master Plan EIS

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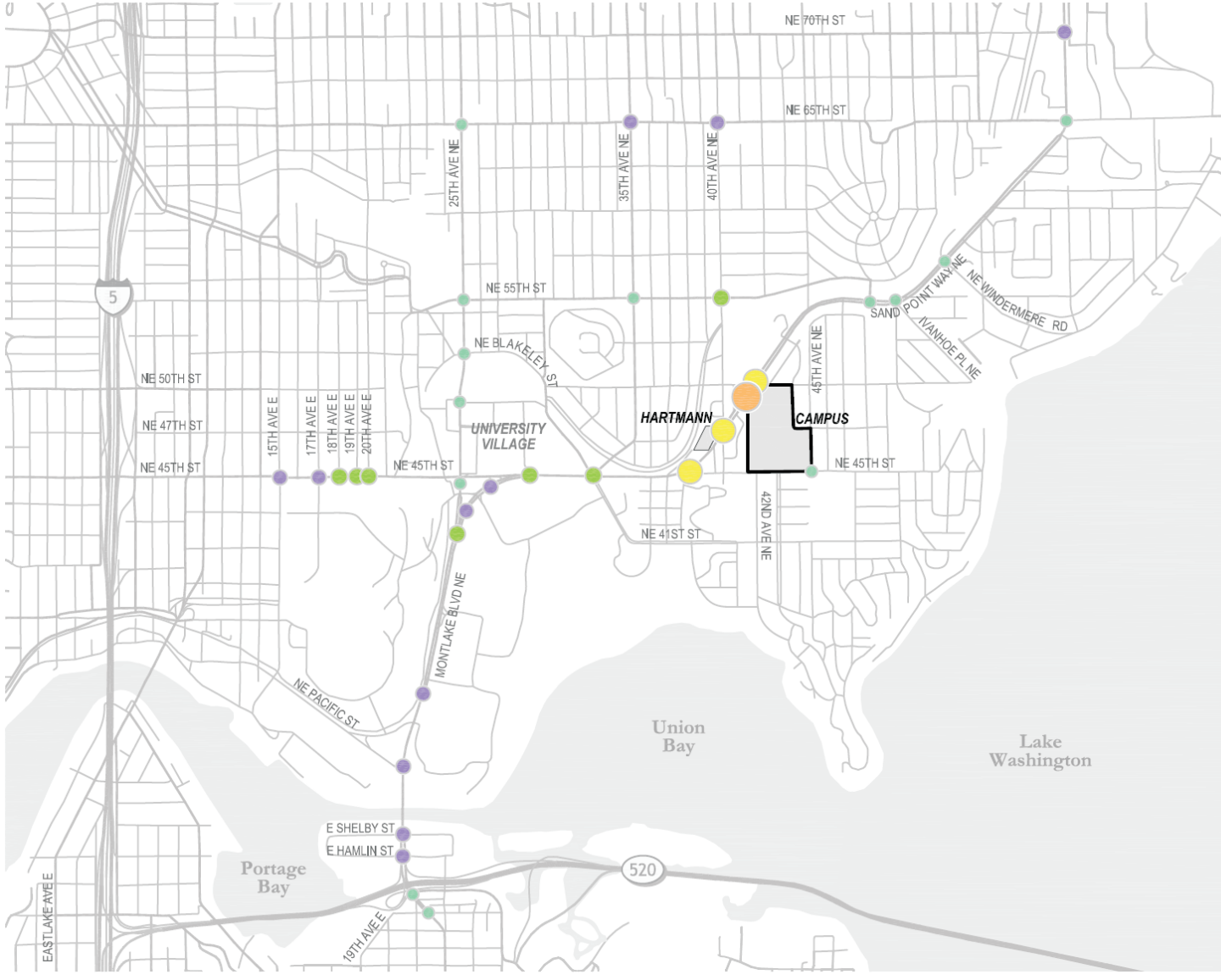

NOT TO SCALE

LEGEND

= 0 - 5%
= 6 - 10%
= 11 - 15%
= 16 - 25%
= 26 - 35%
= 36% +

Source: The Transpo Group

Figure 4

Existing PM Peak Hour Children's Traffic Volume Effects

Seattle Children's Hospital
Major Institution Master Plan EIS

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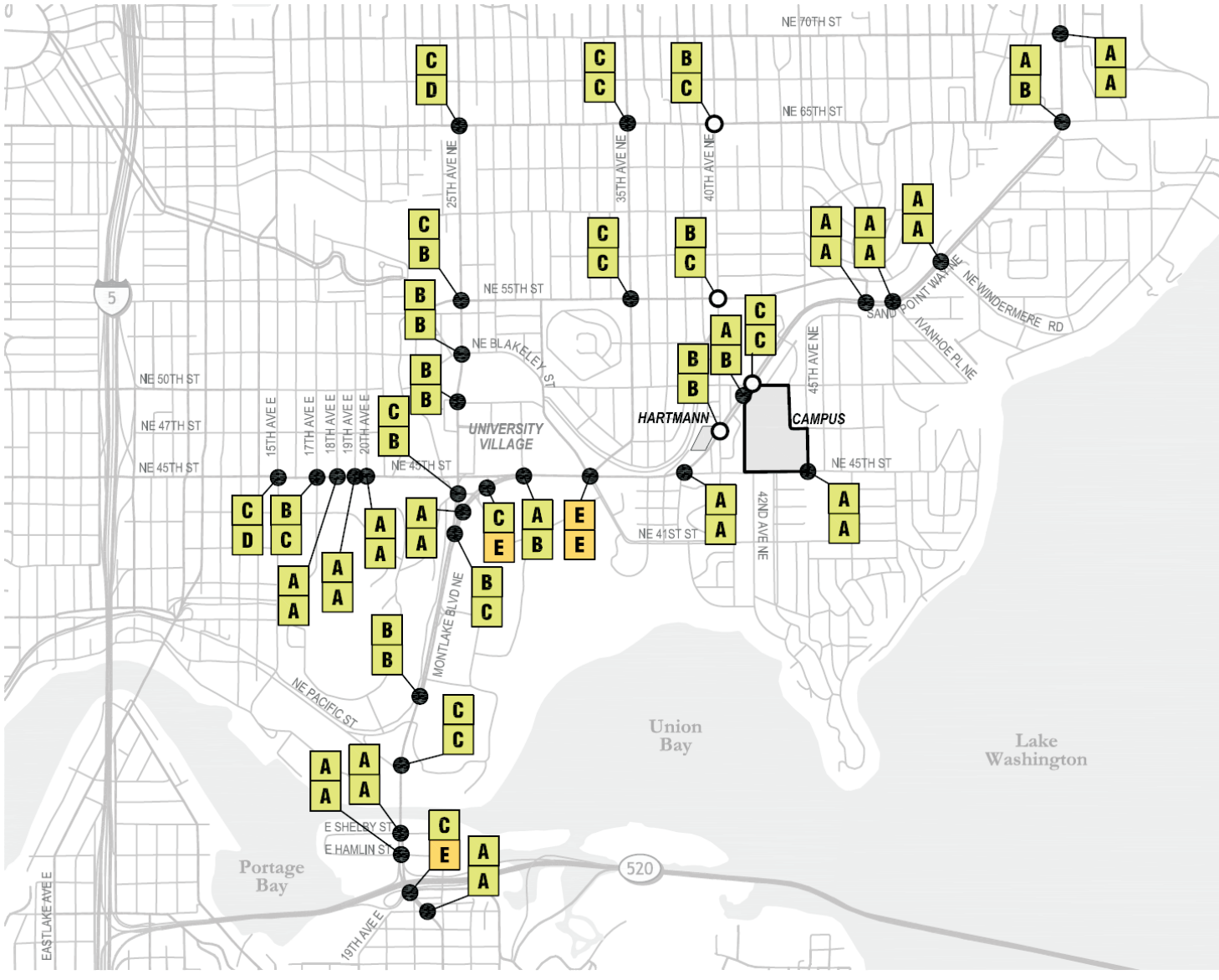

NOT TO SCALE

LEGEND

- X = AM
- X = PM
- = SIGNALIZED INTERSECTION
- = UNSIGNALIZED INTERSECTION

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

- A = 0 TO 10 DELAY (SEC/VEH)
- B = 10 TO 20 DELAY (SEC/VEH)
- C = 20 TO 35 DELAY (SEC/VEH)
- D = 35 TO 55 DELAY (SEC/VEH)
- E = 55 TO 80 DELAY (SEC/VEH)
- F = 80+ DELAY (SEC/VEH)

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

- A = 0 TO 10 DELAY (SEC/VEH)
- B = 10 TO 15 DELAY (SEC/VEH)
- C = 15 TO 25 DELAY (SEC/VEH)
- D = 25 TO 35 DELAY (SEC/VEH)
- E = 35 TO 50 DELAY (SEC/VEH)
- F = 50+ DELAY (SEC/VEH)

Source: The Transpo Group

Figure 5

Existing Peak Hour Levels of Service Summary

Seattle Children's Hospital
Major Institution Master Plan EIS

Analysis indicates that a majority of the study intersections are operating at LOS D or better during both the AM and PM peak hours. ~~Three~~ Two study intersections, NE 45th Street/Union Bay Place NE ("five corners")~~, Montlake Boulevard NE/NE 45th Street,~~ and Montlake Boulevard NE/eastbound SR 520 Ramps, are currently operating at LOS E or worse during one or more peak hours. LOS E or worse indicates that these intersections are congested and vehicle delays are long. Poor operating conditions at the NE 45th Street/Union Bay Place NE intersection are due to a combination of high traffic volumes and the unconventional five-leg configuration of this intersection. The ~~Montlake Boulevard NE/NE 45th Street and~~ Montlake Boulevard NE/eastbound SR 520 Ramps intersection~~s~~ operate~~s~~ poorly due to high traffic volumes and inadequate capacity during the peak hours. Although this evaluation focuses on the AM and PM peak hours, there are excessive delays along the NE 65th Street corridor during non-peak periods, including at the NE 65th Street/25th Avenue NE study intersections[2].

The City of Seattle's Comprehensive Plan does not define a LOS standard for individual intersections; however, the City generally recognizes LOS E and F as poor operations.

Key Corridors

Children's is served by several key corridors within the study area. Travel time and speed surveys were conducted along key corridors to present a more complete picture of the existing study area transportation system. These surveys were conducted during the PM peak period which represents the heaviest traffic flows in the study area. Table 3 provides a summary of the existing travel times to and from Children's along Montlake Boulevard, NE 45th Street, and Sand Point Way NE.

Table 3
Existing (2007) PM Peak Hour Corridor Travel Time and Average Speeds

Corridor	Direction[1]	Existing	
		Average Travel Time (minutes)[2]	Average Speed (mph)
Sand Point Way NE between NE 70th Street and Children's	NB	3	32
	SB	3	34
Montlake Boulevard and Sand Point Way NE between Roanoke Street and Children's	NB	9	15
	SB	13	10
NE 45th Street and Sand Point Way NE between I-5 and Children's	WB	9	14
	EB	10	13

Source: The ~~Trampso~~Transpo Group, March 2008
1. Direction of travel where NB = northbound, SB = southbound, EB = eastbound, and WB = westbound.
2. Average travel time presented in minutes.

Sand Point Way NE Corridor

As shown in Table 3, travel to and from the north along Sand Point Way NE currently occurs at nearly the speed limit. This is consistent with the results of the intersection levels of service which show very good LOS B or better operations at all signalized intersections north of

[2] Seattle Department of Transportation, *University Area Transportation Action Strategy Final Report*, August 2008.

Children's during the PM peak hour. Attachment T-4 provides additional information on travel time and speeds for the Sand Point Way NE corridor.

Montlake Boulevard Corridor

During the PM peak hour, the southbound direction travel exhibits greater delay (i.e., longer travel time and slower speeds) than the northbound direction. The primary "bottlenecks" in the southbound direction are five corners, near the hospital, and the approach to SR 520, at the south end of the corridor. While the overall average travel speed was about 10 mph for the Montlake Boulevard corridor, the travel speeds in shorter segments near points of congestion (i.e., five corners and SR 520) is lower. This is consistent with the results of the intersection levels of service which show poor LOS E operations at "bottleneck" locations of the corridor, and good LOS C or better operations at the remaining locations during the PM peak hour. Conditions in the northbound direction are similar to the southbound direction; however, there is less delay in the vicinity of the SR 520 interchange and approaching five corners which results in slightly higher travel speeds and faster travel times. The key corridor analysis shows that the overall performance of the Montlake Boulevard corridor is affected by access capacity to SR 520, and regional traffic congestion on SR 520 itself.

NE 45th Street Corridor

NE 45th Street connects with I-5 via the University District business district street grid, where signals as well as I-5 congestion affect traffic performance congestion. Average travel speeds in both the eastbound and westbound directions along the NE 45th Street corridor are similar during the PM peak hour. The primary "bottleneck" in both directions to and from Children's is I-5 through the University District and five corners. While the overall average travel speeds were about 13 to 14 mph for the corridor, the travel speeds in short segments near points of congestions (i.e., I-5 through the University District and five corners) is lower. This is consistent with the results of the intersection levels of service which show longer delays in the vicinity of I-5, and shorter delays or better operations at the remaining locations during the PM peak hour.

Site Access

As discussed previously, access to Children's is currently provided via the signalized intersection at Sand Point Way NE and Penny Drive. An evaluation of existing intersection operations during both the AM and PM peak hours shows that the current service level is LOS B or better at this location. These good operations show that one driveway is sufficient to serve the current traffic (i.e., approximately 600 to 650 vehicles) to and from Children's during the peak hours.

Concurrency

Children's currently meets transportation concurrency. As discussed previously, the City of Seattle's Comprehensive Plan does not define a LOS standard for individual intersections. Instead, operational standards focus on arterial levels of service at specific screenlines throughout the City. A screenline is an imaginary line drawn across several arterials at a particular place. The arterial LOS is defined by the volume to capacity (v/c) ratio: projected traffic volume divided by the City-defined roadway capacity. To evaluate the performance of the arterial system, the calculated LOS for each screenline is compared with the LOS standard of

the particular screenline, as defined by the City. The City standard is typically a v/c ratio of 1.0 to 1.2 for each screenline.

1.4 Traffic Safety

Regional

Records of reported accidents at the study intersections were reviewed to help identify whether any traffic safety issues exist. The City of Seattle has adopted criteria for assigning high accident location status to signalized intersections with 10 or more reported collisions per year and unsignalized intersections with five or more reported collisions per year. Intersections designated as high accident locations are targeted for future safety improvements in an effort to reduce the occurrence of accidents. A summary of the total and average annual of reported accidents at each study intersection is provided in Attachment T-4. Fewer than 10 collisions per year were reported at each of the signalized intersections and fewer than five collisions per year were reported each unsignalized study intersections. Thus, none of the study locations currently meet the City's criteria for a high accident location.

The greatest number of collisions was reported at the NE 45th Street/University Village Driveway intersection. At this location, there were 11 accidents in 2004, 15 in 2005, and none in 2006. This sharp reduction in reported collisions corresponds approximately with the installation of traffic signals at this location in 2006.

Local

In addition to the general review of accident experience on regional facilities serving Children's, a review of accidents and safety conditions on the streets local to the Children's campus was also undertaken. This review includes not only an examination of reported accidents, but also consideration of physical conditions that contribute to a safe environment for vehicles, pedestrians, and other travel modes. Figure 6 illustrates reported accidents during the three year period on local streets surrounding Children's, including Sand Point Way NE, NE 45th Street, NE 50th Street, and 40th Avenue NE. This summary includes both intersection and non-intersection accidents.

Sand Point Way NE

An average of seven collisions per year were reported on this roadway (not including those at intersections) with the predominant accident type being rear-end collisions which is typical of areas with frequent stop and go traffic due to turning into driveways and stopping at signalized intersections. One of the accidents reported along Sand Point Way NE was bicycle related. No bicycle facilities are provided along Sand Point Way NE in the vicinity of Children's. Pedestrian facilities are only provided on the east side adjacent to Children's and the only signalized crossing is at the Sand Point Way NE/Penny Drive intersection. In addition, parking is provided on the east side of Sand Point Way NE which separates or buffers the sidewalks from the general travel lanes.

Legend

- Traffic Signal
- Stop Sign
- Traffic Circle
- Crosswalk
- # Average Annual Reported Accidents

NOTE:
<10 accidents per year at signalized intersection or <5 accidents per year at unsignalized intersection does not meet city's minimum threshold as high accident location.

Figure 6

Source: The Transpo Group

Existing Local Street System Reported Accidents (2004 - 2006)

Seattle Children's Hospital
Major Institution Master Plan EIS

NE 45th Street
An average of about two collisions per year or a total of four accidents were reported on this roadway in the current three year period (2004 – 2006) (SDOT). Accidents occurred between 43rd Avenue NE and 45th Avenue NE (rear-end collision with a stopped vehicle) and between Sand Point Way NE and 40th Avenue NE (rear-end collision with a stopped vehicle and parked vehicle). There were two accidents at the NE 45th Street/40th Avenue NE intersection, one involving an eastbound left-turning vehicle and a bicyclists and the other involving a northbound left-turning vehicle and an eastbound through vehicle. The City, in partnership with Children's, has recently added sharrows along NE 45th Street which are pavement markings that identify the bicycle route and help vehicles and bicyclist share the road by making motorists aware of the potential presence of bicyclists. In addition, pedestrian facilities are provided on both sides of this roadway from Sand Point Way NE to Laurelhurst Elementary School. The provision of bicycle and pedestrian facilities provide for a safer environment for these modes on NE 45th Street.

NE 50th Street
No accidents were reported on NE 50th Street in the vicinity of Children's. Parking and sidewalks are provided on both sides of the roadway. No bicycle facilities are provided; however, this roadway is a relatively low volume road with traffic calming devices such as a traffic circle at the intersection of 46th Avenue NE which slow vehicles. In addition, the speed limit is 20 mph at the Villa Academy school zone.

40th Avenue NE
Less than one accident per year was reported along this roadway in the vicinity of Laurelon Terrace. Sidewalks and parking are provided on both sides of this roadway creating a safer environment for pedestrians.

Traffic safety analysis is typically conducted for the most recent complete three-year period; therefore, data from 2007 was not available at the time the analysis was developed, and thus not included. However, in 2007 there was a fatal accident at the unsignalized Sand Point Way NE/40th Avenue NE intersection. This accident was due to the eastbound left-turning vehicle failing to yield to the westbound through vehicle. It is noted that 40th Avenue NE meets Sand Point Way NE at a skewed angle which can contribute to awkward maneuvers. The angle of the intersection makes maneuvering to and from 40th Avenue NE difficult due to limited visibility. SDOT plans to signalize this location which would improve safety.

1.5 Parking

This section describes parking supply and demand associated with Children's. Since the parking analysis was developed, Children's has secured additional off-site parking at the University of Washing Montlake parking lot (E-1). A total of 150 spaces are being leased at this location. This added off-site parking is supported by shuttle service to Children's campus. The additional parking results in minor changes to existing parking supply and demand relationships, shuttle service, and somewhat of lowers the current level of traffic impact through the NE 45th Street/Union Bay Place (five corners) intersection. ~~To the extent appropriate, the effects of this change in the existing conditions will be addressed in the Final EIS.~~

Supply

Figure 7 (rev) shows the existing parking facilities associated with Children's. There are three parking areas located at the hospital and four off-site parking areas typically utilized by Children's employees.

Children's currently provides 1,462 parking spaces on campus and leases additional parking for employees northeast of the hospital on Sand Point Way NE, including 350 at Warren G. Magnuson Park, 100 at the Center for Spiritual Living, and 150 at the adjacent Federal Archives site. Children's also leases 40 parking spaces at the 13th Church at 3500 NE 125th Street. In addition, the Hartmann site includes 80 parking spaces on site. These parking areas total 2,182 spaces. Parking lots are free-of-charge to patients and visitors. Children's employees are charged for parking.

Children's Campus

The Giraffe Garage is located on the northwest corner of the campus across Penny Drive from the hospital. It provides 728 parking stalls for patients, visitors, staff, and physicians. The garage has four levels, which are not currently connected to each other; direct access to each level is via separate garage entrances off Penny Drive. The Whale Garage is located to the east of the Melinda French Gates Ambulatory Care Building. The three-level Whale Garage has 608 parking stalls for patients, visitors, staff, and physicians. It serves the main entrance of the Ambulatory Care Building and provides the Americans with Disabilities Act (ADA) accessible parking. Access to the Whale Garage is from Penny Drive. Ninety-six surface parking spaces are provided on the campus at the northeast corner[3]. An additional 30 parking spaces are scattered around the campus at the loading docks as well as entries to provide ADA accessible parking and unloading/loading spaces. Parking lots, traffic flow, and neighborhood parking are supervised by a full-time parking officer and supported by the Children's security staff.

Employee parking lots are monitored through license plate number recognition or a key card system. There is also one parking lot for medical residents and fellows monitored with parking permits. Parking assignments for employees are based on shift, seniority, position, and compliance with Children's parking policies as a condition of employment. Parking charges for employees are grouped by the number of days the employee drives alone per pay period and the employee's designated work shift.

[3] It should be noted that the number of parking spaces for the emergency department has been reduced due to interim modular office units and landscape maintenance operations which remove approximately 24 surface parking spaces.

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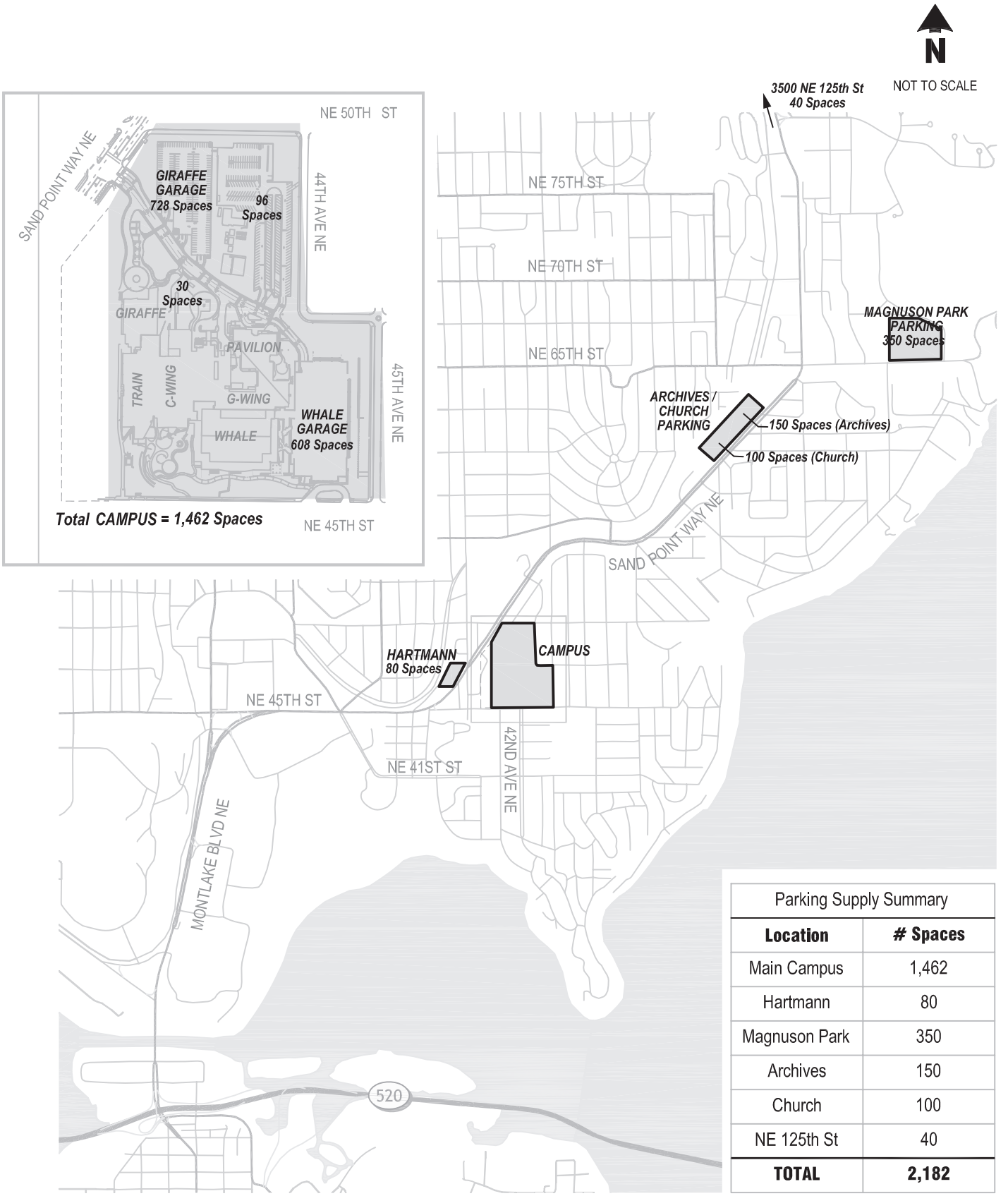


Parking Supply Summary	
Location	**# Spaces**
Main Campus	1,462
Hartmann	80
Magnuson Park	350
Archives	150
Church	100
NE 125th St	40
TOTAL	**2,182**

Source: The Transpo Group

Figure 7rev
Existing Parking Facilities

Demand

Parking demand is based the combined effects of employees, visitors, patients, and other staff parking on Children's campus, at Hartmann, and at off-site lots. Each user type has different parking demand characteristics that are affected by their trip origination, travel time, travel mode, etc. Existing parking demand at Children's was determined in consideration of all these factors.

Parking occupancy data was collected on Wednesday, February 7 and Thursday, February 8, 2007. Wednesday and Thursday typically represent the highest on-campus parking demand. In addition, off-site parking data was collected on Monday, April 16, 2007. Based on these sources, peak parking demand occurs at approximately 11:00 am on weekdays as both employee and visitor demand climb through the morning hours. Total peak parking demand, based on the February and April 2007 data, is approximately 1,750 spaces. Compared to the total supply (both on and off-site as of February 2007) of 2,182 spaces, this represents a parking utilization level of about 80 percent.

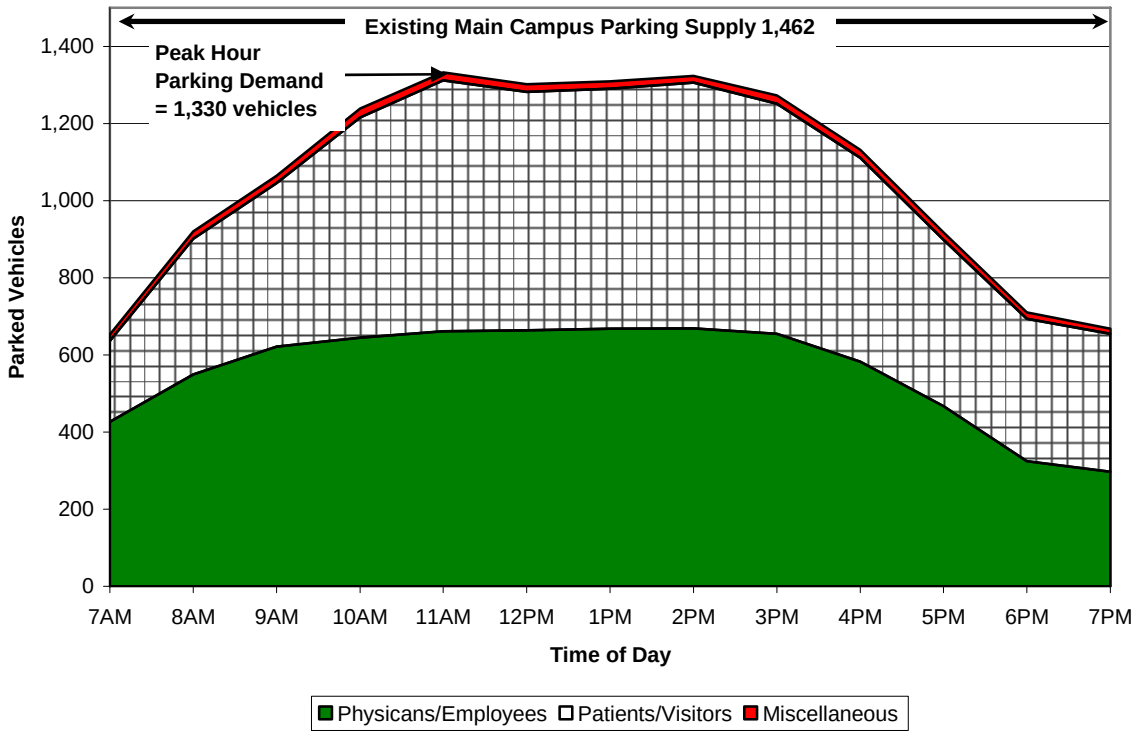
It is important to recognize that Children's accommodates parking both on Children's campus and at off-site parking areas. The off-site parking areas at Magnuson Park, Archives, Church, and others typically operate at lower utilization levels than the campus. Daily fluctuation of patients and visitors to Children's can challenge parking management staff to keep supply and demand in balance. Thus, on the same days that overall parking demand was about 1,750 spaces, peak parking demand on campus averaged approximately 1,330 spaces which reflects an occupancy of about 90 percent of the spaces supplied. Figure 8 illustrates the hourly variation of parking demand on campus and how it relates to campus parking supply.

The practical capacity of a parking lot is about 85 to 90 percent occupancy, which ensures vehicles circulating parking areas can locate a space, and accounts for peak surges and vehicles leaving parking spaces[4]. Thus, Children's parking has reached its practical capacity during peak parking demand with employee and patient/visitor occupancies above 90 percent.

Since the development of the existing conditions parking model for Children's using February 2007 data, actual parking levels at Children's both on campus and within off-site parking areas have reached or exceeded the levels reported herein. Off-site parking demand at Magnuson Park, Archives, and the Church reached approximately 95 percent utilization in October 2007.

While existing demand for parking varies daily, estimates of future parking demand will be based on forecast population levels and travel characteristics for the various population groups. Thus, variance in current demand levels does not affect future forecasts of parking demand.

[4] Industry standard based on *Parking* (Weant and Levinson 1990).



Source: The Transpo Group, October 2007

Figure 8
Children's Campus Existing Average Parking Demand

Parking Demand Management

Children's actively manages its campus and off-site parking. This investment is made to support their overall effort to reduce SOV travel and traffic impacts as part of their Transportation Management Program (TMP). It is also necessary to assure patient and visitor access to hospital services during peak demand periods.

To encourage alternative transportation modes, Children's charges employees for parking as well as assigns parking based on shift, seniority, position, and compliance with Children's parking policies. On campus, parking is partitioned by user type to promote clarity and control for parking enforcement. Employee off-site parking lots are monitored by tracking license plate numbers, card keys, or parking permits. Children's employees are prohibited from parking on neighborhood streets, and both traffic flows and neighborhood parking violations are monitored by a full-time parking officer and supported by security staff.

Children's acknowledges the high patient/visitor parking demand and the difficulty to find available parking during peak hours. In order to manage parking, Children's offers free valet parking to patients and visitors on weekdays from 9:30 am to 3:30 pm. Valet parking allows Children's to manage their campus parking to provide more efficient use of existing parking supply and reduce the number of on-site parking spaces required.

1.6 Non-Motorized Travel – Pedestrian and Bicyclists

Based on the 2006 Commute Trip Reduction (CTR) survey, approximately five percent of Children's employees walk to work, while six percent bike to work (CHRMC 2006). Overall pedestrian and bicycle volumes near Children's are generally low to moderate, typical of suburban areas. It is noted, however, that the location of the Burke Gilman Trail west of Sand Point Way NE attracts pedestrians and bicyclists from the east, both from Children's and the Laurelhurst neighborhood. On campus, pedestrian activity is high as patients and employees cross Penny Drive going to and from parking areas and the transit stop.

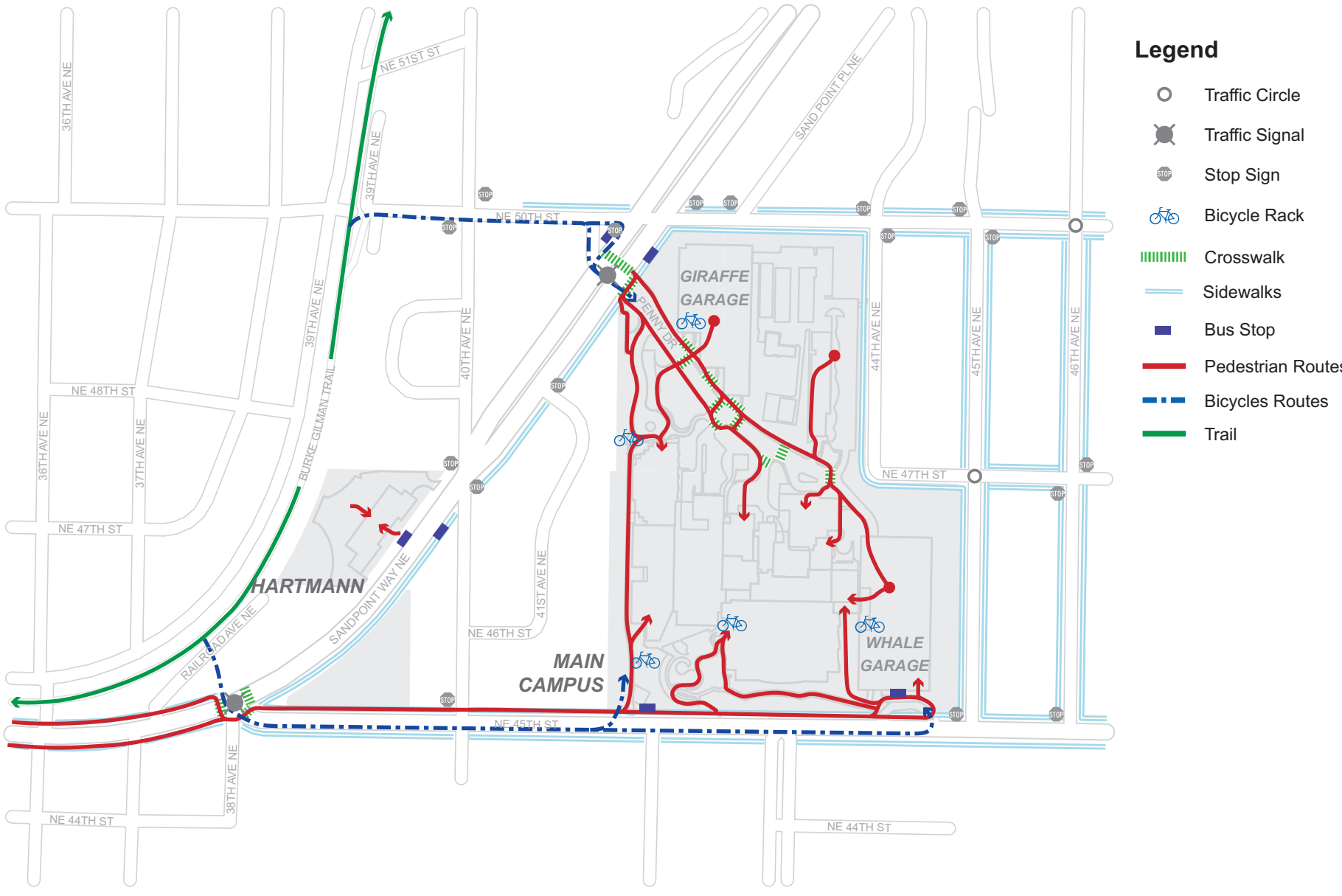
Off-site Pedestrian and Bicycle Facilities

Figure 9 identifies non-motorized facilities serving Children's and the Hartmann site. The majority of local streets adjacent to Children's including portions of Sand Point Way NE have sidewalks on both sides which are generally five feet wide. There are intermittent sidewalks on the west side of Sand Point Way NE between NE 50th Street and 40th Avenue NE and on-street parking is permitted on the east side of Sand Point Way NE near Children's. There are no sidewalks on the north side of NE 50th Street between 41st Avenue NE and 40th Avenue NE.

There are a limited number of pedestrian crossings along Sand Point Way NE as well as a lack of pedestrian facilities in the vicinity of the campus between the Laurelhurst neighborhood to the east, and Burke-Gilman Trail to the west. Signalized pedestrian crossings are provided at the Sand Point Way NE/Penny Drive and Sand Point Way NE/NE 45th Street intersections. It should be noted that as discussed under the traffic safety section SDOT plans to signalize the Sand Point Way NE/40th Avenue NE location with full vehicle and pedestrian movements allowed. In addition, Sand Point Way NE is an arterial street commonly used by bicyclists[5] although no bicycle lanes are marked.

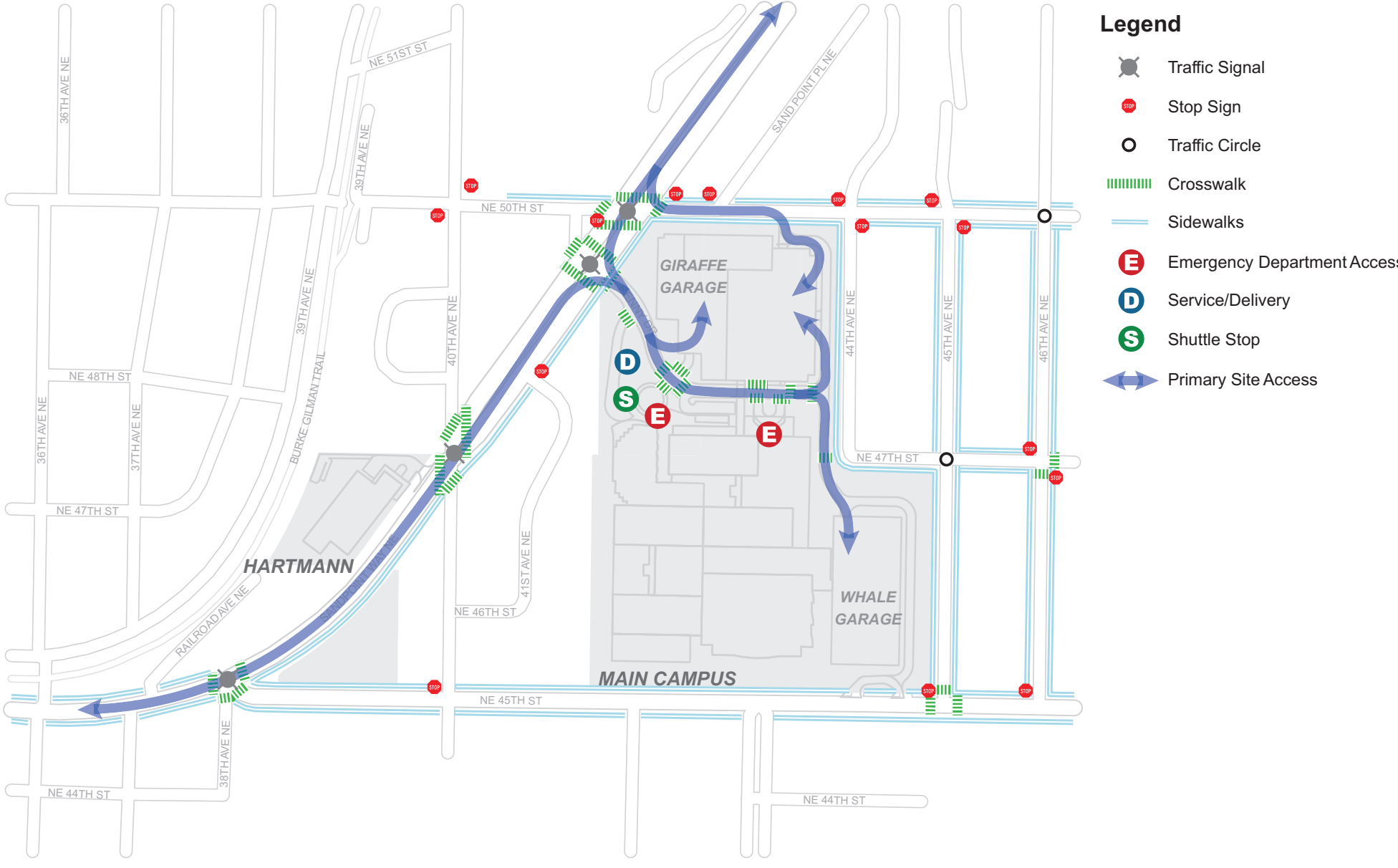
The Burke-Gilman Trail is located two blocks from Children's just south of NE 55th Street between 40th Avenue NE and Princeton Avenue. This is an 18 mile multi-modal trail which runs from Shilshole Bay in the City of Seattle to the City of Bothell where it intersects with the Sammamish River Trail. Within Seattle the trail connects Gas Works Park near Lake Union to Log Boom Park in Kenmore, via the University District, Sand Point, Lake City, and Lake Forest Park. The trail is heavily utilized for recreation serving cyclists, joggers, skaters, and strollers on weekends and weekdays. It also serves commuters on weekdays between Seattle and the Eastside. Pedestrians and bicyclists desiring to gain access to Children's and the Hartmann building from the trail exit at NE 50th Street via a ramp and ride or walk along this roadway until it intersects Sand Point Way NE. From the trail to Children's, NE 50th Street has no sidewalks or bicycle facilities, and is narrow with on-street parking on both sides. In addition, persons must cross 40th Avenue NE at NE 50th Street, which has no crosswalks and poor sight distance. From NE 50th Street, bicyclist must cross two-lanes of traffic to get into the left-turn lane to enter Children's at Penny Drive. There is a signalized crosswalk at Penny Drive to accommodate pedestrians wishing to access Children's. It should be noted that there is no wayfinding between the Burke-Gilman Trail and Children's; therefore, unaware bicyclists may have difficulty navigating to the campus. For example, if bicyclists exit the trail at 40th Avenue NE (north of the NE 50th Street) and follow this roadway to the 40th Avenue NE/Sand Point

[5] Seattle Department of Transportation Bicycle Guide Map, 2003.



Source: The Transpo Group

Figure 9
Existing Non-Motorized Facilities



Source: The Transpo Group

Figure 12

Proposed Street System and Traffic Control - Alternatives 3 and 6

Way NE intersection, they will be forced to make a right turn (when the campus is north or to the left) due to the restricted left-turns at this intersection. Although the trail borders the Hartmann site, no direct connection is provided.

On-site Pedestrian and Bicycle Facilities

Penny Drive is the primary pedestrian and bicyclist (and vehicle) entrance to Children's; however, there is also pedestrian and bicyclist access from the transit stop on NE 45th Street through the Whale Garage. Penny Drive has sidewalks on both sides which are intersected by several parking garage driveways, entrances, and loading docks. Six crosswalks are provided on Penny Drive, and those west of the Airplane Entrance have cross slopes that exceed the ADA compliance limit of two percent. A ramp from Sand Point Way NE to the Giraffe Entrance provides ADA accessible access for pedestrians[6]. Due to frequency of pedestrian crossings, conflicts between peak pedestrian and vehicle flows occur. To minimize conflicts between pedestrians and vehicles, and enhance safety, Children's provides a number of marked crosswalks along Penny Drive and within parking areas as well as devices to slow traffic down including speed bumps and on-site speed indicators (radar) along Penny Drive and within parking areas.

There are a number of on-site pedestrian pathways leading between buildings and parking lots. In addition, there is a direct pathway on the west side of the hospital connecting NE 45th Street to Sand Point Way NE. Pedestrian access points along the eastern perimeter of the hospital do not follow designated pathways to Penny Drive or hospital buildings; instead, they lead to parking lots or doors with restricted access.

Hartmann is accessible via stairs from Sand Point Way NE or an ADA accessible entrance from the drop-off area located in the parking lot on the northwest side of the building.

Children's provides bicycle parking for approximately 120 bicycles as well as showers and lockers on campus. Covered and secured bicycle parking is provided in each level of the Giraffe Garage, on level 5 of the Whale Garage, and at the NE 45th Street access, and open bicycle racks are provided at the Giraffe and Whale entrances. Surveys in January 2008 indicated that campus bicycle parking facilities were approximately 40 percent utilized; however, in the summer, bicycle parking is typically fully utilized with riders often parking at locations other their provided facilities including their offices. Currently, no bicycle parking is provided at Hartmann.

1.7 Transit and Shuttle Services

Transit and private shuttle service provide important roles in serving Children's current travel demand, supporting the overall TMP goals of reducing SOV travel as well as supporting campus parking management efforts. During the commute period, approximately 10 percent of Children's employees subject to CTR requirements arrive via transit. Approximately 11 percent arrive via shuttle from remote parking lots.

[6] The steep slopes around and within the campus contribute to a lack of ADA accessible facilities, which means those requiring these facilities must gain access through the building. Access through the building between Giraffe Entrance and the Whale Entrance is confusing due to the organization of incremental improvements to the campus.

Transit

Children's and the Hartmann site are served by King County Metro Transit Routes 25 and 75. Figure 10 illustrates the King County Metro transit routes serving Children's. These routes operate on 15 to 30-minute headways on weekdays; Route 75 provides 30-minute headways on weekends. Based on the 2006 CTR survey, approximately 10 percent of Children's employees commute via transit. Eighty percent of employees who commute via transit use King County Metro and the remaining 20 percent use other transit services including Community Transit, Sound Transit, and Pierce County Transit (CHRMC 2006).

Riders accessing Children's via Route 75 are dropped off on Sand Point Way NE, and must walk on an uphill path for about a quarter-mile, crossing a number of garage entrances, to reach Children's main entrance. This difficult walk for riders makes transit a slightly less desirable mode choice.

In May 2007, Children's partnered with Metro Transit to fund additional bus service on routes 25 and 75 during the hours when Children's employees are changing shifts. This partnership increased service levels of these routes for both Children's and neighborhood users by adding a total of 63 roundtrips on Routes 25 and 75 starting in September 2007. The increased service provides higher frequencies during shift changes.

Shuttle Services

Children's operates six shuttle routes that provide access to three off-site employee parking lots as well as connections to and from the hospital, administrative buildings, and research facilities. The connection to off-site parking serves employee commuter travel and reduces the need for campus parking. The interconnection between other Children's facilities reduces inter-facility vehicle travel and parking impacts associated with such travel. It is currently both a convenient service between key Children's venues and a means of minimizing the demand for on-site parking. Patients and visitors do not use the off-site parking lots or shuttles.

Figure 10 shows the three off-site parking lots at Magnuson Park, the Archives, and the Church and the shuttle service to the lots. One shuttle route services the Archives and Church parking lots, which are connected by a pedestrian pathway. Shuttle service to the off-site parking lots operates Monday through Friday from approximately 6:00 am to 7:00 pm. There is no shuttle service to off-site parking lots on weekends or holidays; employees who normally park in the off-site parking lots on weekdays park at the hospital at these times. At the hospital, the shuttle stop is located adjacent to the Giraffe entrance. The shuttles run every 7 to 15 minutes during peak times and less frequently during other times of day. Based on shuttle ridership counts, conducted in October 2007, the shuttles to off-site parking areas have about 1,000 total riders per day, reflecting approximately 12 percent of the peak hour commuter mode split.

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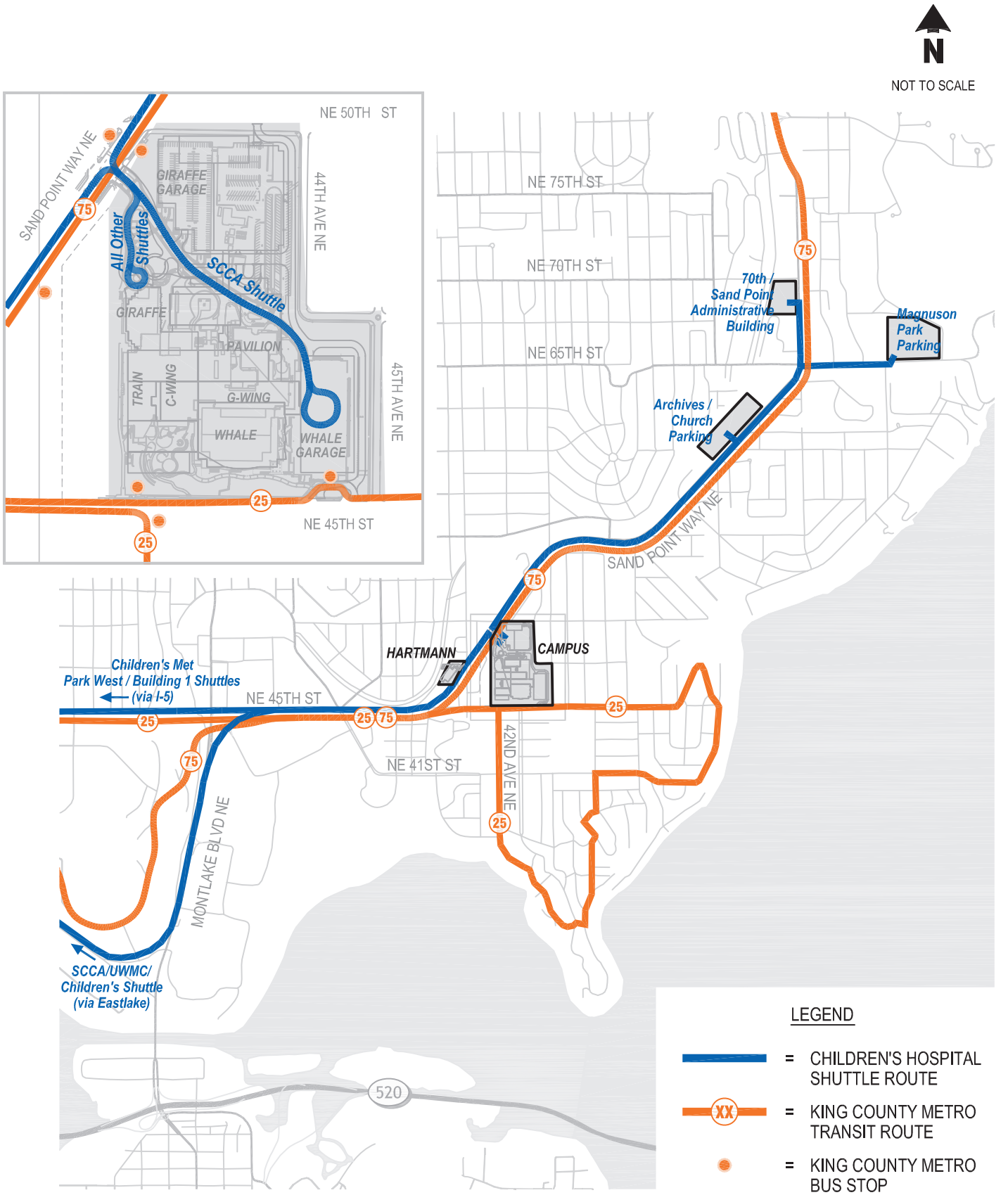


Source: The Transpo Group

Figure 10
Existing Shuttle and Transit Service

Weekday shuttle services between the hospital and off-site facilities serve the administrative building located at NE 70th Street/Sand Point Way NE, the research facilities at Metropolitan Park West (1100 Olive Way), and the Children's Research Institute (1900 9th Avenue). The shuttles are operated from approximately 6:00 am to 7:00 pm. They provide inter-facility transportation while reducing traffic and parking congestion at Children's from staff, physician, and patient trips.

In addition to the shuttle services operated by Children's, Fred Hutchinson Cancer Research Center also provides shuttle service from the Seattle Cancer Care Alliance to the University of Washington Medical Center (Muilenberg Tower) and Children's (Whale Entrance). This shuttle runs every 40 minutes between 7:00 am and 7:00 pm.

1.8 Transportation Management

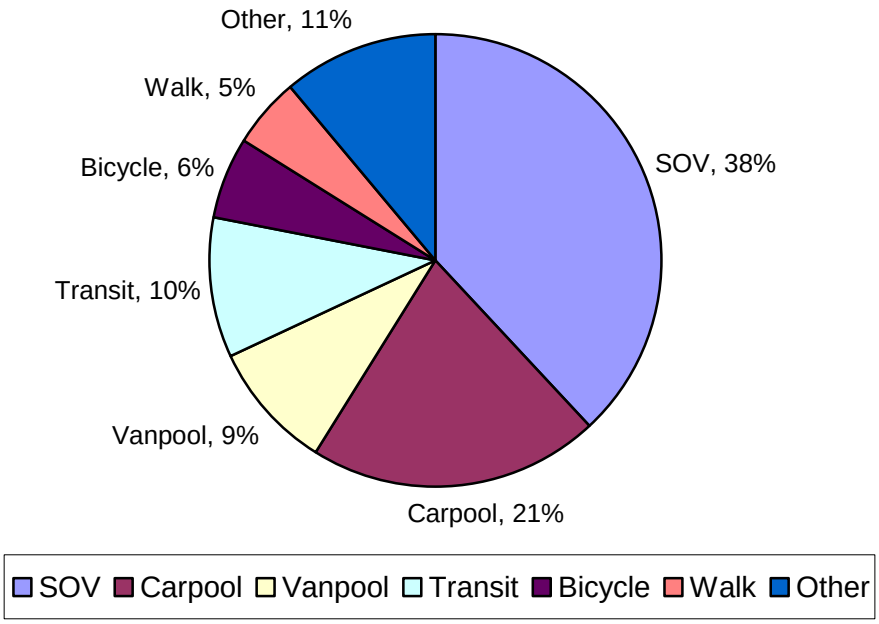
Children's TMP is an agreement between the City of Seattle, King County Metro, and Children's whereby all parties agree to use their resources to provide maximum energy conservation as it relates to employees commute trips to and from Children's. The agreement was first signed and implemented in 1985 and has been updated several times, with the latest update occurring in 2002. The primary purpose of the TMP is to reduce the number of SOV trips through the use of incentives.

Children's has been recognized for their leadership in CTR and TMP programs. This recognition has included the Environmental Protection Agency's Best Workplaces for Commuters in 2006; King County's Diamond Award in 1997, 2001, 2003, 2006, and 2007; and the Governor's Commute Smart Award in 1998 and 2002. The 2006 CTR survey demonstrated that less than 38 percent of affected day-shift staff drive alone to work, a number that has been reduced by approximately three percent per year over the past several years. Figure 11 shows the mode split by affected employee as reported by the CTR survey (CHRMC 2006).

Children's manages their current transportation demand in a variety of ways through programs included in the TMP, shuttles service, and on-site parking management strategies.

Strategies currently used in Children's CTR/TMP programs include:

- Distribution of promotional and marketing material to promote high occupancy vehicle (HOV) commuting and other commute alternatives. Materials are distributed via brochures, transportation bulletin boards, commuter service webpage, weekly in-house newsletter, email broadcasts, and the annual transportation fair
- Showers and lockers for bicyclists
- Uncovered and covered bicycle parking at each parking lot and employee entrance
- Commuter Service Coordinator who promotes and maintains the TMP
- Guaranteed ride home program



Source: CHRMC 2006
Notes: SOV = single occupancy vehicle; Other includes telecommute, compressed work week, etc.

Figure 11
Employee Mode Splits Based on 2006 CTR Survey

- Subsidies for fares for transit, ferry, and rail as well as FlexPass program[7], annual bicycle tune-up, vanpool
- Priority parking for carpools and vanpools
- Charging employees for parking
- Bonuses for commuters bicycling, walking, telecommuting, motorcycling, vanpooling, and carpooling to work
- Internal rideshare matching
- On-site Flexcars
- Daycare facilities in nearby administrative offices
- On-site exercise facilities
- Compressed work week to reduce total weekly commute trips

[7] FlexPass is a King County Metro program which allows employers to provide commute benefits to employees. Children's has customized their FlexPass program which covers unlimited bus service on all King County Metro routes, Sound Transit, Community Transit, and Pierce County Transit routes, Sounder commuter rail service (including Amtrak Rail Plus from Seattle to Edmonds and Everett), Metro VanPool full fare subsidy for vanpools and van shares, Metro VanShare subsidy up to $20 per month, Home Free Guarantee - up to eight emergency taxi rides per employee per year, and FlexPerks - special discount offers from participating merchants.

- Flex time and telecommuting
- On-site Children's vehicles for work-related business trips

Attachment T-6 provides more detailed information on the current TMP strategies Children's is implementing. The shuttle service provided from the hospital to remote parking areas and other Children's facilities reduces the number of SOV employee trips to and from the hospital. Children's is managing on-site parking by charging employees for spaces, monitoring parking lots and adjacent neighborhoods, and providing valet services.

1.9 Helistop

Typically, Children's has experienced three daytime (7:00 am to 10:00 pm) landings and one nighttime (10:00 pm to 7:00 am) landing per month, on average. Medivac flights on a given day have been as frequent as two during the daytime period and two during the nighttime period. Each landing consists of two operations – one arrival and one departure. Children's security staff secures the emergency department and helistop for helicopter landings. A Children's security staff member is posted during helicopter landings, during the time the helicopter remains on the helistop, and during departure.

2 Impacts

This section describes the future traffic conditions for the year 2030 with and without the approval of the Master Plan. For Alternative 1, continuation of existing conditions at Children's including beds, building area, employee population, and patient population is assumed. As a result, no change in trip generation or parking demand is assumed under this alternative. In addition, non-motorized and transit facilities are expected to stay the same.

Unmitigated traffic generation for Alternatives 3, 6, ~~and~~ 7R, and 8 (the Build Alternatives) is related to the ~~size and~~ number of beds provided by Children's as well as employee and patient population. Land use for the Build Alternatives is programmatically very similar; therefore, it is expected that employee and patient population and traffic generation would be similar for each build alternative. In addition to traffic generation, the Build Alternatives have other transportation characteristics in common. Table 4 summarizes key transportation characteristics of the Build Alternatives.

From a transportation perspective, the proposed Build Alternatives are very similar with the only differences between the Build Alternatives being the location of parking and access to Children's. Alternatives 3 and 6 would provide the same access points (i.e., Penny Drive and NE 50th Street); however, Alternative 6 would provide additional parking at the hospital and less parking on the Hartmann site. Alternatives 7R~~,~~ would provide two additional accesses to the Laurelon Terrace area via 40th Avenue NE ~~and Sand Point Way NE~~ and ~~905~~ 1,100 parking spaces that may otherwise be located at the hospital or Hartmann. Alternative 8 would provide two additional accesses to the Laurelon Terrace area via 40th Avenue NE and 1,213 parking spaces that may otherwise be located at the hospital; the Hartmann site would not be included in the Master Plan under this alternative.

Table 4
Build Alternatives Key Transportation Characteristics[1]

Characteristic	Alternative 3 – ~~Proposed~~South Campus Development	Alternative 6 - Modified North Campus Expansion	Alternative 7R - Expanded Boundary, Early Laurelon Development	Alternative 8 - Early Laurelon Development without Hartmann
Properties Affecting Unmitigated Traffic Generation	500 - 600 beds, 2.4 million sf of development (includes Children's and Hartmann)			
Access to Children's	2 Primary Access Points: Penny Drive – full movements and NE 50th Street – right-in/left-out only Shuttle Access Only: NE 45th Street		3 Primary Access Points –Penny Drive – full movement, and ~~new driveway Sand Point Way NE – right-in/right-out,~~ 40th Avenue NE – Two full movements, one serving the Emergency Department/patient drop-off and the other serving parking area	
Parking[1~~2~~]	**3,600 total stalls:**			
	2,570 at hospital	2,845 at hospital	~~1,940~~ 1,775 at hospital	1,887 at hospital
	530 at Hartmann		~~255~~ 225 at Hartmann	0 at Hartmann
	500 off-site parking area			
	0 at Laurelon Terrace		~~905~~ 1,100 at Laurelon Terrace	1,213 at Laurelon Terrace
Traffic Control	New signals at Sand Point Way NE/NE 50th Street		N/A	
	~~Additional~~ Signal and capacity improvements at Sand Point Way NE/Penny Drive			
Non-Motorized	Additional controlled crossings along Sand Point Way NE Improved ADA access Improved connection to Burke-Gilman Trail			
Shuttle Service[2]	Off-site shuttle arrival area at Giraffe Entrance			

Source: CHRMC, March 2008
sf = square feet
N/A = Not applicable, no improvements proposed.

~~1. Items shaded are different from the other Build Alternatives.~~
1~~2~~. The total number of parking is the same for all Build Alternatives ~~except Alternative 6~~; however, the location of parking is different.
2. Children's master plan is continuing to be refined at the writing of this document. For Alternatives 7R and 8, Children's may provide shuttle and transit service along Sand Point Way NE at 40th Avenue NE rather than the Giraffe Entrance.

Neither the NE 50th Street nor the NE 45th Street access are proposed as part of Alternatives 7R and 8. The intersections within the larger study area that would be affected by the differences in alternatives are intersection numbers 1, 2, 3, 20, and 21 on Figure 1. These are:

1. Sand Point Way NE/Penny Drive
2. Sand Point Way NE/40th Avenue NE
3. Sand Point Way NE/NE 50th Street

20. Sand Point Way NE/NE 45th Street
21. 45th Street NE/NE 45th Avenue

All the Build Alternatives propose two or more primary access points to the hospital. In order to provide decision-makers with information on the sensitivity of local traffic operations to these access points, different access scenarios were evaluated to determine how each would affect adjacent intersection operations as well as Penny Drive. The analysis evaluated the sensitivity of near-site traffic operations both without and with the NE 50th Street access for the upper campus.

Table 5 shows a brief comparison of Children's existing and proposed enhanced TMP. The Build Alternatives impact analysis assumes continuation of the existing TMP for the "unmitigated" condition and implementation of the enhanced TMP for the "mitigated" condition.

This analysis reflects the Build Alternatives descriptions and assumptions as of early December 2007, ~~and~~ updated in early March 2008, and August 2008.

2.1 Street System

Alternative 1

Regional Street System

The City's Comprehensive Plan, Capital Improvement Program, *University Area Transportation Action Strategy* (~~UATS~~UATAS), and the WSDOT SR 520 Bridge Replacement and HOV Project documents were reviewed to determine transportation policies and planned improvements located within the study area. These planned improvements are detailed in Attachment T-8.

The analysis considers both current conditions and those during the year when all projects would be completed (called the "horizon year"). For this analysis, the horizon year is 2030, and the analysis assumes completion of the University Link Light Rail (which is fully funded), as well as the 35th Avenue NE Improvements and Sand Point Way NE Pedestrian Improvements (between 40th Avenue NE and 41st Avenue NE) under the Capital Improvement Program. The SR 520 project was not included in the analysis because it is not fully funded. If the SR 520 project is implemented, it would increase capacity on SR 520 and may provide additional capacity for the Montlake Boulevard on and off-ramps, which would likely reduce congestion on this portion of the corridor. In addition, the projects outlined in the ~~UATS~~UATAS were not included in the analysis since they are not funded.

Projects that are currently under review and are not funded were not assumed in the analysis. This assumption presents a conservative estimate of project impacts because many of the improvements would likely reduce congestion along major corridors in the study area.

Table 5
Comparison of Existing and Enhanced Transportation Management Programs

Existing Program	Proposed Enhancements[2]
Shuttle Service and Facilities	
Shuttle fleet of **12 vehicles**	Increase shuttle fleet to support service ~~**21 vehicles**~~
6 Weekday Routes to/from campus, off-site parking, other Children's facilities, and affiliated institutions[2]	**5 Additional Weekday Routes** to public transit hubs including U-District, 3rd Avenue/Westlake and Downtown Transit Tunnel, SR 520/ Montlake Boulevard Station, future Husky Stadium light rail station, and south Snohomish County[2]
Shuttle stop at Giraffe Building	Transportation hub with 4 to 6 bus bays with integrated pedestrian circulation between bays and hospital
Route 75 bus stop at Penny Drive/Sand Point Way NE and Route 25 bus stop at turnaround on NE 45th Street	Pedestrian-oriented entrance adjacent to bus stop and directional guides to riders along a path; or create a combined hub at Sand Point Way/40th Avenue NE
Transportation Demand Management	
Incentives for Alternate Commutes	
Up to **$50 per month** in Commuter Bonus for employees and hospital physicians	Up to **$65 per month** and include residents, fellows, and students as eligible
Rideshare matching, reserved parking for vanpools and carpools, additional quarterly bonuses for vanpool drivers, backup drivers, and bookkeepers; $65 per month for full time carpooling	Continue existing program proportionate to growth of staff and invest in technology that facilitates rideshare matching by commuters themselves, including real-time matching
FlexPass for all Children's employees and hospital physicians / PugetPass upon request	FlexPass extended to residents and fellows, and UPass subsidized for students
Showers, lockers, secure bike parking, and free bike tune-ups	Flexbike program – one-way electric-assist bicycle rental Company Bike Program – provide a free bicycle to employees who commit to cycling and $100 per year gear bonus for biking
Umbrellas and reflective lights for walking	$100 per year gear bonus for walking
Supportive programs	
Guaranteed Ride Home (GRH) and car sharing memberships	Continue existing program proportionate to growth of staff and investment in Zipcar as population grows
Parking Management	
Assignment to on and off-site parking by **seniority and position** for employees. Residents and fellows park on-site.	Off-site parking **assignments** based on **home address** (begun in March 2008). Day-shift residents and fellows assigned to off-site.
Parking officer and security staff monitor speeds, direct traffic, and enforce parking, including parking at off-site lots. Parking in neighborhood is forbidden, and enforced by checking license plates and issuing warnings/tickets.	Children's should invest in technology to allow daily pay-per-use charges for visitors and patients, control access to visitor lots, and more tightly manage on-site parking supply
Employees, hospital Physicians, Pace temps, travelers, UW employees, and contractors who drive alone charged **$50 per month** for parking	Raise on-site parking charge to **$65 per month** and add students, residents, and fellows to employees charged for parking
Patient families, carpools, vanpools, residents, students, fellows, volunteers, community physicians, trustees, board members and vendors **park free**	**Eliminate free parking** and replace with pay-per-use. Allow for potential validation or Medicaid vouchers for patient families.

Source: Children's, ~~March~~ October 2008

1. Children's would continue with the current transportation management program, and add the programs and policies described.
2. Headways and hours of operations vary; see Attachment T-9 for details.

Local Streets
Under Alternative 1, Children's local access and circulation would be the same as existing except at the Sand Point Way NE/40th Avenue NE intersection. Signalization with a westbound left turn lane on Sand Point Way NE and full pedestrian crosswalks is planned by the City of Seattle in 2009~~8~~.

Alternatives 3, 6, ~~and~~ 7R and 8

Regional Street System
The regional street system for the Build Alternatives would be the same as those described under Alternative 1.

Local Streets
Local access modifications on Sand Point Way NE, NE 50th Street, NE 45th Street are incorporated into the Build Alternatives. Additional modifications are proposed with Alternative 7R and 8 along 40th Avenue NE and 41st Avenue NE to provide access to the expanded campus on what is now the Laurelon Terrace property. Figures 12 and 13 (rev) illustrate the proposed vehicular access and circulation.

These proposed modifications would include:

- **Sand Point Way NE/Penny Drive**. As indicated in the Children's Concept Plan (CHRMC 2008), this intersection would be shifted to the north, primarily through widening on the north side of the Penny Drive approach, and re-signalized accordingly. The capacity improvements would include the provision of two outbound left-turn lanes on Penny Drive, and one northbound right turn lane on Sand Point Way NE. Crosswalks would be provided on all approaches, and a pedestrian "scramble" phase would be provided. The pedestrian phase would have minimal impacts on operations with this intersection continuing to operate at an LOS C or better during the peak hours.
- **Sand Point Way NE/NE 50th Street Intersection Improvements.** For Alternatives 3 and 6, the Sand Point Way NE/NE 50th Street intersection would be signalized. Crosswalks would be provided on all approaches of the Sand Point Way NE/NE 50th Street intersection. This traffic signal and associated improvements are only required in the event that an added access at NE 50th Street is developed which is ~~also~~ part of Alternatives 3 and 6.
- **41st Avenue NE and NE 46th Street Vacations.** With Alternative 7R and 8, 41st Avenue NE and NE 46th Street would be vacated between Sand Point Way NE and 40th Avenue NE. This roadway currently provides access to residential units; however, with the development of the hospital on this parcel, this roadway would be replaced by building development with access provided at other locations. It is noted that operational and public benefit improvements needed to approve street vacations requests are independent from the environmental review process.

~~R and~~

Source: The Transpo Group

Figure 13 rev

Proposed Street System and Traffic Control - Alternatives 7R and 8

- **Sand Point Way NE Traffic Signal Coordination.** With the two proposed traffic signals, in Alternatives 3 and 6, resulting in a total of four on Sand Point Way NE between NE 45th Street and NE 50th Street, all signals would be coordinated to assure proper progression of traffic volumes on Sand Point Way NE. This improvement would be coordinated with Seattle Department of Transportation (SDOT) and the Washington State Department of Transportation (WSDOT).

Figures 14 (rev) and 15 (rev) show the proposed channelization along Sand Point Way NE from NE 45th Street to 50th Street for the Build Alternatives. The existing channelization is provided for reference.

Vehicle Access

In all Build Alternatives, Penny Drive would continue to be the primary access to the campus. It would be supported by secondary access at NE 50th Street in Alternatives 3 and 6. In Alternative 7R and 8, ~~additional~~ two new access points to the lower expanded campus would be provided off ~~Sand Point Way NE and~~ 40th Avenue NE, in addition to the Penny Drive access. Access to the Hartmann site would be via a full-access driveway on Sand Point Way NE. The following describes the proposed changes:

- **Sand Point Way NE Access Improvements.** For all ~~Build~~ Alternatives 3, 6 and 7R, this would include developing a full-access driveway on the west side of Sand Point Way NE between NE 45th Street and 40th Avenue NE to serve the Hartmann site. Alternative 8 excludes the use of the Hartmann site; however, in conjunction with the Sand Point Way NE/40th Avenue NE intersection improvements a full-access driveway would be constructed to the southwest. As part of all Build Alternatives, Sand Point Way NE would be improved along the project frontage including sidewalks. Children's would work with SDOT and WSDOT to ensure this driveway design met their standards.

  ~~In addition, Alternative 7R would develop a driveway between 40th Avenue NE and Penny Drive with vehicle access limited to right in/right out due to the close proximity to adjacent signalized intersections. An emergency vehicle only left turn lane is proposed, which would require modification to the median, and installation of an emergency vehicle only signal that would be preempted upon approach of these vehicles. Children's would work with SDOT and WSDOT to ensure this driveway design meet their standards.~~

- **NE 50th Street Access Improvements.** For Alternatives 3 and 6, this would include developing a driveway on NE 50th Street and improving NE 50th Street between the driveway and Sand Point Way NE (including sidewalks). The driveway design on NE 50th Street would be such that access would be limited to orient vehicles to the west (no east-oriented inbound or outbound traffic would be allowed to assure that neighborhood traffic impacts would be minimized). This orientation would provide for left turn out and right-turn in only at the NE 50th Street driveway. Children's would work with SDOT, WSDOT, and the community to determine the appropriate method for restricting these movements. Potential treatments for restricting turns could range from signing to diverter islands or partial closure of NE 50th Street. The NE 50th Street improvements would only be required in the event that an added access at NE 50th Street is developed.

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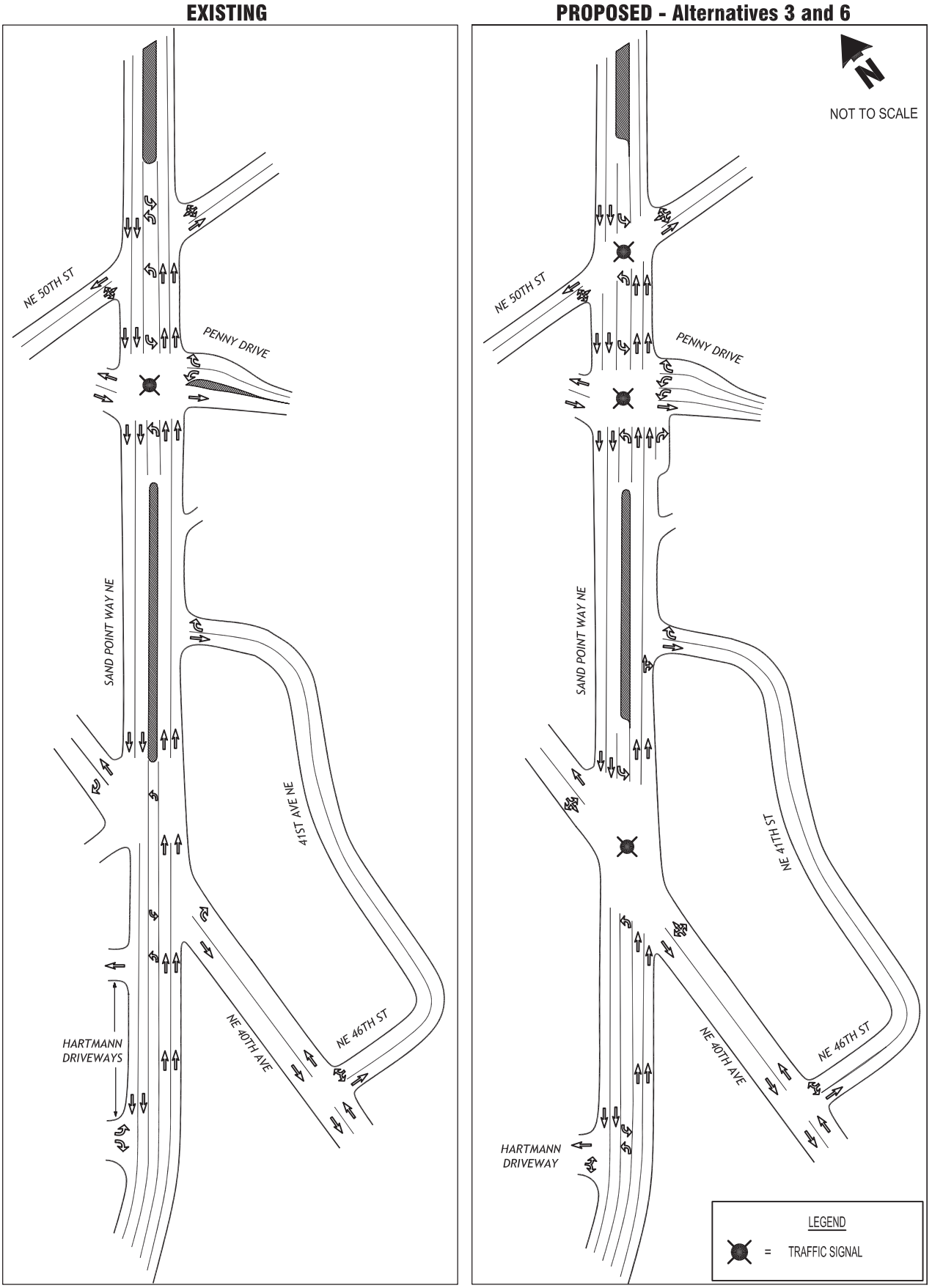

Figure 14 rev

Source: *The Transpo Group*

Sand Point Way NE Channelization Alternatives 3 and 6

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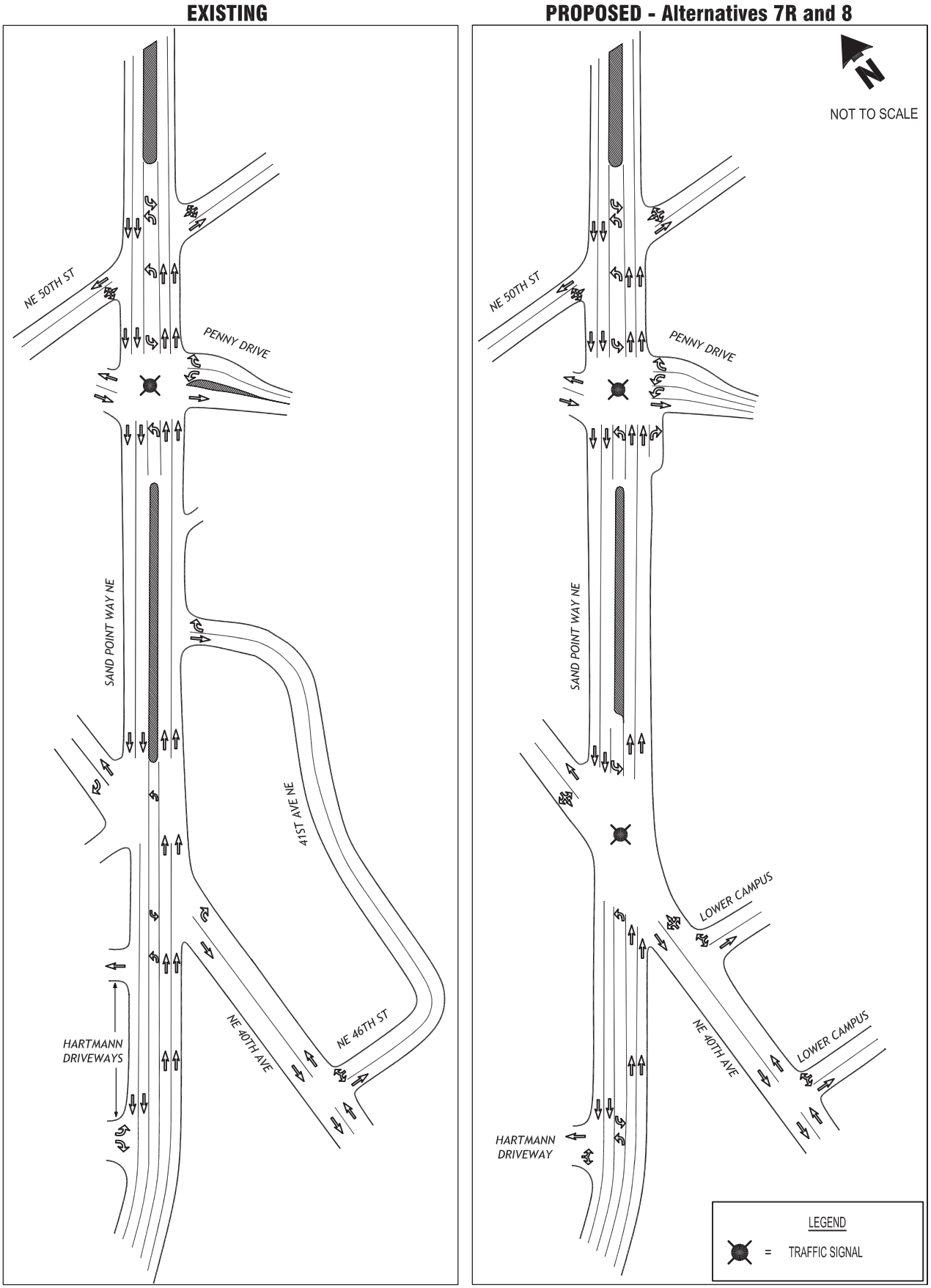

Figure 15 rev

Source: *The Transpo Group*

Sand Point Way NE Channelization Alternatives 7R and 8

- **NE 45th Street Shuttle Access Improvements.** While not currently used for vehicle access, Children's has maintained a curb cut on NE 45th Street. For all the Build Alternatives, this access location is not planned for vehicle access; however, shuttle access only is being proposed for Alternatives 3 and 6. ~~Shuttle access at this location would facilitate potential community use of Children's shuttles.~~ Since this access already physically exists, only minor changes would be needed at this location. Improvements may include signage and other minor measures to assure safety associated with ingress and egress. In addition, this driveway would be designed for left turn in and right turn out only. Children's would work with SDOT and the community to determine the appropriate method for restricting turns from this driveway. Potential treatments for restricting turns could range from signing to other more aggressive measures. These improvements would occur only in the event that the NE 45th Street entrance is used as a significant site access location.
- **40th Avenue NE Access Improvements.** For Alternative 7R and 8, Children's would develop two~~a~~ full access driveways on 40th Avenue NE and improve 40th Avenue NE along the project frontage between NE 45th Street and Sand Point Way NE including sidewalks and bicycle shared-lane markings. In addition, wayfinding signs would be provided along Sand Point Way NE and NE 45th Street to direct Children's traffic to the appropriate driveways.

Emergency Access

For Alternatives 3 and 6, the primary access for all vehicles, including emergency vehicles, at Children's would remain Sand Point Way NE at Penny Drive. Two entrances would be provided off Penny Drive, one for emergency vehicles and one for private vehicles. Secondary emergency vehicle access would be via NE 50th Street.

For Alternative 7R and 8, the primary access for emergency vehicles would be via ~~the Sand Point Way NE~~40th Avenue NE ~~which is proposed as right-in/right-out for general traffic but would provide a left-in from the southbound direction for emergency vehicles only~~. Thi~~s~~e Sand Point Way NE/40th Avenue NE intersection traffic signal ~~driveway~~ would be designed ~~such that only~~with emergency vehicle~~s would~~ preemption ~~a traffic signal~~ to allow safe and quick access to 40th Avenue NE and the emergency department driveway~~left turns into the Sand Point Way NE driveway and no general vehicular traffic~~. ~~Children's would work with SDOT and WSDOT to determine the appropriate method for this emergency-only access. General traffic wishing to access the emergency department would use the 40th Avenue NE driveway (from the north or south) or the Sand Point Way NE right-in/right-out access (from the south).~~

Emergency access to the Hartmann site, for all Build Alternatives, would be via the driveway on Sand Point Way NE.

Service and Deliveries

The primary campus access for service and deliveries would remain the Sand Point Way NE/ Penny Drive intersection for all alternatives. The two existing service loading areas would be consolidated into one area. Access to the loading area would be via the first driveway on Penny Drive, which would minimize conflicts between service vehicles and the general traffic flow on Penny Drive. Deliveries to the Hartmann site would be via the driveway on Sand Point Way NE. No service and delivery impacts are expected.

Shuttle Access
Primary patterns of ingress and egress for all Children's shuttles would continue to be via the main Penny Drive access. The primary shuttle pick-up and drop-off area for all Build Alternatives would be adjacent to the Giraffe Entrance. The shuttle area would provide a convenient connection to transportation and support Children's increase efforts to encourage or require non-SOV travel and/or use of remote parking areas by employees. As the site design process evolves, it is possible that additional definition of on-site shuttle and alternative travel mode facilities could occur. For Alternatives 7R and 8, a shuttle and transit stop would likely be developed along Sand Point Way NE at 40th Avenue NE.

Summary of Impacts and Potential Mitigation
As described in the preceding section, physical modifications are proposed on streets adjacent to, or providing direct access to Children's.

If the access to NE 50th Street were eliminated, potential community impacts, special driveway design restrictions, and the proposed traffic signal at the NE 50th Street/Sand Point Way NE intersection would also be eliminated. The need for the NE 50th Street access is evaluated in Section 2.3, Traffic Operations.

2.2 Traffic Volumes

This section discusses the background traffic volumes without the project and traffic generated by Children's due to the project.

Alternative 1

A detailed description of the 2030 traffic volume forecasting methodology is provided in Attachment T-7. Forecasts of the baseline traffic volumes for the 2030 horizon year were developed to account for increases in traffic due to new development in the study area and regional traffic growth. These forecasts were developed using the updated Seattle Department of Transportation travel demand model, which reflects changes in residential and employment land uses and future transportation projects. The model has a 2005 base year and a 2030 future horizon year. Because the proposed Children's master plan is intended to accommodate approximately 20 years of growth, a 2030 horizon year for analysis provides a reasonable and conservative context for considering the ultimate impacts of the Build Alternatives.

The 2030 model forecasts were further refined using a commonly accepted practice of factoring growth across screenlines. This procedure adjusts the forecasts to compensate for the fact that forecast models inherently include less detail related to both traffic analysis zones and the roadway network than actually exist. This step assists in calibrating the forecasts to a more predictable outcome, and effectively avoids inadvertent over-assignment or under-assignment along key transportation corridors.

In general, growth per year was approximately 0.5 to 1 percent from 2007 to 2030 with specific screenline growth ranging from less than 0.5 percent per year to approximately 2 percent per year. This results in overall growth for the study intersections ranging from about 10 to 13 percent at most locations. Attachment T-2 provides the no-build 2030 peak hour traffic volume forecasts for the study area.

For Alternative 1 (No Build), traffic generated by Children's is assumed to remain the same as existing levels. It was assumed that SOV rates would remain the same as existing. This assumption represents a ~~worse case~~worst-case scenario, and may somewhat overestimate future Children's traffic levels since they have successfully reduced SOV rates over the past several years. However, over the 23-year forecast horizon, it would be speculative to assume further reduction in SOV levels since current achieved levels are already consistent with Seattle's central business district TMP performance without enhancements of Children's TMP.

Alternatives 3, 6, ~~and~~ 7R and 8

The baseline traffic volumes for all of the Build Alternatives analysis are consistent with those used for the Alternative 1. In order to determine the impacts of the proposed Build Alternatives, the new trips associated with expansion of Children's were added to the background traffic volumes. This section discusses Children's trip generation, mode share, assignment, and distribution as well as expected traffic increases associated with the project.

Trip Generation and Mode Share

The unmitigated daily, AM peak hour, and PM peak hour trip generation associated with Children's project was estimated based on existing Children's traffic characteristics and expected increases in population (i.e., employees and patients/visitors) with the Build Alternatives. Future growth with the Build Alternatives was based on Children's population growth projections, which estimate that the hospital and Hartmann population would grow by about 100 percent by 2030. The estimation of trip generation considered travel modes used by employees and patients/visitors as well as time of day arrival and departure for population groups. The trip generation methodology is outlined below.

Trip Generation Methodology. The trip generation methodology is founded in site specific data including traffic counts, population growth, and mode split, as discussed in Attachment T-1 of the Final EIS. The following process was used to estimate trip generation:

- **Collection of Existing Traffic Data** – Traffic counts were conducted for the main campus and Hartmann in February 2007 to determine the existing traffic levels within these areas. In addition, shuttle ridership data was collected and analyzed for October 2007 to determine the off-site parking use. Together, this information became a basis on which to calibrate the trip generation model for existing Children's traffic.

- **Determination of Campus Population and Mode Splits** – As shown in Table 9 of Attachment T-9, trip and parking generation is based on the independent consideration of approximately 20 use/population categories. These included Children's employee day shift and non-day shift, physicians, students, residents, fellows, off-site Children's staff, temps, construction, consultants, vendors, volunteers, patients, visitors, etc. To create a trip and parking generation model, Children's provided daily population estimates using internal records for the main campus and Hartmann. The mode splits for each population was determine based on available data such as the Commute Trip Reduction (CTR) survey as well as Children's own surveys. Unique mode splits were determined for each population group. The *overall* SOV mode share for the entire Children's population was

71 percent. The SOV share for CTR eligible employees was 38 percent, while outpatients and visitors were approximately 95 percent.

- **Calibrated Existing Trip Generation Model** – An existing trip generation model was created based on the population and mode split information discussed above. This model was calibrated against the traffic data collected in 2007 as well as ITE *Trip Generation* rates. The trip generation model rates were determined to be substantially higher than ITE trip generation based on beds.

- **Future Trip Generation Model** – The trip generation model was used to develop anticipated trip generation for Children's expansion under the unmitigated condition, which assumed no change in current mode splits for any of the user/populations groups.

  Future trip generation was determined by forecasting growth in each individual population based on Children's future staffing plan for the proposed Master Plan. Each population group was not assumed to grow the same, since the future needs of each identified user/population varied. For example, the outpatient and resident population was anticipated to increase by a factor of approximately 1.5, and Children's employees and other population groups were anticipated to increase by a factor of approximately 2.11 by 2030. This results in an overall average population increase by a factor of 1.96 by 2030.

A detailed description of the process for determining future trip generation is provided in Attachment T-1. Table 6 shows the net new future SOV, transit, bike/walk, and other person trips pertaining to the hospital and Hartmann expansion both for the unmitigated and mitigated conditions. Mitigated trip generation was determined by assessing the benefits of implementing the TDM and enhanced shuttle strategies as well as justification of the changes in trip making characteristics through modeling. The US Environmental Protection Agency COMMUTER Model (v2.0) was used to predict future mode splits based on specific elements of the TMP as direct inputs. The COMMUTER Model uses inputs of current and future populations by user subgroup, existing model splits for each group, TDM incentives, and policy changes to forecast the mode split effects of the proposed programs. These adjusted mode splits were then used as a basis for forecasting future trip generation across the affected user subgroups. It was assumed that the TDM offerings would continue to apply to Children's employees, and CUMG physicians, and that the full benefits are extended to medical residents, fellows, and students. While it was noted that opportunities to affect other groups exist, they were not able to be modeled by the COMMUTER model, and thus not relied on to contribute to anticipated demand reduction.

Table 6
Future Unmitigated and Mitigated Net New Person Trips by Mode

Mode	Unmitigated			Mitigated		
	Daily	AM Peak Hour	PM Peak Hour	Daily	AM Peak Hour	PM Peak Hour
SOV	7,800	730	600	6,300	460	380
Carpool	1,240	260	170	1,180	170	110
Vanpool	310	90	60	260	50	40
Transit	820	150	100	2,070	530	400
Bike/walk	720	150	100	1,160	200	140

Source: The Transpo Group, March 2008

In the unmitigated scenario, the majority of the travel would continue to be via vehicle (i.e., SOV, carpool, or vanpool) with transit and bike/walk accounting for about 15 to 20 percent of the total Children's person trips to and from the hospital and Hartmann. Children's has been decreasing its share of SOVs over the last few years with incentive programs which encourage employees to use alternative modes. It is likely that SOVs would continue to decrease in the future, since Children's plans to continue to expand its programs. As shown in Table 6, based on the proposed TMP and shuttle enhancements, the mitigated scenario would anticipated a decrease in SOV with a shift to a majority of peak hour travel occurring with via transit and bike/walk. However, as a conservative estimate of unmitigated future trip generation, this study assumes the mode share would remain the same as existing. In addition, the percent of population visiting Children's during the peak hours is assumed to be the same. i.e., no additional telecommute or shift in work schedules is assumed.

Future unmitigated and mitigated vehicular trips related to the Build Alternatives were determined based on future person trips by mode. Table 7 shows the total future Children's trip generation and net new trips attributed to the proposed Build Alternatives (see Attachment T-1 for details). Unmitigated, the Build Alternatives would increase existing Children's traffic by approximately 8,400 vehicle trips per day, with 850 trips occurring during the AM peak hour and 690 trips occurring during the PM peak hour. Mitigated, the Build Alternatives would increase existing Children's traffic by approximately 6,800 vehicle trips per day, with 540 trips occurring during the AM peak hour and 440 trips occurring during the PM peak hour.

Table 7
Estimated Future Unmitigated Vehicle Trip Generation

Trips	Unmitigated			Mitigated		
	Inbound	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**
Daily						
Future Total	8,800	8,800	17,600	8,000	8,000	16,000
Existing	4,600	4,600	9,200	4,600	4,600	9,200
Net New	**4,200**	**4,200**	**8,400**	**3,400**	**3,400**	**6,800**
AM Peak						
Future Total	1,210	440	1,650	930	410	1,340
Existing	590	210	800	590	210	800
Net New	**620**	**230**	**850**	**340**	**200**	**540**
PM Peak						
Future Total	420	990	1,410	360	800	1,160
Existing	220	500	720	220	500	720
Net New	**200**	**490**	**690**	**140**	**300**	**440**

Source: The Transpo Group, November 2007

Trip Distribution and Assignment

A distribution of project-generated traffic to the study intersection was developed using residential zip code data for existing Children's employees and patients. Figure 16 shows the distribution of patients/visitors and Figure 17 shows the distribution of employees. Attachment T-1 provides additional detail.

Project traffic was assigned to the street system based on the trip distribution discussed above. Attachment T-2 shows the AM and PM peak hour trip assignment for the off-site study intersections. These project traffic volumes were combined with the 2030 baseline (no-build) forecasts to arrive at the 2030 with-project conditions. AM and PM peak hour traffic volumes for study intersections with the project are provided in Attachment T-2.

Source: The Transpo Group

Figure 16
Patient/Visitor Trip Distribution

Source: The Transpo Group

Figure 17
Employee Trip Distribution

Neighborhood Traffic Associated with Build Alternatives

It is recognized that there may be additional pressure for through traffic to filter through the Bryant (more so) and Laurelhurst (less so) neighborhoods without or with Children's expansion to avoid future congestion on the major corridors. Areas where congestion may occur include:

- **Laurelhurst Neighborhood** – Additional traffic could use NE 45th Street and NE 50th Street to avoid congestion along Sand Point Way NE. Children's traffic would be oriented to and from the west; therefore, development of the Build Alternatives is not expected to substantially increase traffic through the neighborhoods beyond any hospital traffic that was actually occurring by Laurelhurst residents.
- **40th Avenue NE** – A minimal increase in traffic volumes would be anticipated on 40th Avenue NE east of Sand Point Way NE without the expansion and with Alternatives 3 and 6. With Alternatives 7R and 8, Children's would increase traffic volumes along this roadway. These alternatives would provide frontage improvements and enhancements to accommodate the anticipated growth in traffic.
- **Bryant Neighborhood** – This neighborhood sits between Children's and regional access to the west. Given this, a portion of Children's traffic (approximately 20 percent) was assigned via 35th Avenue NE and 40th Avenue NE to serve traffic oriented to the northwest. As discussed previously, traffic would increase along these corridors both without and with Children's due to additional congestion on the major corridors which could add pressure for through traffic to filter through neighborhood streets like NE Blakeley Street and 39th Avenue NE. However, accurately quantifying the level of indirectly added neighborhood traffic over a 20-year forecast is difficult. Mitigation options could include neighborhood traffic control measures such as traffic circles along key intersections of cut-through routes or other measures to increase friction for through vehicles. It is not anticipated that a noticeable amount of Children's traffic would be subject to this pattern because the route described would primarily avoid the length of Sand Point Way NE east of Five Corners, which does not provide a substantial travel time benefit, especially eastbound.

Traffic Volume Increases Associated with Build Alternatives

Figures 18 and 19 summarize the proportional impact to the study area intersections associated with the Build Alternatives in 2030. At intersections closer to the hospital and along the access corridors, Children's trips represent a larger percentage of overall traffic than at intersections farther from the site.

On Montlake Boulevard, traffic from the Build Alternatives would reflect between about 1 and 12 percent of the peak hour traffic at the study intersections, with about 4 percent occurring at the Montlake Boulevard/SR 520 Eastbound ramp intersection during the peak hours. Similarly, build alternative traffic volume impacts would represent between about 3 and 14 percent of the peak hour traffic at the study intersections on NE 45th Street, with about 5 percent occurring near the I-5 interchange. At the intersection of five corners, Children's expansion traffic would reflect approximately 13 percent of the total AM peak hour traffic and 8 percent of the total PM peak hour traffic.

Summary of Impacts and Potential Mitigation

Additional traffic may filter through the adjacent neighborhoods due to increased congestion on the major corridors. In order to mitigate this potential impact, traffic volumes could be monitored to determine if growth in traffic is attributed to neighborhood cut-through, and if so, consideration could be given to traffic calming/traffic control measures. Children's could be required to assist in the funding or implementation of such measures.

Increases in AM and PM peak hour traffic, unrelated to Children's new trips, on the already congested Montlake Boulevard and NE 45th Street corridors would be significant under Alternative 1. Traffic increases between 10 and 13 percent on these corridors will result in continued degradation in travel times for all vehicles, increasing traffic queues, and congestion, if other corridor improvements are not implemented. Note that to the extent additional demand is forecasted on corridors already operating at or near capacity during the peak hours, it is likely the peak hour conditions will spread over more hours of the day and actual peak hour traffic increases may be less than described.

While completion of the Sound Transit Station (University Link Light Rail) near Husky Stadium and SR 520 will provide a connection to high capacity transit, arterial connections to the north on Montlake Boulevard will remain very congested. The ~~UATS~~UATAS identified a number of additional improvement strategies to increase person carrying capacity and provide more information to drivers including widening Montlake Boulevard to accommodate an HOV lane, optimizing signal timing and coordination along corridors, and providing variable message signs (VMS) with traveler information. These strategies have not been finalized and there is no project funding identified to implement them. In addition to the ~~UATS~~UATAS, potential improvements have been identified in the City's Comprehensive Plan and Capital Improvement Program (CIP), and WSDOT's SR 520 improvements. A list of these improvements as well as details is provided in Attachment T-8.

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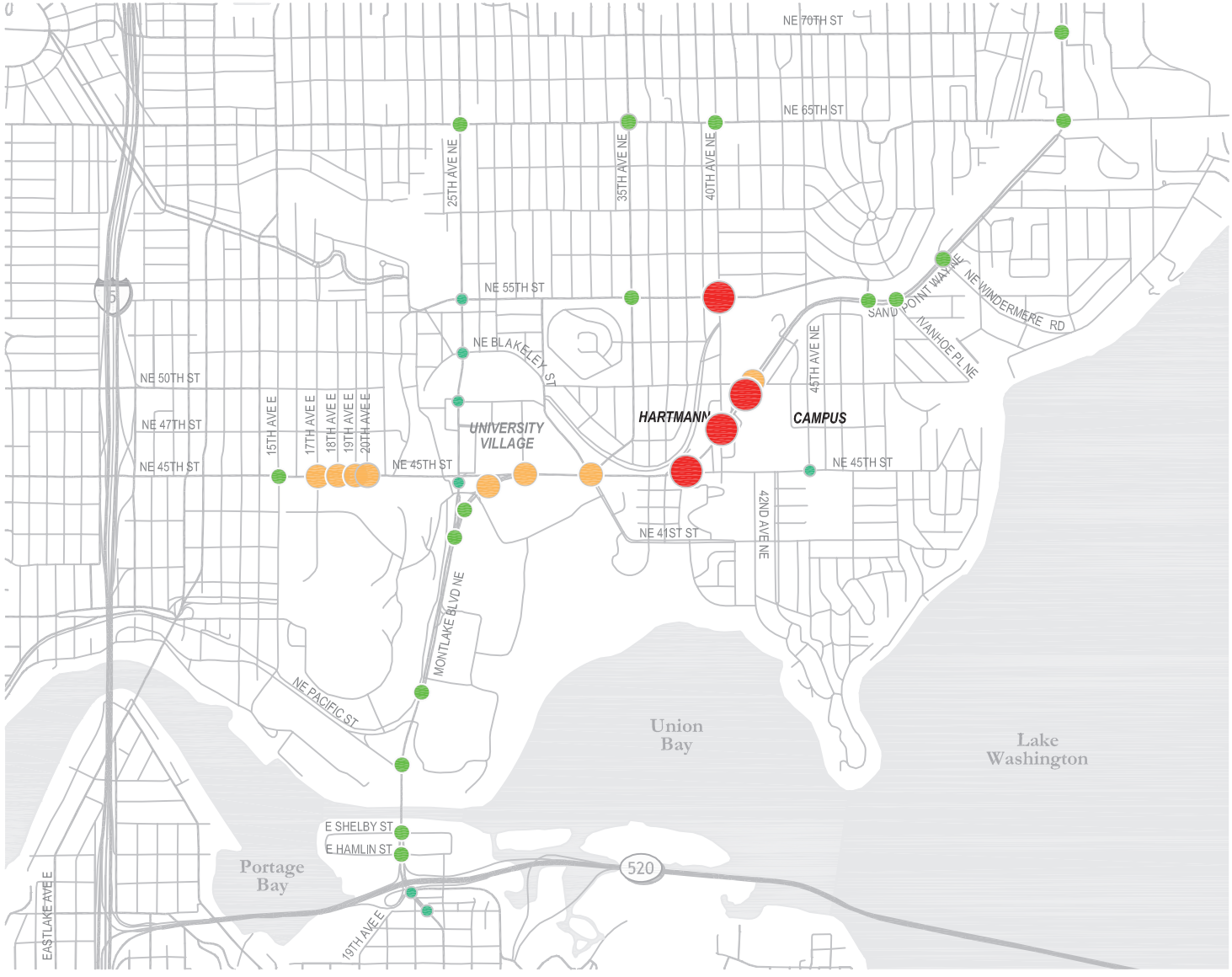

N

NOT TO SCALE

LEGEND

= 0 - 5%

= 6 - 10%

= 11 - 15%

= 16 - 30%

Source: The Transpo Group

Figure 18

Future (2030) AM Peak Hour Proportional Net New Traffic Volume

Seattle Children's Hospital
Major Institution Master Plan EIS

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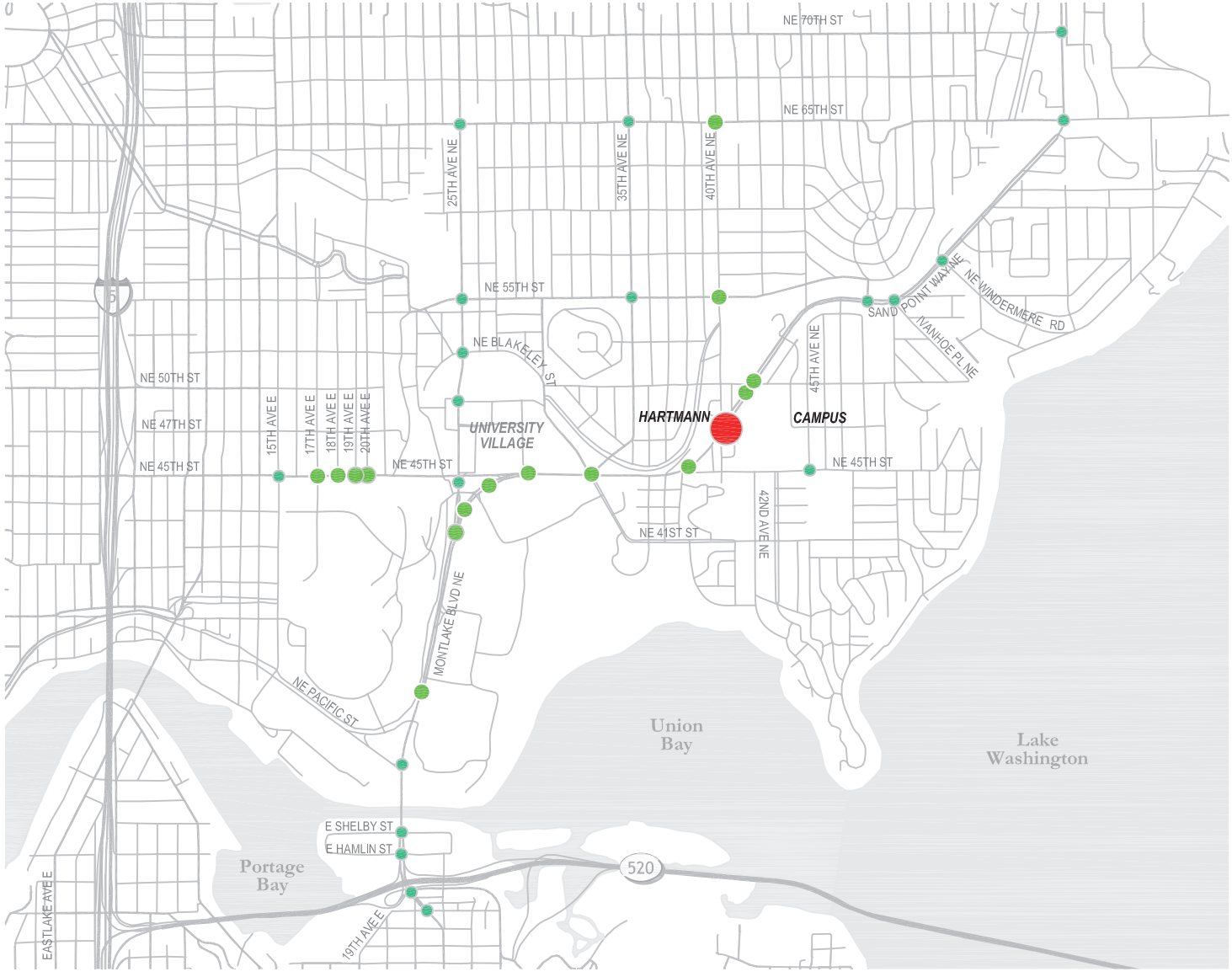

N

NOT TO SCALE

LEGEND

- = 0 - 5%
- = 6 - 10%
- = 11 - 15%
- = 16 - 30%

Source: The Transpo Group

Figure 19

Future (2030) PM Peak Hour Proportional Net New Traffic Volume

Unmitigated Children's traffic, associated with each of the Build Alternatives, would increase area wide traffic volumes occurring during the AM and PM peak hours as well as throughout the day. Strategies to enhance and improve critical corridor traffic operations are discussed in Section 2.3, Traffic Operations. To reduce the impact of the expansion, Children's is planning to enhance their existing TMP in order to reduce total traffic, and SOV trips in particular, as shown in Table 5. Implementation of the enhanced TMP is anticipated to result in decreased SOV travel such that a 30 percent reduction in peak hour traffic impact would occur as compared to the unmitigated traffic generated by the Build Alternatives. This would result in Children's generating approximately 440 net new PM peak hour trips due to the expansion. This is approximately 250 PM peak hour trips less than the unmitigated build condition.

2.3 Traffic Operations

Impacts to traffic operations describe how the transportation system will perform with and without the proposed project. This section discusses the operating conditions based on the traditional intersection level of service and performance of key corridors, Sand Point Way NE, Montlake Boulevard and NE 45th Street, as a system wide analysis. Together, these analyses provide a basis for decision makers to understand impacts and potential mitigation options.

Unless noted in Section 2.1, Street System, all 2030 intersection analysis was conducted assuming unimproved intersections. AM and PM peak hour levels of service for the no-build 2030 conditions are summarized in Figure 20 (rev) and a detailed summary is available in Attachment T-4. In addition, the AM and PM peak hour levels of service for the build 2030 conditions are summarized in Figure 21 (rev) with a detailed summary in Attachment T-4.

PM peak hour average travel times and speeds along key corridors were estimated for the 2030 No Build and Build Alternatives using the Synchro 6.0 software program which was calibrated against existing data. In the future, the PM peak hour would continue to represent the heaviest traffic flows in the study area. Table 8 provides a summary of No Build and Build Alternatives travel times to and from Children's along Montlake Boulevard, NE 45th Street, and Sand Point Way NE with the existing and enhanced TMP. Existing travel times are shown for comparison purposes.

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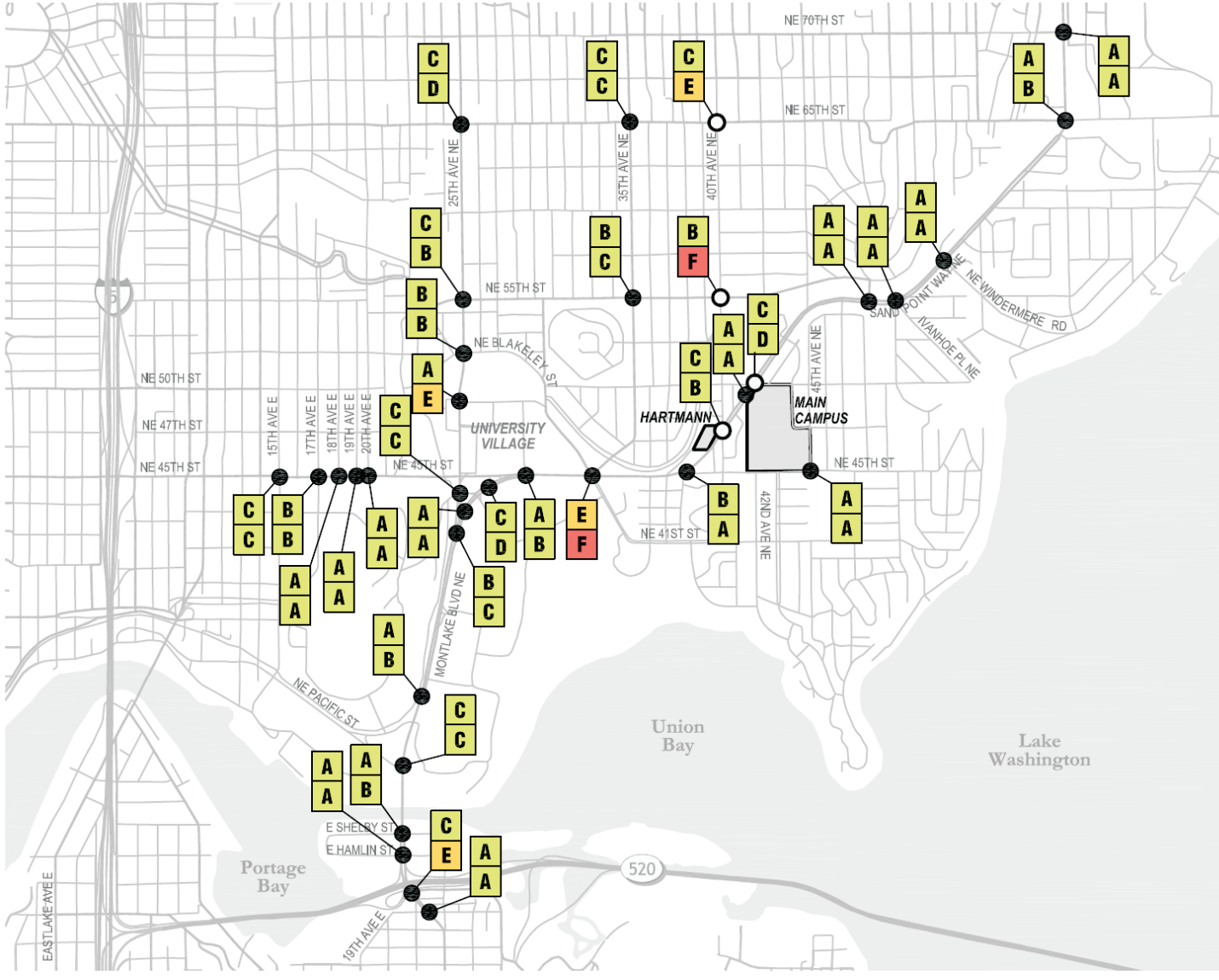


N

NOT TO SCALE

LEGEND

X = AM
X = PM
= SIGNALIZED INTERSECTION
= UNSIGNALIZED INTERSECTION

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A = 0 TO 10 DELAY (SEC/VEH)
B = 10 TO 20 DELAY (SEC/VEH)
C = 20 TO 35 DELAY (SEC/VEH)
D = 35 TO 55 DELAY (SEC/VEH)
E = 55 TO 80 DELAY (SEC/VEH)
F = 80+ DELAY (SEC/VEH)

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

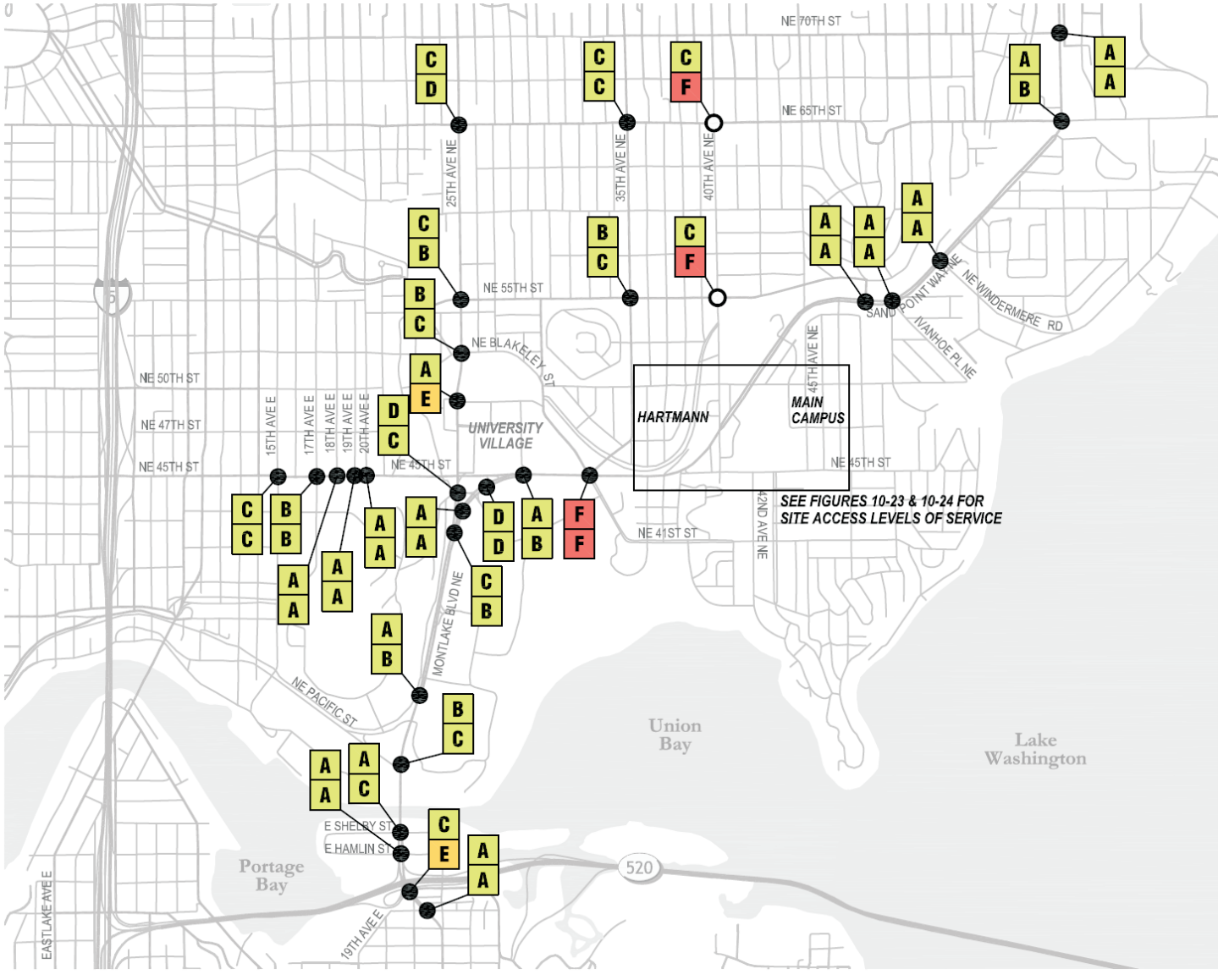
A = 0 TO 10 DELAY (SEC/VEH)
B = 10 TO 15 DELAY (SEC/VEH)
C = 15 TO 25 DELAY (SEC/VEH)
D = 25 TO 35 DELAY (SEC/VEH)
E = 35 TO 50 DELAY (SEC/VEH)
F = 50+ DELAY (SEC/VEH)

Source: The Transpo Group

Figure 20 rev

No Build (2030) Peak Hour Levels of Service Summary

Seattle Children's Hospital
Major Institution Master Plan EIS



NOT TO SCALE

LEGEND

X = AM
X = PM
= SIGNALIZED INTERSECTION
= UNSIGNALIZED INTERSECTION

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A = 0 TO 10 DELAY (SEC/VEH)
B = 10 TO 20 DELAY (SEC/VEH)
C = 20 TO 35 DELAY (SEC/VEH)
D = 35 TO 55 DELAY (SEC/VEH)
E = 55 TO 80 DELAY (SEC/VEH)
F = 80+ DELAY (SEC/VEH)

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A = 0 TO 10 DELAY (SEC/VEH)
B = 10 TO 15 DELAY (SEC/VEH)
C = 15 TO 25 DELAY (SEC/VEH)
D = 25 TO 35 DELAY (SEC/VEH)
E = 35 TO 50 DELAY (SEC/VEH)
F = 50+ DELAY (SEC/VEH)

Source: The Transpo Group

Figure 21 rev

Build Alternatives (2030) Peak Hour Levels of Service Summary

Seattle Children's Hospital
Major Institution Master Plan EIS

Table 8
Comparison of Existing, No-Build (2030), and Build Alternatives Corridor Travel Time and Average Speeds

Corridor	Direction[1]	Existing		No Build (2030)		Build Alternatives w/ Existing TMP (2030)		Build Alternatives w/ Enhanced TMP (2030)	
		Average Travel Time (minutes)[2]	Average Speed (mph)	Average Travel Time (minutes)[2]	Average Speed (mph)	Average Travel Time (minutes)[2]	Average Speed (mph)	Average Travel Time (minutes)[2]	Average Speed (mph)
Sand Point Way NE between NE 70th Street and Children's	NB	3	32	3	27	3	24	3	26
	SB	3	34	3	28	3	27	3	26
Montlake Boulevard and Sand Point Way NE between Roanoke Street and Children's	NB	9	15	11~~10~~	11	11	10	11	10
	SB	13	10	14~~18~~	~~8~~6	16~~21~~	~~7~~6	15	8
NE 45th Street and Sand Point Way NE between I-5 and Children's	WB	9	14	10	12	13	9	11	10
	EB	10	13	12	10	15	8	14	8

Source: The ~~Tranpso~~Transpo Group, March 2008

1. Direction of travel where NB = northbound, SB = southbound, EB = eastbound, and WB = westbound.
2. Average travel time presented in minutes.

Alternative 1

Intersections

The following ~~six~~ five study locations would operate at LOS E or worse under no-build 2030 conditions during one or more of the peak hours:

- **NE 45th Street/Union Bay Place NE (Five Corners)** – This intersection operates at LOS E during both the AM and PM peak hours under existing conditions. In 2030, NE five corners would operate at LOS E during the AM peak hour and LOS F during the PM peak hour.
- ~~**Montlake Boulevard NE/NE 45th Street** – This intersection operates at LOS E during the PM peak hour under existing conditions and would continue to operate at this level under no-build 2030 conditions.~~
- **Montlake Boulevard NE/Eastbound SR 520 Ramp** – This intersection operates at LOS E during the PM peak hour under existing conditions and would continue to operate at this level under no-build 2030 conditions.
- **25th Avenue NE/University Village Driveway** – Operations at this intersection would degrade from B under existing conditions to LOS E under no-build 2030 conditions during the PM peak hour.
- **40th Avenue NE/NE 55th Street** – Operations at this intersection would degrade from LOS C under existing conditions to LOS F in no-build 2030 conditions during the PM peak hour. This intersection would meet the *Manual on Uniform Traffic Control Devices* (MUTCD) traffic signal warrant criteria (FWHA 2003).
- **40th Avenue NE/NE 65th Street** – Operations at this intersection would degrade from LOS C under existing conditions to LOS E in no-build 2030 conditions during the PM peak hour. The poor operating conditions are due to high traffic volumes on the northbound approach; all other approaches would operate at LOS D. This intersection would meet the criteria in the MUTCD for traffic signal warrants (FWHA 2003).

All other study intersections are expected to operate at LOS D or better under no-build 2030 conditions during both the AM and PM peak hours**.** It is recognized that the intersection LOS may not accurately represent overall traffic performance at some locations since complicating factors associated with key corridors, Montlake Boulevard and NE 45th Street, and overall congestions on these roadways and SR 520 and I-5 affect traffic operations through some study intersections. The key corridors analysis provides an understanding of traffic performance as a system based on corridor travel times.

Key Corridors

Sand Point Way NE Corridor. As would be expected with an increase in traffic volumes, travel times along the Sand Point Way NE corridor to and from NE 70th Street and Children's would increase from 2007 to 2030. The average speed would be approximately six to seven mph below the speed limit. This is consistent with the results of the intersection levels of service which indicates LOS C or better operations at all signalized intersections north of Children's during the PM peak hour.

Montlake Boulevard Corridor. Similar to existing conditions, during the PM peak hour the southbound direction travel would continue to exhibit greater delay (i.e., longer travel times and slower speeds) than the northbound direction. As compared to existing conditions, under No Build conditions, travel times would increase along the Montlake Boulevard corridor by approximately ~~one~~ two minute in the northbound direction and ~~five~~ one minute~~s~~ in the more congested southbound direction. The overall average travel speed is projected to be about 11 mph in the northbound direction and ~~6~~ 8 mph in the southbound direction; however, the travel speeds in shorter segments near points of congestion or "bottleneck" locations (i.e., five corners and SR 520) would continue to be lower. This is consistent with the results of the intersection levels of service which shows poor LOS E operations at "bottleneck" locations of the corridor, and good LOS C or better operations at the remaining locations during the PM peak hour.

NE 45th Street Corridor. Similar to existing conditions, the average travel speeds during the PM peak hour in both the eastbound and westbound directions would continue to be approximately the same under No Build conditions. A comparison between existing and No Build conditions shows that travel times would increase by about one minute in the westbound direction and two minutes in the eastbound direction. The primary "bottleneck" in both directions would continue to be the I-5 interchange through the University District and five corners. The overall average travel speeds for the corridor would be about 12 mph in the westbound direction and 10 mph in the eastbound direction; however, the travel speeds in short segments near points of congestion (i.e., I-5 through the University District and five corners) would be lower. This is consistent with the results of the intersection levels of service which show longer delays in the vicinity of I-5 and five corners, and shorter delays or better operations at the remaining locations during the PM peak hour.

It is noted that the overall increase in travel time may, in some cases appear to be less than the increased delay occurring at individual intersections along the corridor. Individual intersection delay is a weighted average of all approaches, while corridor travel times are a reflection of travel experience in a single direction. In addition, as some of the more congested intersections reach and exceed their practical capacity, delay calculations become less reliable due to the limits of the software programs' ability to calculate potential levels.

From an intersection standpoint, the first ~~three~~ two locations (i.e., five corners~~, Montlake Boulevard NE/NE 45th Street,~~ and Montlake Boulevard/Eastbound SR 520 Ramps) affected by the No Build Alternative~~s~~, all have limited opportunities to support general traffic capacity improvements. In these cases, it may be more appropriate to consider system improvements that support non-SOV travel mode choices, such as HOV lanes, or pedestrian/bicycle improvements. These issues have been studied in a number of previous documents, most recently the ~~UATS~~UATAS and the SR 520 project review. Improvements identified thus far include:

- Montlake Boulevard HOV lanes (widening)
- Transit bypass lanes and transit priority on NE 45th Street
- NE 45th Street/I-5 capacity improvements
- Variable Message Signs (VMS)

As part of this analysis additional capacity improvements at critical intersections such as five corners were also evaluated. However, major street widening and even a roundabout, while theoretically adding capacity and improving intersection performance, do not appear to be either practical or feasible. Similarly, capacity improvements on Montlake Boulevard near SR 520 or the Montlake Bridge, as well as on NE 45th Street through the University District would appear to be difficult. The following describes these strategies as they relate to issues associated with each of the corridors and intersections:

- **Montlake Boulevard Corridor and~~, Five Corners, and Montlake Boulevard NE/NE 45th Street~~ Improvements –** As part of the ~~UATS~~UATAS, intersection improvements are proposed at Hamlin Street and Shelby Street as well as an HOV Lane from NE Pacific Place to 25th Avenue NE. These improvements would increase mobility along the Montlake corridor by providing additional capacity for high occupancy vehicles. Potential mitigation for the five corners intersection could be to extend the proposed Montlake Boulevard southbound HOV lane through this location to encourage HOV and transit by providing priority to these modes of travel. Although the travel time, average speed, and intersection delays for SOV along Montlake Boulevard would likely not substantially improved with the addition of an HOV lane, the corridor and intersections would have capacity for more person throughput and these improvements would encourage alternative modes. In addition to the HOV lane, the ~~UATS~~UATAS and CIP suggest installing variable message signs in the vicinity of Montlake Boulevard/NE 45th Street to inform users of current delays. This would allow travelers to choose alternative routes during the peak periods when congestion is at its highest and travel times are longest. No funding is committed for these projects.

  In addition to these corridor wide improvements, ~~at the Montlake Boulevard NE/NE 45th Street intersection signal timing adjustments would improve operations to LOS C during the PM peak hour~~traffic signals along Sand Point Way NE/NE 45th Street/Montlake Boulevard corridors between NE 50th Street (if signalized) and 25th Avenue NE should be optimized to improve overall corridor operations.

- **Montlake Boulevard/SR 520 Improvements –** Currently, traffic from SR 520 spills onto Montlake Boulevard causing stop and go traffic and long delays. Improvements to SR 520 would reduce congestion along Montlake Boulevard at the SR 520 interchange, and thus, remove the corridor "bottleneck".

- **NE 45th Street Corridor Improvements –** This corridor was also evaluated in the ~~UATS~~UATAS. Improvements include providing more capacity in the vicinity of I-5/NE 45th Street as well as adding a westbound transit only lane. Improvements in the vicinity of I-5 would decrease travel time and increase speeds at this "bottleneck" location. ~~In addition, t~~The transit only lane would provide additional person throughput along the corridor and may encourage the use of alternative modes. In addition, the ~~UATS~~UATAS and CIP suggests installing variable message signs in the vicinity of Montlake Boulevard/NE 45th Street to inform users of current delays. As noted previously, this would allow travelers to choose alternative routes during the peak periods when congestion is at its highest and travel times are longest. No funding is committed for these projects.

- Other Intersection Improvements:
  - **Five Corners –** Significant capacity enhancements would be difficult at this intersection due to limited right-of-way and the five leg configuration of this

intersection. Consideration was given to installation of a roundabout which would require three-lanes and a diameter of 200-feet to achieve LOS D operations during the peak hours.

- **25th Avenue NE/University Village Driveway –** A potential future improvement could be signal timing adjustments including the provision of protected/permitted phasing on the southbound approach. This modification would result in LOS A operations during the AM peak hour and LOS C operations during the PM peak hour.
- **40th Avenue NE/NE 55th Street –** As noted, this intersection would meet the criteria in the MUTCD's (FHWA 2003) traffic signal warrants. Therefore, a potential future improvement could be installation of traffic signals which would result in LOS A operations during the AM peak hour and LOS B operations during the PM peak hour.
- **40th Avenue NE/NE 65th Street –** As noted, this intersection would meet the criteria in the MUTCD's traffic signal warrants (FWHA 2003). Therefore, a potential improvement would be installation of traffic signals which would improve operations to LOS A during both the AM and PM peak hours.

~~While a~~SDOT has conducted a number of studies ~~have been~~ which identify~~ied~~ a range of potential projects to address transportation issues within the study area~~, it may be appropriate to consider additional corridor analysis on both the Montlake Boulevard and NE 45th Street corridors~~. These studies ~~would~~ examine traffic operations in greater detail along the key corridors~~with goals of confirming the value and feasibility of those projects identified to date as well as determining if additional improvements can be identified~~. Since the key corridors within the study area are physically constrained, part of the evaluation of potential improvements should consider the benefit to not only vehicle capacity, but also to person trip capacity. This approach ~~would~~ provides a basis for exploring measures like signal timing and coordination improvements, and ~~would also~~ values improvements that enhance transit, carpool, and other HOV performance. Therefore, the mitigation measures discussed in Section 3 ~~T~~take~~ing~~ this approach, and are ~~would be~~ consistent with the City and subarea transportation goals, including the Mayor's initiative to make Seattle the most walkable and bikeable place in the country.

Site Access

Access for Children's under Alternative 1 would continue to be via one driveway at the Sand Point Way NE/Penny Drive intersection. Similar to existing conditions, this intersection is anticipated to have good operations with a service level of LOS B or better during the peak hours.

Alternatives 3, 6, 7R and 8~~7~~

Intersections

Impacts of the Build Alternatives, compared to Alternative 1, are considered potentially significant by the City if the:

- Intersection level of service degrades from an acceptable LOS D to LOS E or worse
- Intersection level of service degrades from an unacceptable LOS E to LOS F

- Intersection delay increases by more than five seconds at an intersection already operating at LOS E or worse without project traffic

Based on these criteria, the following ~~five~~ four intersections would be most affected by the addition of Children's new traffic in 2030:

- **NE 45th Street/Union Bay Place NE (Five Corners) –** This intersection would operate at LOS E during the AM peak hour and LOS F during the PM peak hour under no-build 2030 conditions. With the addition of Children's traffic by 2030, the NE 45th Street/Union Bay Place NE intersection operations would degrade to LOS F during the AM peak hour. During the PM peak hour, this intersection would continue to operate at LOS F and the overall intersection delay would increase by about 54 seconds which represents approximately three seconds of added delay each year over the 20 year Children's expansion period.

- ~~**Montlake Boulevard NE/NE 45th Street** – During the PM peak hour, this intersection would degrade from LOS E under no-build 2030 conditions to LOS F with a calculated delay increase from 74 to 81 seconds (i.e., approximately 7 seconds). Traffic associated with new Children's trips (i.e., project trips associated with the alternatives) accounts for about eight percent of the traffic volumes at this intersection.~~

- **Montlake Boulevard/Eastbound SR 520 Ramp –** This intersection would operate at LOS E during the PM peak hour under no-build 2030 conditions. With the addition of Children's traffic associated with the Build Alternatives, this intersection would continue to operate at LOS E during the PM peak hour and delays would increase by about 12 seconds which represents an increase of about 0.6 seconds per year over the 20-year Children's build-out period. Traffic associated with new Children's trips (i.e., project trips associated with the Build Alternatives) accounts for about four percent of the traffic volumes at this intersection.

- **40th Avenue NE/NE 55th Street –** This intersection would operate at LOS F during the PM peak hour under no-build 2030 conditions. With the addition of traffic associated with the Build Alternatives, this intersection would continue to operate at LOS F and calculated delays would increase by about 54 seconds (if a traffic signals were not installed to mitigate Alternative 1) which represents an increase in delay of approximately three seconds per year over the 20-year buildout. This intersection would meet the criteria in the MUTCD traffic signal warrants (FWHA 2003) with or without the Build Alternatives.

- **40th Avenue NE/NE 65th Street –** This intersection would operate at LOS E during the PM peak hour under no-build 2030 conditions. With the addition of traffic associated with the Build Alternatives, intersection operations would degrade from LOS E to LOS F with a calculated delay increase from 42 to 58 seconds (i.e., 16 seconds). The reduction in levels of service resulting from the increased delay would occur as a result of additional Children's traffic demand on the eastbound and northbound approaches during the PM peak hour. This intersection would meet the criteria in the MUTCD traffic signal warrants (FWHA 2003).

In addition to the intersections listed above, the 25th Avenue NE/University Village Driveway intersection would continue to operate at LOS E with the addition of Children's traffic in 2030. However, the overall intersection delay at the 25th Avenue NE/University Village Driveway intersection would not increase; therefore, this change would not be noticeable to drivers. All other study intersections would operate at LOS D or better during both the AM and PM peak hours.

Table 9 compares the potential impacts to intersections due to the Build Alternatives with the existing and proposed enhanced TMP. The No Build conditions are shown for comparison. The information presented in the table is similar to that provided in the Affected Environment section ~~except the calculation of annual percent of Children's contribution to the PM peak hour traffic volumes. While the total change (or total percent of Children's contribution to PM peak hour traffic volumes) over a 20-year period is one way to understand the project impact, it is recognized that growth in traffic occurs over time, and thus the annual rate of change in traffic growth presents another way to understand potential traffic impacts over time. This is similar to the recognition that the No Build condition represents a total of approximately 10 percent growth over 20 years or an annual growth of 0.5 percent per year. As shown in the table, with continuation of the current TMP Children's traffic would represents an annual growth of about 0.5 percent or less per year; however, with the enhanced TMP Children's traffic would represent an annual growth of approximately 0.25 percent or less per year.~~

As discussed under Alternative 1, it is recognized that the intersection LOS may not accurately represent overall traffic performance at some locations since complicating factors associated with key corridors, Montlake Boulevard and NE 45th Street, and overall congestions on these roadways and SR 520 and I-5 affect traffic operations through some study intersections. The key corridors analysis provides an understanding of traffic performance as a system based on corridor travel times.

Key Corridors

Sand Point Way NE Corridor. Travel along the Sand Point Way NE corridor with the proposed expansion would be similar to conditions without the expansions. All the Build Alternatives would decrease travel speeds along the corridor by one to three mph; however, the small changes in speed would likely not be noticeable to drivers. The travel time to and from Children's would be approximately the same with the addition of Children's traffic due to the expansion. This is consistent with the results of the intersection levels of service which show little to no change in operations between the No Build and Build Alternatives for intersection operations along this corridor.

Montlake Boulevard Corridor. The additional traffic due to the Build Alternatives would increase travel times along the Montlake corridor by approximately ~~three~~ two minutes in the southbound direction ~~and one minute in the northbound direction~~. In the critical southbound direction, a ~~three~~ two minute increase is equivalent to a ~~16~~ 14 percent change in overall travel time. Travel speeds would decline commensurate with added delay between the No Build and Build Alternatives. This is consistent with the results of the intersection analysis which show the majority of the intersections service levels along this corridor would remain the same between the No Build and Build Alternatives. The enhanced TMP proposed by Children's would decrease travel times along this corridor in the southbound direction by about one minute or six percent.

NE 45th Street Corridor. The additional traffic due to the Build Alternatives would increase travel times along the NE 45th Street corridor by approximately three minutes in both directions. This is consistent with the results of the intersection levels of service which show intersection operations at "bottleneck" locations (i.e., I-5 and five corners) would worsen which contributes to the increase in travel time to and from Children's. The enhanced TMP proposed by Children's

would decrease travel times along this corridor in the westbound direction by about two minutes or 15 percent and in the eastbound direction by about one minute or seven percent.

Site Access

For Alternatives 3 and 6, the proposed access would be via the existing Penny Drive signal (expanded and shifted to accommodate the proposed configuration) plus a new NE 50th Street access, which would be designed to reduce or eliminate any driveway traffic turning to or from the east. Installation of this access would also require installation of a new signal at the Sand Point Way NE/NE 50th Street intersection. For Alternatives 7R and 8, which includes the expanded campus to the west, additional access via 40th Avenue NE ~~and Sand Point Way NE~~ is proposed. Alternatives 7 and 8 would not include the NE 50th Street driveway; however, for completeness of the site access evaluation, consideration was given to operations both with and without it for each Alternative.

Table 9: Summary Comparison of Intersection Impacts

Intersection	No Build Alternative	Build Alternatives Existing TMP			Build Alternatives Enhanced TMP		
	Delay (seconds)	% PM Volume Impact	Delay (seconds)	Delay Increase (seconds)[1]	% PM Volume Impact	Delay (seconds)	Delay Increase (seconds)[1]
Five Corners	137	8%	191	54	6%	171	34
~~Montlake Blvd/NE 45th St~~	~~74~~	~~7%~~	~~81~~	~~7~~	~~5%~~	~~80~~	~~6~~
Montlake Blvd/SR 520 EB Ramp	63	4%	75	12	3%	70	7
40th Ave NE/NE 55th St	58	9%	112	54	6%	90	32
40th Ave NE/NE 65th St	42	6%	58	16	4%	51	9

Source: The Transpo Group, March 2008

1. Delay increase represents the increase over the No Build Alternative i.e., Build Alternative delay minus No Build Alternative delay (in seconds).

The adequacy of Penny Drive was evaluated based on operations of the access point (i.e., LOS D or better), vehicle queues along the driveway which may block parking garage entrances and increase congestion on the circulation roads, and the interaction of pedestrians and vehicles on-site to ensure safety. Based on these criteria, access needs for the upper campus (i.e., existing campus not including expansion to Laurelon Terrace) are as follows:

- **Penny Drive Only (One Driveway) –** This access would serve up to approximately 1,000 total peak hour vehicle trips.
- **Penny Drive and NE 50th Street (Two Driveways)** – Two accesses would serve up to approximately 1,500 total peak hour vehicle trips.

Based on these factors, a total of 1,000 peak hour vehicle trips could be accommodate by the Penny Drive signalized access. With an additional access onto NE 50th Street, up to 1,500 peak hour vehicle trips could be handled. Table 10 illustrates the level of usage of the upper campus, and the access requirements for each build alternative.

As shown in Table 10, Alternatives 3 and 6 would require two access points to serve the level of anticipated traffic associated with the upper campus traffic demand. This traffic demand relates to the proposed parking demand on the upper campus. For Alternative 3, which proposes 2,570 on-site parking spaces, demand exceeds the capacity of the "Penny Drive only" access by about 16 percent. For Alternative 6, which proposes 2,845 on-site spaces, access demand exceeds the Penny Drive capacity by over 30 percent. With Alternatives 7R and 8, both the AM and PM peak hour traffic volumes for the upper campus could be served by Penny Drive only, eliminating the need for the NE 50th Street access.

It is noted that if the amount of parking provided on the upper campus was such that expected peak hour traffic volumes were 1,000 vehicles or less for Alternatives 3 and 6, then the Penny Drive access would be sufficient and the NE 50th Street access could be eliminated.

Access Operations

To provide decision-makers with an understanding of the operational affects of the access on near-site intersections and on-site circulation, a sensitivity analysis was conducted, which evaluated each alternative both without and with NE 50th Street.

Children's traffic volumes were assigned to the roadway network based on the travel patterns shown in Figure ~~13~~ 16 and ~~14~~17, as well as consideration of the location of parking at the hospital. The assumed distribution to and from Children's access locations without and with NE 50th Street is illustrated in Figures 22 (rev) and 22a. Attachment T-2 presents the Children's trip assignment for all the scenarios. A majority of the traffic was assumed to use Penny Drive for all of the scenarios since a ~~large~~ portion of the parking would be easily accessible from this location. In addition, about ~~20 to 30~~15 to 20 percent of Children's traffic was anticipated to use the NE 50th Street driveway since a large portion of the proposed parking would be easily accessible via this entrance. The total future 2030 Build Alternatives with-project traffic volumes are provided in Attachment T-2.

Table 10
Build Alternatives Access Requirement Summary

	Alternative 3	Alternative 6	Alternative 7R	Alternative 8
Access Capacity				
Penny Drive Only	1,000			
Penny Drive and NE 50th Street	1,500			
Access Demand Volumes (Upper Campus Only)				
AM Peak Hour Vehicle Trips	1,160	1,320	830~~900~~	860
PM Peak Hour Vehicle Trips	990	1,120	710~~770~~	730
Number of Required Accesses (Upper Campus Only)				
AM Peak Hour Requirement	2	2	1	1
PM Peak Hour Requirement	1	2	1	1

Source: Transpo Group, March 2008.

Figures 23 (rev) and 24 (rev) present the results of the intersection operations for all the scenarios. As shown, with either access operation all of the intersections would operate at LOS D or better during both peak hours both without and with NE 50th Street except the following:

- For Alternative 3, the unsignalized left-turns from the Hartmann driveway would operate at LOS F during the PM peak hour, without or with the NE 50th Street access. This is due to approximately 60 left-turning vehicles from the Children's driveway. It may be desirable to design the driveway with dual outbound lanes to assure right-turn exiting vehicles are not delayed by the left-turn traffic to the north. It is noted that with a reduction in parking on the Hartmann site, as shown by the analysis of Alternatives 6 and 7R, this driveway would operate at LOS D or better during the peak hours.
- For Alternatives 3 and 6, the Sand Point Way NE/NE 50th Street intersection would operate at LOS E during the PM peak hour without the NE 50th Street access. This intersection would not be signalized without the proposed NE 50th Street access.

Under Alternatives 3 and 6, it is recommend that traffic be monitored at the Sand Point Way NE/NE 50th Street intersection to determine whether the need for a traffic signal develops since the poor operations are due to Children's traffic (approximately 20 percent) which was assigned to and from the north and users may choose other paths depending on the ease of access at the Sand Point Way NE/NE 50th Street intersection. ~~. Therefore, i~~In terms of intersection operations, for Alternatives 7R and 8, either access proposal would have minimal impact on the

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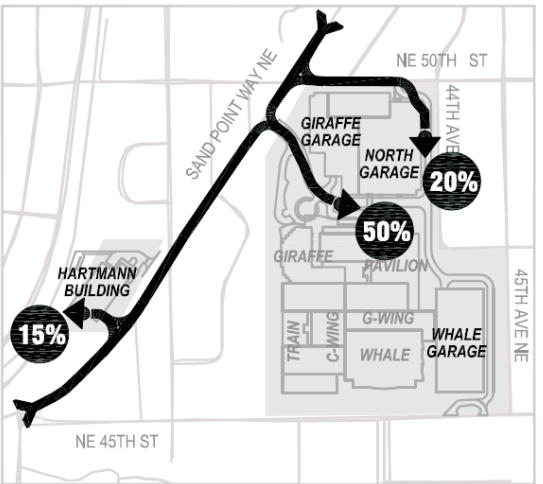
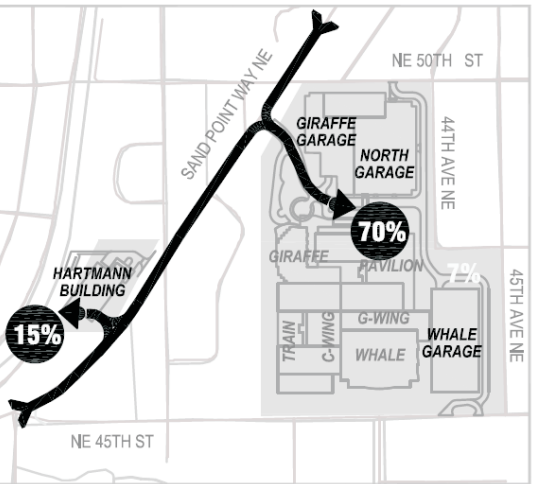
Alternative 3

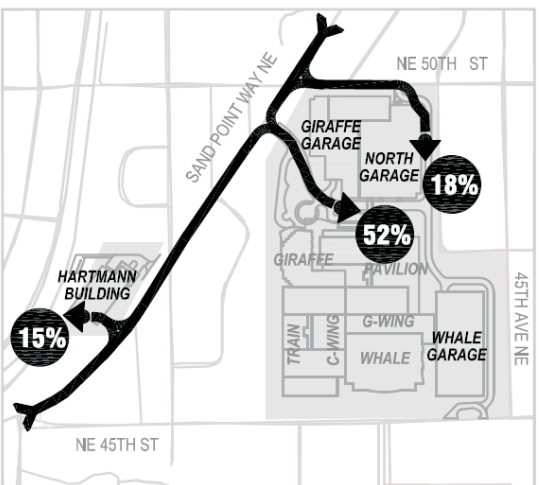


With NE 50th St Access

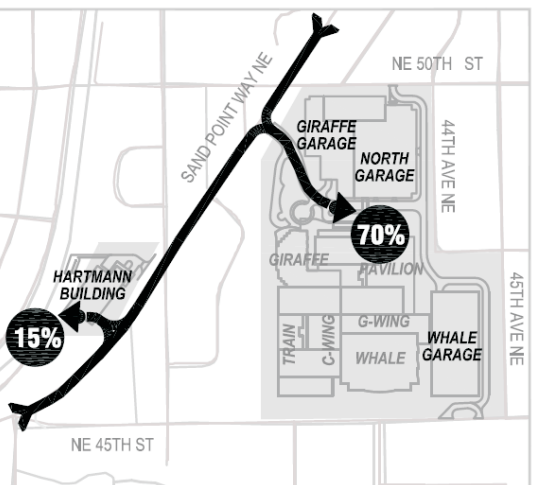


Without NE 50th St Access

Alternative 6



With NE 50th St Access



Without NE 50th St Access

N

NOT TO SCALE

NOTE:
15% of project trips are assumed to use off-site parking.

Source: The Transpo Group

Figure 22 rev
Site Access Project Trip Distribution

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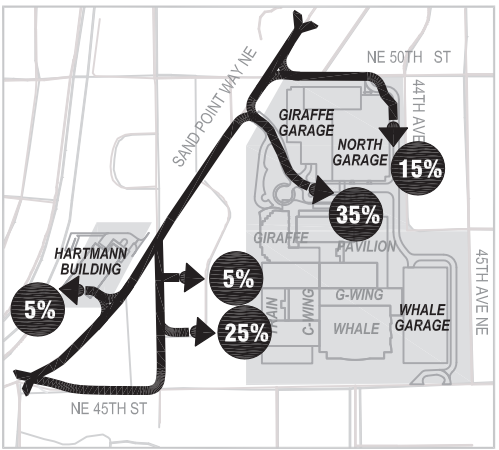
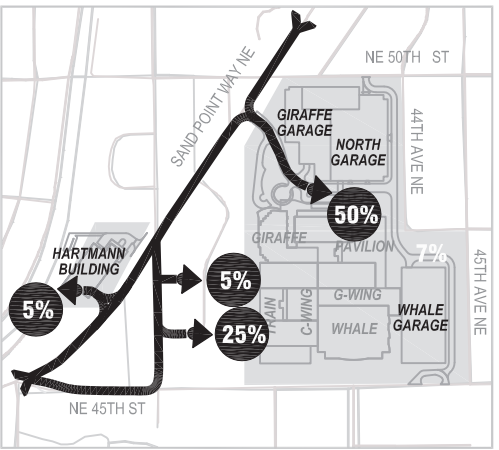
Alternative 7R

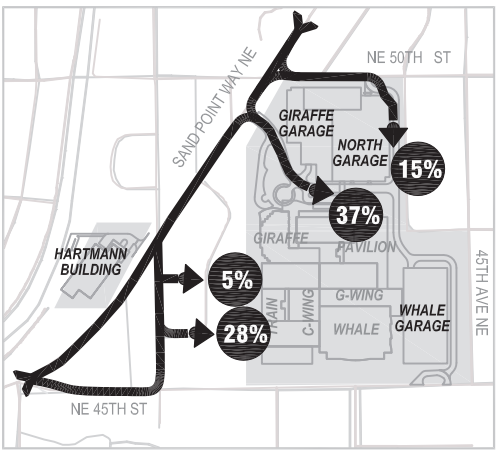


With NE 50th St Access

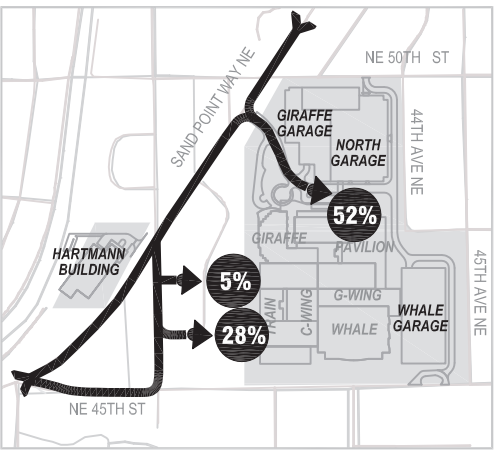


Without NE 50th St Access

Alternative 8



With NE 50th St Access



Without NE 50th St Access

N

NOT TO SCALE

NOTE:
15% of project trips are assumed to use off-site parking.

Source: The Transpo Group

Figure 22a
Site Access Project Trip Distribution (Continued)

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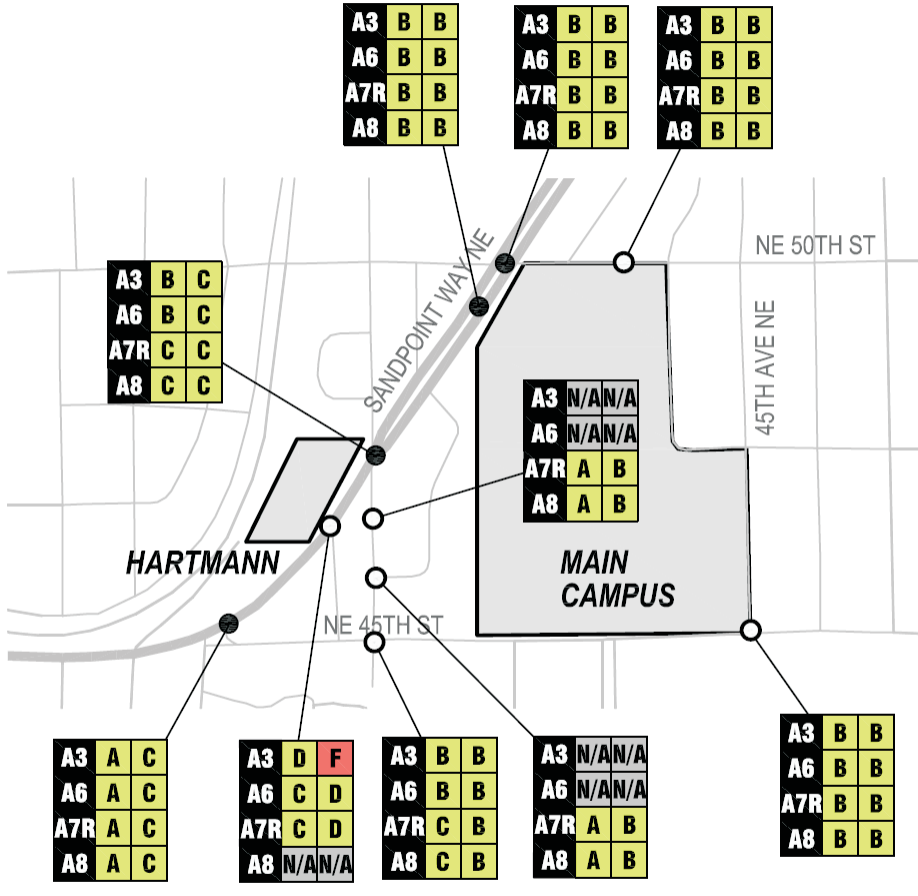

N

NOT TO SCALE

LEGEND

ALTERNATIVE AM PM

A#	X	X

● = SIGNALIZED INTERSECTION

○ = UNSIGNALIZED INTERSECTION

N/A = NOT APPLICABLE (NO ACCESS PROPOSED)

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 20 DELAY (SEC/VEH)
C	= 20 TO 35 DELAY (SEC/VEH)
D	= 35 TO 55 DELAY (SEC/VEH)
E	= 55 TO 80 DELAY (SEC/VEH)
F	= 80+ DELAY (SEC/VEH)

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 15 DELAY (SEC/VEH)
C	= 15 TO 25 DELAY (SEC/VEH)
D	= 25 TO 35 DELAY (SEC/VEH)
E	= 35 TO 50 DELAY (SEC/VEH)
F	= 50+ DELAY (SEC/VEH)

Source: The Transpo Group

Figure 23 rev

Build Alternatives Peak Hour Levels of Service Summary with NE 50th Street Access

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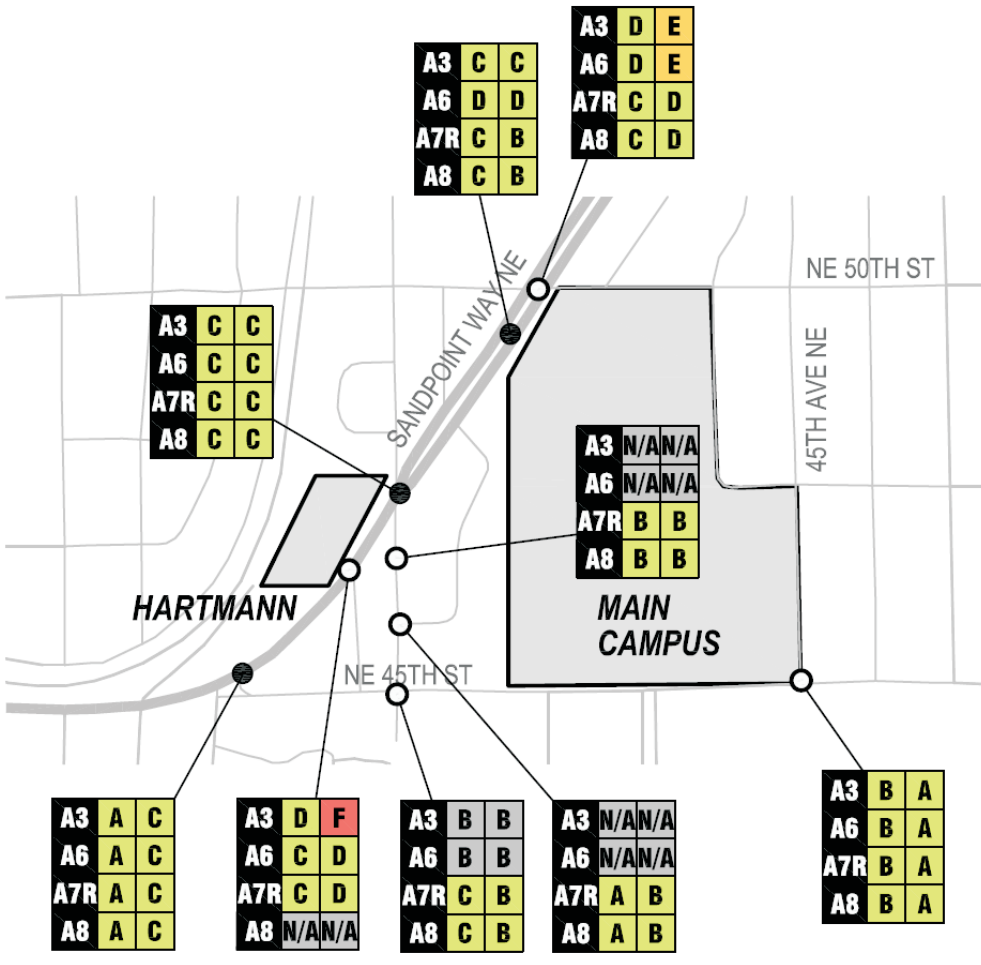

N

NOT TO SCALE

LEGEND

ALTERNATIVE AM PM

A# X X

= SIGNALIZED INTERSECTION

= UNSIGNALIZED INTERSECTION

N/A = NOT APPLICABLE (NO ACCESS PROPOSED)

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 20 DELAY (SEC/VEH)
C	= 20 TO 35 DELAY (SEC/VEH)
D	= 35 TO 55 DELAY (SEC/VEH)
E	= 55 TO 80 DELAY (SEC/VEH)
F	= 80+ DELAY (SEC/VEH)

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 15 DELAY (SEC/VEH)
C	= 15 TO 25 DELAY (SEC/VEH)
D	= 25 TO 35 DELAY (SEC/VEH)
E	= 35 TO 50 DELAY (SEC/VEH)
F	= 50+ DELAY (SEC/VEH)

Source: The Transpo Group

Figure 24 rev

Build Alternatives Peak Hour Levels of Service Summary without NE 50th Street Access

adjacent street system. The NE 50th Street access is not part of the current Alternative 7R and 8 proposals.

Summary of Impacts and Potential Mitigation

Unmitigated Children's traffic would degrade operations at the study intersections during the AM and PM peak hours. In addition, the PM peak hour impacts to the overall corridor travel times would be modest—approximately ~~three~~ two minutes added to the southbound Montlake Boulevard route between SR 520 and Children's, and about three minutes added to the eastbound NE 45th Street corridor. The overall traffic conditions would continue to be congested with or without the Build Alternatives.

Potential mitigation for Children's impact would be similar to those described for the No Build alternative. As discussed for Alternative 1, previous studies have identified a number of projects to increase corridor (and intersection) performance in both the NE 45th Street and Montlake Boulevard corridors. Most of the projects are focused on improving corridor efficiency, enhancing performance and capacity of non-SOV travel modes, and improving driver information and decision making abilities. These projects are all consistent with current City policy direction to emphasize enhancement of non-SOV travel options, which increase the person-carrying capacity of the system without necessarily increasing vehicular capacity. As noted, no funding for these projects has been secured.

Both with and without the proposed project, improvements are required along both Montlake Boulevard and NE 45th Street. Determining the recommended configuration of Montlake Boulevard and NE 45th Street embodies the consideration of many factors and stakeholders. The City of Seattle ~~should~~ has taken the lead in evaluating these corridors in additional detail, and considered not only vehicular capacity and delay, but also multi-modal performance and the corridor's ability to serve person trip mobility. ~~Any s~~Solutions were identified ~~for~~ the UATAS and other pedestrian and bicyclist studies within these corridors; ultimately these solutions should be integrated with SR 520 ~~and UATS~~ planning. As mitigation, Children's could participate in funding ~~the studies as well as provide a~~their share ~~in funding~~of the recommended improvements to the extent they are connected to mitigation of Children's impacts. In addition to the improvements outlined in these studies, Children's could extend Intelligent Transportation System (ITS) improvements from Montlake Boulevard/NE 45th Street to the Sand Point Way NE/NE 50th Street intersection to improve vehicle flow and travel times. The mitigation section of this report as well as Attachment T-9 provides additional detail on the potential projects to which Children's could contribute.

To reduce the impact of the expansion, Children's is planning to enhance their existing TMP in order to reduce total traffic, and SOV trips in particular, as shown in Table 5. Attachment T-4 provides the results of the intersection operations analysis with a 30 to 40 percent reduction in build alternative traffic volumes due to the enhanced TMP. Although this mitigation would lessen the affect of the Children's expansion on the delay at the study intersections, it would not eliminate the impacts.

Similar to Alternative 1, other intersection improvements include:

- ~~**Montlake Boulevard NE/NE 45th Street** – Provision of future signal timing adjustments at this location would improve operations to LOS D during the PM peak hour.~~
- **40th Avenue NE/NE 55th Street** –A potential future improvement would be to install traffic signals at this location to improve operations to LOS A during the AM peak hour and LOS B during the PM peak hour.
- **40th Avenue NE/NE 65th Street** –A potential future improvement would be to install traffic signals at this location to improve operations to LOS A during the AM peak hour and LOS B during the PM peak hour.

A summary of Children's proposed mitigation measures is presented in Section 3, Mitigation Measures.

Transportation Concurrency Review

The City has implemented a Transportation Concurrency Project Review System to comply with one of the requirements of the Washington State Growth Management Act. The system, as described in the Seattle Department of Planning and Development Director's Rule 4-99 and the City's Land Use and Zoning Code, is designed to provide a mechanism that would determine whether adequate transportation facilities would be available "concurrent" with proposed development projects. Transportation concurrency is applied during zoning review of individual projects. The calculation of concurrency herein assumes the entire project would be developed at once, which is not anticipated but represents a worst-case way to present the concept of concurrency.

Five screenlines were chosen for review, based on their location in relationship to Children's estimated influence areas. The screenlines that were analyzed for concurrency review include the Montlake Bridge and major roadways in the study area including 15th Avenue NE to Sand Point Way NE, as shown in Table 11.

Table 11
Children's Transportation Concurrency Analysis

Screenline		Direction	Capacity	1998 PM Peak Hour Volume	V/C Standard	PM Peak Hour Children's New Traffic	V/C Ratio[1]
No.	Location						
5.16	University and Montlake Bridges	NB	4,300	3,820	1.2	90	0.91
		SB	4,300	3,630	1.2	160	0.88
6.14	South of NE 80th Street 5th Ave NE to 15th Ave NE	NB	4,980	4,030	1	110	0.83
		SB	4,280	2,060	1	50	0.49
6.15	South of NE 80th St 20th Ave NE to Sand Point Way NE	NB	4,300	2,640	1	130	0.64
		SB	4,300	1,580	1	50	0.38
13.12	East of I-5 NE 65th St to NE 80th St	EB	5,540	2,260	1	10	0.41
		WB	5,540	2,160	1	20	0.39
13.13	East of I-5 NE Pacific St to NE Ravenna Blvd	EB	6,760	3,710	1	10	0.55
		WB	6,760	4,460	1	30	0.66

Source: The Transpo Group, October 2007
V/C = volume to capacity
NB = northbound, SB = southbound, EB = eastbound, WB = westbound
1. V/C ratio is calculated as 1998 PM Peak Hour Volume plus Children's New Traffic divided by the screenline capacity.

The transportation concurrency analysis indicates that with new traffic generated by the Build Alternatives, the screenlines would have v/c ratios that are less than the City's v/c standard, and thus the conditions would meet concurrency requirements.

2.4 Traffic Safety

Alternative 1

In general, as traffic volumes increase, the potential for traffic safety issues increases proportionately. It is unlikely that the increase in traffic would significantly change traffic safety within the study area. However, it would likely become progressively more challenging for side-street traffic at unsignalized intersections to enter the traffic stream. Pedestrian and bicyclists would continue to face the same challenges as today with limited crossings along Sand Point Way NE in the vicinity of Children's. The proposed traffic signal at the Sand Point Way NE/40th Avenue NE intersection would improve vehicular and non-motorized access to and across Sand Point Way NE.

Alternatives 3, 6, 7R and 8~~7~~

Regional
Based on the three-year accident history reviewed in Section 1.4, the study area has not experienced an unusually high level of accidents to date. As traffic volumes increase, the potential for traffic safety issues increases proportionately. It is unlikely that the increase in traffic would significantly change traffic safety within the study area. However, it would likely become progressively more challenging for side-street traffic at unsignalized intersections to enter the traffic stream. Indicators of this are found in Section 2.3, Traffic Operations.

Local
With the improvements along Sand Point Way NE, including additional signalized crossings, the safety of pedestrian and bicyclist crossings would be improved. While the additional curb cuts proposed under the Build Alternatives would increase the potential for pedestrian/bicyclist/vehicle conflicts, no unusual physical conditions exist that would suggest unique safety concerns.

Two schools (Laurelhurst Elementary School and The Villa Academy) are located east of Children's in the Laurelhurst neighborhood, and pedestrian activity near these locations is high during school hours. Nearly all Children's traffic would be oriented to and from the west; therefore, development of the Build Alternatives is not expected to increase pedestrian safety issues.

Summary of Impacts and Potential Mitigation
No significant adverse impacts to safety were identified. General traffic increases may contribute to increased potential for conflicts; however, no pre-existing safety hazards were identified which would be exacerbated.

Children's proposal would contribute to improved pedestrian facilities under all Build Alternatives. The additional signalized crosswalks at both Penny Drive and NE 50th Street (with Alternatives 3 and 6 only) would improve linkages between the Burke-Gilman Trail, Children's, and the Laurelhurst neighborhood. These improvements would enhance the comfort and safety of the experience of using the trail.

2.5 Parking

Alternative 1

Supply
With the No Build alternative, the total parking supply would be the same as existing, 2,182 spaces.

Demand
Children's traffic would remain the same as existing; therefore, parking demand is expected to be the same. The current parking occupancy at the hospital is approximately 1,330 spaces which reflects an occupancy of 90 percent; and would be expected to be the same under the No Build condition. As discussed previously, the practical capacity of a parking lot is 85 to 90 percent

occupancy, which ensures vehicles circulating parking areas can locate a space, and accounts for peak surges and vehicles leaving parking spaces.

Children's off-site parking area would continue to have utilizations of approximately 95 percent during peak parking demand. It is anticipated that both the hospital and off-site parking areas would be "full" during peak periods, making it difficult for employees and patients/visitors to find parking.

Parking Demand Management

The existing parking demand management strategies would remain in place with the No Build alternative. Children's would continue to actively manage its hospital and off-site parking as well as charging employees for parking and assigning parking to encourage use of alternative modes. At the writing of this section, Children's is currently implementing a policy to increase employee parking costs. These increase charges may encourage some employees to shift from SOV to alternative modes, and thus, reduce the parking demand at the hospital and/or at off-site parking areas.

Alternatives 3, 6, 7R and 8~~7~~

Supply

The City of Seattle provides minimum and maximum parking requirements for major institutions such as Children's. The minimum parking supply requirement is based on a combination of numbers of employees, beds, outpatients, and auditorium seating. The maximum parking supply allowed by code is 135 percent of the calculated required minimum. Parking above the maximum can be allowed if the TMP goals are being met or exceeded. Table 12 shows the Build Alternatives minimum and maximum parking supply requirements based on the City's code.

The City requires the project to supply approximately 2,300 to 3,100 parking spaces, either on site or within off-site parking lots. For the Build Alternatives Children's is proposing to provide 3,600 parking spaces, which exceeds the City's parking supply requirements. However, additional supply can be provided if the institution is meeting its TMP goal. Children's current TMP goal is 50 percent SOV, and the most recent CTR survey indicates Children's currently exceeds the goal at 38 percent SOV.

The analysis of traffic impacts included in this DEIS was based on Children's providing 3,600 parking spaces with the majority of the spaces (approximately ~~2,600~~1,800 to 2,800) located at the hospital, and the remaining located at Hartmann, Laurelon Terrace (for Alternative 7R and 8 only) and other off-site parking areas (Figure 25 (rev)). All parking areas, traffic flow, and neighborhood parking would continue to be supervised by a full-time parking officer and supported by the Children's security staff. With the implementation of additional mitigation measures to reduce parking demand, it is possible that the 3,600 spaces may be reduced to 3,100 spaces. See "Parking Demand Management" below.

While not directly included in the calculation of mitigated conditions, Children's is continuing to explore opportunities to locate parking remote and off-site, preferably outside the area of impact described herein. For every 100 spaces reduced on-site (and located out of the area) an

approximately five to ten percent reduction in locally generated traffic could occur. Such parking would require further expansion of the shuttle system proposed.

On-site Parking

All Build Alternatives would use the existing 608 parking spaces located in the Whale Garage. In addition, a parking garage (North Garage) would be built on the northeast corner of the property over the current surface parking lot, and the Giraffe Garage would be expanded. The North Garage parking levels would align with floors of the existing Giraffe Garage and would be connected to the Giraffe Garage by an internal ramp to improve the circulation system. It is anticipated parking garages would be designed to provide adequate circulation to minimize internal queuing and impacts to the adjacent streets. The total parking spaces at the hospital and Hartmann would be 3,100 spaces for all Build Alternatives with the allocation shown in Table 13 (see also Figure ~~3.8-~~25).

Table 12
Build Alternatives Parking Supply Required by City Code

Code Requirement	Number Basis	Minimum spaces[1]	Maximum Spaces[1]
Long-Term Parking			
1 space per 80% of hospital-based MDs[2]	1,095 Children's Physicians	876	1,183
1 space per 25% of staff MDs[3]	409 Community Physicians	102	138
1 space per 30% of peak hour employees[4]	2,935 Children's Staff	881	1,189
Total Long-term Parking Spaces		*1,859*	*2,510*
Short-Term Parking			
1 space per 6 beds[5]	600 beds	100	135
1 space per 5 outpatients[6]	1,566 outpatient	313	423
1 space per 10 seats in auditorium	250 seats	25	34
Total Short-term Parking Spaces		*438*	*592*
Total Required Spaces		**2,297**	**3,102**

Source: Children's, May 2007; The Transpo Group, November 2007

Notes: MDs = medical doctors

1. Per Major Institutions Code, minimum parking based on code requirement shown. Maximum parking allowed by code is 135 percent of the calculated required minimum. Parking above maximum can be allowed if TMP goals are being met or exceeded.
2. Assumes 254 existing Children's University Medical Group physicians, and 103 existing Fellows which are increased by a factor of 2.11 to account for future growth due to the proposed master plan. Assumes 228 existing Residents increased by a factor of 1.5 to account for future growth due to the proposed master plan.
3. Based on 194 existing Community physicians from payroll database which are increased by a factor of 2.11 to account for future growth due to the proposed master plan.
4. Based on 1,391 existing employees on site during the afternoon peak hour including:
   783 Day Shift + 50% of Day/Evening and Day/Night
   200 On-Call and Exempt
   257 Evening Shift that overlaps with Day Shift
   33 Employee Equivalent Off-Site employees
   11 Pace Temps
   27 Students
   80 Volunteers
   which are increased by a factor of 2.11 to account for future growth due to the proposed master plan.
5. 600 beds for the proposed master plan based on project description.
6. 1,044 outpatients based on total outpatient population for the "highest day" in February 2007 which represents a conservative estimate. This outpatient population is increased by a factor of 1.5 to account for future growth due to the proposed master plan.

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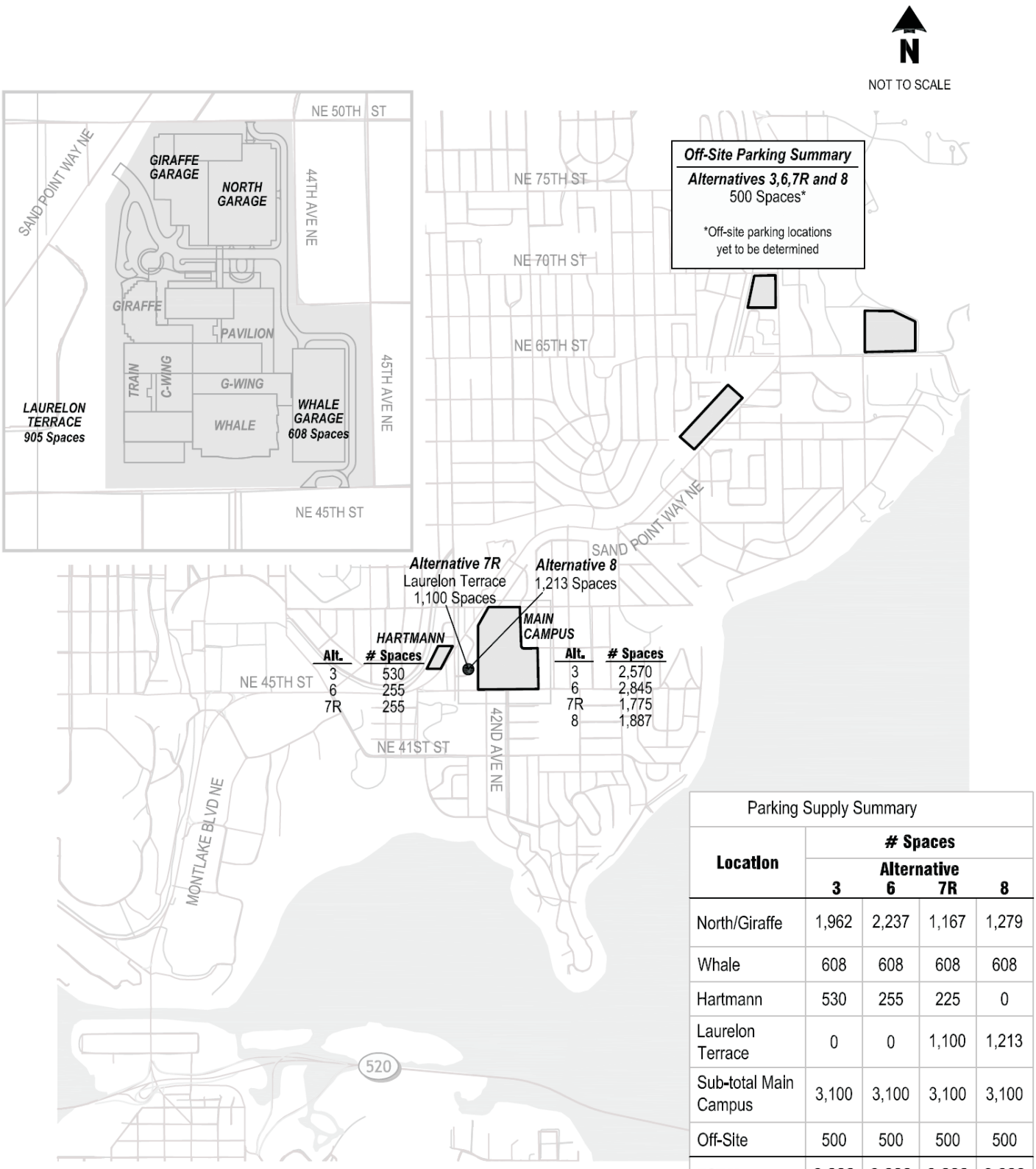

Parking Supply Summary

Location	# Spaces			
	Alternative			
	3	6	7R	8
North/Giraffe	1,962	2,237	1,167	1,279
Whale	608	608	608	608
Hartmann	530	255	225	0
Laurelon Terrace	0	0	1,100	1,213
Sub-total Main Campus	3,100	3,100	3,100	3,100
Off-Site	500	500	500	500
TOTAL	**3,600**	**3,600**	**3,600**	**3,600**

Source: The Transpo Group

Figure 25 rev
Proposed Parking Supply

Table 13
Build Alternatives Proposed Unmitigated Parking Supply

Location	Alternative 3	Alternative 6	Alternative 7R	Alternative 8
North/Giraffe Garage	1,962	2,237	1~~,332~~167	1,279
Whale Garage	608	608	608	608
Laurelon Terrace	0	0	~~905~~1,100	1,213
Hartmann	530	255	225~~55~~	N/A
Total Campus	*3,100*	*3,100*	*3,100*	*3,100*
Off-Site Parking	500	500	500	500
Total Parking Supply	**3,600**	**3,600**	**3,600**	**3,600**

Source: Children's, March 2008.
N/A = Not applicable, Hartmann is not included as part of Alternative 8. It assumed that the existing 80 parking spaces would remain.

Hartmann and Off-Site Parking
The Build Alternatives would include construction of an underground parking garage at the Hartmann site with ~~255~~ 225 to 530 parking spaces depending on the alternative. It should be noted that Hartmann would not be included in the expansion proposal for Alternative 8 so no additional parking would be constructed at this location; however, the existing 80 parking spaces would remain.

Under all alternatives, off-campus parking would continue to be used to minimize localized traffic impacts, and free shuttles would continue to serve the remote parking lots to provide connections with Children's facilities. The capacity of the remote lots would be 500 spaces for all Build Alternatives. As a worst-case scenario, remote parking is assumed to be within the study area (i.e., north of the hospital). Parking located outside the area of impact would reduce Children's impacts on this transportation system.

Demand
Similar to trip generation estimates, peak hour parking demand was estimated based on employee and patient populations. Parking demand is based on a head count of the population that would be using parking when parking demand is at its highest. For Children's this typically occurs between 1:00 pm and 4:00 pm. The mode share for the parking demand analysis was assumed to be consistent with the assumptions for the unmitigated trip generation (Attachment T-1). Children's has been decreasing its share of SOVs over the last few years with incentive programs that encourage employees to use alternative modes of transportation. This decrease in SOVs translates into a decrease in parking demand, since Children's no longer needs parking spaces for these vehicles. It is likely that in the future parking demand would continue to decrease since Children's plans to continue to expand its TDM programs. However, as a

conservative estimate of future parking demand, this analysis assumes the mode share would remain the same as existing.

The *calculated* total peak parking demand is approximately 3,400 vehicles. The *effective* parking demand, or practical capacity, is determined by applying a design safety factor to the hour with the highest parking demand. This safety factor allows for some reserve spaces to ensure that drivers circulating the parking area can find a space. It also accounts for peak surges and vehicles leaving parking spaces. It is typical to allow for a factor lower than 10 to 15 percent in cases where parking spaces are assigned, other parking management strategies are applied (such as valet) and/or in areas with lower parking turnover. Children's assigns parking to employees and would continue this in the future as well as provides valet for patients and visitors. Therefore, eEffective parking demand was calculated assuming a safety factor of five percent applied to the parking demand (i.e., 3,400 vehicles), yielding an effective parking demand of approximately 3,580 spaces; a little bit less than the proposed parking supply, and thus the supply is adequate. While on-site supply would be adequate to accommodate calculated peak parking demand, it would not be excessive. Unusual demand days or peak surges in demand within a peak period could result in extended parking searches, resulting in driver frustration.

Parking Demand Management

It is anticipated that Children's would enhance parking demand management strategies with the increase in demand expected by the expansion. In addition, Children's would continue to actively manage its hospital and off-site parking as well as charge employees for parking and assign parking to encourage use of alternative modes. As noted, at the writing of this section, Children's is currently implementing a policy to increase employee parking costs. These increased charges may encourage some employees to shift from SOV to alternative modes, and thus, reduce the parking demand at the hospital and/or at off-site parking areas. The results of the parking demand management strategy are summarized in Table 14 and described in Attachment T-9. With the proposed TDM and transit shuttles, the parking supply would be reduced from 3,600 spaces to 3,100 spaces.

Table 14
Future Peak Parking Demand at MIMP Buildout

~~Peak Parking Demand in 2028~~ Population Group	Without Mitigation	With TDM Programs	With TDM and Transit Shuttles
Children's Employees – Day Shift	830	690	510
Children's Employees – Non-day Shift	635	610	550
Community Physicians	270	250	240
Students, Residents and Fellows	290	200	190
Other employees	555	550	560
Patients (in- and out-)	890	890	890
Total	*3,470*	*3,190*	*2,940*
Effective Demand (+5% for ~~ciculation~~circulation	3,600	3,350	3,100

Source: Nelson\Nygaard Consulting Associates, Inc..

Summary of Impacts and Potential Mitigation

The total proposed parking supply for the Build Alternatives is greater than the maximum number of parking spaces allowed by the City's Land Use Code. As discussed above, parking supply would be adequate to meet the calculated peak parking demand; however, it would not be excessive and peak surges may result~~s~~ in difficulty locating vacant parking spaces. Mitigation for this potential condition could include continuation of on-site parking management and valet, increasing the on-site parking supply or decreasing the rate of peak parking demand. The proposed enhanced TMP program would result in a substantial reduction in auto travel to the site, especially by staff. The proposed enhanced TMP would decrease the effective parking demand by 500 vehicles to approximately 3,100 vehicles. The reduced parking demand ~~would~~ could be met by eliminating the leasing of off-campus parking spaces.

Table 15 shows ~~The proposed~~ the potential location of the 3,100 spaces, assuming the implementation of the proposed TDM and transit shuttles and elimination of off-site parking since Children's has not secured long term leases for off-site parking ~~would be as shown in Table 15~~. Successful implementation of these measures would reduce any potential for parking ~~impacts~~demand on-site as well as nearby traffic impacts. It should be noted that Children's has secured a letter of intent with Sound Transit to identify long-term partnerships including potential private-public partnerships which would allow Children's to access current or future park and ride lots owned and operated by Sound Transit. To the extent that off-site parking can be secured, the opportunity to eliminate construction of on-site parking would exist; while

continuing to meet parking demand, the latter would have the affect of reducing localized traffic impacts as identified in other portions of this EIS. For every 100 spaces secured off-site (and out of the area), mitigated traffic impacts would be reduced by approximately five to ten percent.

Table 15
Build Alternatives Proposed Mitigated Parking Supply

Location	Alternative 3	Alternative 6	Alternative 7R	Alternative 8
North/Giraffe Garage	1,962	2,237	1,167~~332~~	1,279
Whale Garage	608	608	608	608
Laurelon Terrace	0	0	~~905~~1,100	1,213
Hartmann	530	255	22~~5~~5	0
Total Campus	*3,100*	*3,100*	*3,100*	*3,100*
Off-Site Parking[1]	0	0	0	0
Total Parking Supply	**3,100**	**3,100**	**3,100**	**3,100**

Source: Children's, March 2008.
1. Instead of eliminating off-site parking, as part of Children's mitigation strategy, Children's intends to identify and develop up to 500 off-site parking spaces to reduce Children's traffic to and from the campus and to reduce campus parking supply. Per SDOT recommendation, the off-site parking would be located outside the study area.

2.6 Non-Motorized Facilities – Pedestrian and Bicyclists

Alternative 1

No significant adverse non-motorized impacts are expected as part of Alternative 1 in the context of the increased background traffic levels of 10 to 13 percent at most study locations. Pedestrian and bicycle facilities on the campus and the Hartmann site are assumed to remain the same as existing. As noted previously, the City's Capital Improvement Program does include ADA access and sidewalk improvements along Sand Point Way NE between 40th Avenue NE and 41st Avenue NE. In addition, the Sand Point Way NE/40th Avenue NE intersection would be signalized which would provide an easier and safer pedestrian crossing along Sand Point Way NE.

It is noted that the UATAS evaluated pedestrian and bicycle conditions within the study area along key corridors, Montlake Boulevard and NE 45th Street. This evaluation resulted in a number of identified improvements to address known deficiencies along key pedestrian and bicycle facilities.

Alternatives 3, 6, 7R and ~~7~~8

Pedestrian and bicycle volumes near Children's would likely continue to be low to moderate, typical of suburban areas. On-site pedestrian levels would likely increase in the future since the proposed larger hospital would serve more patients and have more employees. Although not relied on in the evaluation of traffic and parking impacts, as Children's continues to improve their TMP, it is likely that in the future the number of Children's employees walking and biking to work would increase.

For all Build Alternatives, Children's would construct new sidewalks on portions of the west side of Sand Point Way NE between NE 50th Street and 40th Avenue NE along the Hartmann site frontage (except Alternative 8). The proposed pedestrian and bicycle facilities are shown on Figure 26 for Alternatives 3 and 6, and Figure 27 (rev) for Alternative 7R and 8. Each of the Build Alternatives includes pedestrian connections to both transit and Children's shuttle stops as part of an integrated site design. It is also noted that as part of Children's mitigation strategy they intend to help fund improvements to local pedestrian and bicycle facilities including projects in the City of Seattle Bicycle Master Plan, connections from the campus to the larger non-motorized network, and potentially bicycle boulevards. These~~is~~ are~~is~~ intended to enhance the attractiveness of travel by non-SOV travel modes. Alternatives 7R and 8 ~~provides~~provide pedestrian facilities within the Laurelon Terrace Property with improvements along the frontage on Sand Point Way NE and 40th Avenue NE.

With the addition of traffic signals along Sand Point Way NE at NE 50th Street, ~~the Build~~ Alternatives 3 and 6 would make it easier and safer to cross Sand Point Way NE at more locations, improving accessibility and safety. This also would enhance the connection of Children's to the Burke-Gilman Trail and surrounding neighborhoods.

Penny Drive would continue to be the primary access to Children's for vehicles, pedestrians, and bicyclists. Pedestrian crossings on Penny Drive would be consolidated to three ADA-accessible crossings between the parking garages and plaza entrances for inpatient, outpatient, and emergency services.

More frequent pedestrian campus crossings would be encouraged. This would be supplemented by more frequent designated pedestrian entry points with expanded closed circuit television surveillance. The design of these facilities would include improved wayfinding signage to Children's entrances and parking areas. Design of pedestrian and green space areas throughout the campus would include accepted national standards for public safety, such as suggested by "Crime Prevention through Environmental Design."

Laurelhurst Elementary School and The Villa Academy are located east of the site. The majority of Children's traffic would be oriented to and from the west and continued parking policies and enforcement would continue to discourage Children's traffic from parking in the local neighborhoods. Development of the alternatives is not expected to increase pedestrian safety issues.

Alternatives 3 and 6 are similar in general layout and overall pedestrian environment would be similar. Most pedestrian or bicycle activity would occur on campus or across and along Sand

Point Way NE at Penny Drive for pedestrians and bicyclists accessing transit service or the Burke-Gilman Trail.

Alternatives 7R and 8 includes development on what is now the Laurelon Terrace property with a more urban frontage on Sand Point Way NE and 40th Avenue NE. Enhancements to the sidewalk along this frontage and potential location of transit stops adjacent to 40th Avenue NE

Source: The Transpo Group

Figure 26
Proposed Non-Motorized Facilities - Alternatives 3 and 6

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Source: The Transpo Group

Figure 27 rev

Proposed Non-Motorized Facilities - Alternatives 7R and 8

on Sand Point Way NE would result in a more activated pedestrian environment and urban streetscape.

~~The Build Alternatives~~Alternatives 3, 6, and 7R also would include new pedestrian and bicycle facilities at the Hartmann site. An ADA-accessible pedestrian entrance would be located on the east end of the site along Sand Point Way NE.

With the Build Alternatives, all the bicycle parking would remain, and additional secured bicycle parking would be provided in the proposed North Garage.

Summary of Impacts and Potential Mitigation

No significant adverse localized non-motorized impacts are expected as a result of Children's expansion. However, increases in regional traffic would lead to increases in potential conflicts between vehicular and non-motorized modes within the regional and local study area. As part of the ~~UATS~~UATAS, several projects have been identified to enhance access and improve safety for pedestrian and bicyclists within the study area. As described in the Mitigation Measures section, Children's is offering to fund priority pedestrian and bicycle improvements up to $2 million to enhance accessibility to the surrounding neighborhood. These types of regional improvements may encourage and make it easier to access Children's via non-motorized modes from further distances, and thus help with Children's reducing their expected traffic generation.

2.7 Shuttle and Transit Services

Alternative 1

To be conservative, the analysis of traffic and parking impacts assumed no change (increase) in the level of use of shuttle and transit as part of the No Build alternative. It is likely that over time as these modes become more accessible and congestion increases, shuttle and transit use would increase. No additional shuttle and transit service are assumed as part of the future conditions.

Alternatives 3, 6, 7R and 8~~7~~

Children's would continue to work with King County Metro, Sound Transit, and Community Transit to expand their services at or near Children's and to optimize the hours of operation and frequency of service (see Attachments T-10 and T-11 for agreements with agencies). The analysis of the Build Alternatives do not rely on improvements to shuttle and transit services; however, with Alternative 7R and 8 transit stops would likely be relocated to the Sand Point Way NE/40th Avenue NE intersection. This relocation allows transit to serve both the Hartmann site and the hospital with one stop. In addition, with the transit stops near 40th Avenue NE, riders would access Children's without having to walk uphill along Penny Drive.

It is assumed for this analysis that Penny Drive would remain the primary access for all shuttle vehicles. At the hospital, for all Build Alternatives, a shuttle arrival and departure area would be provided at the Giraffe entrance separate from the loading dock area. As the site design evolves, a combined shuttle and transit hub at the Sand Point Way NE/40th Avenue NE intersection is being considered for Alternatives 7R and 8.

Summary of Impacts and Potential Mitigation

No significant adverse transit and shuttle impacts are expected as a result of Children's expansion. Children's continuation of partnering with transit agencies to increase service would encourage additional ridership, and may reduce SOV travel. Enhanced shuttle service may also reduce the number of SOV trips to and from Children's. As part of Children's mitigation strategy shuttle service expansion is currently being explored (see Attachment T-9). As a result of the shuttle studies being conducted, Children's recently implemented the "Green Line" shuttle which provides service between Children's and downtown Seattle.

2.8 Helistop

All Alternatives

On average, Children's experiences three to four daytime landings and one to two nighttime landings per month and a five-year annual average of 60 landings per year. The Children's Health Facilities Planning and Development department has used a standard population/use rate methodology to project future helicopter air ambulance patient landings at Children's. The projected landings per year are 62 by 2010, 71 by 2020, and 77 by 2030 (see Appendix A for details).

2.9 Phasing Impacts

The Children's expansion would be completed over a 20-year period in four phases for all Build Alternatives. The following presents an overview of Children's Build Alternative phasing for each aspect of the transportation system (i.e., street system, traffic volumes, traffic operations, traffic safety, parking, non-motorized, and shuttle and transit). Trip generation is presented for each analysis phase; actual analysis is presented for Phase 1.

Street System

For the purpose of the phasing analysis, it is assumed that the regional transportation infrastructure (SR 520, UATAS improvements, etc.) would be similar to current conditions. This provides a worst case analysis context for considering phased impacts. To the extent that infrastructure improvements (for SR 520 or as part of UATAS along NE 45th Street and Montlake Boulevard) are constructed and operational prior to occupancy of any Children's development phase, overall traffic operations may be better than described herein.

The mitigation for the overall master plan identified a number of near-site transportation improvements. The following near-site street improvements would be constructed by Phase 1:

- Alternatives 3 and 6 – Sand Point Way NE/Penny Drive intersection improvements including shifting Penny Drive to the north, additional capacity, and upgrading the traffic signal
- Alternatives 3 and 6 – Sand Point Way NE frontage improvements
- Alternatives 7R and 8 – 40th Avenue NE frontage and site access improvements

Summary of Impacts and Potential Mitigation – Phase 1

As described in the preceding section, physical modifications are proposed on streets adjacent to or providing direct access to Children's Phase 1 development. No additional mitigation measures would be recommended based on street system impacts.

Traffic Volumes

Trip generation by phase was calculated using the method discussed in the Impacts section, and consideration of the portion of the expansion completed as it relates to the anticipated beds per phase. The pace of bed development is faster than the pace of clinic space development; therefore, this approach likely over estimates the level of trip generation for Phases 1, 2, and 3 of the Build Alternatives and presents a conservative estimate of potential traffic impacts for these phases. Table 16 shows expected net new trips generated for *each* phase of the Build Alternatives. These trips represent unmitigated conditions, as the TDM plan is implemented trip generation attributed to each phase may decrease.

As shown in the table, the overall net new trips per phase is less than Children's net new vehicle trips for completion of the Build Alternatives (i.e. Phase 4); therefore, traffic volume impacts at each phase are anticipated to be less. In addition, Alternatives 3 and 6 would generate more traffic for Phases 1 and 2 than Alternative 7R and 8, because Alternatives 3 and 6 would construct more beds during the early phases of development.

Children's traffic was added to 2012 without project conditions to form the basis of the Phase 1 analysis. The forecast for 2012 without project conditions were developed using the City's travel demand model and the same methods described for 2030 forecasts. Appendix D, Attachment T-2 shows the Phase 1 project trip assignment, No Build (2012), and Phase 1 traffic volumes. Traffic volume impacts due to Children's traffic were evaluated for Phase 1, Alternatives 3 and 6, during the PM peak hour unmitigated conditions. These represent the worst-case disclosure of impacts for this phase. Impacts associated with Alternatives 7R and 8 would be approximately one-third less than described for Alternatives 3 and 6. The PM peak hour would continue to represent the heaviest traffic flows in the study area in the future. Subsequent Children's phases would be evaluated as Children's applies for permits over the 20-year development of the master plan. At intersections closer to the hospital and along the access corridors, Children's trips represent a larger percentage of overall traffic than at intersections farther from the site.

On Montlake Boulevard, traffic from Phase 1 would reflect between approximately two and four percent of the peak hour traffic at the study intersections, with approximately two percent occurring at the Montlake Boulevard/SR 520 Eastbound ramp intersection during the peak hours. Similarly, Phase 1 traffic volume impacts would represent between about three and four percent of the peak hour traffic at the study intersections on NE 45th Street, with about two percent occurring near the I-5 interchange. At the intersection of five corners, Children's expansion traffic would reflect approximately four percent of the total 2012 PM peak hour traffic.

Summary of Impacts and Potential Mitigation – Phase 1

Increases to traffic volumes within the study area would be small i.e., two to four percent. These increases are within the normal range of daily fluctuations in traffic volumes which can vary

between five to ten percent. No additional mitigation measures would be recommended based on traffic volumes alone.

Table 16
Build Alternatives Forcasted Net New Trips by Phase – Unmitigated[1]

	Alternative 3				Alternative 6				Alternative 7R				Alternative 8			
Phase	Beds	Daily	AM Peak Hour	PM Peak Hour	Beds	Daily	AM Peak Hour	PM Peak Hour	Beds	Daily	AM Peak Hour	PM Peak Hour	Beds	Daily	AM Peak Hour	PM Peak Hour
1	377	3,000	305	250	377	3,000	305	250	336	2,000	205	165	336	2,000	205	165
2	557	7,200	745	600	521	6,400	655	525	408	3,800	385	305	408	3,800	385	305
3[2]	532	6,600	680	550	605	8,400	850	690	604	8,400	850	690	604	8,400	850	690
4 /Build-out[3]	604	8,400	850	690	605	8,400	850	690	604	8,400	850	690	604	8,400	850	690

Source: Children's and The Transpo Group, September 2008

1. Net new trips shown are cumulative e.g., Phase 2 volumes include trips that would be made in both Phases 1 and 2.
2. Decrease in Children's trips for Alternative 3 due to the demolition of Train beds.
3. Trips were determined based on the pace of bed development. For Phase 4, Alternatives 7R and 8, no change in traffic levels is shown between Phases 3 and 4 since traffic from the development of clinics is included in a previous phase. Therefore, this method potentially overestimates traffic levels for Phases 1, 2, and 3.

Traffic Operations

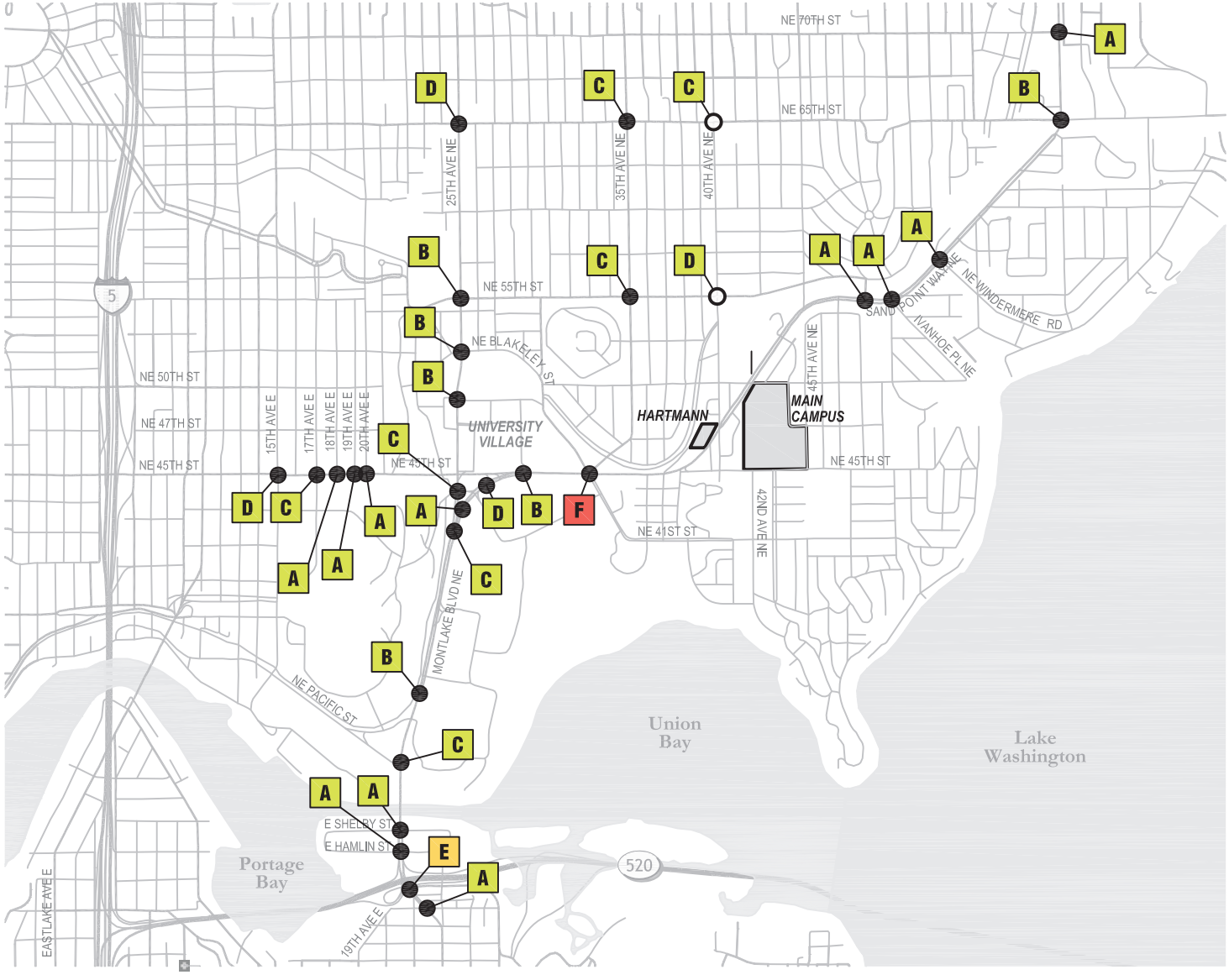
Similar to the traffic volume discussion, Phase 1 impacts were evaluated assuming traffic generated by Alternatives 3 and 6, which reflect the highest number of beds proposed in Phase 1. Subsequent Children's phases would be evaluated as Children's applies for permits over the 20-year development of the master plan. Similar to the disclosure of full build-out, both individual intersections and key corridors were evaluated.

Intersections

Figures 28 and 29 illustrate the anticipated levels of service for off-site study intersections under the No Build (2012) and Phase 1 conditions. Based on the criteria used to evaluate full build-out, the following two intersections would be most affected by the addition of Children's Phase 1 traffic:

- **NE 45th Street/Union Bay Place NE (Five Corners) –** This intersection would operate at LOS F during the PM peak hour under no-build 2012 conditions. With the addition of Children's traffic by 2012, this intersection would continue to operate at LOS F during the PM peak hour and the overall intersection delay would increase by about 16 seconds.
- **40th Avenue NE/NE 55th Street –** This intersection would operate at LOS D during the PM peak hour under no-build 2012 conditions. With the addition of traffic associated with Phase 1, this intersection would degrade to LOS E and calculated delays would increase by about 12 seconds.

In addition to the intersections listed above, the Montlake Boulevard NE/SR 520 Ramps would continue to operate at LOS E with the addition of Children's traffic in 2012. The increase in overall intersection delay would be less than five seconds. All other study intersections would operate at LOS D or better during the PM peak hour.



NOT TO SCALE

LEGEND

- = SIGNALIZED INTERSECTION
- = UNSIGNALIZED INTERSECTION

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

- A = 0 TO 10 DELAY (SEC/VEH)
- B = 10 TO 20 DELAY (SEC/VEH)
- C = 20 TO 35 DELAY (SEC/VEH)
- D = 35 TO 55 DELAY (SEC/VEH)
- E = 55 TO 80 DELAY (SEC/VEH)
- F = 80+ DELAY (SEC/VEH)

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

- A = 0 TO 10 DELAY (SEC/VEH)
- B = 10 TO 15 DELAY (SEC/VEH)
- C = 15 TO 25 DELAY (SEC/VEH)
- D = 25 TO 35 DELAY (SEC/VEH)
- E = 35 TO 50 DELAY (SEC/VEH)
- F = 50+ DELAY (SEC/VEH)

Source: The Transpo Group

Figure 28

No-Build (2012) PM Peak Hour Levels of Service Summary

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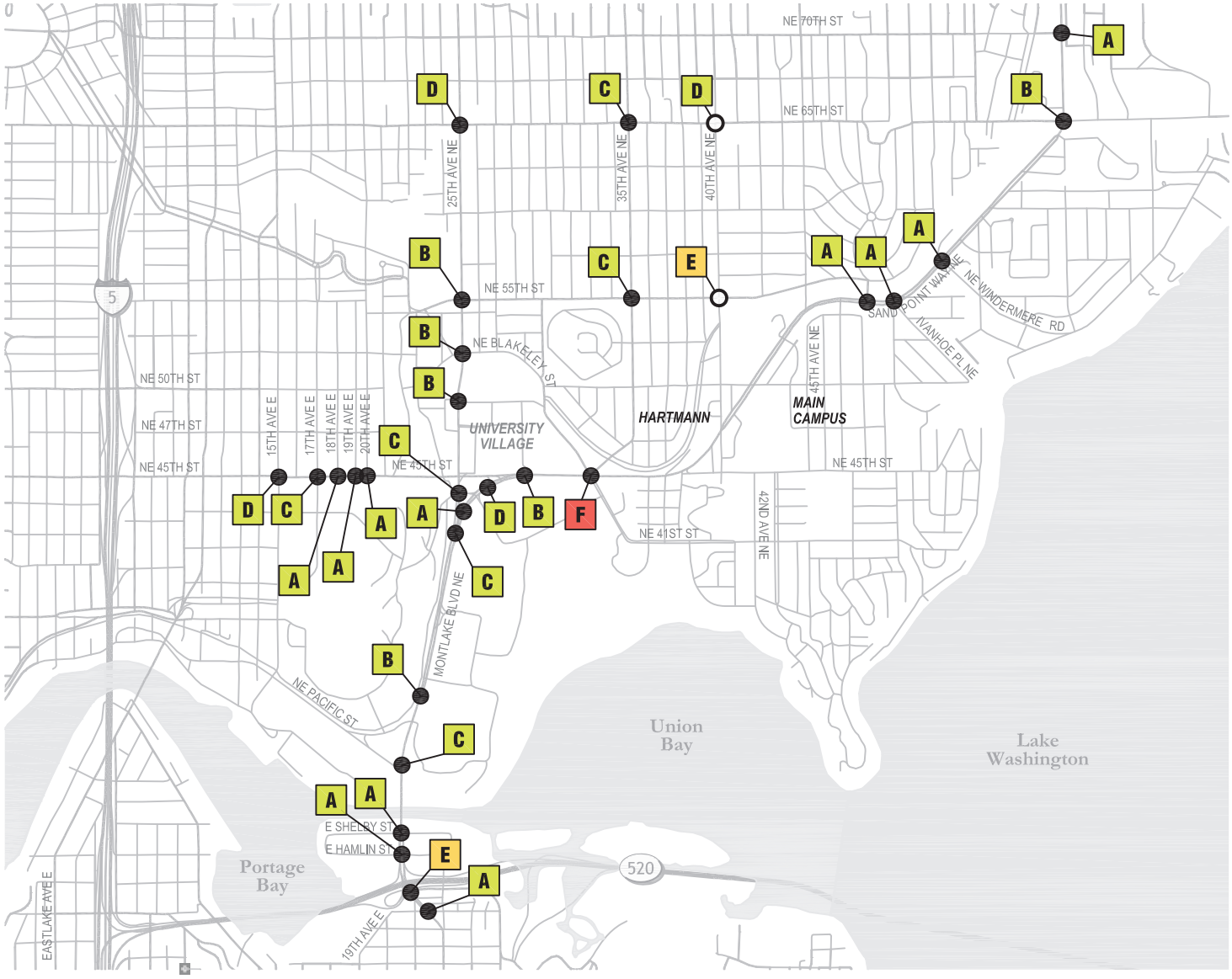

N

NOT TO SCALE

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● = SIGNALIZED INTERSECTION

○ = UNSIGNALIZED INTERSECTION

SIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 20 DELAY (SEC/VEH)
C	= 20 TO 35 DELAY (SEC/VEH)
D	= 35 TO 55 DELAY (SEC/VEH)
E	= 55 TO 80 DELAY (SEC/VEH)
F	= 80+ DELAY (SEC/VEH)

UNSIGNALIZED INTERSECTION LEVEL OF SERVICE SCALE

A	= 0 TO 10 DELAY (SEC/VEH)
B	= 10 TO 15 DELAY (SEC/VEH)
C	= 15 TO 25 DELAY (SEC/VEH)
D	= 25 TO 35 DELAY (SEC/VEH)
E	= 35 TO 50 DELAY (SEC/VEH)
F	= 50+ DELAY (SEC/VEH)

Source: The Transpo Group

Figure 29

Phase 1 (2012) PM Peak Hour Levels of Service Summary

Key Corridors

The analysis of key corridors provides an understanding of system performance using corridor travel times as the criteria for evaluation. Table 17 provides a summary of projected 2012 travel times for No Build and Phase 1 conditions.

Table 17
No Build (2012) and Phase 1 Corridor Travel Time and Average Speeds

Corridor	Direction[1]	No Build (2012)		Phase 1	
		Average Travel Time (minutes)[2]	Average Speed (mph)	Average Travel Time (minutes)[2]	Average Speed (mph)
Sand Point Way NE between NE 70th Street and Children's	NB	3	28	3	27
	SB	3	26	3	26
Montlake Boulevard and Sand Point Way NE between Roanoke Street and Children's	NB	9	13	9	12
	SB	13	9	14	8
NE 45th Street and Sand Point Way NE between I-5 and Children's	WB	10	12	11	11
	EB	13	9	13	9

Source: The Transpo Group, September 2008
1. Direction of travel where NB = northbound, SB = southbound, EB = eastbound, and WB = westbound.
2. Average travel time presented in minutes.

Sand Point Way NE Corridor. The travel time to and from Children's would be approximately the same for no-build 2012 and Phase 1 conditions. This is consistent with the results of the intersection levels of service which show little to no change in operations between the No Build and Phase 1 for intersection operations along this corridor.

Montlake Boulevard Corridor. The additional traffic due to Phase 1 would increase travel times along the Montlake corridor by approximately one minute in the southbound direction. This one minute increase is equivalent to an eight percent change in overall travel time. Travel speeds would decline in the southbound direction commensurate with added delay between the No Build and Phase 1 conditions. Travel in the northbound direction would be similar with and without Phase 1 traffic. This is consistent with the results of the intersection analysis for this corridor which show the majority of the service levels along this corridor would remain the same between the No Build and Phase 1 conditions.

NE 45th Street Corridor. The additional traffic due to Phase 1 would increase travel times along the NE 45th Street corridor by approximately one minute in the westbound direction. This is consistent with the results of the intersection levels of service which show intersection operations at "bottleneck" locations (i.e., I-5 and five corners) would worsen which contributes to the increase in travel time to and from Children's. Travel in the eastbound direction would be similar with and without Phase 1 traffic.

All of the travel time impacts are shown for the unmitigated condition. Successful implementation of the TMP is expected to result in a 30 to 40 percent reduction in PM peak hour traffic volumes. While it is not clear what level of demand reduction would occur with Phase 1, some level of reduction would be likely. Thus, actual impacts would likely be less than shown in Table 17.

Site Access

As discussed for the overall master plan analysis, Alternatives 3 and 6 propose access via the existing Penny Drive signal and NE 50th Street. The site access analysis completed of Children's expansion indicated that Penny Drive would accommodate up to 1,000 total peak hour vehicle trips. For Alternatives 3 and 6, Phase 1 would generate approximately 305 net new AM peak hour trips and 250 net new PM peak hour trips (see Table 16). The existing traffic accessing Penny Drive is approximately 640 AM peak hour trips and 610 PM peak hour trips. It is likely that a portion of Children's Phase 1 traffic would park off-site. However, as a conservative estimate, with all Phase 1 traffic using Penny Drive there would be approximately 945 AM peak hour trips and 860 PM peak hour trips. This traffic projection is less than 1,000 vehicles; therefore, one driveway (i.e., Penny Drive only) is sufficient to serve Alternatives 3 and 6 Phase 1 development.

For Alternatives 7R and 8, Phase 1 access would be provided via 40th Avenue NE. Alternatives 7R and 8 would not include the NE 50th Street access.

Access Operations

For Alternatives 3 and 6 at Phase 1, a majority of the traffic would use Penny Drive since a large portion of the parking would be easily accessible from this location. Children's would complete the Sand Point Way NE/Penny Drive improvements as part of Phase 1. The access analysis for completion of Children's expansion shows good operations at this intersection with the planned improvement. Therefore, it is anticipated that with lower traffic volumes generated at 2012 with Phase 1, this intersection would have good operations. Moreover, Sand Point Way NE/Penny Drive intersection operations with development of subsequent phases would meet the City's LOS D standard.

During Phase 1, Alternatives 3 and 6 would not require the NE 50th Street access. Therefore, signalization of the Sand Point Way NE/NE 50th Street intersection would not be required as part of Phase 1. It is anticipated that with 2012 traffic, the Sand Point Way NE/NE 50th Street intersection would continue to operate at acceptable levels of service.

For Alternatives 7R and 8, Phase 1 traffic would access the expansion via 40th Avenue NE. Signalization of the Sand Point Way NE/40th Avenue NE intersection is anticipated by 2009. The access analysis for completion of Children's expansion shows good operations at this intersection with the planned improvement. Therefore, it is anticipated that with lower traffic volumes generated at 2012 with Phase 1, this intersection would have good operations. Moreover, Sand Point Way NE/40th Avenue NE intersection operations with development of subsequent phases would meet the City's LOS D standard with development of subsequent phases.

Summary of Impacts and Potential Mitigation – Phase 1

Phase 1 would degrade operations at two study intersections during PM peak hour. In addition, the PM peak hour impacts to the overall corridor travel times would be approximately one minute added to the southbound Montlake Boulevard route between SR 520 and Children's, and about one minute added to the westbound NE 45th Street corridor. The overall traffic conditions would continue to be congested with or without Phase 1, as described in relation to the entire master plan.

Potential mitigation could include implementation of Children's enhanced TMP and/or participation in funding improvements in the UATAS and other studies. In addition, the extension of ITS from Montlake Boulevard/NE 45th Street to the Sand Point Way NE/ NE 50th Street intersection would also improve vehicle flow and travel times.

Similar to full build-out of the expansion, the 40th Avenue NE/NE 55th Street intersection would be impacted by the project. A potential future improvement would be to install traffic signals at this location to improve operations to LOS A during the PM peak hour. This intersection should be monitored to determine the timing of this improvement.

Traffic Safety

As traffic volumes increase, the potential for traffic safety issues may increase in a similar proportion. The increase in traffic for each phase of Children's would not be expected to result in a new traffic hazard at any study area location. With the improvements along Sand Point Way NE, including additional signalized crossings, the safety of pedestrian and bicyclist crossings would be improved. While the additional curb cuts proposed under each phase of the Build Alternatives would increase the potential for pedestrian/bicyclist/vehicle conflicts, no unusual physical conditions exist that would suggest unique safety concerns.

Summary of Impacts and Potential Mitigation – Phase 1

No significant adverse impacts to safety were identified. General traffic increases may contribute to increased potential for conflicts; however, no new safety hazards were would be created. Children's proposed mitigation includes construction of near-site pedestrian and bicycle facilities improving safety crossing Sand Point Way NE, and contribution of several million dollars to pedestrian and bicycle projects near the site.

Parking

The following describes parking supply and demand for each phase.

Supply

The City of Seattle provides minimum and maximum parking requirements for major institutions such as Children's. As discussed previously, the minimum parking supply requirement is based on a combination of numbers of employees, beds, outpatients, and auditorium seating. The maximum parking supply allowed by code is 135 percent of the calculated required minimum. Parking above the maximum can be allowed if the TMP goals are being met or exceeded. Since Children's currently exceeds the TMP goal, additional parking supply may be provided. Therefore, parking at each phase should be provided to adequately serve Children's parking demand. Table 18 summarizes the proposed parking supply by phase.

Table 18
Build Alternatives Parking Supply and Demand by Phase – Unmitigated[1]

	Alternative 3		Alternative 6		Alternative 7R		Alternative 8	
Phase	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**
1	2,500	2,463	2,500	2,710	2,300	2,342	2,300	2,262
2	3,400	2,859	3,200	3,535	2,700	3,287	2,700	3,175
3	3,300[2]	3,600	3,600	3,465	3,600	3,285	3,600	3,175
4 / Build-out	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600

Source: Children's and The Transpo Group, September 2008
1. Parking supply and demand shown is cumulative e.g., Phase 2 includes parking supply/demand that would be made in both Phases 1 and 2.
2. Decrease in parking supply due to the demolish of Train beds. .

Demand

Peak hour parking demand was estimated based on the methodology discussed in the Impact section, and consideration of the portion of the expansion completed as it relates to the anticipated beds per phase. It is assumed that Children's would implement their proposed TMP enhanced incrementally over the 20-year period. As the enhanced TMP is implemented, parking demand at each phase may decrease. However, as a conservative estimate of future parking demand, this analysis assumes the mode share would remain the same as existing. Table 18 shows a comparison of the *effective* parking demand and proposed parking supply by phase.

As shown in Table 18, the unmitigated proposed parking supply for each phase would not meet the anticipated parking demand for some of the Build Alternatives. For Alternative 3, at Phase 1 there would be a deficiency of approximately 37 parking spaces and at Phase 2 approximately 541 parking spaces. Both Alternatives 6 and 7R would have a parking deficiency at Phase 3 with an additional 135 spaces needed for Alternative 6 and 313 spaces for Alternative 7R. For Alternative 8, there would be a parking deficiency at Phase 1 of approximately 38 spaces and at Phase 3 of approximately 425 spaces.

Summary of Impacts and Potential Mitigation – by Phase

Table 18 illustrates that imbalances between parking supply and demand could potentially occur depending on the actual achieved transportation mode splits (and thus actual parking demand) and the actual number of spaces constructed (and made available). In cases of under supplying parking, improved TMP performance and/or utilizing off-site parking, as Children's does currently, would mitigate the potential shortfall. In the case of over parking supply, no adverse parking impact would be expected. However, over supplying parking would not be consistent with achieving TMP goals. Therefore, for those phases that would result in excess parking (e.g., Alternatives 7R and 8 – Phase 2), Children's could consider reducing the stalls made available to employees.

Non-Motorized Facilities – Pedestrian and Bicyclists

Pedestrian and bicycle volumes near Children's would likely continue to be low to moderate, typical of suburban areas with each phase of development. On-site pedestrian levels would likely increase at each phase since the proposed larger hospital would serve more patients and have more employees. As part of Phase 1, Children's would construct frontage improvements including pedestrian and bicycle facilities. These improvements would be along Sand Point Way NE for Alternatives 3 and 6 and along 40th Avenue NE for Alternatives 7R and 8.

Summary of Impacts and Potential Mitigation – Phase 1

No significant adverse localized non-motorized impacts are expected as a result of Children's expansion. However, increases in regional traffic would lead to increases in potential conflicts between vehicular and non-motorized modes within the regional and local study area. As noted with respect to safety, Children's proposes a number of near site improvements to enhance safety and convenience of pedestrian and bicycle connections to the Burke-Gilman Trail and surrounding neighborhood. In addition, Children's proposal includes funding several million dollars in other City non-motorized projects.

Shuttle and Transit Services

At all phases, Children's would continue to work with King County Metro, Sound Transit, and Community Transit to expand their services at or near Children's and to optimize the hours of operation and frequency of service (see Attachments T-10 and T-11 for agreements with agencies). The analysis of the Build Alternatives at each phase does not rely on improvements to shuttle and transit services. For Phase 1, Penny Drive would remain the primary access for all shuttle vehicles.

Summary of Impacts and Potential Mitigation – Phase 1

No significant adverse transit and shuttle impacts are expected as a result of Children's expansion. Children's continuation of partnering with transit agencies to increase service would encourage additional ridership, and may reduce SOV travel.

Helistop

The new helistop would be relocated in Phase 1 for all Build Alternatives; detailed phasing is provided in EIS Section 3.5, Noise.

~~2.9Phasing and Construction Impacts~~

~~**The Children's expansion would be completed over a 20-year period in four phases for all Build Alternatives. snTable 16 shows the portion of the expansion expected to be completed at each phase and the level of net new trips generation by the phase.**~~

~~**Forcasted Table 16Figure 28: Proposed Non-Motorized Facilities – Alternative 7R**~~

2.10 ~~Table 16Table 17 ∏~~Construction Impacts

The level of construction traffic generated at each phase is dependent on the amount of demolition and excavation as well as the total land use constructed for each phase. ~~Source: Children's and Transpo Group, March 2008.~~

~~At the writing of this study, parking supply by phase was not available. However, Children's is committed to providing adequate parking to support its expected demand at each phase. This parking would be provided either on-site or at off-site parking areas supported by shuttle service to and from the campus. Therefore, no parking impacts are expected during each phase of the project.~~

Construction traffic impacts would occur periodically throughout the 20-year development of the master plan. Construction traffic would be generated as each phase of the master plan is constructed, and phasing may overlap. A majority of the truck traffic would be attributed to the hauling of materials off-site with excavations. The amount of excavation varies from approximately 435,000 to 665,000 cubic yards for each Build Alternative, and the direction of the excavation is approximately three to ten months for each phase (depending on the total excavation for that phase). Table 19 provides a summary of truck traffic per day and per hour for each of the Build Alternatives by phase. The calculation of daily truck traffic assumes 20 working days per month and six-hours per day where deliveries to and from the site would be allowed. It is assumed that truck traffic would be prohibited from entering and exiting the site during the morning and evening commute hours.

Table 19
Build Alternatives Construction Truck Traffic (Average Maximum Roundtrips)

Phase	Alternative 3			Alternative 6			Alternative 7R			Alternative 8		
	Duration (months)	Trucks per Day[1]	Trucks per Hour[2]	Duration (months)	Trucks per Day[1]	Trucks per Hour[2]	Duration (months)	Trucks per Day[1]	Trucks per Hour[2]	Duration (months)	Trucks per Day[1]	Trucks per Hour[2]
1	10	34	6	10	48	8	5	36	6	5	36	6
2	5 to 10[3]	84	14	5 to 10[3]	78	13	7	42	7	7	27	4
3	3	13	2	3	38	6	5	65	11	5	83	14
4	3	18	3	3 to 5[3]	82	14	5	68	11	5	68	11

Source: Children's and The Transpo Group, March 2008.

1. Trucks per day assumes trucks hold 20 cubic years and there are 20 working days per month. .
2. Trucks per hour assumes there are six-hours per day where deliveries are allowed.
3. The total duration when excavation would occur would be ten months; however, truck traffic would vary since there would be three different areas where excavation would occur with some portions taking longer to excavate than others.

As shown in Table 19, for the Build Alternatives daily truck traffic would range from an average maximum of approximately 20 to 80 round-truck trips per day. Alternative 3 would generally have less truck traffic than the other Build Alternatives since less excavation is required. Alternatives 7R and 8 would have similar levels of truck traffic since the excavation needs are approximately the same.

Assuming truck deliveries occur over a six-hour period, this equates to an average maximum of approximately 3 to 14 round-truck trips per hour (or a total of 6 to 28 total truck trips per hour). Examining a one hour time period shows that with an average maximum of 6 to 28 truck trips per hour there would be less than one truck per minute. This daily and hourly truck traffic is the average maximum for the excavation period which is anticipated to be an average of less than 6 months over the two to four years of construction per phase. It is anticipated that during other periods of construction truck traffic would less intense.

The remaining traffic generated by construction of the expansion would be by construction workers. The maximum number of construction workers on-site is anticipated to be approximately 250 workers. Assuming average vehicle occupancy of approximately 1.1 passengers per vehicle, 250 workers would generate approximately 230 vehicle trips. Construction parking would be provided at off-site parking areas supported by shuttle service to and from the campus. Therefore, no parking impacts are expected during each phase of the project.

~~ieConstruction traffic impacts would occur periodically throughout the development of the master plan, which is anticipated to be built over a 20-year period. Construction traffic would be generated as each phase of the master plan was constructed, and phasing may overlap. Based on the preliminary construction phasing for the Concept Plan, an average of 40 to 80 weekly truck/delivery trips (i.e., roundtrips) are estimated by phase during the construction. With the overlapping of phases, the maximum average weekly truck/delivery trips is expected to be approximately 115 roundtrips (or a total of 230 trips per week). Assuming a five-day work week, this equates to approximately 23 roundtrips per day for construction trucks/deliveries or a total of 46 truck trips (i.e., 23 inbound and 23 outbound trips). With the overlapping of construction and phasing, it is anticipated that portions of the expansion would be generating traffic while construction is underway. As a worst case scenario, if the expansion was completed through Phase 4 and construction was still occurring, Children's net new peak hour traffic could potentially increase from 850 trips at build-out to 896 trips with build-out and construction during the AM peak hour, and from 690 trips at build-out to 736 trips with build-out and construction during the PM peak hour. This represents a five to six percent increase in traffic volume. This is considered a potential construction impact.~~

With the overlapping of construction and phasing, it is anticipated that portions of the expansion would be generating traffic while construction is underway. For example, after completion of Phase 1 and during peak periods of Phase 2 construction, Children's could generate up to 570 AM peak hour and 490 PM peak hour vehicle trips (i.e., Phase 1 traffic plus truck traffic and maximum construction worker traffic). This would be less than Children's forecasted 2030 Build Alternatives traffic generation without the enhanced TMP; therefore, impacts are expected to be similar to or less than full build. Peak periods of construction are anticipated to be

on average approximately six months, and during other times traffic generated by construction workers and trucks are anticipated to be less. The combined affects of Children's expansion and construction traffic for subsequent phases may be higher than 2030 Build Alternatives depending on the hours of operations and success of Children's TMP. Subsequent Children's phases would be evaluated as Children's applies for permits over the 20-year development of the master plan. A Construction Traffic Management plan would be prepared to mitigate any impacts as a result of construction traffic.

~~The remaining traffic generated by construction of the expansion would be by construction workers. At this time, it is unknown how many construction workers would be on site; however, traffic generated by construction workers and construction trucks/deliveries combined is expected to be less than the net new traffic generated by full development of the Children's expansion (i.e., 8,400 net new daily trips). Therefore, construction impacts (without additional Children's traffic) on the surrounding transportation system are expected to be less than those with full build-out of the master plan.~~

~~Construction workers are anticipated to have an impact on parking. As the existing conditions parking analysis shows, on-site and off-site parking is currently fully utilized. Therefore, construction of the expansion would create a parking impact.~~

Summary of Impacts and Potential Mitigation

As noted above, the magnitude of the impacts related to construction traffic is difficult to quantify for some phases at this planning stage of the master plan process. Construction traffic impacts would depend on final design details, truck routes (expected primarily via Sand Point Way NE), and construction schedule. Impacts generally would include:

- Arrival, departure, and parking of construction worker vehicles
- Delivery of construction materials
- Removal of debris associated with demolition activity
- Delivery of construction vehicles and machinery
- Delivery or removal of material associated with fill or excavation of activity
- Potential impacts to bicycle and pedestrian traffic

No significant off-site or on-site traffic volume or operation impacts are expected as a result of phasing and construction separately; however, there is a potential for cumulative impacts due to traffic being generated by build-out of the project and construction. This potential impact could be mitigated by scheduling construction activities such that arrival and departure of construction traffic occurs outside the peak hours.

In addition, the potential parking impact of construction workers could be mitigated by securing additional off-site parking for construction workers and shuttling them to and from the site.

3 Mitigation Measures

This section summarizes measures identified to mitigate the impacts of the proposed Children's MIMP. It includes:

- **Construction Traffic Mitigation**. Mitigation to address construction traffic impacts is described.
- **Operation Traffic Mitigation**. Mitigation to address operational traffic impacts is described. This section includes:
  - Children's Design and Facilities – including campus design, near-site improvements and off-site parking
  - Children's Enhanced Transportation Management Plan (TMP)
  - Proposed Intersection Improvements
  - Children's Contributions to Area Transportation Facilities – including corridor ITS and Northeast Seattle transportation, pedestrian and bicycle improvements
- ~~**Children's Proposal – Comprehensive Safety and Mobility Plan (CTS)**. Attached as Attachment T-9, Children's offers a specific response to the level of unmitigated impact, a combination of investments in transit, shuttles and other non-SOV travel inducements, as well as capital improvement strategies.~~
- ~~**Other Mitigation Measures**. Beyond those measures proposed by Children's directly, the transportation analysis identified other impacts for which mitigation measures were identified.~~

3.1 Construction

Children's would develop a ***C~~c~~onstruction M~~m~~anagement P~~p~~lan*** describing procedures for construction activity including such items as truck routes, hours of operation, and construction parking for approval by the City. The following measures would be included in the construction management plan to mitigate potential traffic and parking impacts of construction activity during each phase of the master plan:

- Contractors would be required to direct that all construction worker vehicles be parked in a remote off-site parking lot ~~or in a temporary on-site parking area~~ and served by Children's shuttles
- Construction activities would be scheduled so that the most intensive activities in terms of construction traffic are spread out over time and avoid period of peak traffic congestion.
- Safe pedestrian and vehicular circulation would be provided adjacent to the construction site through the use of temporary walkways, signs, and manual traffic control (flaggers)
- Construction material delivery vehicles would be prohibited from leaving or entering the area during AM and PM peak hours.
- Truck routes would be identified.

Additional measures that could be considered as part of the ***Construction Management Plan*** include conducting a pre-construction inventory of the local street system. After completion of construction, the street network would be assessed to determine potential roadway damage caused by Children's construction. To the extent that such damage attributable to construction activity is identified, the City could require additional mitigation.

3.2 OperationsChildren's Proposed – Comprehensive Safety and Mobility Plan

Attachment T-9 describes in detail Children's proposed mitigation strategy in response to its impacts. Children's proposed mitigation strategy has evolved since the Draft EIS was published. The evolution has been in response to feedback from the community and City on the mitigation proposed in the Draft EIS. It is described in detail in Appendix D, Attachment T-9 to this Final EIS, and is titled *Proposed Comprehensive Transportation Plan in Support of the 2008 MIMP, October 1, 2008*. It contains elements to reduce congestion and other negative transportation impacts related to Children's growth. It addresses both regional and local impacts of the expansion. The following pages provide a summary of the operational strategies proposed by Children's. including:

- Children's Design and Facilities – including campus design, near-site improvements and off-site parking
- Children's Enhanced Transportation Management Plan (TMP)
- Proposed Intersection Improvements
- Children's Contributions to Area Transportation Facilities – including corridor ITS and Northeast Seattle transportation, pedestrian and bicycle improvements

Children's Design and Facilities

Campus Design and Near-site Improvements

The campus design includes elements to support pedestrian accessibility, bicycle facilities, and transit centers. Together with the arrangement of buildings, the campus design is intended to support the convenience and attractiveness of alternative transportation modes. This campus design would blend with the surrounding neighborhood and include adjacent improvements on Sand Point Way NE, 40th Avenue NE, NE 45th Street and NE 50th Street (for Alternatives 3 and 6 only), to support vehicle and pedestrian movement near the campus, for both Children's transportation, and the surrounding neighborhood.

On-site improvements include:

- **Shuttle** – Development of a high quality shuttle hub to serve Children's shuttles and enhanced pedestrian connection to shuttles. Depending on the alternative selected, the hub could become a combined transit/shuttle hub, to consolidate the arrival of these non-auto oriented modes to the hospital.
- **Transit** – Create a pedestrian-oriented building entrance proximate to the Route 75 transit stop. Develop an enhanced campus pathway to connect to the Route 25 transit stop. In the long term, work with Metro to co-locate Routes 25 and 75 at the same stop location.
- **Bicycle** – Add bicycle parking to accommodate up to 600 cyclists, focused in locations that facilitate access to desired on campus locations. Add shower and locker facilities to accommodate the anticipated level of demand.
- **Pedestrian –** Build a front door into the hospital campus and directly into the main hospital entrance off 40th Avenue NE. In addition, clear pedestrian flow patterns, both from adjacent neighborhoods, and within the campus, would be developed as a

fundamental element of the site design through the Master Plan development process. Vehicle routes on campus would be designed to enhance the safety of pedestrians using the routes as well.

- **Redesign Penny Drive –** Penny Drive would be redesigned to provide designated spaces for pedestrians and bicycles, as well as automobiles.

Near-site improvements would compliment the on-site investments identified above, and include:

- **Transit** – Depending on the final alternative selected, and the final location of transit stops, Children's would work with SDOT and WSDOT to reconfigure the intersection of 40th Avenue/Sand Point Way NE to create a priority for safe pedestrian crossing while balancing the capacity and vehicle circulation requirements.
- **Sand Point Way NE Intersections** – Improvements to intersections on Sand Point Way NE include the intersections with Penny Drive, 40th Avenue NE, and possibly NE 50th Street, depending on the selected alternative.
    - **Penny Drive/Sand Point Way NE** – Enhancements at this location include the addition of a second left turn lane from Penny Drive to Sand Point Way NE, as well as improvements to bicycle and pedestrian access across Sand Point Way NE.
    - **40th Avenue NE/Sand Point Way NE** – Work with City to install traffic signal at this location. A signal is in the current City plans, however, with the development of Children's, it would be desirable to develop a design that integrates with the planned entrance scheme (depending on the alternative selected), as well as enhance pedestrian crossing safety.
    - **NE 50th Street/Sand Point Way NE** – A traffic signal would be required under Alternatives 3 and 6, pending a formal signal study by SDOT. ~~may be advisable based on a formal signal study conducted by the City of Seattle~~
- **NE 45th Street Left-turn Lane** – If Alternatives 7R or 8 are selected, it may be desirable to restripe NE 45th Street to accommodate a left-turn lane for eastbound to northbound turns (from NE 45th Street to 40th Avenue NE). This improvement could be accomplished through restriping, and through the removal of a few on-street parking spaces.
- **Near Site Pedestrian and Bicycle Environment** – Improve wayfinding and design to enhance the quality and number of pedestrian entrances around the campus.
- **Burke Gilman Trail Connection** – Improve connectivity between trail and hospital through improved wayfinding and intersection enhancements. At Hartmann, connect the trail with the 40th Avenue NE crossing of Sand Point Way NE. This would increase the convenience for both pedestrians and cyclists.
- **Enhance Street Frontages** – Depending on the alternative selected, bring the buildings closer to the street, provide widened sidewalks, etc. This could also include the addition of first floor retail to activate the sidewalk areas.

Mitigation Measure Effectiveness. The above improvements would, to varying degrees, enhance the safety and efficiency of travel for pedestrians and vehicles in the immediate site vicinity through enhanced signing, improved pathways, enhanced pedestrian environments, and

improved traffic control at key entrances and proximate intersections. It is also noted that the traffic control along the site frontage would be included in the ITS improvement described below, so the traffic signal timings and coordination between traffic signals would improve progression on Sand Point Way NE.

Off-Site Parking

As described in Attachment T-9, in addition to the level of mitigation proposed above, Children's remains committed to exploring new off-site parking and out-of-area remote parking. Successfully securing off-site parking would reduce the level of required parking development on-site. Providing the following benefits:

- **Reduced On-site Parking**. Depending on the nature, location and type of parking secured, Children's would benefit through reduced on-site development costs, though these savings would be partially offset by the increase in operational costs associated with shuttle service to the remote parking.

- **In Area Remote Parking**. This represents parking in locations consistent with Children's current practice including Magnuson Park on the north, and the University of Washington Montlake parking area (Lot E1) on the south. To the extent that this parking can serve trips from the north and south respectively, it results in a direct offset in traffic approaching the campus. Magnuson parking reduces impacts between the hospital and Magnuson Park on Sand Point Way NE to the north; University of Washington Lot E1 parking reduces impacts on NE 45th Street, and Sand Point Way NE to the south, including the Five Corners intersection.

- **Out-of-Area Remote Parking**. This represents the securing of parking in remote lots *outside the area of impact* identified in the EIS traffic impact analysis. This would include areas north of Magnuson Park and south of the Montlake Boulevard/SR 520 interchange area. To the extent that Children's locates parking completely outside the area of impact, the effect would be equivalent to achieving a greater transit mode split, facilitated by shuttle connections.

Mitigation Measure Effectiveness. To determine the effectiveness of this measure, a sensitivity analysis was conducted. It is estimated that for every 100 parking spaces that would be located out of area, a reduction in new PM peak hour trips of 5 to 10 percent would occur. This strategy could substantially reduce the level of traffic impacts otherwise disclosed through the prior analysis assumptions. If the off-site parking is located within the area of impact, then the reduction in impact would be less, but still of benefit to the segments of Sand Point Way NE near the hospital, including Five Corners intersection for southerly located parking.

Children's Enhanced Transportation Management Program

Attachment T-9 describes the enhanced Transportation Management Plan proposal in detail. It includes a goal commitment to achieve a 30 to 40 percent SOV mode split, and is founded on three primary strategies: transit/shuttle enhancement, transportation demand management (TDM), and parking management, together with the on and near campus physical enhancements described previously.

- **Transit Shuttles.** Significant investment would be made in the operation of new shuttles from major transit hubs that connect riders directly to campus. Shuttle routes would meet regional transit service hubs at 3rd Avenue/Westlake downtown, the University District, and the future light rail station at Montlake. Another additional route would likely provide connections from south Snohomish County during peak commute periods.
- **TDM Enhancements.** Children's would add new TDM services and programs, including increased commuter bonus awards for employees who do not drive alone.
- **Parking Management Policies**. Children's would increase the financial incentive not to drive alone by raising the cost of SOV parking and raising commuter bonus awards. In addition, Children's would reduce or eliminate free parking, allow pay-per-use parking, and assign staff to off-campus lots based on proximity to home addresses to further encourage non-SOV travel, reduce miles traveled by SOV, and potentially remove vehicles from the area affected by the Master Plan.

Mitigation Measure Effectiveness. The effectiveness of the proposed TMP measures were evaluated using U.S. Environmental Protection Agency COMMUTER Model (v2.0), a widely accepted mode split model for forecasting future SOV rates and related trip reductions. Based on this, the proposed TMP program as outlined in Attachment T-9 would result in a 30 - 40 percent reduction to the unmitigated new PM peak hour traffic from Children's.

Proposed Intersection Improvements ~~Other Transportation Mitigation~~

In addition to the mitigation measures discussed above, Section 2, Impacts identified the following mitigation measures:

- **40th Avenue NE/NE 55th Street** - Children's should contribute their fair share to the future installation of traffic signals at this intersection. The City should monitor this intersection to determine the timing of the mitigation implementation. This mitigation would result in future (2030) LOS A operations during the AM peak hour and LOS B operations during the PM peak hour for the Build Alternatives.
- **40th Avenue NE/NE 65th Street** - Children's should contribute their fair share to the future installation of traffic signals at this intersection. The City should monitor this intersection to determine the timing of the mitigation implementation. This mitigation would result in future (2030) LOS A operations during both the AM and PM peak hours for the Build Alternatives.
- ~~**Montlake Boulevard NE/NE 45th Street** – Children's should contribute their fair share to future signal timing improvements at this intersection. The City should monitor this intersection to determine the timing of the mitigation implementation. Provision of future signal timing adjustments at this location would improve operations to LOS D during the PM peak hour for the Build Alternatives.~~
- ~~**Sand Point Way NE Right-in/Right-out Driveway Emergency Access** – For Alternative 7, Children's is proposing a median break with an actuated emergency vehicle-only traffic signal to accommodate southbound emergency vehicle traffic. This access would require a median break and removal of a portion of the existing median to accommodate emergency left-turning vehicles into the site. The final location of the driveway is still being refined; therefore, the extent of the median and street tree removal is unknown.~~

~~However, the turn lane would need to meet City of Seattle standards and include appropriate transitions. Children's could provide a connection between the lower campus and Penny Drive to eliminate the need for this emergency vehicle access. This connection to Penny Drive should accommodate right-in/right-out traffic only to ensure it does not interfere with the operations of Penny Drive and its intersection with Sand Point Way NE.~~

Children's Contributions to Area Transportation Facilities

Intelligent Transportation Systems

In addition to the trip reduction Children's would achieve through its enhanced TMP, the hospital is pledging capital dollars toward projects that would improve operations for all traffic using one of the most congested corridors affected by Children's proposed expansion. Children's would make a direct contribution of $500,000 to build Intelligent Transportation Systems (ITS) improvements through the corridor from Montlake Boulevard/NE 45th Street to Sand Point Way NE/NE 50th Street. These ITS projects would benefit all road users (not just Children's-generated traffic) by improving vehicle flow and travel times in response to changing traffic conditions. This would fund and extend the ITS improvement identified by the City in the UATAS.

ITS projects use technology to optimize signal coordination and signal timing, utilizing traffic cameras and variable message signs. ITS projects typically do not require right-of-way or major physical improvements; therefore they can often be implemented more quickly than other types of improvements. Because they do not require significant construction, they result in minimal traffic disruption on the affected corridors. In addition to benefitting peak hour traffic conditions, they also improve corridor travel at other times during the day and on weekends. Children's contribution would be used to:

- Install a detection system that measures congestion along southbound Montlake Boulevard, linked to smart traffic control devices that adapt to traffic conditions
- Install variable message signs to give real-time traffic information to drivers, including travel time estimates, updates on collisions and other traffic conditions, and to implement variable speed limits throughout the day in order to keep traffic flowing as smoothly as possible
- Optimize signal coordination and timing to move vehicles most efficiently and optimize intersection performance
- Upgrade signal controllers as needed to allow signals to be interconnected
- Install traffic cameras as identified by the City of Seattle

Mitigation Measure Effectiveness. Practice-based research indicates that ITS enhancements result in between 10 and 45 percent improvement in functional street capacity or performance[8]. For example, at Greenwood Avenue N and Holman Road NW in Seattle, an ITS implementation

[8] The potential level of benefit for ITS was determined based on a review of a variety of sources including research from the United States Department of Transportation, Federal Highway Administration *Traffic Signal Timing Manual*, Transportation Research Board, and Pima Association of Governments - Tucson, AZ.

has led to a measured 30 percent reduction in vehicle delay and a 15 percent reduction in travel time. While it is inappropriate to model such improvements when dealing with long-range forecasts, even achieving improvement on the low end of the range above would represent a level of improvement that largely offsets the identified impact of Children's added traffic on corridor operations.

Northeast Seattle Transportation Improvements

The traffic impact analysis identified impacts to traffic congestion on NE 45th Street and Montlake Boulevard. These corridors have both experienced peak period congestion for many years. While Children's added traffic would impact calculated travel times and intersection delays, the corridors are forecast to continue to be congested in the future with or without the proposed expansion of Children's Hospital. These traffic conditions were studied by the City as part of the UATAS, and other studies. No single solution to reduce peak hour delay for general traffic has been identified through these studies. Transportation improvements have focused on efforts to enhance safety and walkability for pedestrians, to invest in improvements that facilitate transit service and efficiency, as well as those that propose to optimize the performance of the corridors in their current configuration (i.e., Intelligent Transportation Solutions).

Children's has committed to funding a pro rata share of Northeast Seattle Transportation improvement projects that were identified from the UATAS, Sand Point Way NE Northeast Pedestrian Study, and the City of Seattle Bicycle Master Plan. The pro rata methodology was used consistent with methods employed by the City when calculating pro rata in other neighborhoods, including South Lake Union and Northgate. It is based on comparing the PM peak hour traffic associated with the master plan expansion of Children's to the total PM peak hour traffic forecast for 2030. The list of potential projects and methodology that were used as the basis for pro rata is included in Attachment T-9, Table 7.

Based on current estimates, Children's pro rata contribution would total approximately $1,400,000, or approximately $3,955 per new bed added (assuming up to 354 additional beds) by Children's over the course of the master plan development. While the obligation was calculated by determining partial shares of many projects, it is anticipated that actual implementation would be determined by SDOT, and directed at funding high priority projects in the affected subarea. Thus, the proposed pro rata portion of the mitigation can be viewed similar to a transportation impact fee of $3,955 per new bed.

Mitigation Measure Effectiveness. A pro rata based "impact fee" is an effective way to address the impact of added Children's traffic on the Northeast Seattle transportation system, and develop an equitable basis for contributing to the City's vision for future transportation in Northeast Seattle. The level of obligation determined through a pro rata, which is a commonly accepted basis for addressing impacts under SEPA as the level of mitigation is proportional to the level of impact identified. By affording the City the flexibility to allocate the funds to the highest priority projects, greater improvement is more likely to result. As these funds are prioritized, it is expected that they would be concentrated by the City on the NE 45th Street and/or Montlake Boulevard transportation improvements, as those are the corridors where the impacts of Children's traffic is the highest.

Northeast Seattle Pedestrian and Bicycle Improvements

Children's proposes to provide several million dollars in funding for pedestrian and bicycle improvements in NE Seattle over the timeframe of the MIMP development. Children's proposes these funds to support alternative travel mode choices throughout the surrounding neighborhoods to the hospital, and expects that they would also compliment the aggressive TMP goals laid out in the MIMP mitigation plan. Children's would work with the City, community members, and pedestrian and bicycle advocates to identify potential improvements. The following represent potential categories to guide the investments in bicycle and pedestrian infrastructure improvements that Children's could consider funding:

- **Bicycle Master Plan Priority Projects**. These funds would be allocated to five projects, and include adding sharrows or bike lanes along significant sections of 20th Avenue NE, Ravenna Place, 35th Avenue NE, and NE 65th Street.

- **Connections from Campus to Larger Bike/Pedestrian Networks**. These projects are focused on improving the safety, wayfinding and connectivity between Children's and regional pedestrian facilitates like the Burke Gilman Trail. As shown on Table 9 of Attachment T-9, it includes sidewalks on sections of 41st Avenue NE, NE 50th Street, and Sand Point Way NE, as well as the installation of clear wayfinding signs to and from the campus and Sand Point Way NE to the Burke Gilman Trail.

- **Bicycle Boulevards**. Children's proposes some of its funding to develop bicycle boulevards in NE Seattle. It is proposed consistent with the core mission of the hospital to enhance children's safety and welfare. In addition, it is consistent with enhancing travel options for bicycle and non-auto modes to and from Children's Hospital, as well as from and within the surrounding neighborhoods. The specific routes would be planned in collaboration with City staff and the community.

Mitigation Measure Effectiveness. These improvements were identified by Children's not to offset an identified significant adverse impact to pedestrian or bicycle safety, but to enhance safety and accessibility for all modes of travel to and from the hospital, as well as to, from and within the surrounding neighborhoods where these improvements would occur. Attachment T-9 identifies more specific benefits of each of the improvements. Overall, the improvements would result in benefits to pedestrian and bicycle safety, while encouraging increased use of these modes by Children's employees, patients, and visitors, as well as the general public. ~~The strategy is a response to the issues raised by this study and the community, and is offered as a *Recommended Comprehensive Safety and Mobility Plan in Support of the 2008 MIMP*. It is fundamentally comprised of two elements: a transportation management plan and capital improvements. It addresses both regional and local impacts of the expansion, as well as impacts that occur due to the No Build alternative. The TMP strategy is fundamentally designed to reduce travel demand, while the capital improvements are identified to both partner with other major stakeholders to determine corridor transportation strategies for Montlake and NE 45th Street. In addition, it also provides improvements for pedestrian and bicycle mobility and safety for Children's employees and visitors, and members of the community.~~

~~Transportation Management Program~~

~~Children's dedicates staff to the implementation of programs to reduce travel demand, manage parking, and other related programs. The results achieved by the current TMP are reflected in~~

~~the analysis of unmitigated transportation impacts, and relate to a commuter SOV rate of 38 percent.~~

~~TMP Goal~~

~~The proposed TMP enhancements described in this document and the appendix are expected to result in an approximately 30 to 39 percent reduction in net new PM peak hour vehicle trips associated with Children's MIMP. This corresponds to an additional reduction in the percent of employees driving alone to work, leading to an SOV mode split of about 30 percent or lower among daytime employees at MIMP build out. For comparison, this meets or exceeds the 30 percent SOV goal set for the University District Urban Village in the City of Seattle's Comprehensive Plan.~~

~~TMP Strategies~~

~~The TMP is comprised of three primary strategies, with a number of supporting elements. These strategies are described in greater detail in Attachment T-9. The three primary strategies are:~~

- ~~**Transit Shuttles.** Significant investment would be made in the operation of new shuttles from major transit hubs that connect riders directly to campus. Shuttle routes would meet regional transit service hubs at 3rd Avenue/Westlake downtown, the University District, and the future light rail station at Montlake. Another additional route would likely provide connections from south Snohomish County during peak commute periods.~~
- ~~**TDM Enhancements.** Children's would add new TDM services and programs, including increased commuter bonus awards for employees who do not drive alone to campus.~~
- ~~**Parking Management Policies**. Children's would raise the cost of SOV parking along with providing an incentive not to drive by raising commuter bonus awards. This would dramatically increase financial incentives for those who do not drive alone. In addition, Children's would reduce or eliminate free parking, allow pay-per-use parking, and assign staff to off-campus lots based on proximity to home addresses to further encourage non-SOV travel, reduce miles traveled by SOV, and potentially remove vehicles from the area impacted by the Master Plan.~~

~~TMP Performance~~

~~The impacts/benefits of the TMP enhancements proposed were tested by Children's consulting team using the EPA's COMMUTER Model (v2.0), which was developed for that specific purpose. The results indicated that a reduction in commuter peak hour travel of between 30 and 39 percent would occur.~~

~~TMP Commitment and Measurement~~

~~Children's is legally obliged to monitor its TMP program under state, county, and city Commute Trip Reduction (CTR) requirements. This monitoring is conducted using annual employee travel behavior surveys. Children's ongoing commitment to implement an innovative TMP and achieve desired trip and parking reduction would include:~~

- ~~Continued annual employee CTR surveys~~
- ~~Adoption of an appropriate measure of attainment relative to TMP performance~~
- ~~Annual monitoring and reporting on TMP performance~~

~~Capital Improvements~~

~~Children's proposes a strategy of capital investment intended to focus on improving person travel and mobility, consistent with the City of Seattle and subarea transportation goals. This strategy is separated into three parts, as follows:~~

- ~~**Regional - Critical Corridor Strategy – Subarea Safety and Mobility Study**. As identified in Section 2, Impacts, Children's would contribute to cumulative congestion on the Montlake Boulevard and NE 45th Street corridors. The overall impact on travel time between Children's~~

campus and I-5 via NE 45th Street, and SR 520 via Montlake Boulevard, was calculated to be approximately three minutes for both corridors. Children's proposes to provide $500,000 to fund a Subarea Safety and Mobility Study, led by the City of Seattle, on these corridors. While a number of potential projects have been identified by the UATS, none of these projects are funded at this time. This study would review in detail all of the projects identified to-date, explore other solutions, and continue to focus on developing solutions that improve person-movement capacity, person travel time, and safety. The study would result in a prioritization of projects and reflect the input and participation of major stakeholders. In addition to providing leadership in initiating the process, Children's proposes to contribute a share of the actual dollars required to fund projects resulting from this study. This is described in more detail in the appendix.

- **Local - Other Pedestrian and Bicycle Improvements**. While the level of priority and benefit of corridor improvements identified in UATS may not be fully clarified, and would benefit from the more-focused study as described above, the benefit of many of the non-motorized projects in the area is clear. Children's proposes to provide up to $2,000,000 to fund the construction and implementation of projects that promote bicycling and walking. These projects are identified in Table 5 of Attachment T-9. They would result in improved access and safety in using the Burke-Gilman Trail, enhanced safety in crossing Sand Point Way NE, and other improvements.

- **On Site – Site Plan Considerations**. As part of the site design, a number of capital investments were recommended by the consultant team for consideration in the development of the site master plan. They include:

-developing an on-site transportation center to serve increasing numbers of non-SOV travelers

-constructing enhanced shuttle bus bays (developing capacity for up to four to five shuttles on-site simultaneously)

-designing clear pedestrian circulation to integrate building destinations with transportation connections

-providing storage facilities and amenities for approximately 600 bicycles with secured bicycle parking and shower/locker facilitates in the transportation center, or near the bottom of the hill to provide convenient access for riders

- Other measures are described in more detail Attachment T-9.

Summary of Children's Proposed Commitment

Children's proposes to make financial contributions to support the following sub-area capital improvement mitigation efforts:

- Implementation of a TMP to result in approximately 30 percent or lower SOV use by daytime employees
- Up to $500,000 for the Sub-area Safety and Mobility Study
- Funding selected bicycle and pedestrian projects up to $2.0 million
- Funding a share of selected corridor and intersection projects to be determined based on outcomes of the Sub-area Safety and Mobility Study

Children's has stated that they would expect to receive credit for its investment in the Safety and Mobility Study and non-motorized projects to apply towards its total investment in capital improvements.

4 Significant Unavoidable Adverse Impacts

The Build Alternatives would accommodate additional amounts of future development at Children's and the Hartmann site, which would contribute to additional travel demand and congestion along arterial corridors including Sand Point Way NE, NE 45th Street, and Montlake

Boulevard. The additional development also would increase traffic accessing and circulating in the area. This added congestion would contribute to measurably poorer performance of the transportation network, in terms of increased delays along several of the corridors and at some specific intersections. The increase in traffic and pedestrian and bicycle activity due to development would result in more conflict points and increased hazards to safety.

4.1 Street System

No significant unavoidable impacts to the street system were identified.

4.2 Traffic Volumes

Future (2030) growth in the area would result in increases in regional and local traffic within the study area both without and with the project. In addition, the Build Alternatives would increase area-wide and local traffic on routes serving the site. Mitigation measures are proposed as described which will contribute to improved capacity for vehicles and pedestrians in key corridors, as well as reduce demand. The determination of whether the residual increase in traffic is significant is generally deferred to the traffic operations section of the analysis, where the impact of added volumes are put in context through the analysis of the aeffect on overall delay, travel times, person capacity of corridors, or other factors deemed relevant by decision makers.

4.3 Traffic Operations

The traffic operations analysis conducted in the traffic impact study identified increased travel times for all PM peak hour traffic across the Montlake Boulevard and NE 45th Street corridors. It was found that, after mitigation, Children's additional traffic would add approximately 2 minutes (increasing from 14 to 16 minutes) to the entire trip between Children's and Roanoke Street, south of SR 520 on Montlake Boulevard. Similarly, for both the eastbound and westbound trips on NE 45th Street, from Children's Hospital to I-5, Children's added traffic would add approximately 3 minutes (increasing from 10 to 13 minutes westbound and 12 to 15 minutes eastbound). Following identification of unmitigated impacts, trip volumes were reduced through the enhanced TMP measures discussed previously. As noted in Table 8, the enhanced TMP resulted in somewhat improved travel times on the Montlake and NE 45th corridors discussed above. In both cases, the analysis assumed *only the implementation of the TMP for reduced trip generation*. No specific infrastructure projects were assumed, nor was any further reduction in Children's traffic demand assumed.

As described in Table 9, the successful implementation of Children's TMP would result in reduced levels of impact at key intersections. For example, at five-corners with the enhanced TMP, Children's traffic would be reduced to 6 percent of the total PM peak hour traffic, resulting in 34 seconds of added intersection delay (out of a total 171 seconds). As with corridor impacts characterized above, these results were only calculated with the reduced demand levels associated with the proposed Children's TMP.

Other mitigation measures proposed by Children's include:

- Transportation Management Plan – The TMP as described, would result in a 30 – 40 percent reduction in PM peak hour traffic growth associated with Children's expansion. This mitigation was reflected in the impacts summarized above.

- Intelligent Transportation System (ITS) – The $500,000 commitment to fund ITS on the NE 45th Street/Montlake Boulevard corridors, and its extension directly to the Children's campus represents the type of treatment that can improve operational efficiency between 10 and 45 percent for all traffic. At the low end of the range of effectiveness, it could result in travel time benefits of approximately 1 minute in 2030, considering that overall travel times with the enhanced TMP were calculated to be 15 and 14 minutes, respectively, on the critical travel paths described above. If successful, this improvement could largely offset the calculated impact of Children's added traffic on these roadway segments. It is recognized that the level of congestion at the very worst periods may not be fully responsive to coordinated traffic signals, because of the impact of external traffic congestion on the freeways near the end of each corridor.

- NE Seattle Transportation Improvements – With the pro rata based contribution to NE Seattle Transportation Improvements, the City could implement any of a number of specific improvements identified through UATAS. For example, if the proposed BAT lanes were implemented on NE 45th Street, travel times for buses would be improved. The City has the flexibility to implement the highest benefit project with the $1.4 Million pro rata contribution provided by Children's. No specific adjustment for this benefit was included in the travel time calculations.

- NE Seattle Pedestrian and Bicycle Improvements – While not directly addressing corridor capacity or efficiency along the critical NE 45th Street and Montlake Boulevard corridors, the several million dollar investments in pedestrian and bicycle improvements are designed to enhance the connectivity and effectiveness of the Burke Gilman Trail, as well as the rest of the pedestrian and bicycle network. Beyond the mode splits achieved by Children's through their TMP commitment, and supported by these improvements, further general traffic demand reduction could occur as pedestrian and bicycle usage becomes more attractive in Northeast Seattle. No specific adjustment for this benefit was included in the travel time calculations.

- Off Site Parking – As described in the preceding section, a 5-10 percent reduction in new Children's peak hour trip generation would occur as a result of every 100 additional spaces located off-site. For example, if 300 spaces were located off-site, a reduction in trip generation of about 20 percent would be likely, depending on who was assigned to the remote parking. This could further reduce the travel time and intersection delay impacts from those described in Tables 8 and 9, by approximately one-half the level of reduction represented by the TMP alone.

- Alternatives 7R and 8 Displaced Trips – A number of conservative analysis assumptions were made throughout the document. One that is directly relevant to the consideration of significant impacts relates to the 136 units of removed housing associated with Laurelon Terrace under these alternatives. No specific adjustment to net new trip generation was made to account for the removed on-site parking. If it were, Laurelon Terrace would be

expected to generate 70-85 vehicle trips during the PM peak hour. This equates to 12 to 14 percent of the PM peak hour new trip generation identified for the entire expansion of Children's by 2030.

~~4.~~4Implementing the proposed mitigation identified above could reduce the increased travel times and intersection delay for PM peak hour traffic across the Montlake Boulevard and NE 45th Street corridors that would result~~s~~ from the Build Alternatives. It is anticipated that a 40 to 60 percent improvement in travel time could be achieved as a result of this mitigation. ~~While traffic congestion in Northeast Seattle will continue in the future with or without the expansion of Children's, the expansion would likely result in a measurable change in travel times. It is unclear whether the impacts, after implementation of the proposed mitigation, would be significant.~~

~~There are a number of factors that may contribute to improvement of future traffic operations in the study area. These include the proposed Safety and Mobility Plan sponsored as mitigation by Children's. In addition, Children's has committed to assist in funding their share of the recommendations that come forth from this plan. Beyond this, the final configuration of SR 520 and its interface with Montlake Boulevard are unknown pending the outcome of the EIS process for that project. In consideration of all of these factors, the addition of Children's traffic to the street system, even with a successful TMP that results in reduced traffic demand, could potentially result in changes in traffic operating conditions that would be considered significant, depending on the overall outcome of the Safety and Mobility Plan, as well as other infrastructure such as SR 520.~~

4.4 Traffic Safety

No significant adverse impact to safety would occur. With the proposed mitigation, it is probable that overall safety would be enhanced.

4.5 Parking

No significant unavoidable impact to parking would occur.

4.6 Non-Motorized Facilities

Children's would provide pedestrian and bicycle enhancements at the hospital and Hartmann site, as well as at near-site intersections and along Sand Point Way NE. In addition, improved connections to the Burke-Gilman Trail have been identified. No significant unavoidable adverse non-motorized impacts are expected.

4.7 Shuttle and Transit Services

Children's is in the process of enhancing its existing shuttle services and is exploring expanded shuttle service to accommodate future needs. In addition, Children's has partnered with King County Metro to ensure adequate transit service to the hospital and would continue to form these

partnerships in the future. No significant unavoidable adverse shuttle and transit service impacts are expected.

5 Secondary and Cumulative Impacts

Secondary and cumulative impacts on area roadways are included in the analysis of direct impacts. In addition, there is a potential for cumulative impacts due to the combined affects of traffic being generated by build-out of the project and construction. This potential impact could be mitigated by scheduling construction activities such that arrival and departure of construction traffic occurs outside the peak hours.

Attachment T-1
Children's Site Travel Characteristics

Children's Site Travel Characteristics

Existing and future Children's Hospital traffic characteristics were determined to identify the level of traffic generated by Children's, and the travel patterns of vehicular trips to and from the site. This appendix describes the methodology for calculating Children's existing and future trip generation, and Children's traffic distribution within the study area.

Trip Generation

Trip generation for use in transportation impact analyses are typically estimated based on either building area or employees. For most land use types, including hospitals, studies conducted by the Institute of Transportation Engineers (ITE) indicate that the correlation between trip generation and persons is higher than that between trip generation and building area. For the purposes of this analysis, total on-site persons (employees, patients, and visitors) provides the basis for estimating trip generation. Daily, AM peak hour, and PM peak hour trip generation associated with the Action Alternatives was estimated based on existing Children's trip generation characteristics and expected increases in Children's population with the Action Alternatives. The process of determining trip generation included first creating a calibrated existing trip generation model and then using that model plus the forecasted growth in Children's population to determine future trip generation.

Existing Trip Generation

Existing Children's trip generation data was gathered using traffic counts at the Sand Point Way NE/Penny Drive main campus driveway as well as counts conducted at off-site parking lots serving the main campus. This represents a conservative estimate of existing trip generation since traffic counts were conducted in February 2007 when the average patient census was 206 in-patients which is higher than the typical average patient census of approximately 185 in-patients (recorded for October to March) in 2007. A trip generation model was created based on population (i.e., employees and patients), mode splits, and percent of trips occurring during the peak hour. Key assumptions for the existing trip generation model include:

A. **Population**: Trip generation was developed based on population groups (Children's employees, non-Children's employees, and patients). Approximately 4,800 full-time equivalent employees and patients are anticipated at the Children's main campus and Hartmann on a daily basis. The numbers of existing employees and patients were based on data provided by Children's in May and November 2007.

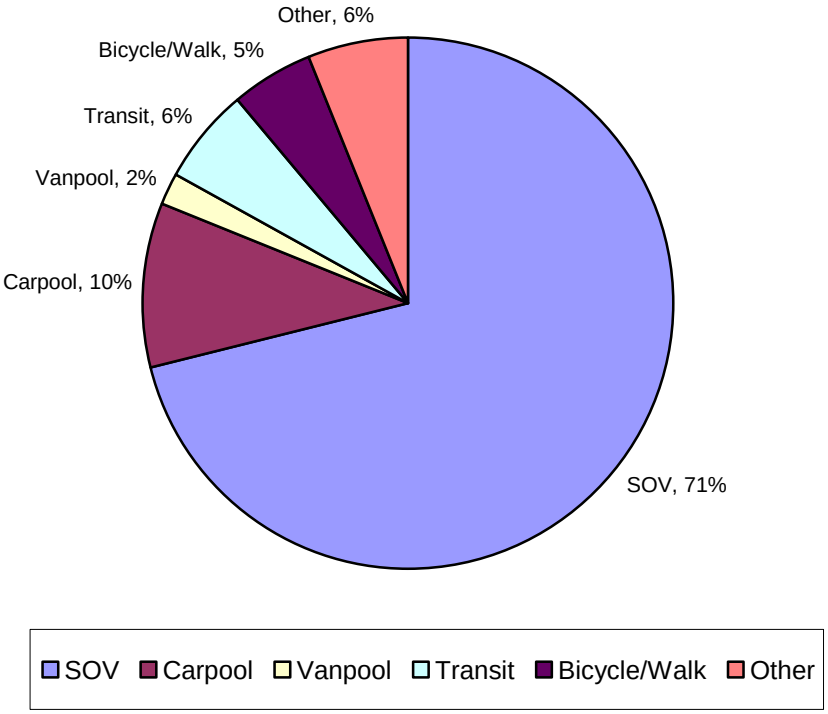
B. **Travel Modes**: The mode share (i.e., SOV, carpool, vanpool, transit, bike/walk, and other) for each population group were based on information provided by Children's and the 2006 Commute Trip Reduction (CTR) survey (see Figure 7). Based on a weight average by population, Figure T-1A show the mode share for the entire Children's population. As shown in the figure, although 38 percent of affected Children's employees drive alone, the overall population has about 71 percent of the employees driving alone. This is due to the fact that outpatient and visitors of patients typically drive to Children's.

C. **Percent of Population at Children's During Peak Hours**: For each population group it was determined what percent would visit Children's during the peak hours. This is based on information provided by Children's in 2007.

D. **Existing Traffic Counts**: Existing traffic counts were taken at the Children's main campus driveway and shuttle ridership data from off-site lots were used to determine the amount of traffic entering and exiting Children's during the peak hours.

This existing trip generation model was calibrated against existing traffic counts to ensure the model reflects current conditions.

Figure T-1A. Existing Population Mode Share



Source: Commute Trip Reduction Survey, 2006 and Children's Hospital, 2007
Notes: SOV = single occupancy vehicle; Other includes telecommute, compressed work week, etc.

Based on the on the mode share shown above, existing vehicular trips to and from the study sites were determined based on existing person trips by mode. Table T-1A shows the existing single occupancy vehicle (SOV), transit, bike/walk, and other trips pertaining to the main campus and Hartmann.

Table T-1A. Existing Person Trips by Mode

Mode	Daily	AM Peak Hour	PM Peak Hour
SOV	8,600	680	640
Carpool	1,110	230	150
Vanpool	280	80	60
Transit	810	130	100
Bike/walk	660	130	90
Other[1]	620	120	90

Source: The Transpo Group, November 2007
1. Other includes telecommuting, compressed work week, out of town travel, etc.

As shown in the table, a majority of the travel occurs via vehicle (i.e., SOV, carpool, or vanpool) with transit, bike/walk, and other accounting for about 20 to 30 percent (i.e., approximately 8,600 daily person trips, 680 AM peak hour person trips, and 640 PM peak hour person trips) of the total Children's person trips to and from the main campus and Hartmann.

Person trips were used to derive the total number of vehicle trips expected at Children's (i.e., main campus and Hartmann). Consideration was given to the occupancy of carpools and vanpools as well as person making multiple trips to an from the study area on a single day. Table T-1B shows Children's estimated existing vehicle trips.

Table T-1B. Estimated Existing Vehicle Trip Generation

	Inbound	Outbound	Total
Daily	4,600	4,600	9,200
AM Peak Hour	590	210	800
PM Peak hour	220	500	720

Source: The Transpo Group, November 2007

As shown in Table T-1B, Children's currently generates approximately 9,200 vehicle trips per day with about 800 trips occurring during the AM peak hour (7:00 to 8:00 AM) and 720 trips occurring during the PM peak hour (4:00 to 5:00 PM).

Unmitigated Future Trip Generation

With the Proposed Plan, Children's is projecting the population (employees and patients) would nearly double by 2030. To determine the future unmitigated trip generation, the existing population was increased based on Children's projected rate of growth which ranged from a factor of 1.5 to 2.11 by 2030. This growth in population yields an expected future population of about 9,700 people. Based on the existing mode share, future vehicular trips to and from the study sites were determined based on future person trips by mode. Table T-1C shows the future single occupancy vehicle (SOV), transit, bike/walk, and other person trips pertaining to the main campus and Hartmann.

Table T-1C. Future Unmitigated Net New Person Trips by Mode

Mode	Daily	AM Peak Hour	PM Peak Hour
SOV	7,800	730	600
Carpool	1,240	260	170
Vanpool	310	90	60
Transit	820	150	100
Bike/walk	720	150	100

Other[1]	680	140	100

Source: The Transpo Group, November 2007
1. Other includes telecommuting, compressed work week, out of town travel, etc.

As shown in the table, a majority of the travel would occur via vehicle (i.e., SOV, carpool, or vanpool) with transit, bike/walk, and other accounting for about 20 to 30 percent (i.e., approximately 1,850 daily person trips, 390 AM peak hour person trips, and 260 PM peak hour person trips) of the total Children's person trips to and from the main campus and Hartmann.

Children's has been decreasing its share of single-occupancy vehicles (SOV) over the last few years with incentive programs which encourage employees to use alternative modes. It is likely in the future that SOVs would continue to decrease since Children's plans to continue to expand its programs. However, as a conservative estimate of unmitigated future trip generation, this study assumes the mode share would remain the same as existing. In addition, the percent of population visiting Children's during the peak hours is assumed to be the same. Table T-1D shows the total future Children's trip generation and the net new trips based on the calibrated existing conditions trip generation model.

Table T-1D. Estimated Future Unmitigated Trip Generation

	Inbound	Outbound	Total
Daily			
Future Total Trips	8,800	8,800	17,600
Existing Total Trips	*4,600*	*4,600*	*9,200*
Net New Trips	**4,200**	**4,200**	**8,400**
AM Peak Hour			
Future Total Trips	1,210	440	1,650
Existing Total Trips	*590*	*210*	*800*
Net New Trips	**620**	**230**	**850**
PM Peak hour			
Future Total Trips	420	990	1,410
Existing Total Trips	*220*	*500*	*720*
Net New Trips	**200**	**490**	**690**

Source: The Transpo Group, November 2007

As shown in the table, without mitigation, the Action Alternatives would increase existing Children's traffic by 8,400 vehicle trips per day with 850 trips occurring during the AM peak hour and 690 trips occurring during the PM peak hour. It should be noted that vehicle trip generation does not completely double since different population groups have varying contributions to vehicle trip generation and the growth of these population groups varies between a factor of 1.5 and 2.11.

Trip Distribution and Assignment

A distribution of project-generated traffic to the study intersection was developed using residential zip code data for existing Children's employees and patients. Figure T-1B shows the distribution of employees and Figure T-1C show the distribution of patients/visitors. As shown in the Figure T-1B, approximately 45 percent of employees travel to and from the south via I-5, SR 520 or Montlake Boulevard; approximately 9 percent travel to and from the west via NE 45th Street or NE 65th Street; approximately 30 percent travel to and from the north via I-5 and local arterials such as 25th Avenue NE, 35th Avenue NE, and 40th Street

NE; approximately 1 percent travel to and from the local neighborhoods; and approximately 15 percent travel to and from Children's via Sand Point Way NE. Figure T-1C shows approximately 65 percent of patients/visitors travel to and from the south via I-5, SR 520 or Montlake Boulevard; approximately 3 percent travel to and from the west via NE 45th Street or NE 65th Street; approximately 25 percent travel to and from the north via I-5 and local arterials such as 25th Avenue NE, 35th Avenue NE, and 40th Street NE; and approximately 7 percent travel to and from Children's via Sand Point Way NE.

Project traffic was assigned to the street system based on the trip distribution discussed above (see Appendix T-2). These project traffic volumes were combined with the 2030 baseline (No-Build) forecasts to arrive at the 2030 with-project conditions. Figures showing the 2030 with-project traffic volumes are provided in Appendix T-2.

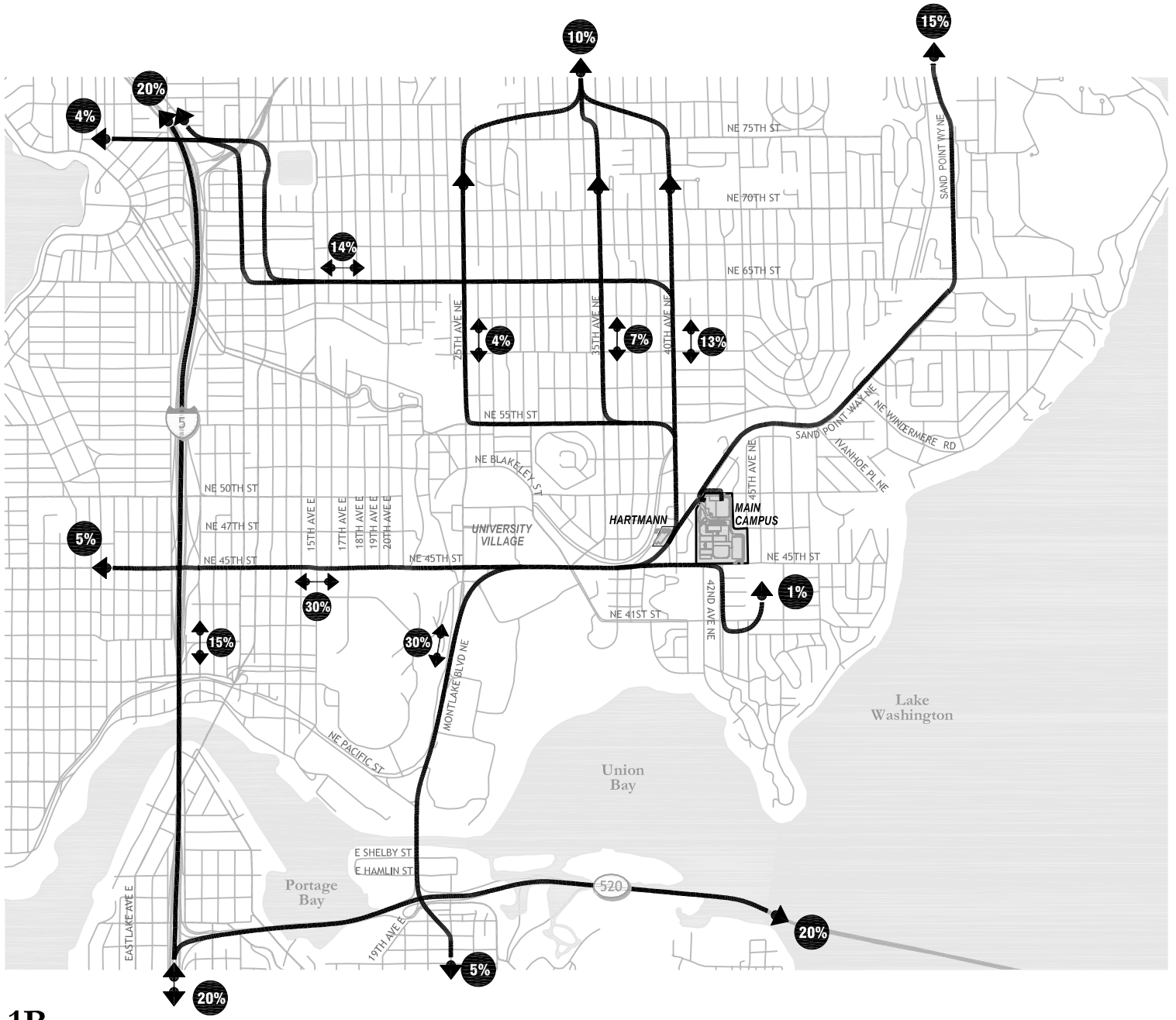


Figure T-1B

Employee Trip Distribution

Children's Hospital MIMP II DEIS

The Transpo Group

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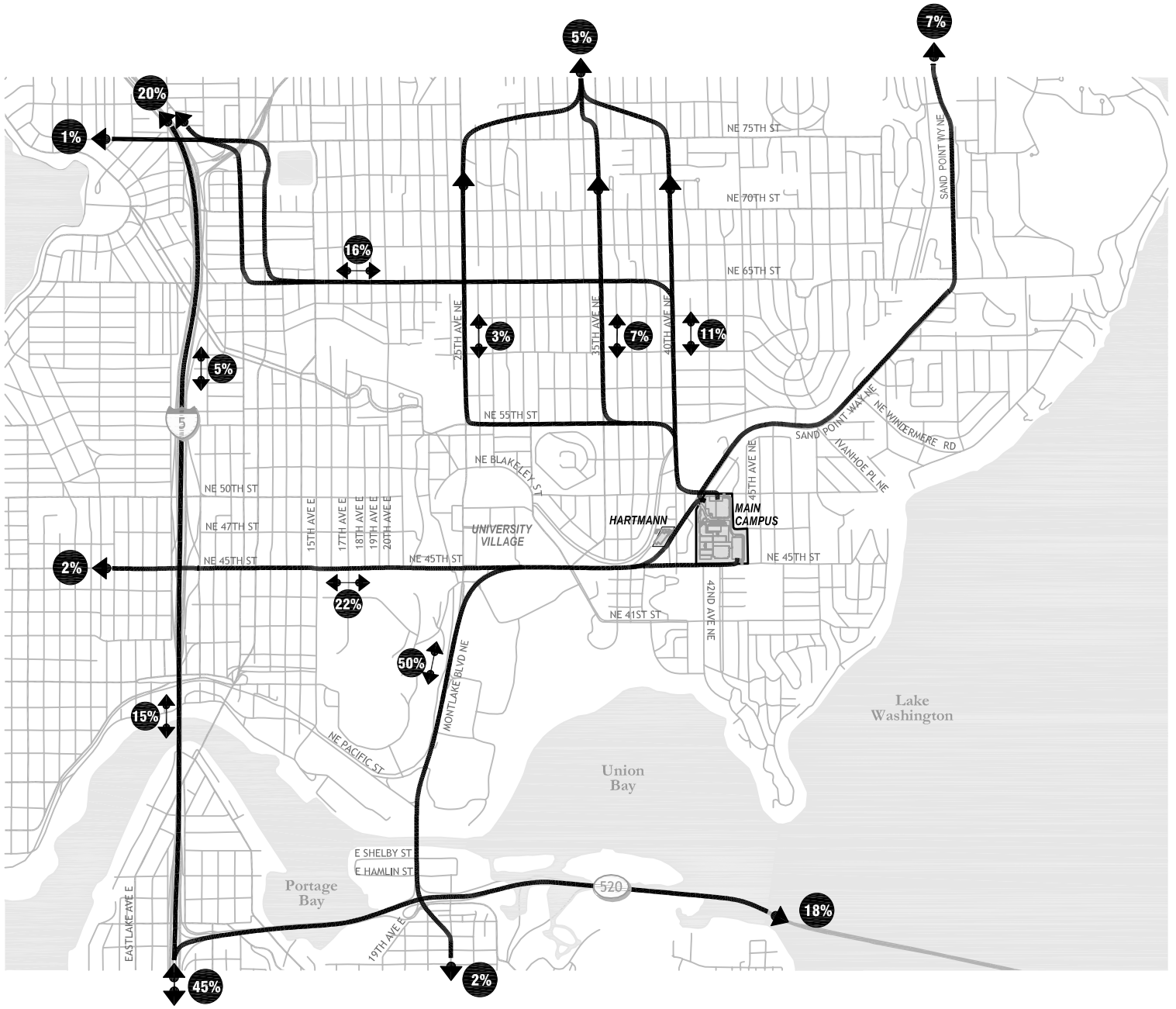

Figure T-1C

Patient/Visitor Trip Distribution

Children's Hospital MIMP II DEIS

The Transpo Group

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Attachment T-2
Intersection Turning Movement Figures

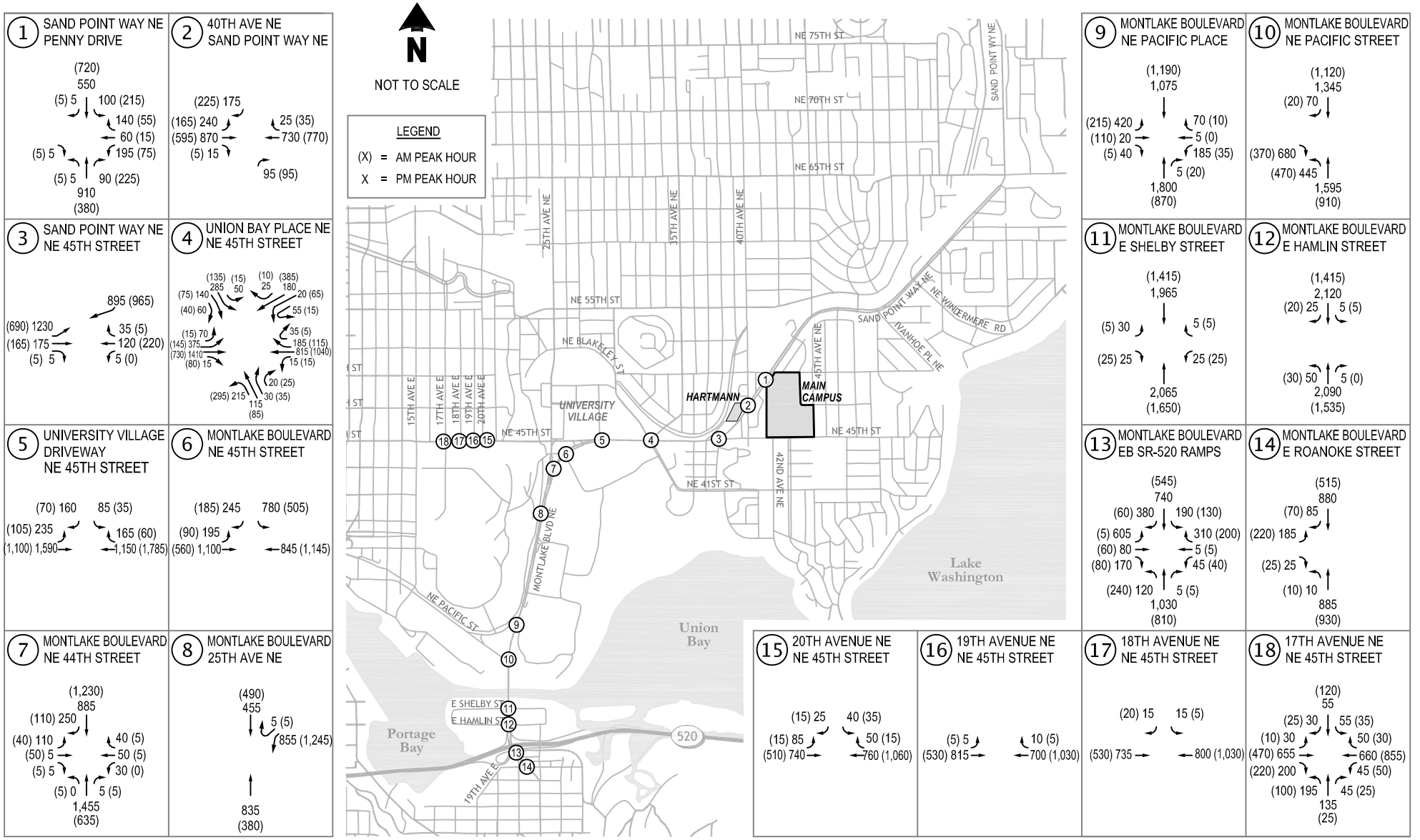

Figure T-2A-1

Existing Peak Hour Traffic Volumes

Children's Hospital MIMP II DEIS

The Transpo Group

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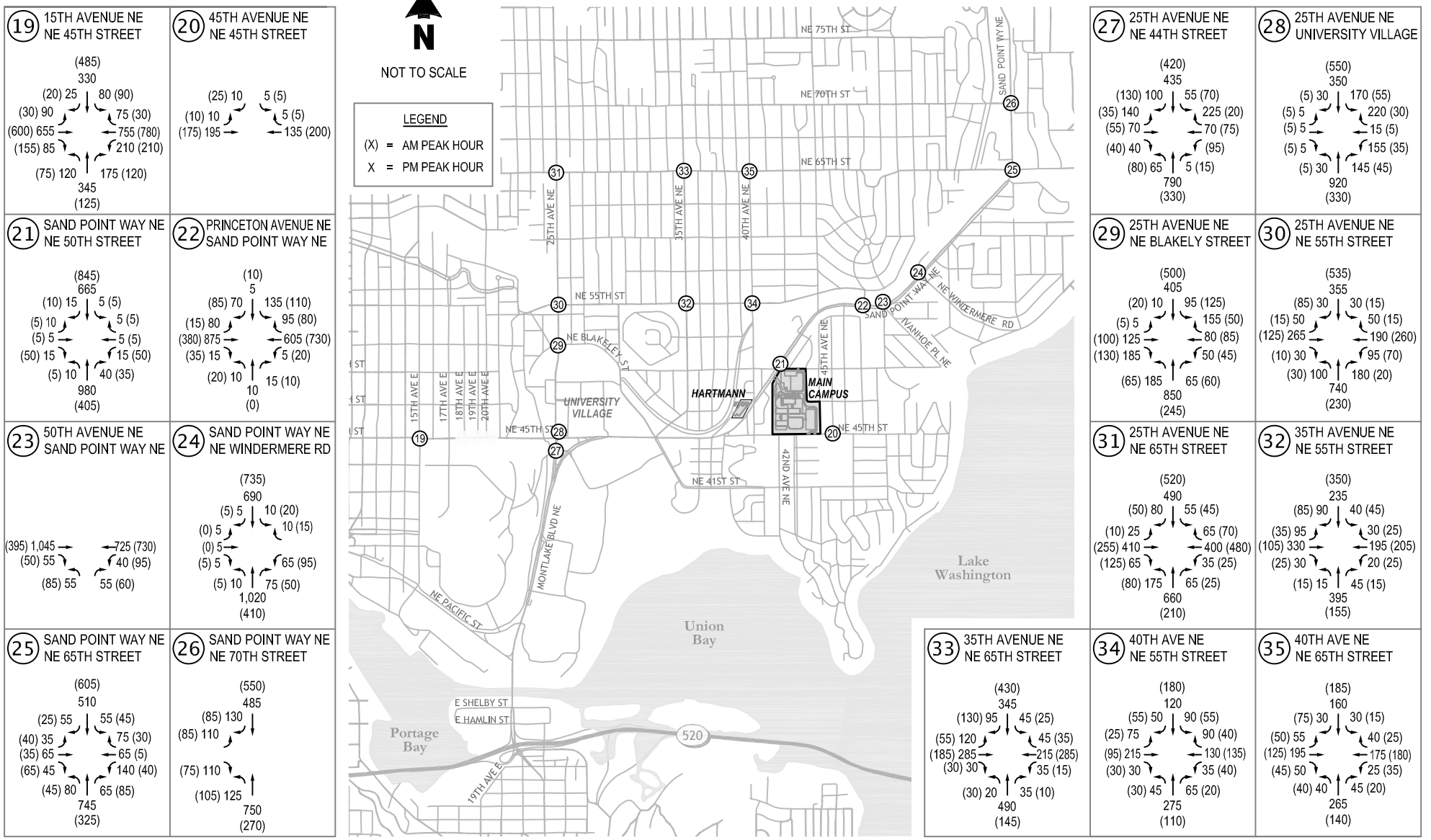

Figure T-2A-2

Existing Peak Hour Traffic Volumes (Cont.)

Children's Hospital MIMP II DEIS

The Transpo Group

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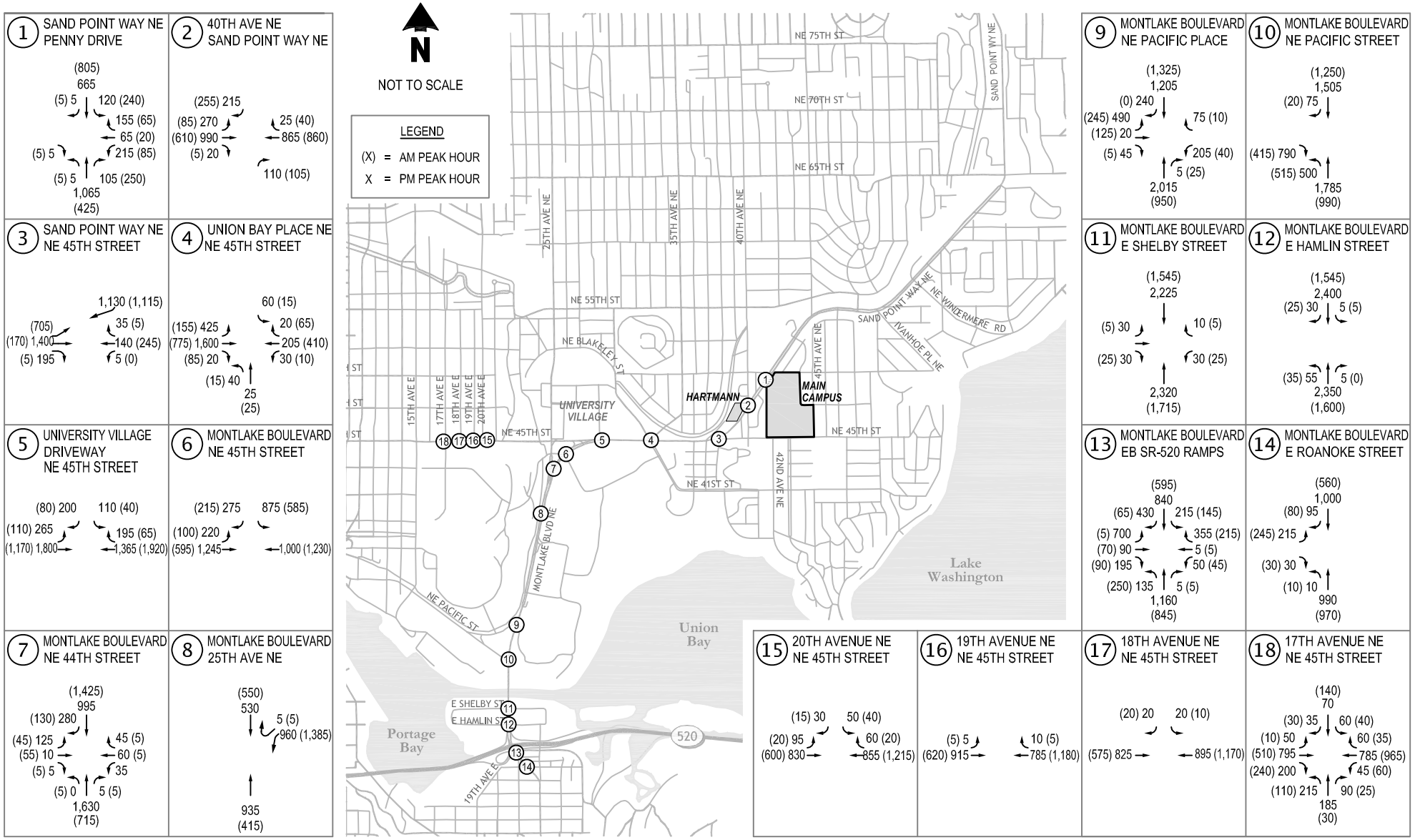

Figure T-2B-1

No-Build (2030) Alternative Peak Hour Traffic Volumes

Children's Hospital MIMP II DEIS

The Transpo Group

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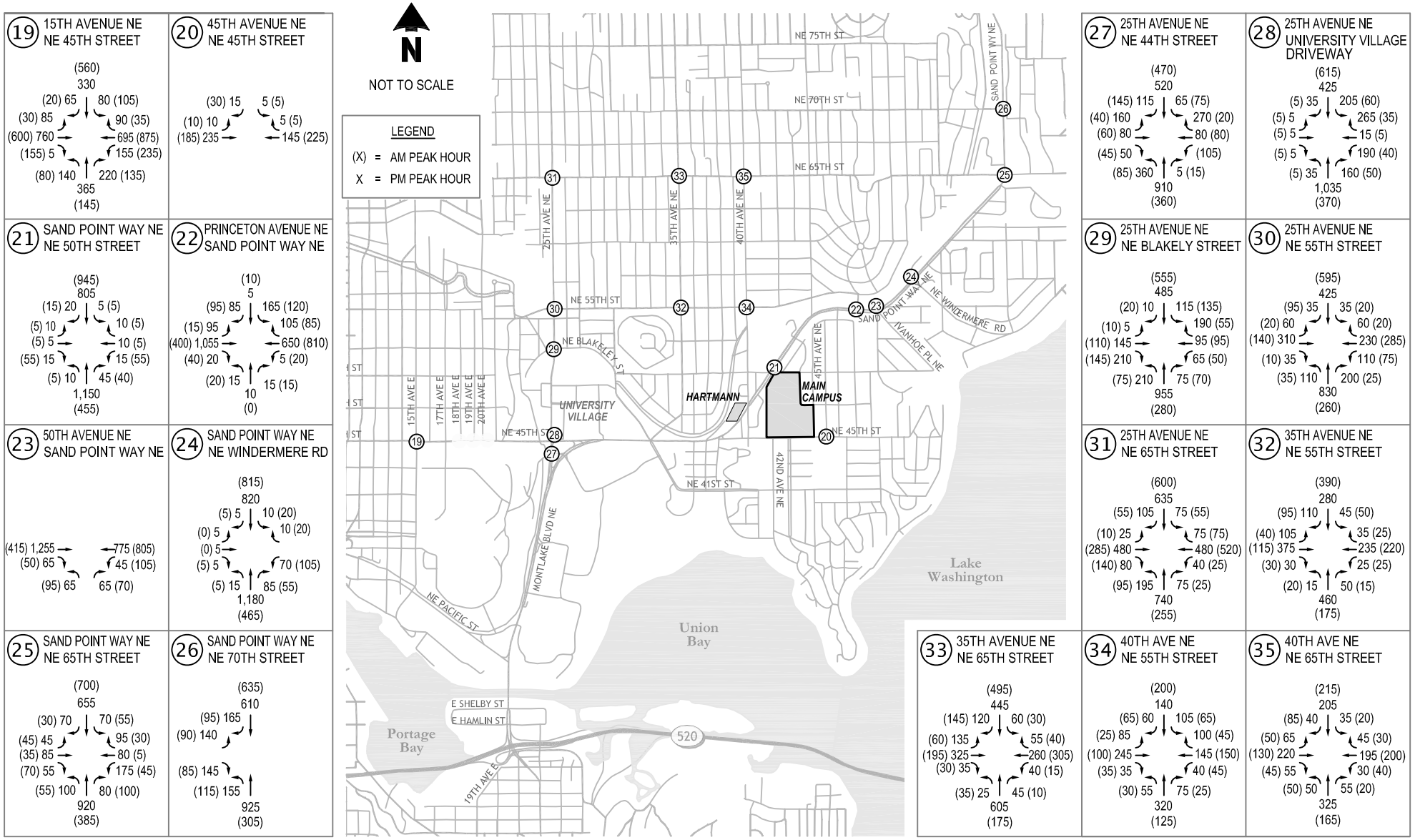

Figure T-2B-2

No-Build Alternative Peak Hour Traffic Volumes (Cont.)

Children's Hospital MIMP II DEIS

The Transpo Group

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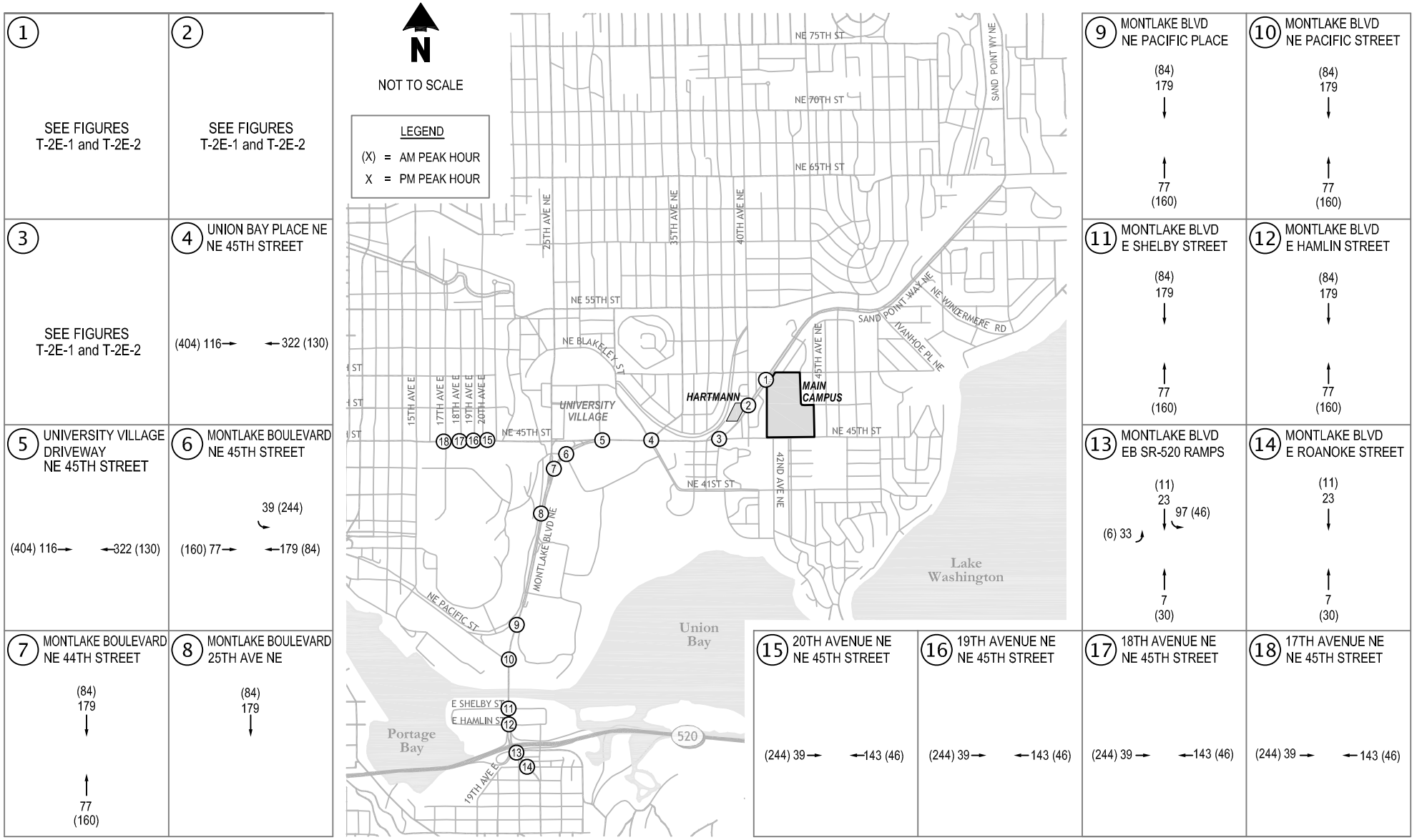

Figure T-2C-1
Project Trip Assignment

Children's Hospital MIMP II DEIS

The Transpo Group

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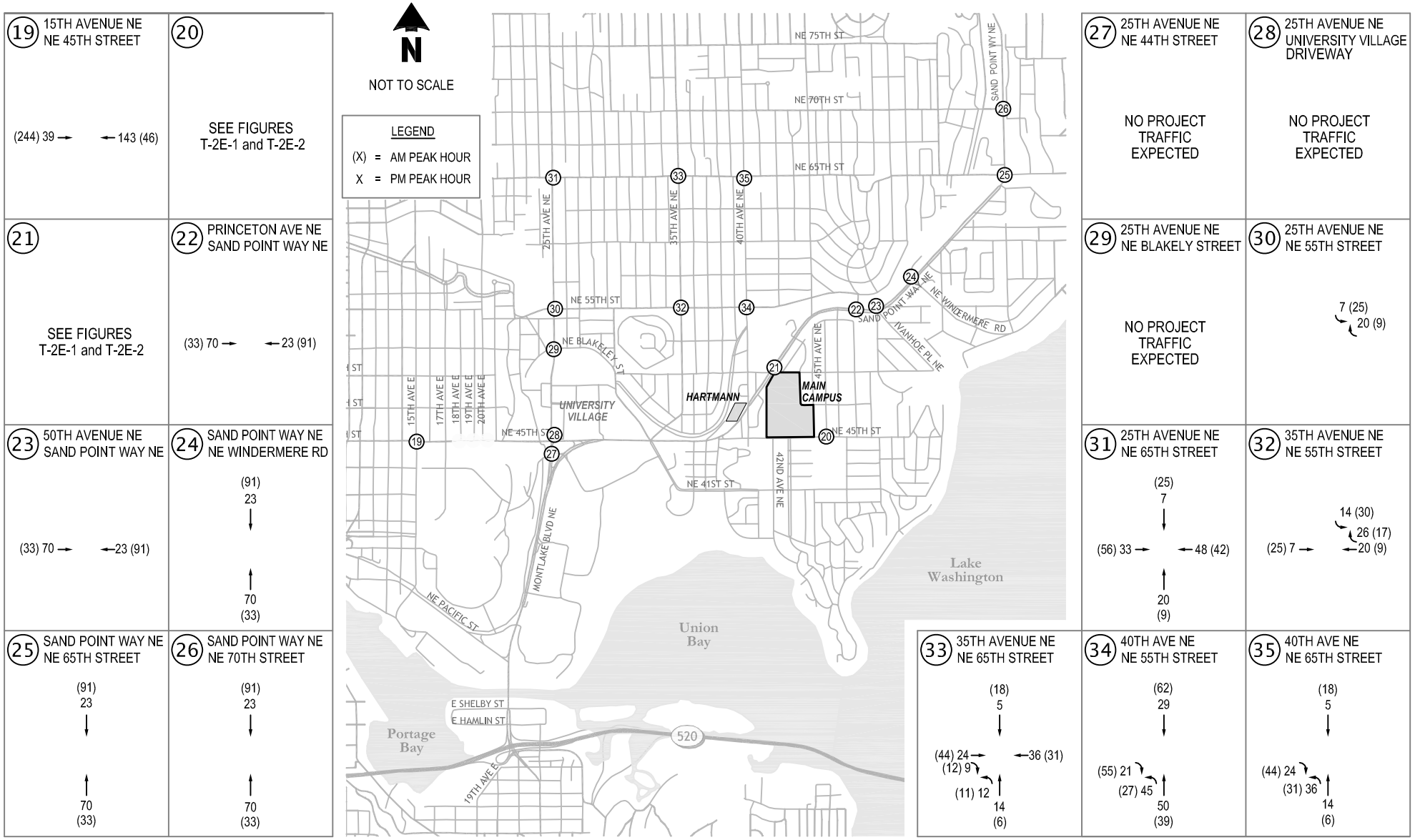

Figure T-2C-2
Project Trip Assignment (Cont.)

Children's Hospital MIMP II DEIS

The Transpo Group

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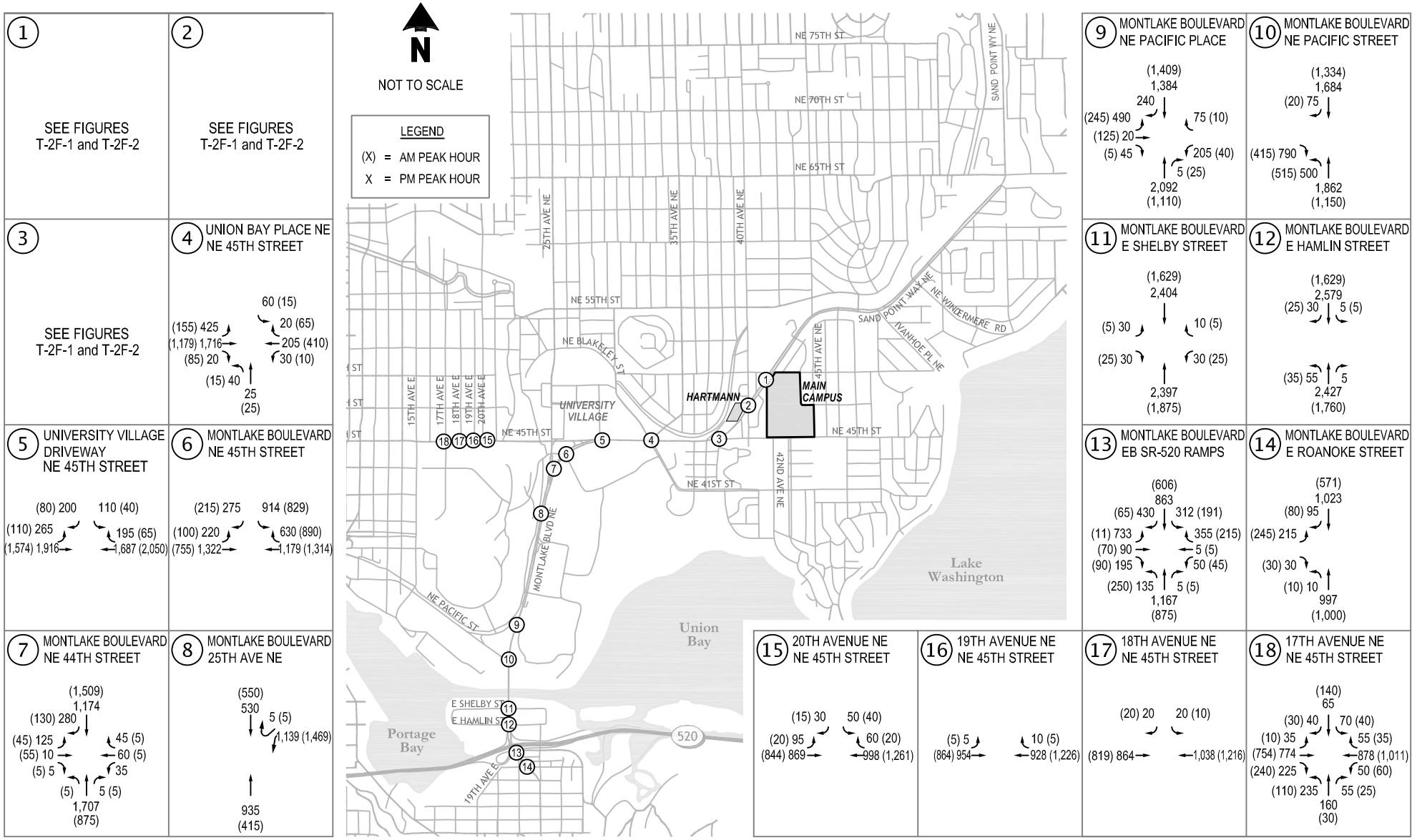

Figure T-2D-1

Build Alternatives (2030) Peak Hour Traffic Volumes

Children's Hospital MIMP II DEIS

The Transpo Group

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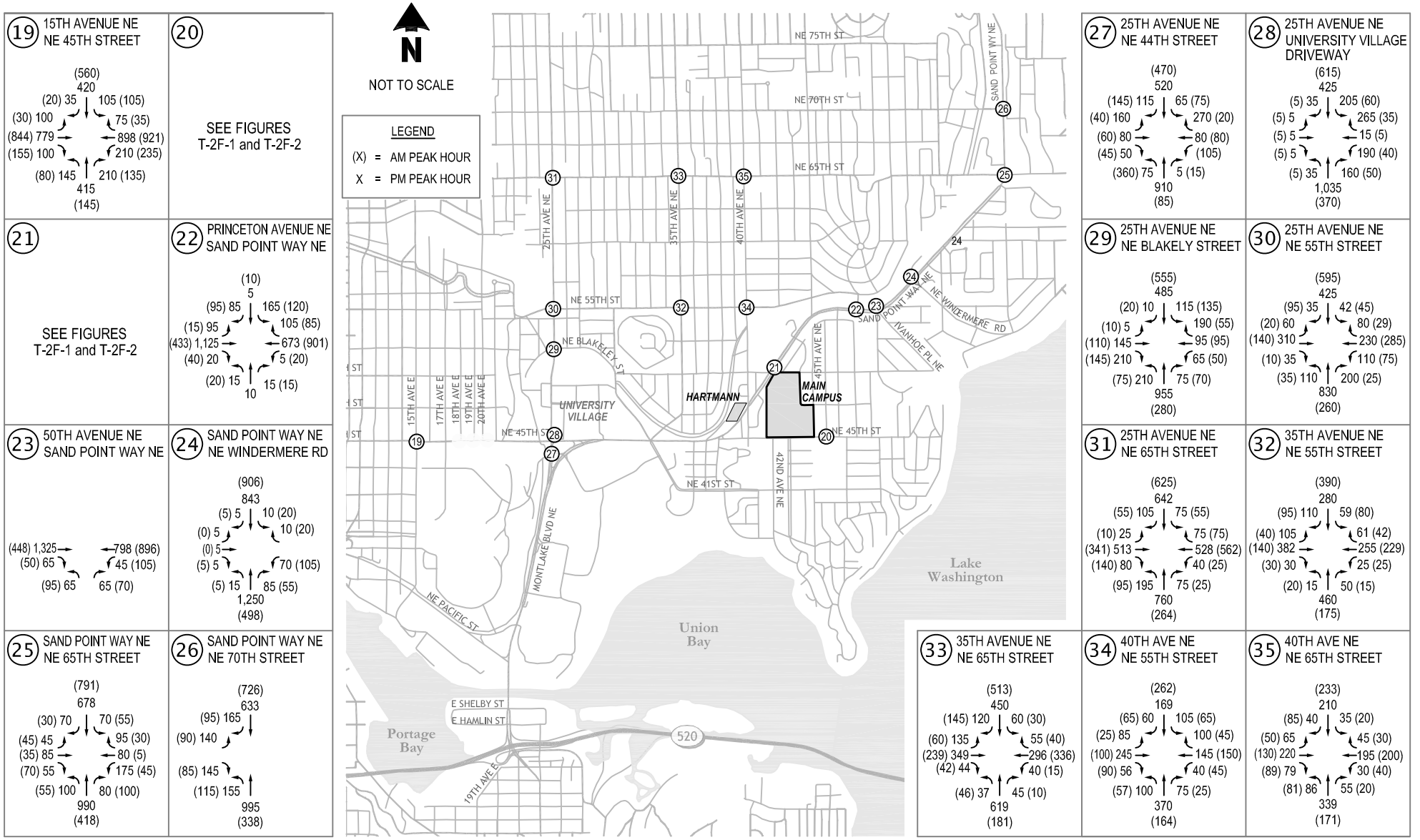

Figure T-2D-2

Build Alternatives (2030) Peak Hour Traffic Volumes (Cont.)

Children's Hospital MIMP II DEIS

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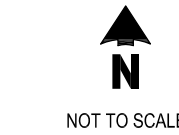

LEGEND
X = PM PEAK HOUR
(X) = AM PEAK HOUR

Alternative 3

1 SAND POINT WAY NE PENNY DRIVE	2 40TH AVE NE SAND POINT WAY NE	3 SAND POINT WAY NE NE 45TH STREET	20 45TH AVENUE NE NE 45TH STREET	21 SAND POINT WAY NE NE 50TH STREET	36 SITE ACCESS NE 50TH STREET	37 HARTMAN DRIVEWAY SAND POINT WAY NE
(146) 287 45 (100) 88 (37) 407 (183) 165 (505) 145 (338)	(46) 9 (16) 34 (704) 282 26 (129) 93 (44) 592 (280) 9 (4) 2 (12)	(294) 668 (806) 298	(4) 9 2 (12)	(186) 182 9 (36) 27 (12) (60) 20 49 (22) (7) 27 123 (54) (4) 20 57 (147) 156 (225)	(244) 86 (89) 199	(40) 91 (109) 40 58 (27) 24 (73) (695) 258 577 (254)

Alternative 6

1 SAND POINT WAY NE PENNY DRIVE	2 40TH AVE NE SAND POINT WAY NE	3 SAND POINT WAY NE NE 45TH STREET	20 45TH AVENUE NE NE 45TH STREET	21 SAND POINT WAY NE NE 50TH STREET	36 SITE ACCESS NE 50TH STREET	37 HARTMAN DRIVEWAY SAND POINT WAY NE	38 40TH AVE NE NE 45TH STREET
(160) 339 45 (100) 88 (37) 407 (183) 164 (504) 159 (407)	(13) 3 (4) 9 (772) 295 26 (129) 93 (44) 644 (294) 9 (4) 2 (12)	(294) 668 (805) 297	(4) 9 2 (12)	(172) 177 16 (59) 46 (22) (84) 27 68 (31) (6) 23 184 (81) (4) 17 83 (220) 147 (220)	(363) 126 (133) 298	(13) 30 (37) 13 (768) 284 20 (9) 9 (24) 638 (281)	9 (4) 2 (12)

Figure T-2E-1A-Rev

Project Trip Assignment (Site Access) – With 50th Street Access

Children's Hospital MIMP II DEIS

The Transpo Group

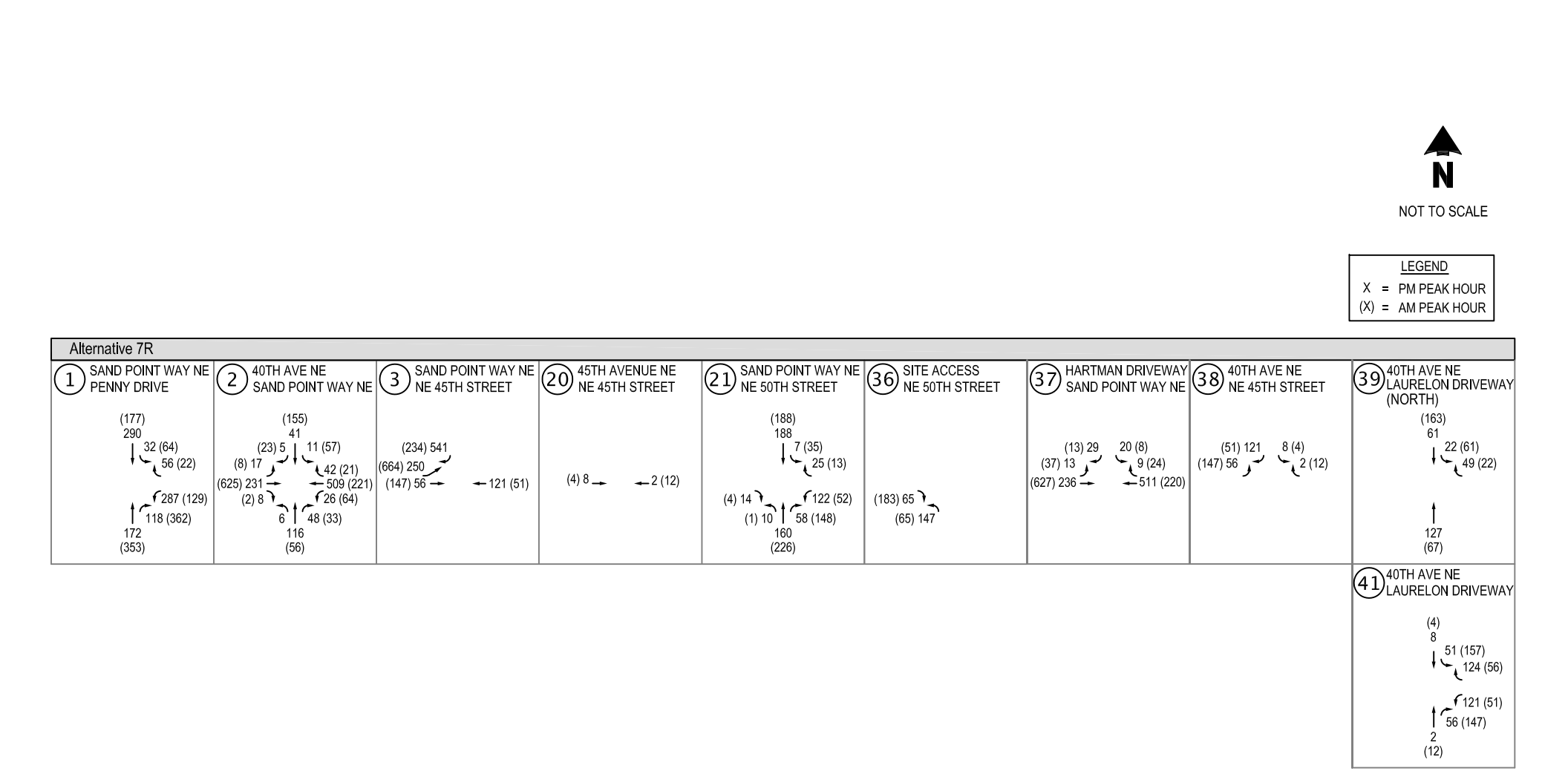

Figure T-2E-1B-Rev

Project Trip Assignment (Site Access) – With 50th Street Access

Children's Hospital MIMP II DEIS

The Transpo Group

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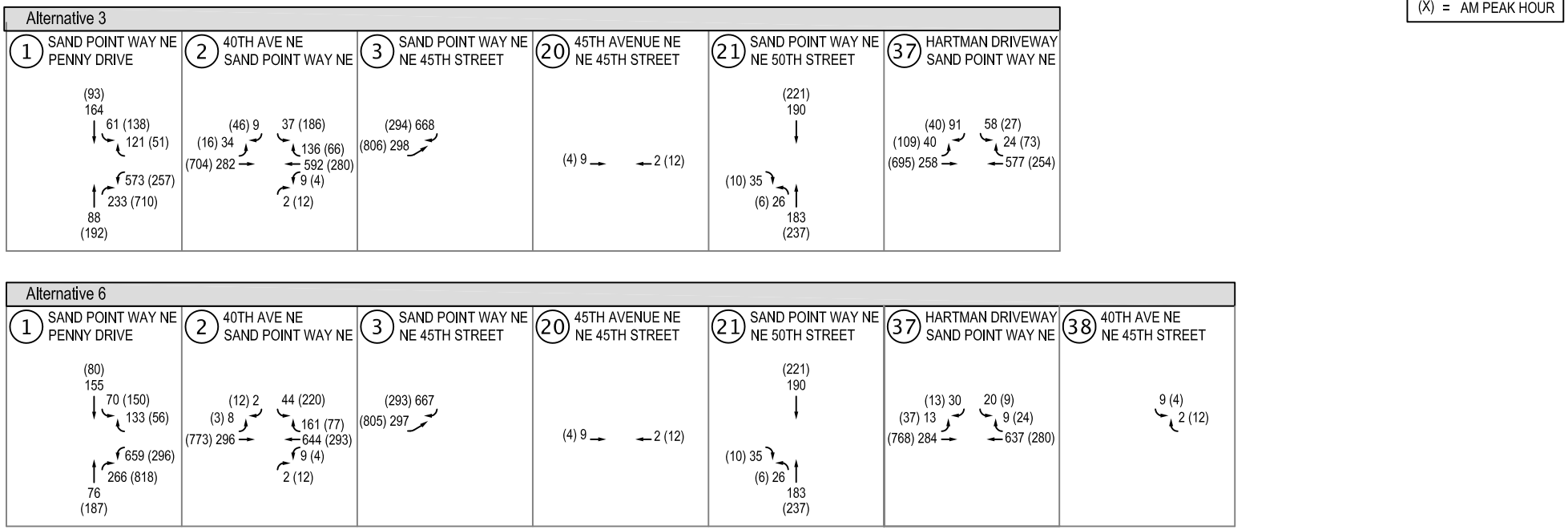

Figure T-2E-2A-Rev

Project Trip Assignment (Site Access) – Without 50th Street Access

Children's Hospital MIMP II DEIS

The Transpo Group

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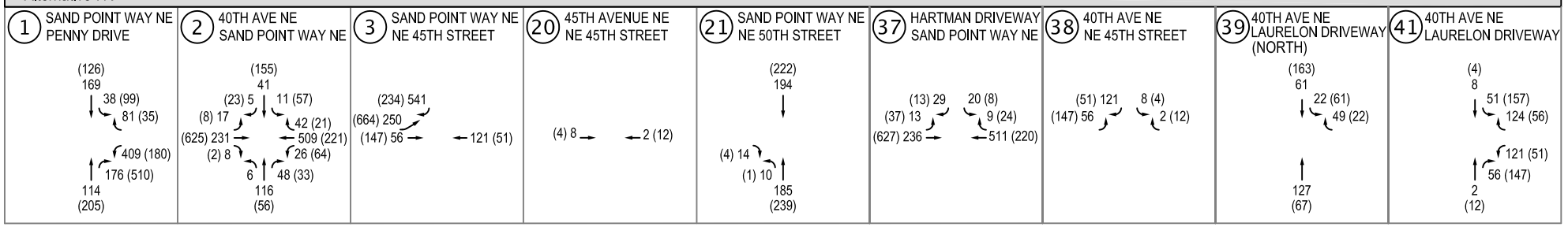
N

NOT TO SCALE

LEGEND
X = PM PEAK HOUR
(X) = AM PEAK HOUR

Alternative 7R



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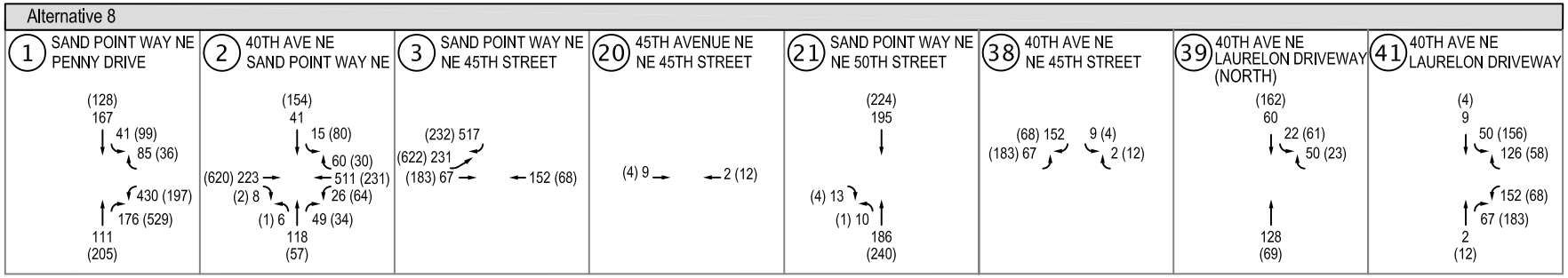

Figure T-2E-2B-Rev

Project Trip Assignment (Site Access) – Without 50th Street Access

Children's Hospital MIMP II DEIS

The Transpo Group

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NOT TO SCALE

LEGEND
X = PM PEAK HOUR
(X) = AM PEAK HOUR

Alternative 3

1 SAND POINT WAY NE / PENNY DRIVE	2 40TH AVE NE / SAND POINT WAY NE	3 SAND POINT WAY NE / NE 45TH STREET	20 45TH AVENUE NE / NE 45TH STREET	21 SAND POINT WAY NE / NE 50TH STREET	36 SITE ACCESS / NE 50TH STREET	37 HARTMAN DRIVEWAY / SAND POINT WAY NE
(951) 952 (5) 5 ↓ 45 (100) 88 (37) ↘ (5) 5 ↘ 407 (183) (5) 5 ↑ 165 (505) 1,210 (763)	(10) 10 (301) 224 ↓ 46 (149) (101) 304 ↘ 118 (84) (1,064) 1,167 → 1,242 (1,055) (5) 20 ↘ 34 (29) (20) 20 ↑ 112 (117) 10 (10)	(1,324) 1,533 (1,261) 1,438 ↘ 35 (5) (170) 195 → 140 (245) (5) 5 ↘	(30) 15 ↘ 5 (5) (10) 10 ↘ 5 (5) (189) 244 → 147 (237)	(891) 867 (15) 20 ↓ 14 (41) (5) 10 ↘ 37 (17) (65) 25 → 59 (27) (62) 42 ↘ 138 (109) (9) 30 ↑ 102 (187) 1,151 (615)	(50) 55 → 35 (65) (244) 86 ↘ (89) 199	(40) 91 ↘ 58 (27) (109) 40 ↘ 24 (73) (1,725) 1,433 → 1,442 (1,249)

Alternative 6

1 SAND POINT WAY NE / PENNY DRIVE	2 40TH AVE NE / SAND POINT WAY NE	3 SAND POINT WAY NE / NE 45TH STREET	20 45TH AVENUE NE / NE 45TH STREET	21 SAND POINT WAY NE / NE 50TH STREET	36 SITE ACCESS / NE 50TH STREET	37 HARTMAN DRIVEWAY / SAND POINT WAY NE
(965) 1,004 (5) 5 ↓ 45 (100) 88 (37) ↘ (5) 5 ↘ 407 (183) (5) 5 ↑ 164 (504) 1,224 (832)	(10) 10 (268) 218 ↓ 46 (149) (89) 279 ↘ 118 (84) (1,132) 1,180 → 1,294 (1,069) (5) 20 ↘ 34 (29) (20) 20 ↑ 112 (117) 10 (10)	(1,324) 1,533 (1,260) 1,437 ↘ 35 (5) (170) 195 → 140 (245) (5) 5 ↘	(30) 15 ↘ 5 (5) (10) 10 ↘ 5 (5) (189) 244 → 147 (237)	(877) 862 (15) 20 ↓ 21 (64) (5) 10 ↘ 56 (27) (89) 32 → 78 (36) (61) 38 ↘ 199 (136) (9) 27 ↑ 128 (260) 1,142 (610)	(50) 55 → 35 (65) (363) 126 ↘ (133) 298	(13) 30 ↘ 20 (9) (37) 13 ↘ 9 (24) (1,798) 1,459 → 1,503 (1,276)

38 40TH AVE NE / NE 45TH STREET

(35) 25 ↘ 59 (54)
(25) 35 ↘ 52 (67)
(160) 235 ↘ 160 (235)

Figure T-2F-1A-Rev

Project Trip Assignment (Site Access) – With 50th Street Access

Children's Hospital MIMP II DEIS

The Transpo Group

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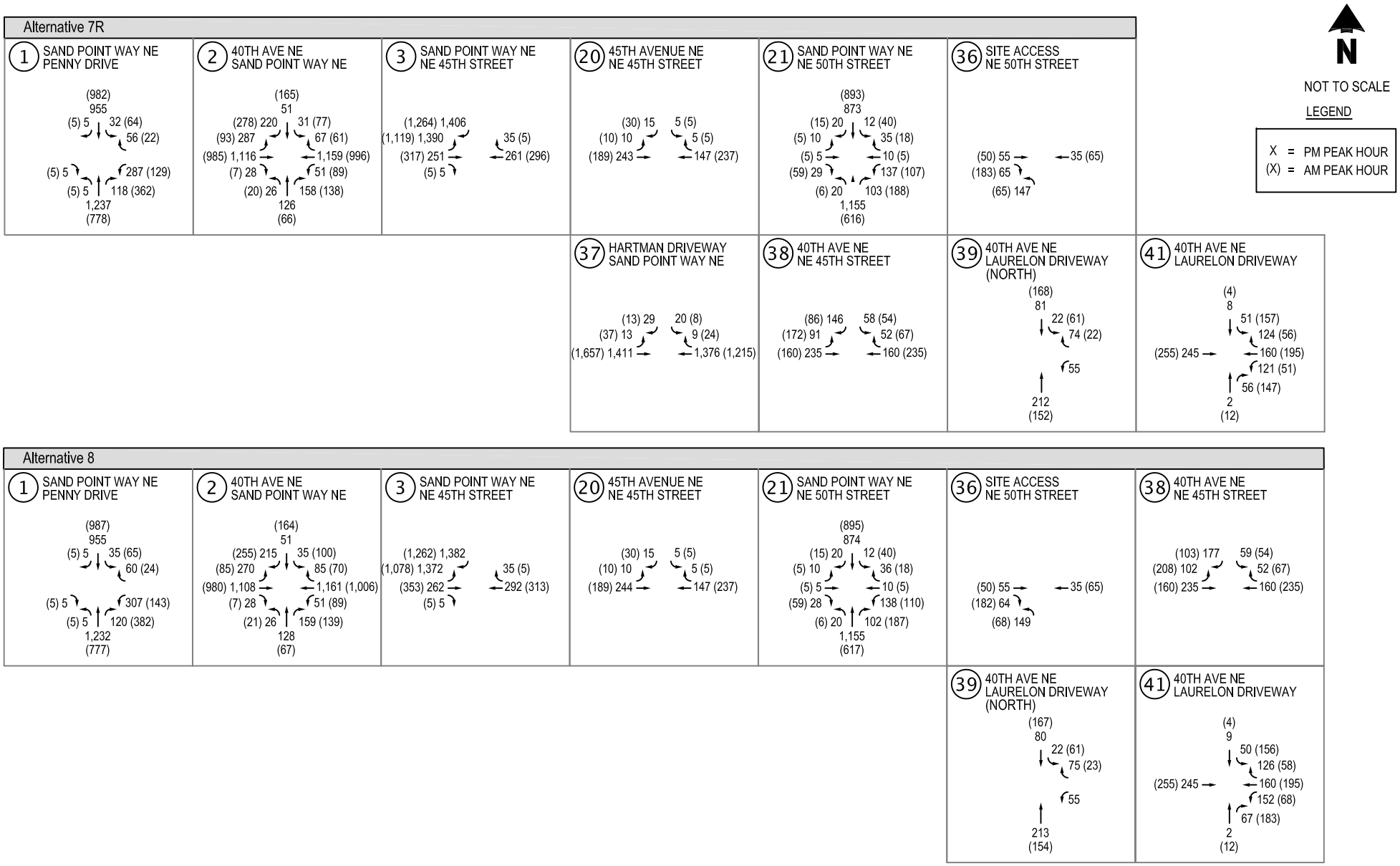

Figure T-2F-1B-Rev

Project Trip Assignment (Site Access) – With 50th Street Access

Children's Hospital MIMP II DEIS

The Transpo Group

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NOT TO SCALE

LEGEND
X = PM PEAK HOUR
(X) = AM PEAK HOUR

Alternative 3

1 SAND POINT WAY NE PENNY DRIVE	2 40TH AVE NE SAND POINT WAY NE	3 SAND POINT WAY NE NE 45TH STREET	20 45TH AVENUE NE NE 45TH STREET	21 SAND POINT WAY NE NE 50TH STREET	37 HARTMAN DRIVEWAY SAND POINT WAY NE
(898) 829 (5) 5 61 (138) 121 (51) (5) 5 573 (257) (5) 5 233 (710) 1,153 (617)	(10) 10 (301) 224 57 (206) (101) 304 161 (106) (1,064) 1,167 1,242 (1,055) (5) 20 34 (29) (20) 20 112 (117) 10 (10)	(1,324) 1,533 (1,261) 1,438 35 (5) (170) 195 140 (245) (5) 5	(30) 15 5 (5) (10) 10 5 (5) (189) 244 147 (237)	(926) 875 (15) 20 5 (5) (5) 10 10 (5) (5) 5 10 (5) (65) 50 15 (55) (11) 36 45 (40) 1,178 (627)	(40) 91 58 (27) (109) 40 24 (73) (1,725) 1,433 1,442 (1,249)

Alternative 6

1 SAND POINT WAY NE PENNY DRIVE	2 40TH AVE NE SAND POINT WAY NE	3 SAND POINT WAY NE NE 45TH STREET	20 45TH AVENUE NE NE 45TH STREET	21 SAND POINT WAY NE NE 50TH STREET	37 HARTMAN DRIVEWAY SAND POINT WAY NE	38 40TH AVE NE NE 45TH STREET
(885) 820 (5) 5 70 (150) 133 (56) (5) 5 659 (296) (5) 5 266 (818) 1,141 (612)	(10) 10 (267) 217 64 (240) (88) 278 186 (117) (1,133) 1,181 1,294 (1,068) (5) 20 34 (29) (20) 20 112 (117) 10 (10)	(1,323) 1,532 (1,260) 1,437 35 (5) (170) 195 140 (245) (5) 5	(30) 15 5 (5) (10) 10 5 (5) (189) 244 147 (237)	(926) 875 (15) 20 5 (5) (5) 10 10 (5) (5) 5 10 (5) (65) 50 15 (55) (11) 36 45 (40) 1,178 (627)	(13) 30 20 (9) (37) 13 9 (24) (1,798) 1,459 1,502 (1,275)	(35) 25 59 (54) (25) 35 52 (67) (160) 235 160 (235)

Figure T-2F-2A-Rev

Project Trip Assignment (Site Access) – Without 50th Street Access

Children's Hospital MIMP II DEIS

The Transpo Group

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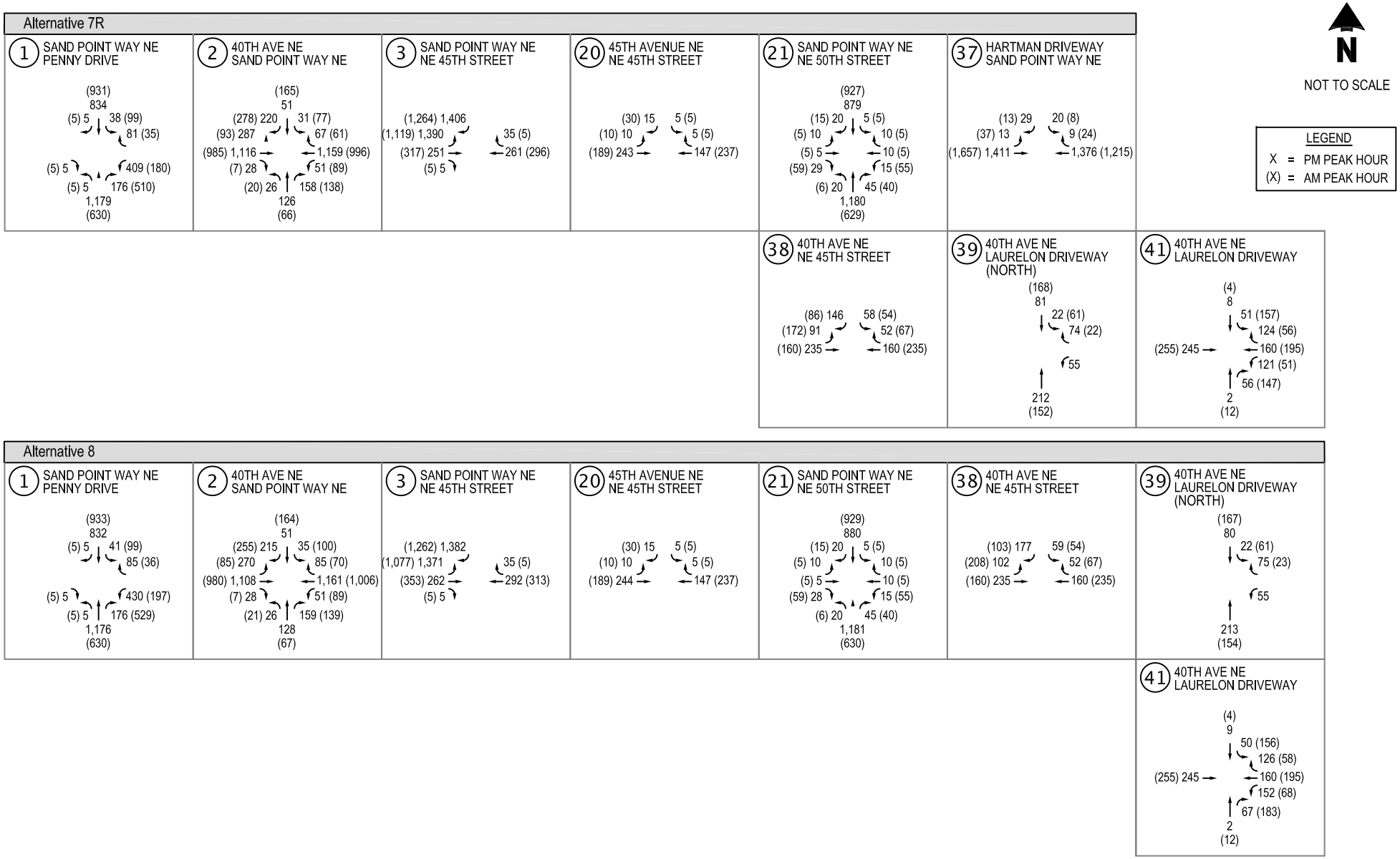

Figure T-2F-2B-Rev

Project Trip Assignment (Site Access) – Without 50th Street Access

Children's Hospital MIMP II DEIS

The Transpo Group

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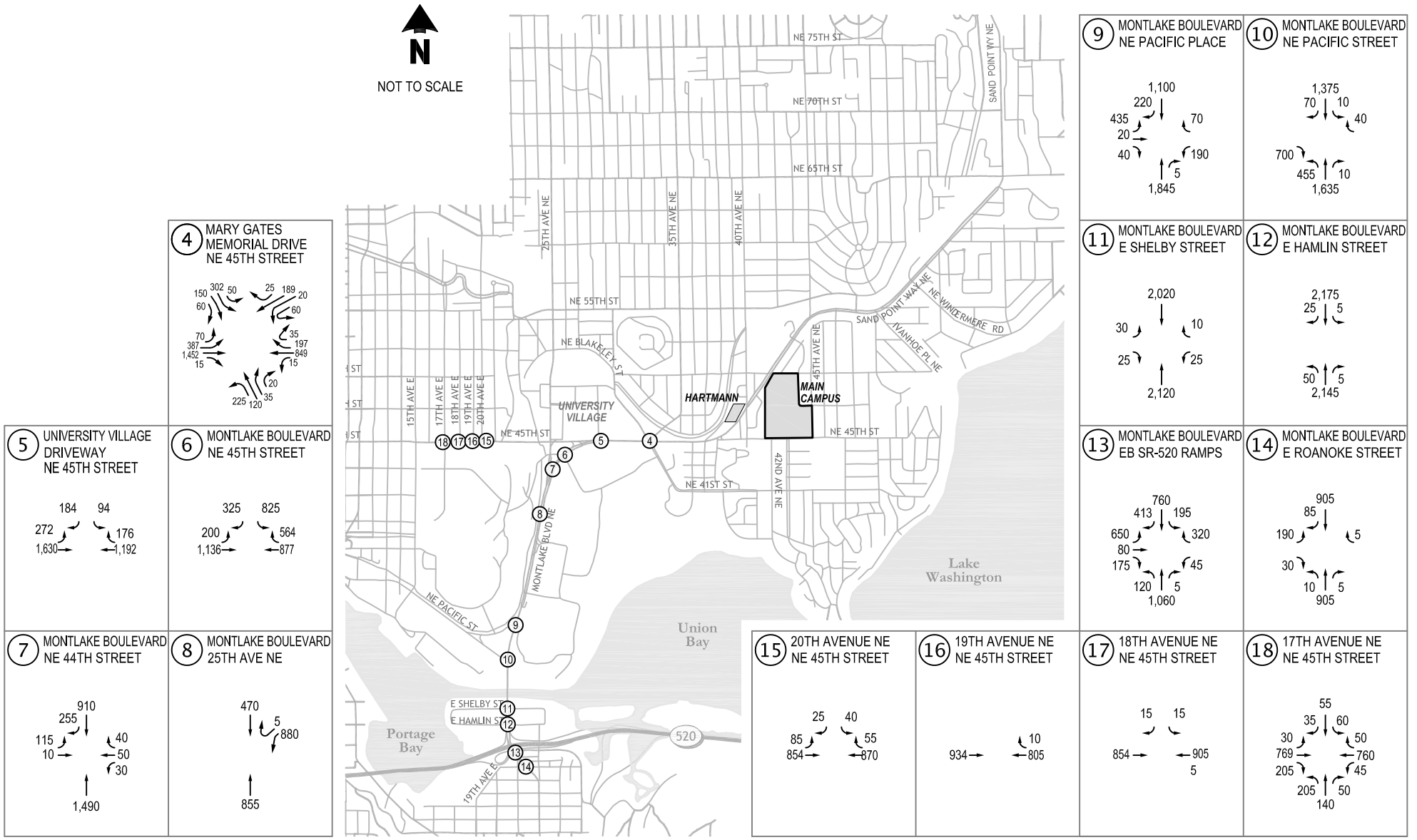

Figure T-2G-1

No-Build (2012) Alternative PM Peak Hour Traffic Volumes

Children's Hospital MIMP II DEIS

The Transpo Group

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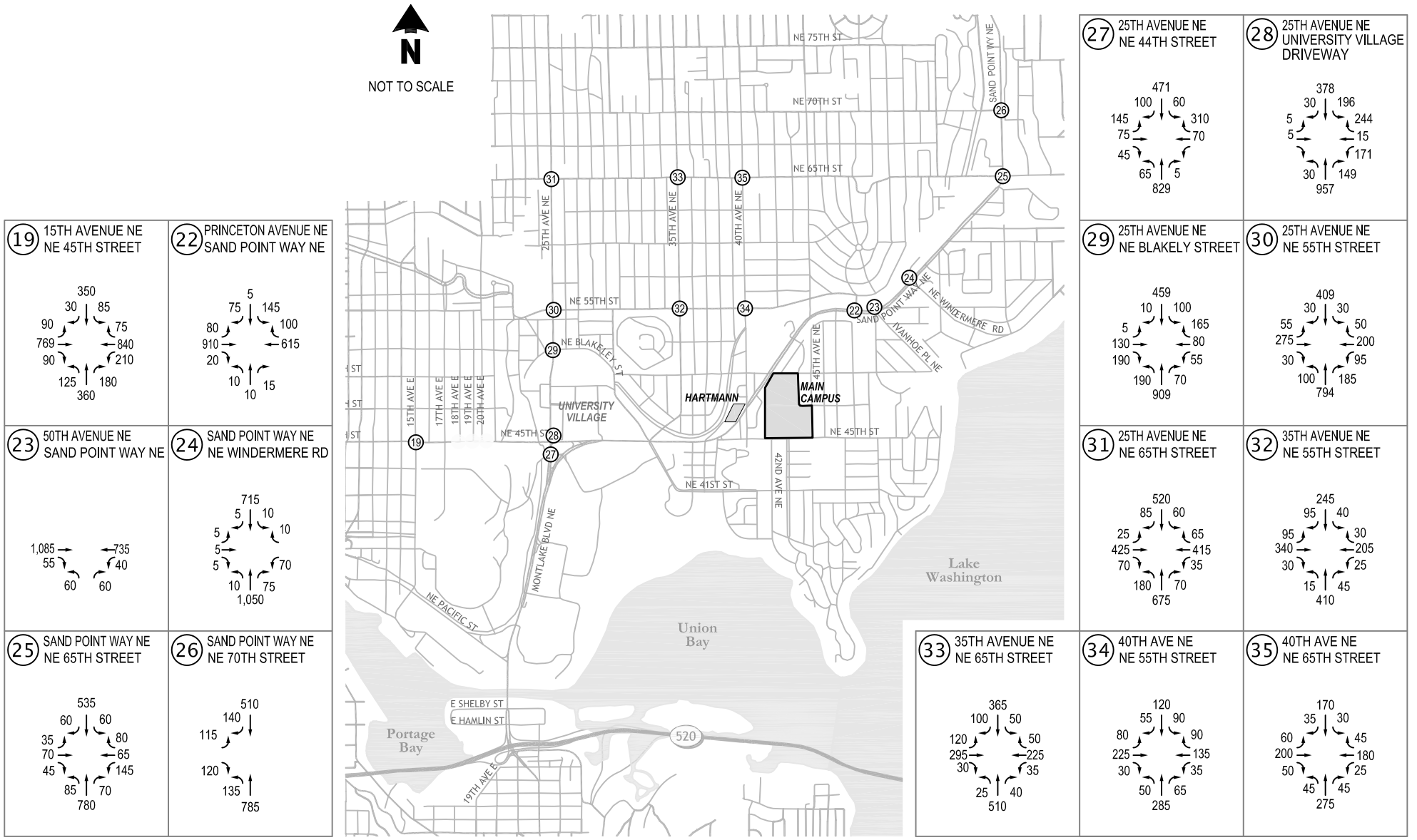

Figure T-2G-2

No-Build (2012) Alternative PM Peak Hour Traffic Volumes (Cont.)

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The Transpo Group

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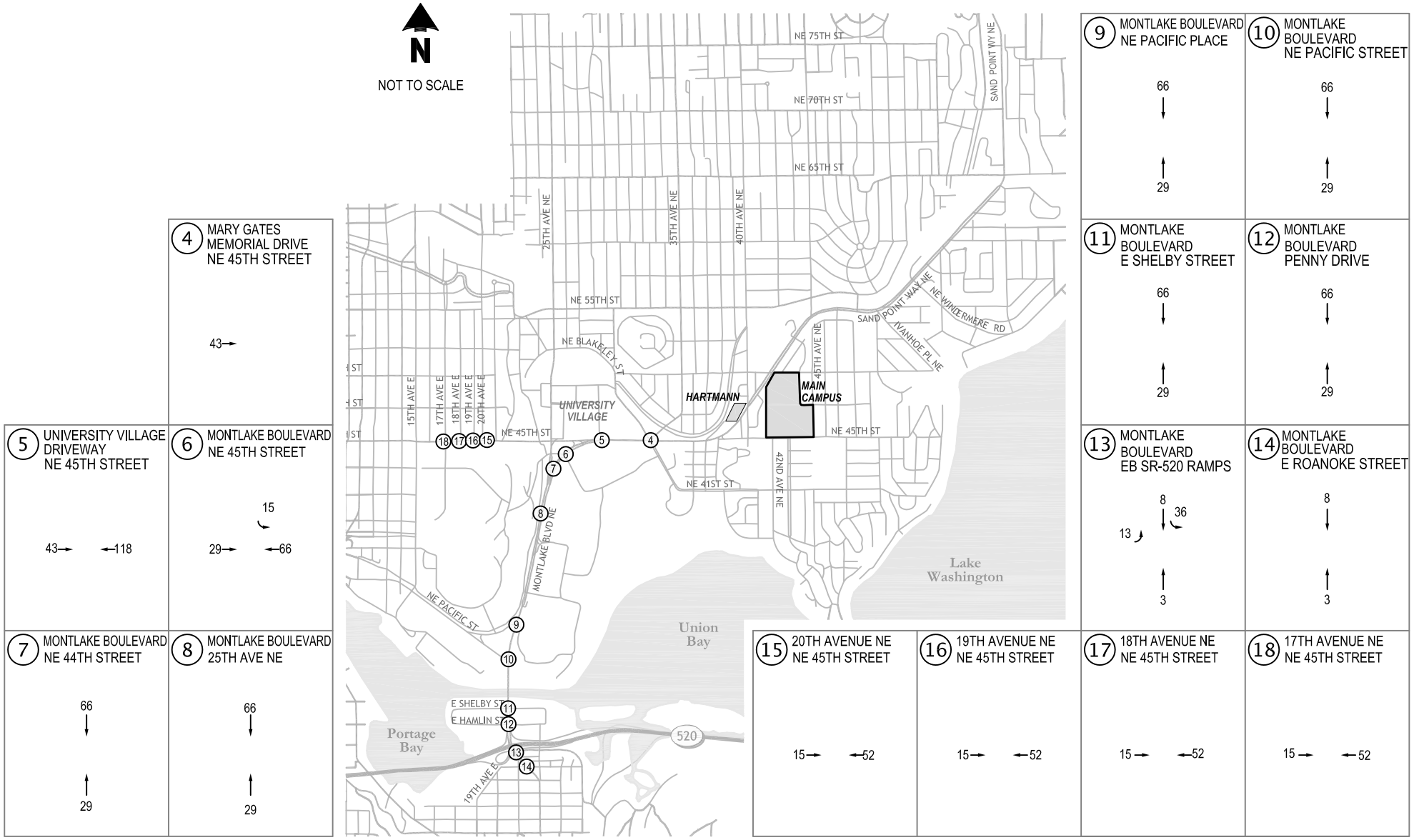

Figure T-2H-1
Phase 1 Trip Assignment

Children's Hospital MIMP II DEIS

The Transpo Group

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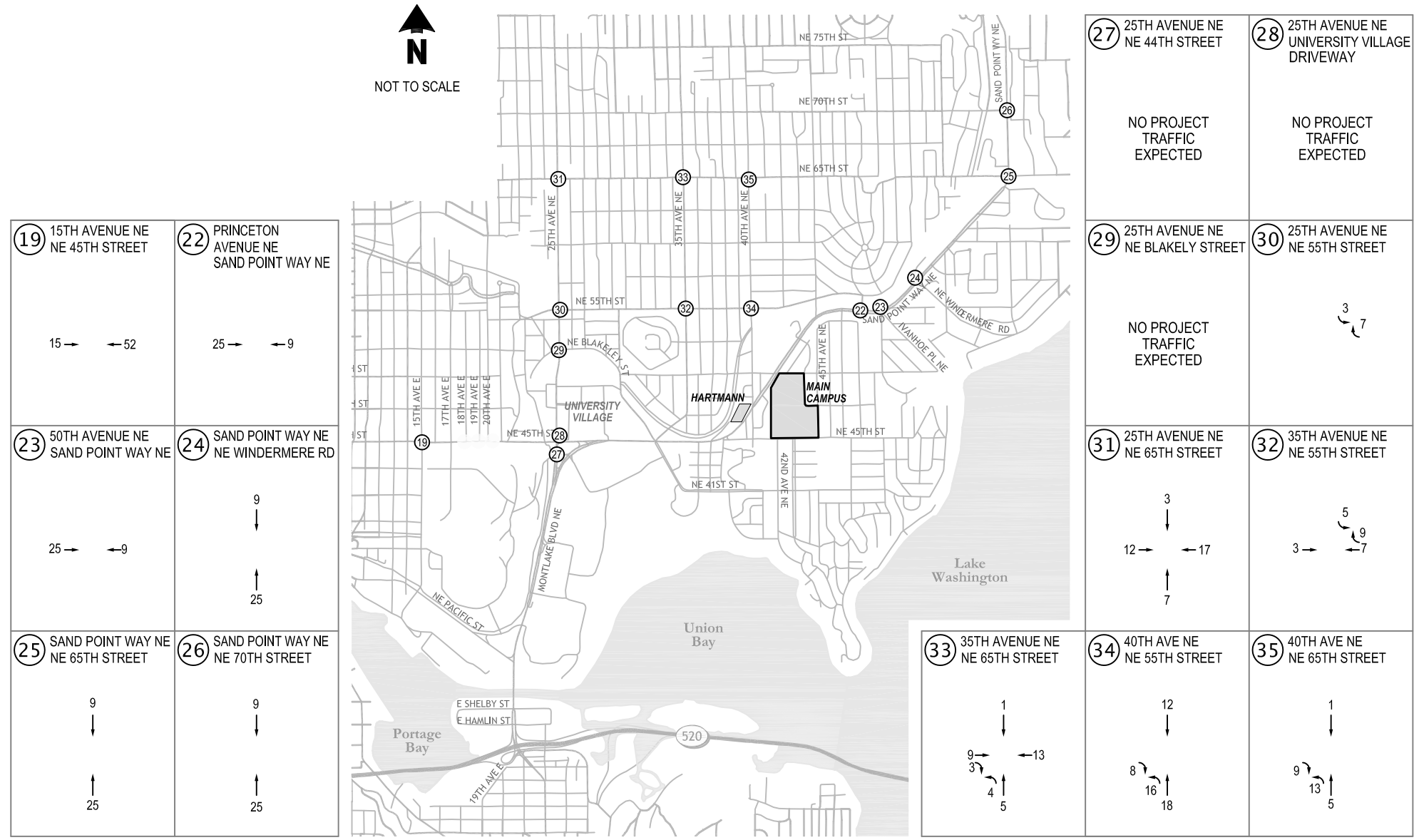

Figure T-2H-2

Phase 1 Trip Assignment (Cont.)

Children's Hospital MIMP II DEIS

The Transpo Group

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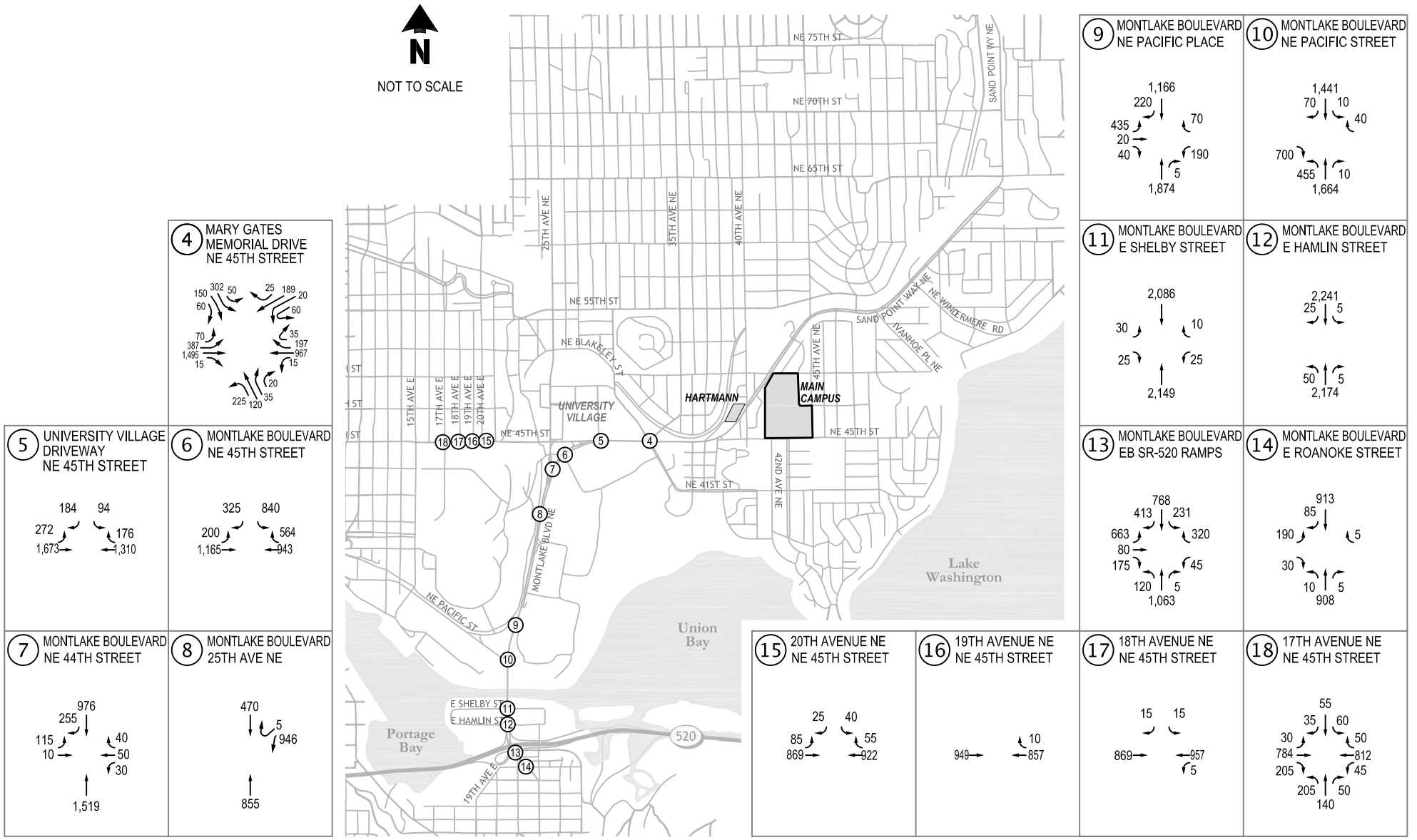

Figure T-2I-1

Phase 1 (2012) PM Peak Hour Traffic Volumes

Children's Hospital MIMP II DEIS

The Transpo Group

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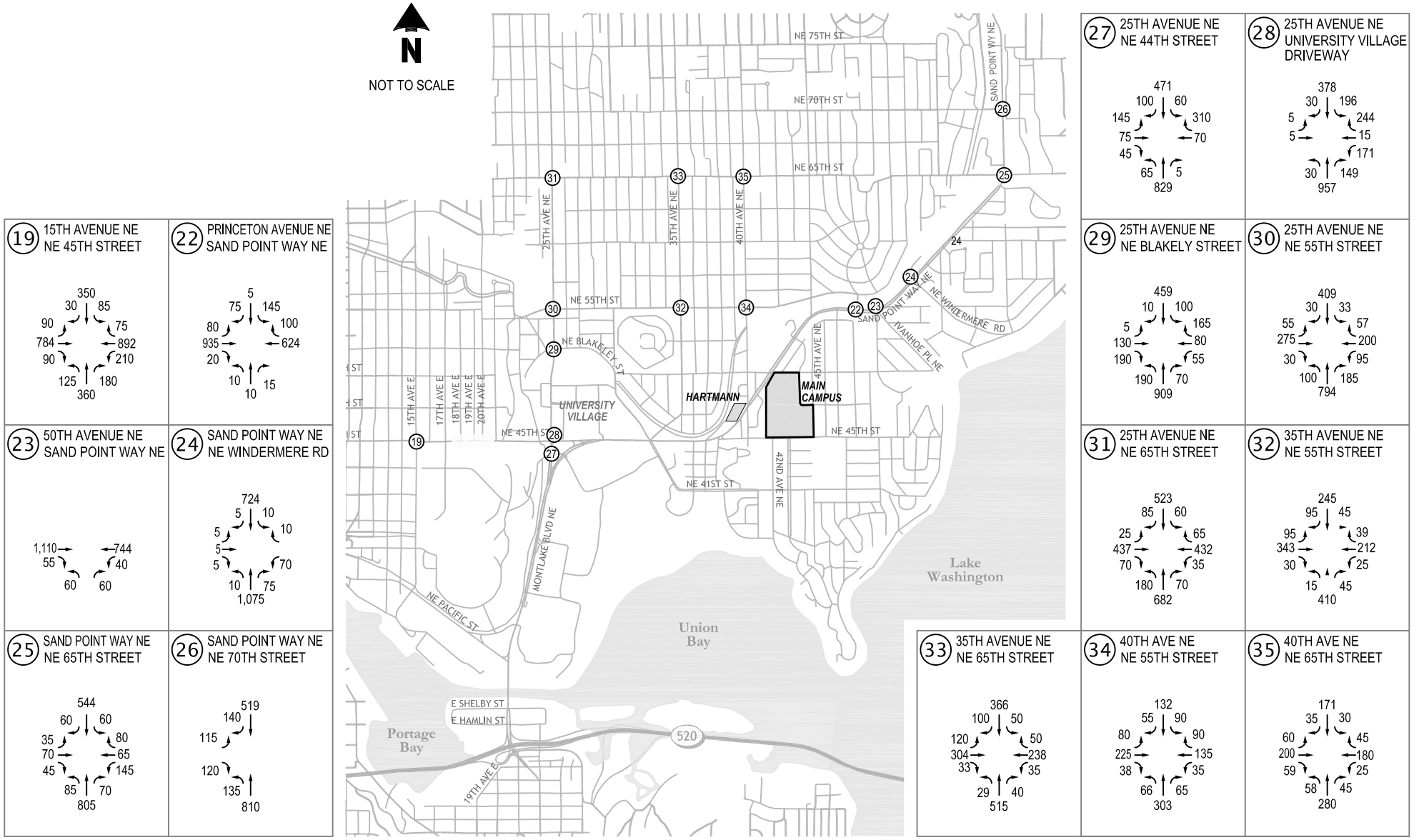

19 15TH AVENUE NE / NE 45TH STREET

22 PRINCETON AVENUE NE / SAND POINT WAY NE

23 50TH AVENUE NE / SAND POINT WAY NE

24 SAND POINT WAY NE / NE WINDERMERE RD

25 SAND POINT WAY NE / NE 65TH STREET

26 SAND POINT WAY NE / NE 70TH STREET

27 25TH AVENUE NE / NE 44TH STREET

28 25TH AVENUE NE / UNIVERSITY VILLAGE DRIVEWAY

29 25TH AVENUE NE / NE BLAKELEY STREET

30 25TH AVENUE NE / NE 55TH STREET

31 25TH AVENUE NE / NE 65TH STREET

32 35TH AVENUE NE / NE 55TH STREET

33 35TH AVENUE NE / NE 65TH STREET

34 40TH AVE NE / NE 55TH STREET

35 40TH AVE NE / NE 65TH STREET

Figure T-2I-2

Phase 1 (2012) PM Peak Hour Traffic Volumes (Cont.)

Children's Hospital MIMP II DEIS

The Transpo Group

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Attachment T-3
Intersection Turning Movement Counts

Intersection turning movement counts can be provided upon request.

Attachment T-4
Traffic Volume and Traffic Operation Summaries

Table 1. Existing Children's Traffic Volume Effects at Study Intersections

Intersection	AM Peak Hour			PM Peak Hour		
	Children's Trips	Existing Traffic	Percent Children's	Children's Trips	Existing Traffic	Percent Children's
1. Sand Point Way NE / Penny Drive	790	1,700	46%	730	2,060	35%
2. Sand Point Way NE / 40th Avenue NE	540	1,810	30%	490	2,190	22%
3. Sand Point Way NE / NE 45th Street	520	2,040	25%	470	2,460	19%
4. NE 45th Street / Union Bay Place NE	510	3,325	15%	480	4,115	12%
5. NE 45th Street / University Village Driveway	510	3,155	16%	480	3,385	14%
6. Montlake Boulevard NE / NE 45th Street	230	3,310	7%	290	3,695	8%
7. Montlake Boulevard NE / NE 44th Street	230	2,030	12%	290	2,835	10%
8. Montlake Boulevard NE / 25th Avenue NE	230	2,120	11%	290	2,150	13%
9. Montlake Boulevard NE / NE Pacific Place	230	2,455	9%	290	3,825	7%
10. Montlake Boulevard NE / NE Pacific Street	230	3,070	8%	290	4,195	7%
11. Montlake Boulevard NE / E Shelby Street	230	3,125	8%	290	4,115	7%
12. Montlake Boulevard NE / E Hamlin Street	230	3,005	8%	290	4,295	7%
13. Montlake Boulevard NE / EB SR-520 Ramps	90	2,180	4%	180	3,680	5%
14. Montlake Boulevard NE / E Roanoke Street	40	1,810	2%	30	2,085	2%
15. NE 45th Street / 20th Avenue NE	280	1,650	17%	190	1,700	11%
16. NE 45th Street / 19th Avenue NE	280	1,570	17%	190	1,530	13%
17. NE 45th Street / 18th Avenue NE	280	1,590	17%	190	1,575	12%
18. NE 45th Street / 17th Avenue NE	280	1,965	14%	190	2,157	9%
19. NE 45th Street / 15th Avenue NE	280	2,720	10%	190	2,953	6%
20. NE 45th Street / 45th Avenue NE	10	420	2%	10	360	3%
21. Sand Point Way NE / NE 50th Street	290	1,425	20%	280	1,770	16%
22. Sand Point Way NE / Princeton Avenue NE	120	1,495	8%	90	1,920	5%
23. Sand Point Way NE / 50th Avenue NE	120	1,415	8%	90	1,975	5%
24. Sand Point Way NE / NE Windermere Road	120	1,340	9%	90	1,900	5%
25. Sand Point Way NE / NE 65th Street	120	1,345	9%	90	1,935	5%
26. Sand Point Way NE / NE 70th Street	120	1,170	10%	90	1,710	6%
27. 25th Avenue NE / NE 44th Street	0	1,365	0%	0	1,995	0%
28. 25th Avenue NE / University Village Driveway	0	1,075	0%	0	2,050	0%
29. 25th Avenue NE / NE Blakely Street	0	1,430	0%	0	2,210	0%
30. 25th Avenue NE / NE 55th Street	30	1,410	2%	30	2,115	1%
31. 25th Avenue NE / NE 65th Street	130	1,895	7%	120	2,525	5%
32. 35th Avenue NE / NE 55th Street	80	1,085	7%	70	1,520	5%
33. 35th Avenue NE / NE 65th Street	120	1,375	9%	110	1,760	6%
34. 40th Avenue NE / NE 55th Street	170	815	21%	160	1,220	13%
35. 40th Avenue NE / NE 65th Street	40	935	4%	80	1,110	7%

Source: Transpo Group, October 2007

Table 2. Existing (2007) Levels of Service Summary

Intersection	AM Peak Hour			PM Peak Hour		
	LOS[1]	Delay[2]	V/C[3] or WM[4]	LOS	Delay	V/C or WM
1. Sand Point Way NE / Penny Drive	A	5	0.40	B	11	0.45
2. Sand Point Way NE / 40th Avenue NE	B	15	SB	B	14	SB
3. Sand Point Way NE / NE 45th Street	A	10	0.45	A	8	0.47
4. NE 45th Street / Union Bay Place NE	**E**	**70**	**0.70**	**E**	**79**	**0.89**
5. NE 45th Street / University Village Driveway	A	7	0.50	B	14	0.60
6. Montlake Boulevard NE / NE 45th Street	C	24	0.65	D	45	0.68
7. Montlake Boulevard NE / NE 44th Street	A	4	0.43	A	9	0.51
8. Montlake Boulevard NE / 25th Avenue NE	B	12	0.58	C	25	0.53
9. Montlake Boulevard NE / NE Pacific Place	B	12	0.50	B	13	0.69
10. Montlake Boulevard NE / NE Pacific Street	C	24	0.57	C	23	0.75
11. Montlake Boulevard NE / E Shelby Street	A	5	0.70	A	8	0.87
12. Montlake Boulevard NE / E Hamlin Street	A	3	0.34	A	2	0.50
13. Montlake Boulevard NE / EB SR-520 Ramps	C	23	0.49	**E**	**58**	**0.87**
14. Montlake Boulevard NE / E Roanoke Street	A	8	0.38	A	6	0.36
15. NE 45th Street / 20th Avenue NE	A	9	0.45	A	8	0.38
16. NE 45th Street / 19th Avenue NE	A	3	0.45	A	2	0.34
17. NE 45th Street / 18th Avenue NE	A	5	0.34	A	4	0.26
18. NE 45th Street / 17th Avenue NE	B	18	0.54	C	23	0.57
19. NE 45th Street / 15th Avenue NE	C	34	0.70	D	38	0.64
20. NE 45th Street / 45th Avenue NE	A	10	SB	A	10	SB
21. Sand Point Way NE / NE 50th Street	C	19	WB	C	24	WB
22. Sand Point Way NE / Princeton Avenue NE	A	8	0.41	A	8	0.47
23. Sand Point Way NE / 50th Avenue NE	A	5	0.33	A	4	0.41
24. Sand Point Way NE / NE Windermere Road	A	5	0.34	A	3	0.45
25. Sand Point Way NE / NE 65th Street	A	7	0.28	B	13	0.53
26. Sand Point Way NE / NE 70th Street	A	8	0.29	A	8	0.49
27. 25th Avenue NE / NE 44th Street	C	30	0.41	B	20	0.44
28. 25th Avenue NE / University Village Driveway	B	10	0.23	B	10	0.64
29. 25th Avenue NE / NE Blakely Street	B	12	0.35	B	18	0.60
30. 25th Avenue NE / NE 55th Street	C	27	0.48	B	15	0.71
31. 25th Avenue NE / NE 65th Street	C	31	0.54	D	39	0.70
32. 35th Avenue NE / NE 55th Street	C	22	0.53	C	30	0.64
33. 35th Avenue NE / NE 65th Street	C	33	0.63	C	34	0.72
34. 40th Avenue NE / NE 55th Street	B	12	N/A	C	24	N/A
35. 40th Avenue NE / NE 65th Street	B	15	N/A	C	20	N/A

Source: Transpo Group, October 2007
Bold indicates LOS E or worse intersection operations.
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.

Table 3. Intersection Collision Data: Three-year Summary[1]

Intersection	Accidents per Year[2]			3-Year Total	Annual Average
	2004	2005	2006		
1. Sand Point Way NE / Penny Drive	0	1	0	1	0.3
2. Sand Point Way NE / 40th Avenue NE[3]	1	0	1	2	0.7
3. Sand Point Way NE / NE 45th Street	1	2	1	4	1.3
4. NE 45th Street / Union Bay Place NE	5	5	5 (1)	15	5.0
5. NE 45th Street / University Village Driveway	11	15	0	26	8.7
6. Montlake Boulevard NE / NE 45th Street	1	0	1	2	0.7
7. Montlake Boulevard NE / NE 44th Street	2	1	1	4	1.3
8. Montlake Boulevard NE / 25th Avenue NE	1	0	1	2	0.7
9. Montlake Boulevard NE / NE Pacific Place	3	2	4	9	3.0
10. Montlake Boulevard NE / NE Pacific Street	1 (1)	1	2	4	1.3
11. Montlake Boulevard NE / E Shelby Street	0	1	2	3	1.0
12. Montlake Boulevard NE / E Hamlin Street	1	5	3	9	3.0
13. Montlake Boulevard NE / EB SR-520 Ramps	1	2	1	4	1.3
14. Montlake Boulevard NE / E Roanoke Street	1	1	3	5	1.7
15. NE 45th Street / 20th Avenue NE	1 (1)	1	1 (1)	3	1.0
16. NE 45th Street / 19th Avenue NE	0	2	0	2	0.7
17. NE 45th Street / 18th Avenue NE	1	0	1 (1)	2	0.7
18. NE 45th Street / 17th Avenue NE	1	4 (1)	2 (2)	7	2.3
19. NE 45th Street / 15th Avenue NE	2	5	4	11	3.7
20. NE 45th Street / 45th Avenue NE[2]	0	0	0	0	0.0
21. Sand Point Way NE / NE 50th Street[2]	6	4	2	12	4.0
22. Sand Point Way NE / Princeton Avenue NE	2	2	4 (2)	8	2.7
23. Sand Point Way NE / 50th Avenue NE	2	2	0	4	1.3
24. Sand Point Way NE / NE Windermere Road	2	1	2 (1)	5	1.7
25. Sand Point Way NE / NE 65th Street	1	0	0	1	0.3
26. Sand Point Way NE / NE 70th Street	2 (1)	2	0	4	1.3
27. 25th Avenue NE / NE 44th Street	2 (1)	0	2	4	1.3
28. 25th Avenue NE / University Village Driveway	2 (1)	5 (2)	1	8	2.7
29. 25th Avenue NE / NE Blakely Street	4 (2)	5	2	11	3.7
30. 25th Avenue NE / NE 55th Street	8 (1)	7 (2)	8	23	7.7
31. 25th Avenue NE / NE 65th Street	5	0	5 (1)	10	3.3
32. 35th Avenue NE / NE 55th Street	3	3 (1)	1	7	2.3
33. 35th Avenue NE / NE 65th Street	1	3	4	8	2.7
34. 40th Avenue NE / NE 55th Street[2]	2 (2)	1	0	3	1.0
35. 40th Avenue NE / NE 65th Street[2]	1	2	2	5	2.3

Source: Seattle Department of Transportation, October 2007
1. Data from the Seattle Department of Transportation (SDOT) for January 1, 2004 through December 31, 2006.
2. Numbers in parenthesis indicate the number of collisions involving pedestrians
3. This intersection is unsignalized.

Table 4. Existing (2007) and No-Build (2030) AM Peak Hour Levels of Service Summary

	Existing			No-Build		
Intersection	LOS[1]	Delay[2,5]	V/C[3] or WM[4]	LOS	Delay[5]	V/C or WM
1. Sand Point Way NE / Penny Drive	A	5	0.40	A	6	0.46
2. Sand Point Way NE / 40th Avenue NE	B	15	SB	B	16	0.39
3. Sand Point Way NE / NE 45th Street	A	10	0.45	B	11	0.50
4. NE 45th Street / Union Bay Place NE	**E**	**70**	**0.70**	**E**	**69**	**0.75**
5. NE 45th Street / University Village Driveway	A	7	0.50	A	7	0.54
6. Montlake Boulevard NE / NE 45th Street	C	24	0.65	C	22	0.69
7. Montlake Boulevard NE / NE 44th Street	A	4	0.43	A	4	0.49
8. Montlake Boulevard NE / 25th Avenue NE	B	12	0.58	B	14	0.66
9. Montlake Boulevard NE / NE Pacific Place	B	12	0.50	A	10	0.50
10. Montlake Boulevard NE / NE Pacific Street	C	24	0.57	B	18	0.57
11. Montlake Boulevard NE / E Shelby Street	A	5	0.70	A	4	0.73
12. Montlake Boulevard NE / E Hamlin Street	A	3	0.34	A	1	0.38
13. Montlake Boulevard NE / EB SR-520 Ramps	C	23	0.49	C	24	0.53
14. Montlake Boulevard NE / E Roanoke Street	A	8	0.38	A	8	0.40
15. NE 45th Street / 20th Avenue NE	A	9	0.45	A	8	0.45
16. NE 45th Street / 19th Avenue NE	A	3	0.45	A	2	0.51
17. NE 45th Street / 18th Avenue NE	A	5	0.34	A	3	0.38
18. NE 45th Street / 17th Avenue NE	B	18	0.54	B	14	0.57
19. NE 45th Street / 15th Avenue NE	C	34	0.70	C	28	0.71
20. NE 45th Street / 45th Avenue NE	A	10	SB	A	10	SB
21. Sand Point Way NE / NE 50th Street	C	19	WB	C	22	WB
22. Sand Point Way NE / Princeton Avenue NE	A	8	0.41	A	8	0.45
23. Sand Point Way NE / 50th Avenue NE	A	5	0.33	A	5	0.35
24. Sand Point Way NE / NE Windermere Road	A	5	0.34	A	6	0.38
25. Sand Point Way NE / NE 65th Street	A	7	0.28	A	6	0.32
26. Sand Point Way NE / NE 70th Street	A	8	0.29	A	6	0.33
27. 25th Avenue NE / NE 44th Street	C	30	0.41	C	26	0.42
28. 25th Avenue NE / University Village Driveway	B	10	0.23	A	8	0.25
29. 25th Avenue NE / NE Blakely Street	B	12	0.35	B	12	0.38
30. 25th Avenue NE / NE 55th Street	C	27	0.48	C	31	0.52
31. 25th Avenue NE / NE 65th Street	C	31	0.54	C	28	0.61
32. 35th Avenue NE / NE 55th Street	C	22	0.53	B	11	0.57
33. 35th Avenue NE / NE 65th Street	C	33	0.63	C	33	0.71
34. 40th Avenue NE / NE 55th Street	B	12	N/A	B	13	NA
35. 40th Avenue NE / NE 65th Street	B	15	N/A	C	15	NA

Source: Transpo Group, October 2007 and March 2008
Note: **Bold** indicates LOS E or worse operations.
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.
5. It is noted that some intersection operations are shown to improve between 2007 existing conditions and 2030 baseline conditions. This can be attributed to the addition of traffic volumes to individual movements experiencing delays below the average for the overall intersection and the optimization of signal timing. In general, operations at these intersections and the experience of individual drivers would be similar to existing conditions.

Table 5. Existing (2007) and No-Build (2030) PM Peak Hour Levels of Service Summary

	Existing			No-Build		
Intersection	LOS[1]	Delay[2,5]	V/C[3] or WM[4]	LOS	Delay[5]	V/C or WM
1. Sand Point Way NE / Penny Drive	B	11	0.45	B	10	0.56
2. Sand Point Way NE / 40th Avenue NE	B	14	SB	C	22	0.62
3. Sand Point Way NE / NE 45th Street	A	8	0.47	A	7	0.53
4. NE 45th Street / Union Bay Place NE	**E**	**79**	**0.89**	**F**	**>120**	**1.09**
5. NE 45th Street / University Village Driveway	B	14	0.60	B	11	0.63
6. Montlake Boulevard NE / NE 45th Street	D	45	0.68	D	48	0.81
7. Montlake Boulevard NE / NE 44th Street	A	9	0.51	A	9	0.58
8. Montlake Boulevard NE / 25th Avenue NE	C	24	0.53	B	20	0.58
9. Montlake Boulevard NE / NE Pacific Place	B	13	0.69	B	15	0.81
10. Montlake Boulevard NE / NE Pacific Street	C	23	0.75	C	26	0.90
11. Montlake Boulevard NE / E Shelby Street	A	8	0.87	B	17	0.98
12. Montlake Boulevard NE / E Hamlin Street	A	2	0.50	A	2	0.59
13. Montlake Boulevard NE / EB SR-520 Ramps	**E**	**58**	**0.87**	**E**	**63**	**1.06**
14. Montlake Boulevard NE / E Roanoke Street	A	6	0.36	A	7	0.44
15. NE 45th Street / 20th Avenue NE	A	8	0.38	A	6	0.37
16. NE 45th Street / 19th Avenue NE	A	2	0.34	A	3	0.37
17. NE 45th Street / 18th Avenue NE	A	4	0.26	A	3	0.30
18. NE 45th Street / 17th Avenue NE	C	23	0.57	B	19	0.67
19. NE 45th Street / 15th Avenue NE	D	38	0.64	C	28	0.64
20. NE 45th Street / 45th Avenue NE	A	10	SB	A	10	SB
21. Sand Point Way NE / NE 50th Street	C	24	WB	D	31	WB
22. Sand Point Way NE / Princeton Avenue NE	A	8	0.47	A	9	0.57
23. Sand Point Way NE / 50th Avenue NE	A	4	0.41	A	4	0.51
24. Sand Point Way NE / NE Windermere Road	A	3	0.45	A	3	0.50
25. Sand Point Way NE / NE 65th Street	B	13	0.53	B	18	0.70
26. Sand Point Way NE / NE 70th Street	A	8	0.49	A	10	0.71
27. 25th Avenue NE / NE 44th Street	B	20	0.44	C	22	0.57
28. 25th Avenue NE / University Village Driveway	B	10	0.64	**E**	**59**	**1.34**
29. 25th Avenue NE / NE Blakely Street	B	18	0.60	B	15	0.72
30. 25th Avenue NE / NE 55th Street	B	15	0.71	B	19	0.84
31. 25th Avenue NE / NE 65th Street	D	39	0.70	D	47	0.89
32. 35th Avenue NE / NE 55th Street	C	30	0.64	C	30	0.75
33. 35th Avenue NE / NE 65th Street	C	34	0.72	C	29	0.89
34. 40th Avenue NE / NE 55th Street	C	24	N/A	**F**	**58**	**NA**
35. 40th Avenue NE / NE 65th Street	C	20	N/A	**E**	**42**	**NA**

Source: Transpo Group, October 2007 and March 2008
Note: **Bold** indicates LOS E or worse operations.
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.
5. It is noted that some intersection operations are shown to improve between 2007 existing conditions and 2030 baseline conditions. This can be attributed to the addition of traffic volumes to individual movements experiencing delays below the average for the overall intersection and the optimization of signal timing. In general, operations at these intersections and the experience of individual drivers would be similar to existing conditions.

Table 6. Traffic Volume Impact at Study Intersections

Intersection	AM Peak Hour New Children's Trips	AM Peak Hour 2030 With-Project	AM Peak Hour Percent Children's	PM Peak Hour New Children's Trips	PM Peak Hour 2030 With-Project	PM Peak Hour Percent Children's
4. NE 45th Street / Union Bay Place NE	534	4,134	13%	438	5,263	8%
5. NE 45th Street / University Village Driveway	534	3,919	14%	438	4,373	10%
6. Montlake Boulevard NE / NE 45th Street	488	4,103	12%	295	4,540	7%
7. Montlake Boulevard NE / NE 44th Street	244	2,639	9%	256	3,446	7%
8. Montlake Boulevard NE / 25th Avenue NE	244	2,599	9%	256	2,686	10%
9. Montlake Boulevard NE / NE Pacific Place	244	2,969	8%	256	4,556	6%
10. Montlake Boulevard NE / NE Pacific Street	244	3,634	7%	256	4,976	5%
11. Montlake Boulevard NE / E Shelby Street	244	3,564	7%	256	4,801	5%
12. Montlake Boulevard NE / E Hamlin Street	244	3,454	7%	256	5,101	5%
13. Montlake Boulevard NE / EB SR-520 Ramps	93	2,428	4%	160	4,340	4%
14. Montlake Boulevard NE / E Roanoke Street	41	1,981	2%	30	2,385	1%
15. NE 45th Street / 20th Avenue NE	290	2,200	13%	182	2,102	9%
16. NE 45th Street / 19th Avenue NE	290	2,100	14%	182	1,897	10%
17. NE 45th Street / 18th Avenue NE	290	2,070	14%	182	1,952	9%
18. NE 45th Street / 17th Avenue NE	290	2,485	12%	182	2,642	7%
19. NE 45th Street / 15th Avenue NE	290	3,265	9%	182	3,492	5%
22. Sand Point Way NE / Princeton Avenue NE	124	1,754	7%	93	2,318	4%
23. Sand Point Way NE / 50th Avenue NE	124	1,664	8%	93	2,363	4%
24. Sand Point Way NE / NE Windermere Road	124	1,619	8%	93	2,303	4%
25. Sand Point Way NE / NE 65th Street	124	1,679	7%	93	2,523	4%
26. Sand Point Way NE / NE 70th Street	124	1,449	9%	93	2,233	5%
27. 25th Avenue NE / NE 44th Street	0	1,500	0%	0	2,330	0%
28. 25th Avenue NE / University Village Driveway	0	1,200	0%	0	2,380	0%
29. 25th Avenue NE / NE Blakely Street	0	1,600	0%	0	2,560	0%
30. 25th Avenue NE / NE 55th Street	34	1,614	2%	27	2,467	1%
31. 25th Avenue NE / NE 65th Street	132	2,272	6%	108	3,113	4%
32. 35th Avenue NE / NE 55th Street	81	1,281	6%	67	1,832	4%
33. 35th Avenue NE / NE 65th Street	122	1,657	7%	100	2,250	5%
34. 40th Avenue NE / NE 55th Street	183	1,093	17%	145	1,550	9%
35. 40th Avenue NE / NE 65th Street	99	1,149	9%	79	1,399	6%

Source: Transpo Group, October 2007 and March 2008

Table 7. 2030 No-Build and Build Alternatives AM Peak Hour Off-Site Levels of Service Summary

	No-Build			Build Alternatives		
Intersection	LOS[1]	Delay[2]	V/C[3] or WM[4]	LOS	Delay	V/C or WM
4. NE 45th Street / Union Bay Place NE	**E**	**69**	**0.75**	**F**	**110**	**0.85**
5. NE 45th Street / University Village Driveway	A	7	0.54	A	10	0.57
6. Montlake Boulevard NE / NE 45th Street	C	22	0.69	D	40	0.82
7. Montlake Boulevard NE / NE 44th Street	A	4	0.49	A	3	0.52
8. Montlake Boulevard NE / 25th Avenue NE	B	14	0.66	C	20	0.69
9. Montlake Boulevard NE / NE Pacific Place	A	10	0.50	A	9	0.53
10. Montlake Boulevard NE / NE Pacific Street	B	18	0.57	B	18	0.60
11. Montlake Boulevard NE / E Shelby Street	A	4	0.73	A	4	0.75
12. Montlake Boulevard NE / E Hamlin Street	A	1	0.38	A	1	0.39
13. Montlake Boulevard NE / EB SR-520 Ramps	C	24	0.53	C	24	0.57
14. Montlake Boulevard NE / E Roanoke Street	A	8	0.4	A	8	0.41
15. NE 45th Street / 20th Avenue NE	A	8	0.45	A	8	0.48
16. NE 45th Street / 19th Avenue NE	A	2	0.51	A	2	0.55
17. NE 45th Street / 18th Avenue NE	A	3	0.38	A	2	0.40
18. NE 45th Street / 17th Avenue NE	B	14	0.57	B	14	0.62
19. NE 45th Street / 15th Avenue NE	C	28	0.71	C	30	0.80
22. Sand Point Way NE / Princeton Avenue NE	A	8	0.45	A	8	0.48
23. Sand Point Way NE / 50th Avenue NE	A	5	0.35	A	5	0.38
24. Sand Point Way NE / NE Windermere Road	A	6	0.38	A	5	0.41
25. Sand Point Way NE / NE 65th Street	A	6	0.32	A	6	0.35
26. Sand Point Way NE / NE 70th Street	A	6	0.33	A	6	0.36
27. 25th Avenue NE / NE 44th Street	C	26	0.42	D	43	0.60
28. 25th Avenue NE / University Village Driveway	A	8	0.25	A	8	0.25
29. 25th Avenue NE / NE Blakely Street	B	12	0.38	B	12	0.38
30. 25th Avenue NE / NE 55th Street	C	31	0.52	C	31	0.54
31. 25th Avenue NE / NE 65th Street	C	28	0.61	C	28	0.64
32. 35th Avenue NE / NE 55th Street	B	11	0.57	B	12	0.62
33. 35th Avenue NE / NE 65th Street	C	33	0.71	C	30	0.75
34. 40th Avenue NE / NE 55th Street	B	13	NA	C	17	NA
35. 40th Avenue NE / NE 65th Street	C	15	NA	C	19	NA

Source: Transpo Group, October 2007 and March 2008
Note: **Bold** indicates LOS E or worse operations.
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.

Table 8. 2030 No-Build and Build Alternatives PM Peak Hour Off-Site Levels of Service Summary

	No-Build			Build Alternatives		
Intersection	**LOS[1]**	**Delay[2]**	**V/C[3] or WM[4]**	**LOS**	**Delay**	**V/C or WM**
4. NE 45th Street / Union Bay Place NE	**F**	**>120**	**1.09**	**F**	**>120**	**1.16**
5. NE 45th Street / University Village Driveway	B	11	0.63	B	14	0.69
6. Montlake Boulevard NE / NE 45th Street	D	48	0.81	D	54	0.88
7. Montlake Boulevard NE / NE 44th Street	A	9	0.58	A	9	0.61
8. Montlake Boulevard NE / 25th Avenue NE	B	20	0.58	B	19	0.64
9. Montlake Boulevard NE / NE Pacific Place	B	15	0.81	B	15	0.84
10. Montlake Boulevard NE / NE Pacific Street	C	26	0.9	C	26	0.93
11. Montlake Boulevard NE / E Shelby Street	B	17	0.98	C	22	1.01
12. Montlake Boulevard NE / E Hamlin Street	A	2	0.59	A	2	0.63
13. Montlake Boulevard NE / EB SR-520 Ramps	**E**	**63**	**1.06**	**E**	**75**	**1.08**
14. Montlake Boulevard NE / E Roanoke Street	A	7	0.44	A	7	0.45
15. NE 45th Street / 20th Avenue NE	A	6	0.37	A	7	0.42
16. NE 45th Street / 19th Avenue NE	A	3	0.37	A	4	0.43
17. NE 45th Street / 18th Avenue NE	A	3	0.3	A	4	0.35
18. NE 45th Street / 17th Avenue NE	B	19	0.67	B	18	0.70
19. NE 45th Street / 15th Avenue NE	C	28	0.64	C	33	0.76
22. Sand Point Way NE / Princeton Avenue NE	A	9	0.57	A	8	0.60
23. Sand Point Way NE / 50th Avenue NE	A	4	0.51	A	4	0.54
24. Sand Point Way NE / NE Windermere Road	A	3	0.5	A	3	0.52
25. Sand Point Way NE / NE 65th Street	B	18	0.70	B	19	0.72
26. Sand Point Way NE / NE 70th Street	A	10	0.71	A	10	0.74
27. 25th Avenue NE / NE 44th Street	C	22	0.57	C	22	0.55
28. 25th Avenue NE / University Village Driveway	**E**	**59**	**1.34**	**E**	**59**	**1.34**
29. 25th Avenue NE / NE Blakely Street	B	15	0.72	C	15	0.72
30. 25th Avenue NE / NE 55th Street	B	19	0.84	B	20	0.85
31. 25th Avenue NE / NE 65th Street	D	47	0.89	D	50	0.92
32. 35th Avenue NE / NE 55th Street	C	30	0.75	C	31	0.76
33. 35th Avenue NE / NE 65th Street	C	29	0.89	C	32	0.93
34. 40th Avenue NE / NE 55th Street	**F**	**58**	**NA**	**F**	**112**	**NA**
35. 40th Avenue NE / NE 65th Street	**E**	**42**	**NA**	**F**	**58**	**NA**

Source: Transpo Group, October 2007 and March 2008
Note: **Bold** indicates LOS E or worse operations.
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.

Table 9. 2030 No-Build and Build Alternatives AM Peak Hour Site Access Intersections Levels of Service Summary

Alternative:	No Build		
	LOS[1]	Delay[2]	V/C or WM[3]
1. Sand Point Way NE /Penny Drive	B	10	0.56
2. Sand Point Way NE /40th Avenue NE	C	22	0.62
3. Sand Point Way NE /NE 45th Street	A	7	0.53
20. NE 45th Street /45th Avenue NE	A	10	SB
21. Sand Point Way NE /NE 50th Street	D	31	WB
Children's Driveway /NE 50th Street	NA	NA	NA
Hartmann Driveway/Sand Point Way	NA	NA	NA

Alternative:	3: With NE 50th St Access			3: No NE 50th St Access			6: With NE 50th St Access			6: No NE 50th St Access		
	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM
1. Sand Point Way NE /Penny Drive	B	17	0.42	C	34	0.49	B	16	0.45	D	42	0.56
2. Sand Point Way NE /40th Avenue NE	B	20	0.84	C	28	0.98	C	21	0.85	C	32	1.01
3. Sand Point Way NE /NE 45th Street	A	7	0.60	A	7	0.62	A	9	0.62	A	10	0.62
20. NE 45th Street /45th Avenue NE	B	10	SB	B	10	SB	B	10	SB	B	10	SB
21. Sand Point Way NE /NE 50th Street	A	9	0.44	D	26	WB	B	11	0.57	D	26	WB
Children's Driveway /NE 50th Street	B	11	NB	NA	NA	NA	B	12	NB	NA	NA	NA
Hartmann Driveway/Sand Point Way	D	34	SB	D	34	SB	C	25	SB	C	24	SB
NE 45th Street/40th Avenue NE[4]	B	12	SB	B	12	SB	B	12	SB	B	12	SB

Alternative:	7R: With NE 50th St Access			7R: No NE 50th St Access			8: With NE 50th St Access			8: No NE 50th St Access		
	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM
1. Sand Point Way NE /Penny Drive	B	14	0.41	C	22	0.44	B	15	0.42	C	22	0.44
2. Sand Point Way NE /40th Avenue NE	C	24	0.83	C	25	0.83	C	25	0.86	C	26	0.86
3. Sand Point Way NE /NE 45th Street	A	8	0.64	A	7	0.64	A	8	0.65	A	7	0.65
20. NE 45th Street /45th Avenue NE	B	10	SB	B	10	SB	B	10	SB	B	10	SB
21. Sand Point Way NE /NE 50th Street	B	10	0.43	C	25	WB	B	11	0.44	C	25	WB
Children's Access/NE 50th Street	B	10	NB	NA	NA	NA	B	10	NB	NA	NA	NA
Hartmann Access/Sand Point Way	C	22	SB	C	22	SB	NA	NA	NA	NA	NA	NA
40th Avenue NE/North Laurelon Access	B	12	WB	B	12	WB	B	12	WB	B	12	WB
40th Avenue NE/Laurelon Access	A	9	WB	A	9	WB	A	9	WB	A	9	WB
NE 45th Street/40th Avenue NE[4]	C	16	SB	C	16	SB	C	17	SB	C	17	SB

Source: Transpo Group, March 2008
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections, worst movement reported for unsignalized intersections.

Table 10. 2030 No-Build and Build Alternatives PM Peak Hour Site Access Intersections Levels of Service Summary

Alternative:	No Build		
	LOS[1]	Delay[2]	V/C or WM[3]
1. Sand Point Way NE /Penny Drive	B	10	0.56
2. Sand Point Way NE /40th Avenue NE	C	22	0.62
3. Sand Point Way NE /NE 45th Street	A	7	0.53
20. NE 45th Street /45th Avenue NE	A	10	SB
21. Sand Point Way NE /NE 50th Street	D	31	WB
Children's Driveway /NE 50th Street	NA	NA	NA
Hartmann Driveway/Sand Point Way	NA	NA	NA

Alternative:	3: With NE 50th St Access			3: No NE 50th St Access			6: With NE 50th St Access			6: No NE 50th St Access		
	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM
1. Sand Point Way NE /Penny Drive	B	14	0.59	C	27	0.68	B	13	0.59	D	43	0.71
2. Sand Point Way NE /40th Avenue NE	C	22	0.80	C	25	0.83	C	23	0.80	C	30	0.86
3. Sand Point Way NE /NE 45th Street	C	29	0.60	C	30	0.60	C	22	0.60	C	28	0.60
20. NE 45th Street /45th Avenue NE	B	10	SB	B	10	SB	B	10	SB	B	10	SB
21. Sand Point Way NE /NE 50th Street	B	11	0.67	E	38	WB	B	15	0.81	E	38	WB
Children's Driveway /NE 50th Street	B	11	NB	NA	NA	NA	B	12	NB	NA	NA	NA
Hartmann Driveway/Sand Point Way	F	86	SB	F	87	SB	D	35	SB	D	35	SB
NE 45th Street/40th Avenue NE	B	13	SB	B	13	SB	B	13	SB	B	13	SB

Alternative:	7R: With NE 50th St Access			7R: No NE 50th St Access			8: With NE 50th St Access			8: No NE 50th St Access		
	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM
1. Sand Point Way NE /Penny Drive	B	12	0.55	B	15	0.57	B	13	0.55	B	15	0.62
2. Sand Point Way NE /40th Avenue NE	C	29	0.86	C	30	0.86	C	29	0.86	C	30	0.86
3. Sand Point Way NE /NE 45th Street	C	25	0.61	C	25	0.61	C	25	0.62	C	25	0.62
20. NE 45th Street /45th Avenue NE	B	10	SB	B	10	SB	B	10	SB	B	10	SB
21. Sand Point Way NE /NE 50th Street	B	10	0.67	D	34	WB	B	10	0.67	D	34	WB
Children's Access/NE 50th Street	B	10	NB	NA	NA	NA	B	10	NB	NA	NA	NA
Hartmann Access/Sand Point Way	D	28	SB	D	28	SB	NA	NA	NA	NA	NA	NA
40th Avenue NE/North Laurelon Access	B	11	WB	B	11	WB	B	11	WB	B	11	WB
40th Avenue NE/Laurelon Access	B	11	WB	B	11	WB	B	11	WB	B	11	WB
NE 45th Street/40th Avenue NE	B	14	SB	B	14	SB	B	14	SB	B	14	SB

Source: Transpo Group, March 2008
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections, worst movement reported for unsignalized intersections.

Table 11. 2030 30 Percent Mitigation AM Peak Hour Off-Site Levels of Service Summary

	Unmitigated			30% Mitigation		
Intersection	LOS[1]	Delay[2]	V/C[3] or WM[4]	LOS	Delay	V/C or WM
4. NE 45th Street / Union Bay Place NE	**F**	**111**	**0.85**	**F**	**107**	**0.84**
5. NE 45th Street / University Village Driveway	A	10	0.57	A	10	0.57
6. Montlake Boulevard NE / NE 45th Street	D	40	0.82	C	31	0.77
7. Montlake Boulevard NE / NE 44th Street	A	3	0.52	A	3	0.51
8. Montlake Boulevard NE / 25th Avenue NE	C	20	0.69	B	19	0.69
9. Montlake Boulevard NE / NE Pacific Place	A	9	0.53	A	9	0.53
10. Montlake Boulevard NE / NE Pacific Street	B	18	0.60	B	18	0.59
11. Montlake Boulevard NE / E Shelby Street	A	4	0.75	A	5	0.77
12. Montlake Boulevard NE / E Hamlin Street	A	1	0.39	A	1	0.40
13. Montlake Boulevard NE / EB SR-520 Ramps	C	24	0.57	C	24	0.56
14. Montlake Boulevard NE / E Roanoke Street	A	8	0.41	A	8	0.40
15. NE 45th Street / 20th Avenue NE	A	8	0.48	A	8	0.48
16. NE 45th Street / 19th Avenue NE	A	2	0.55	A	2	0.54
17. NE 45th Street / 18th Avenue NE	A	2	0.40	A	2	0.40
18. NE 45th Street / 17th Avenue NE	B	14	0.62	B	14	0.58
19. NE 45th Street / 15th Avenue NE	C	30	0.80	C	29	0.76
22. Sand Point Way NE / Princeton Avenue NE	A	8	0.48	A	8	0.47
23. Sand Point Way NE / 50th Avenue NE	A	5	0.38	A	5	0.37
24. Sand Point Way NE / NE Windermere Road	A	5	0.41	A	5	0.39
25. Sand Point Way NE / NE 65th Street	A	6	0.35	A	6	0.33
26. Sand Point Way NE / NE 70th Street	A	6	0.36	A	6	0.35
27. 25th Avenue NE / NE 44th Street	D	43	0.60	D	43	0.60
28. 25th Avenue NE / University Village Driveway	A	8	0.25	A	8	0.25
29. 25th Avenue NE / NE Blakely Street	B	12	0.38	B	12	0.38
30. 25th Avenue NE / NE 55th Street	C	31	0.54	C	31	0.53
31. 25th Avenue NE / NE 65th Street	C	28	0.64	C	28	0.63
32. 35th Avenue NE / NE 55th Street	B	12	0.62	B	12	0.61
33. 35th Avenue NE / NE 65th Street	C	30	0.75	C	31	0.74
34. 40th Avenue NE / NE 55th Street	C	17	NA	C	15	NA
35. 40th Avenue NE / NE 65th Street	C	18	NA	C	17	NA

Source: Transpo Group, March 2008
Note: **Bold** indicates LOS E or worse operations.
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.

Table 12. 2030 30 Percent Mitigation PM Peak Hour Off-Site Levels of Service Summary

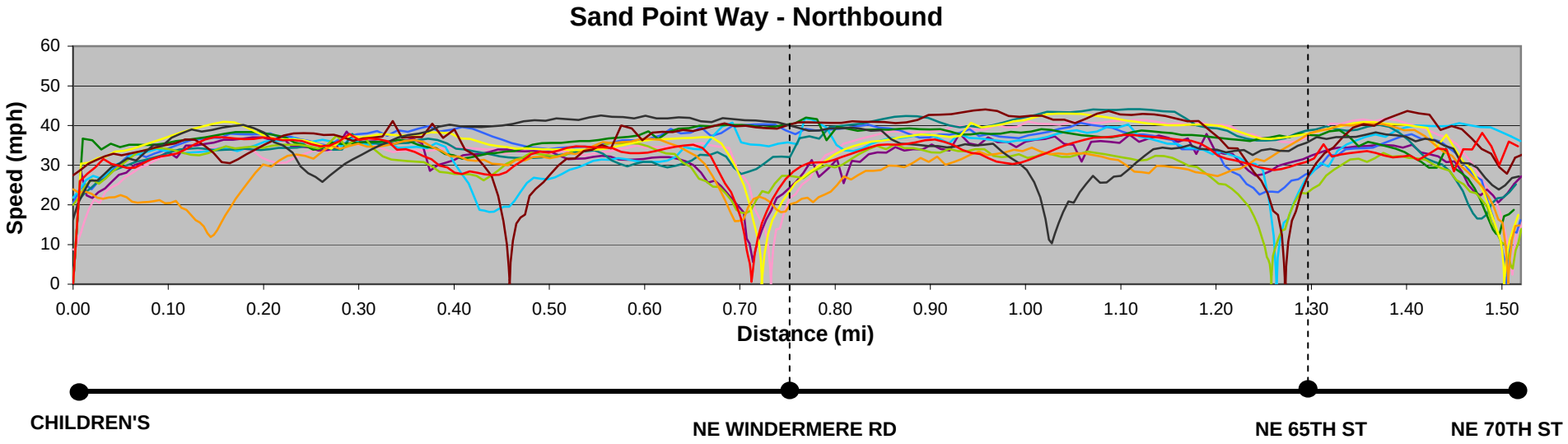
	Unmitigated			30% Mitigation		
Intersection	LOS[1]	Delay[2]	V/C[3] or WM[4]	LOS	Delay	V/C or WM
4. NE 45th Street / Union Bay Place NE	**F**	**>120**	**1.16**	**F**	**>120**	**1.13**
5. NE 45th Street / University Village Driveway	B	14	0.69	B	12	0.66
6. Montlake Boulevard NE / NE 45th Street	D	54	0.88	D	53	0.85
7. Montlake Boulevard NE / NE 44th Street	A	9	0.61	A	9	0.60
8. Montlake Boulevard NE / 25th Avenue NE	B	19	0.64	B	19	0.62
9. Montlake Boulevard NE / NE Pacific Place	B	15	0.84	B	15	0.83
10. Montlake Boulevard NE / NE Pacific Street	C	26	0.93	C	26	0.92
11. Montlake Boulevard NE / E Shelby Street	C	22	1.01	C	21	1.00
12. Montlake Boulevard NE / E Hamlin Street	A	2	0.63	A	2	0.61
13. Montlake Boulevard NE / EB SR-520 Ramps	**E**	**75**	**1.08**	**E**	**70**	**1.08**
14. Montlake Boulevard NE / E Roanoke Street	A	7	0.45	A	7	0.45
15. NE 45th Street / 20th Avenue NE	A	7	0.42	A	6	0.40
16. NE 45th Street / 19th Avenue NE	A	4	0.43	A	4	0.40
17. NE 45th Street / 18th Avenue NE	A	4	0.35	A	4	0.33
18. NE 45th Street / 17th Avenue NE	B	18	0.70	B	18	0.69
19. NE 45th Street / 15th Avenue NE	C	33	0.76	C	33	0.76
22. Sand Point Way NE / Princeton Avenue NE	A	8	0.60	A	8	0.59
23. Sand Point Way NE / 50th Avenue NE	A	4	0.54	A	4	0.53
24. Sand Point Way NE / NE Windermere Road	A	3	0.52	A	3	0.51
25. Sand Point Way NE / NE 65th Street	B	19	0.72	B	19	0.71
26. Sand Point Way NE / NE 70th Street	A	10	0.74	A	10	0.73
27. 25th Avenue NE / NE 44th Street	C	22	0.55	C	22	0.55
28. 25th Avenue NE / University Village Driveway	**E**	**59**	**1.34**	**E**	**59**	**1.34**
29. 25th Avenue NE / NE Blakely Street	B	15	0.72	B	15	0.72
30. 25th Avenue NE / NE 55th Street	B	20	0.85	B	19	0.85
31. 25th Avenue NE / NE 65th Street	D	50	0.92	D	48	0.91
32. 35th Avenue NE / NE 55th Street	C	31	0.76	C	31	0.76
33. 35th Avenue NE / NE 65th Street	C	32	0.93	C	31	0.91
34. 40th Avenue NE / NE 55th Street	**F**	**112**	**NA**	**F**	**90**	**NA**
35. 40th Avenue NE / NE 65th Street	**F**	**58**	**NA**	**F**	**51**	**NA**

Source: Transpo Group, March 2008
Note: **Bold** indicates LOS E or worse operations.
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.

Table 13. 2012 (Phase 1) No-Build and Alternatives 3 & 6 PM Peak Hour Off-Site Study Intersections Levels of Service Summary

	No-Build			Alternative 3 & 6[5]		
Intersection	**LOS[1]**	**Delay[2]**	**V/C[3] or WM[4]**	**LOS**	**Delay**	**V/C or WM**
4. NE 45th Street / Union Bay Place NE	**F**	**88**	**0.96**	**F**	**104**	**0.96**
5. NE 45th Street / University Village Driveway	B	16	0.63	B	15	0.64
6. Montlake Boulevard NE / NE 45th Street	D	53	0.71	D	53	0.74
7. Montlake Boulevard NE / NE 44th Street	A	9	0.52	A	9	0.54
8. Montlake Boulevard NE / 25th Avenue NE	C	24	0.54	C	23	0.57
9. Montlake Boulevard NE / NE Pacific Place	B	13	0.71	B	13	0.71
10. Montlake Boulevard NE / NE Pacific Street	C	24	0.78	C	24	0.79
11. Montlake Boulevard NE / E Shelby Street	A	9	0.89	A	9	0.90
12. Montlake Boulevard NE / E Hamlin Street	A	2	0.51	A	2	0.52
13. Montlake Boulevard NE / EB SR-520 Ramps	E	63	0.91	E	65	0.92
14. Montlake Boulevard NE / E Roanoke Street	A	6	0.37	A	6	0.37
15. NE 45th Street / 20th Avenue NE	A	9	0.44	A	9	0.45
16. NE 45th Street / 19th Avenue NE	A	2	0.39	A	2	0.41
17. NE 45th Street / 18th Avenue NE	A	4	0.29	A	4	0.31
18. NE 45th Street / 17th Avenue NE	C	24	0.62	C	25	0.63
19. NE 45th Street / 15th Avenue NE	D	39	0.70	D	39	0.70
22. Sand Point Way NE / Princeton Avenue NE	A	8	0.49	A	8	0.50
23. Sand Point Way NE / 50th Avenue NE	A	4	0.43	A	4	0.44
24. Sand Point Way NE / NE Windermere Road	A	3	0.46	A	3	0.47
25. Sand Point Way NE / NE 65th Street	B	13	0.56	B	13	0.56
26. Sand Point Way NE / NE 70th Street	A	8	0.53	A	8	0.54
27. 25th Avenue NE / NE 44th Street	C	20	0.46	C	20	0.46
28. 25th Avenue NE / University Village Driveway	B	12	0.77	B	12	0.77
29. 25th Avenue NE / NE Blakely Street	B	19	0.64	B	19	0.64
30. 25th Avenue NE / NE 55th Street	B	16	0.75	B	16	0.75
31. 25th Avenue NE / NE 65th Street	D	41	0.73	D	43	0.74
32. 35th Avenue NE / NE 55th Street	C	31	0.66	C	31	0.66
33. 35th Avenue NE / NE 65th Street	C	35	0.75	C	34	0.77
34. 40th Avenue NE / NE 55th Street	D	29	NA	E	41	NA
35. 40th Avenue NE / NE 65th Street	C	24	NA	D	27	NA

Source: The Transpo Group, September 2008
Note: **Bold** indicates LOS E or worse operations.
1. Levels of service, based on 2000 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.
5. Alternatives 3 and 6 represent worse case disclosure of Phase 1 impacts because they generate more trips.



	Start Time	Stop Time	Total Time
Run 1	03:59:58pm	04:02:56pm	2m, 58s
Run 2	04:19:53pm	04:22:50pm	2m, 57s
Run 3	04:23:38pm	04:26:38pm	3m, 0s
Run 4	04:26:34pm	04:29:37pm	3m, 3s
Run 5	04:45:25pm	04:48:04pm	2m, 39s
Run 6	04:46:34pm	04:49:08pm	2m, 34s
Run 7	04:50:22pm	04:53:51pm	3m, 29s
Run 8	05:14:43pm	05:17:50pm	3m, 7s
Run 9	05:18:12pm	05:21:33pm	3m, 21s
Run 10	05:45:05pm	05:48:03pm	2m, 58s
Run 11	05:50:33pm	05:53:21pm	2m, 48s
Run 12	05:56:50pm	05:59:48pm	2m, 58s
Average	-	-	*2m, 59s*

Travel Time Route Map

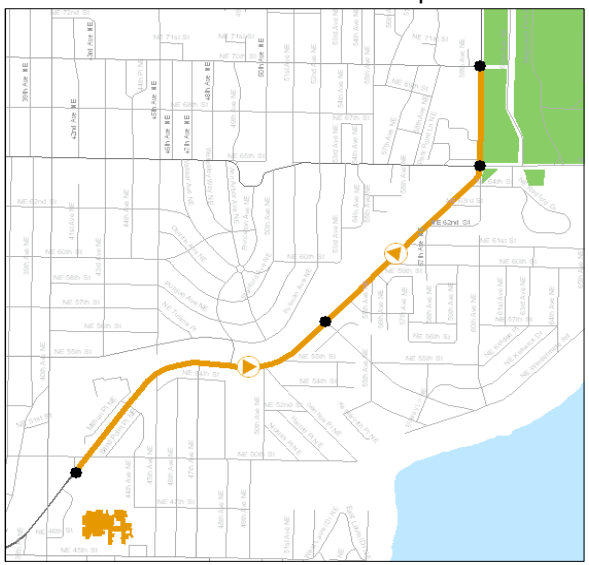


Figure T-4A

Sand Point Way Northbound Travel Times - PM Peak Hour

Children's Hospital Master Plan

The Transpo Group

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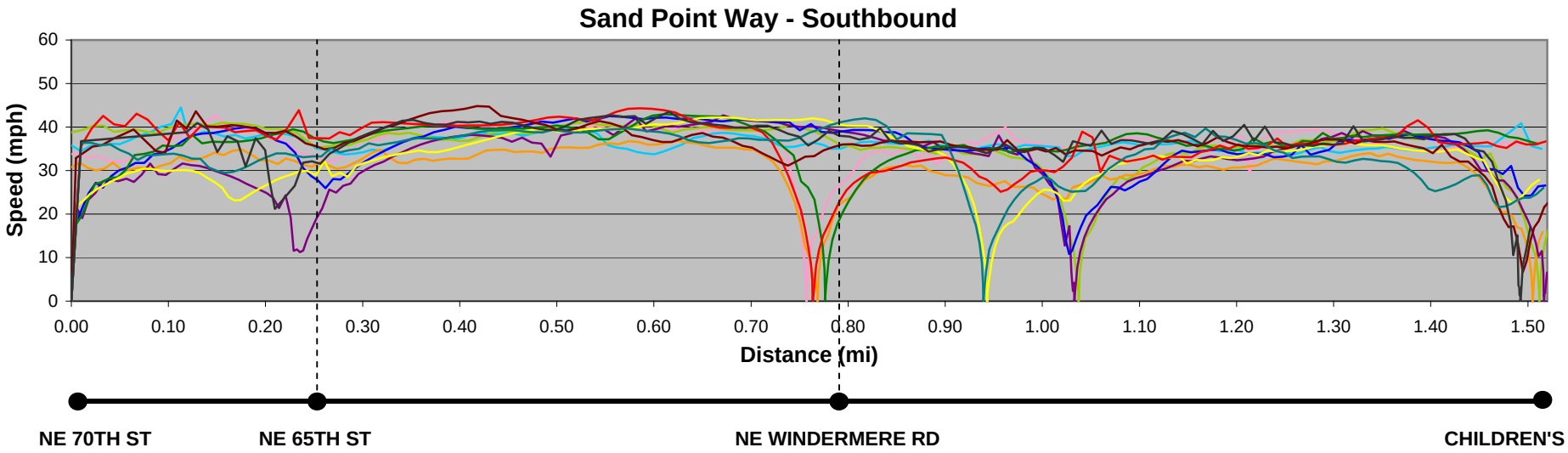

	Start Time	Stop Time	Total Time
Run 1	04:04:38pm	04:07:27pm	2m, 49s
Run 2	04:23:53pm	04:27:16pm	3m, 23s
Run 3	04:27:54pm	04:30:35pm	2m, 41s
Run 4	04:30:52pm	04:33:22pm	2m, 30s
Run 5	04:49:03pm	04:51:59pm	2m, 56s
Run 6	04:51:25pm	04:54:04pm	2m, 39s
Run 7	04:55:51pm	04:58:48pm	2m, 57s
Run 8	05:19:05pm	05:22:06pm	3m, 1s
Run 9	05:22:44pm	05:26:07pm	3m, 23s
Run 10	05:49:48pm	05:52:37pm	2m, 49s
Run 11	05:54:39pm	05:57:15pm	2m, 36s
Run 12	06:00:59pm	06:03:37pm	2m, 38s
Average	-	-	*2m, 52s*

Travel Time Route Map

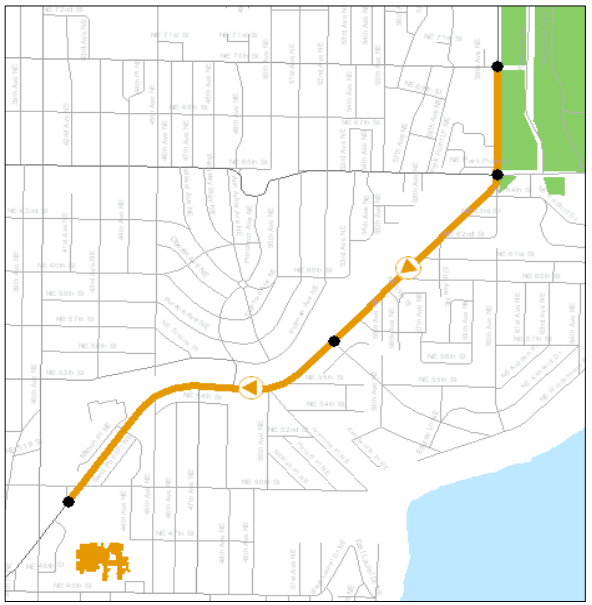

Figure T-4B

Sand Point Way Southbound Travel Times - PM Peak Hour

Children's Hospital Master Plan

The Transpo Group

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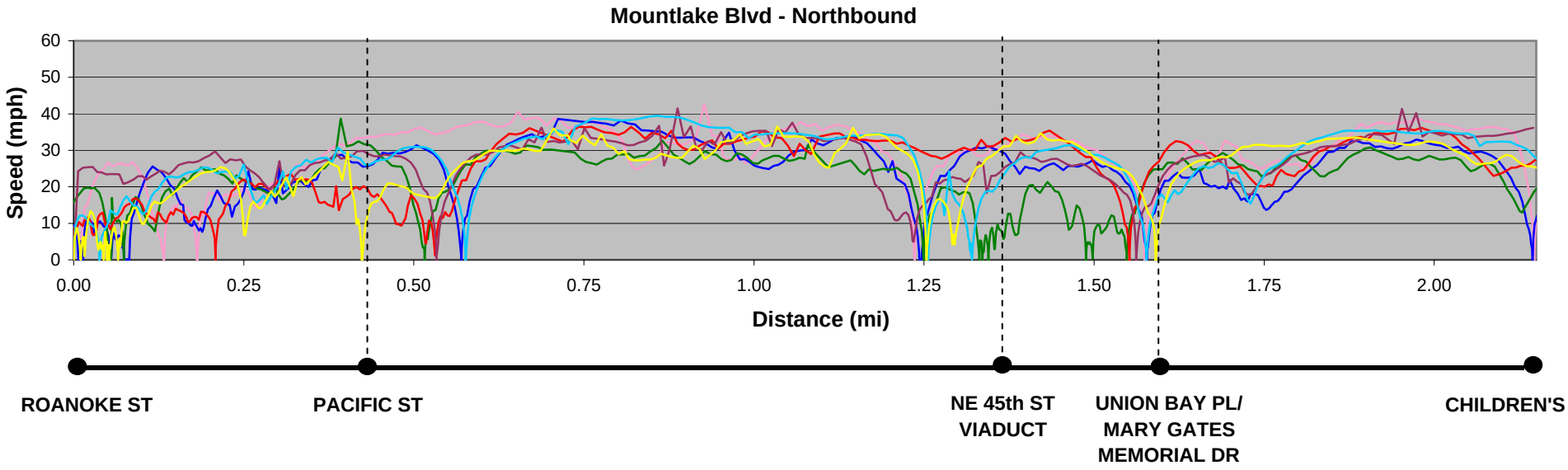
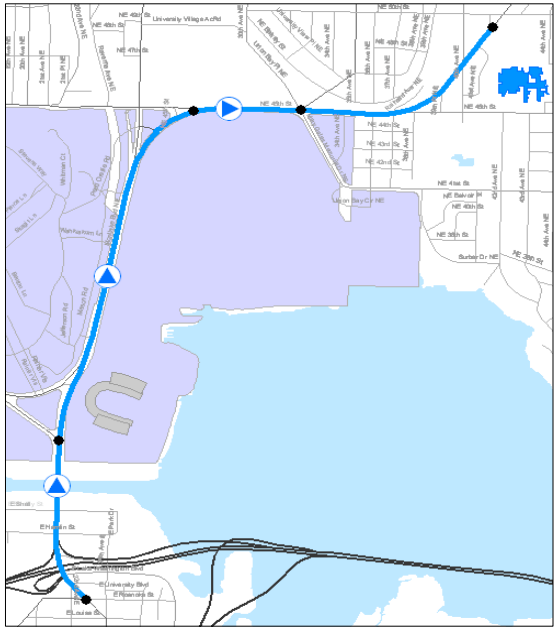


Travel Time Route Map



	Start Time	Stop Time	Total Time
Run 1	04:14:43pm	04:23:37pm	8m, 54s
Run 2	04:40:11pm	04:46:33pm	6m, 22s
Run 3	04:50:49pm	05:01:13pm	10m, 24s
Run 4	05:07:09pm	05:14:42pm	7m, 33s
Run 5	05:18:38pm	05:29:21pm	10m, 43s
Run 6	05:36:10pm	05:45:04pm	8m, 54s
Run 7	05:49:20pm	05:56:49pm	7m, 29s
Average	-	-	*8m, 37s*

Figure T-4C

Montlake Boulevard Northbound Travel Times - PM Peak Hour

Children's Hospital Master Plan

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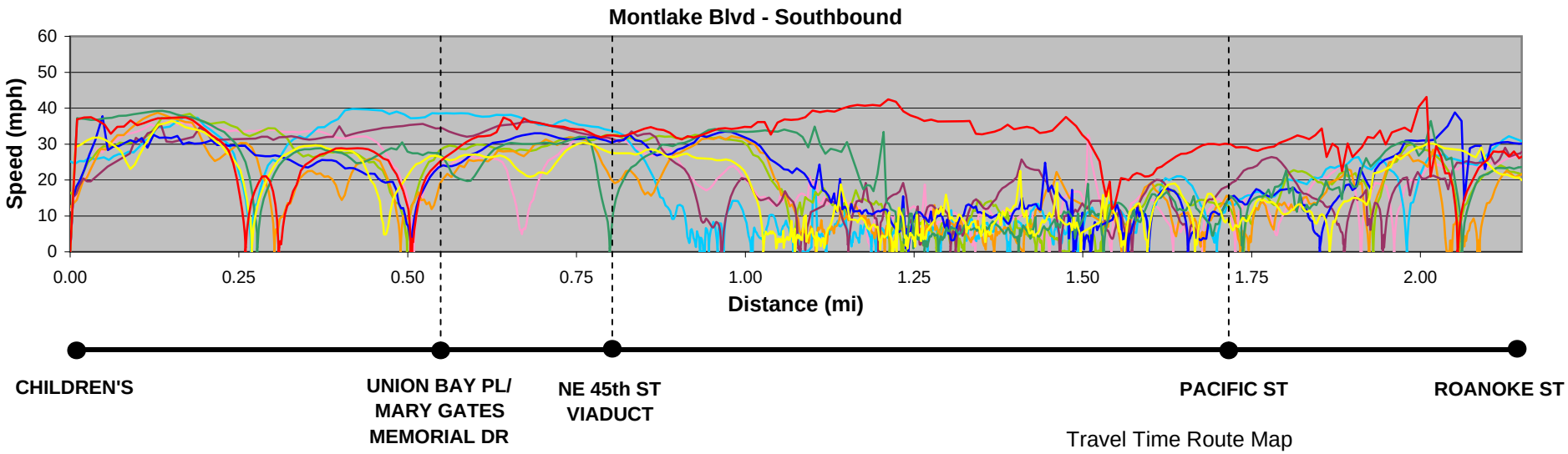
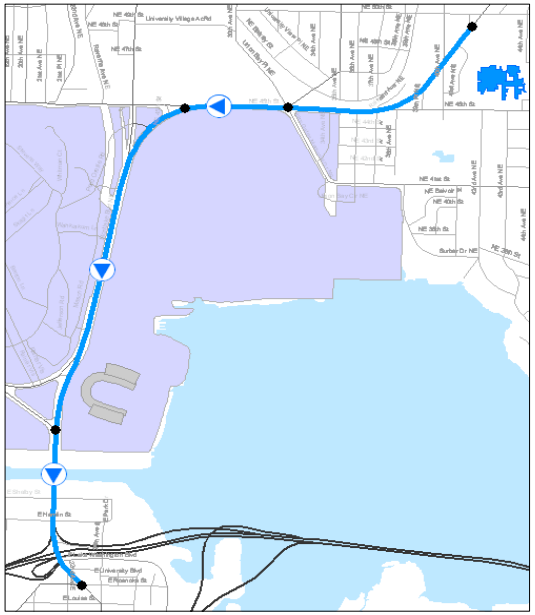


Travel Time Route Map



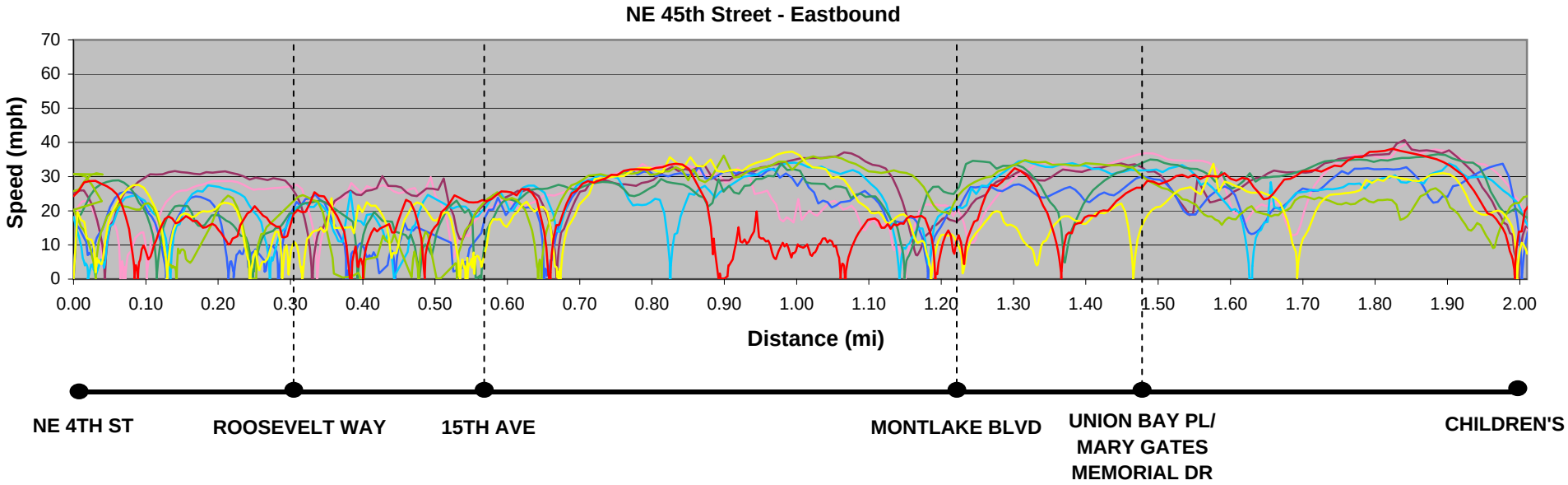
	Start Time	Stop Time	Total Time
Run 1	04:00:00pm	04:12:28pm	12m, 28s
Run 2	04:01:08pm	04:12:37pm	11m, 29s
Run 3	04:27:17pm	04:38:36pm	11m, 19s
Run 4	04:30:36pm	04:48:08pm	17m, 32s
Run 5	04:54:05pm	05:06:11pm	12m, 6s
Run 6	05:03:08pm	05:16:31pm	13m, 23s
Run 7	05:22:07pm	05:34:39pm	12m, 32s
Run 8	05:30:43pm	05:46:36pm	15m, 53s
Run 9	05:52:38pm	06:00:14pm	7m, 36s
Average	-	-	*12m, 42s*

Figure T-4D

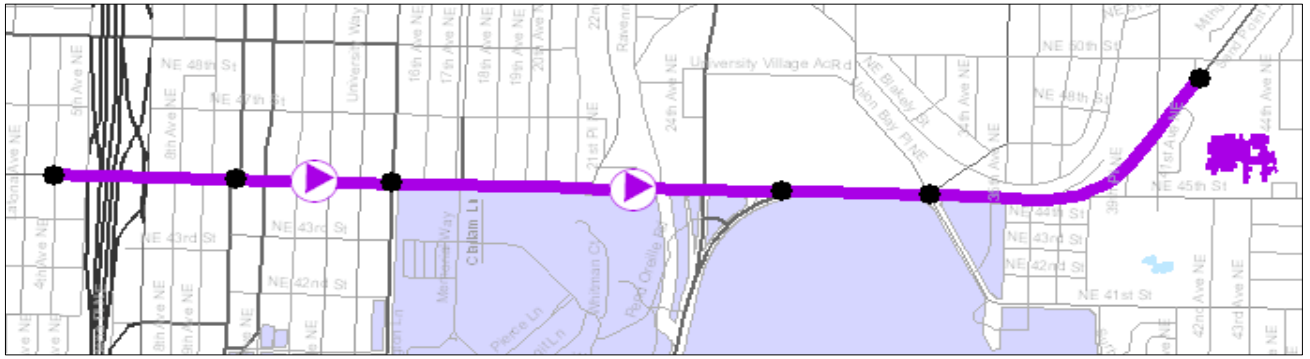
Montlake Boulevard Southbound Travel Times - PM Peak Hour

Children's Hospital Master Plan

The Transpo Group



Travel Time Route Map



	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	*Average*
Start Time	04:14:07pm	04:19:13pm	04:32:04pm	04:41:28pm	05:02:27pm	05:08:54pm	05:25:26pm	05:39:06pm	-
End Time	04:21:32pm	04:26:33pm	04:45:24pm	04:50:21pm	05:10:26pm	05:18:11pm	05:38:46pm	05:50:32pm	-
Total Time	7m, 25s	7m, 20s	13m, 20s	8m, 53s	7m, 59s	9m, 17s	13m, 20s	11m, 26s	*9m, 52s*

Figure T-4E

NE 45th Street Eastbound Travel Times - PM Peak Hour

Children's Hospital Master Plan

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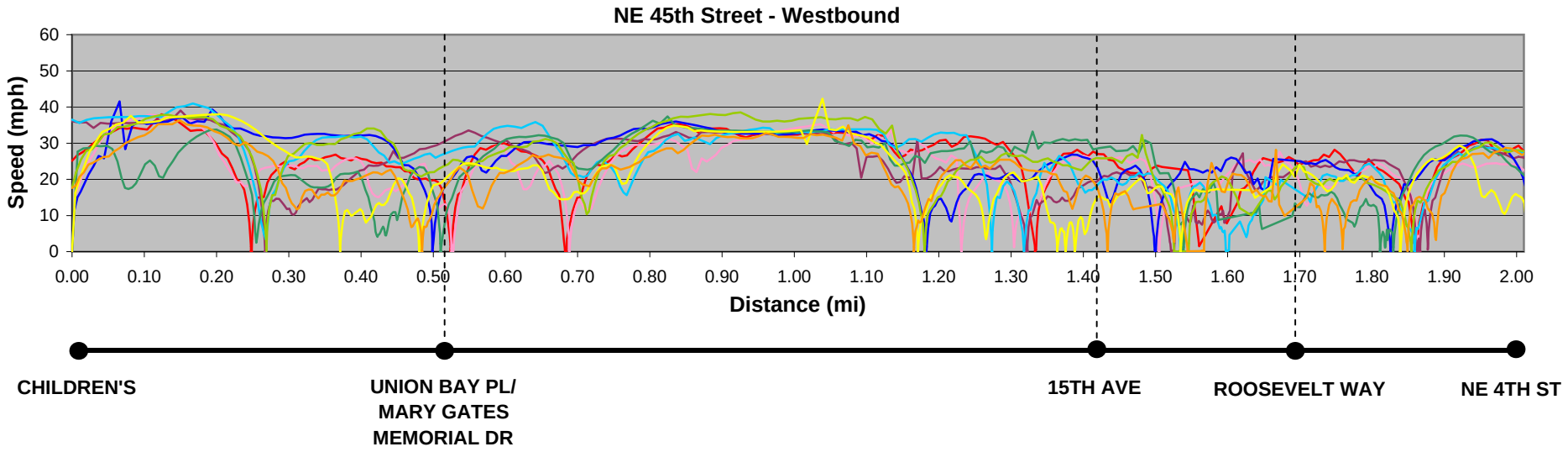
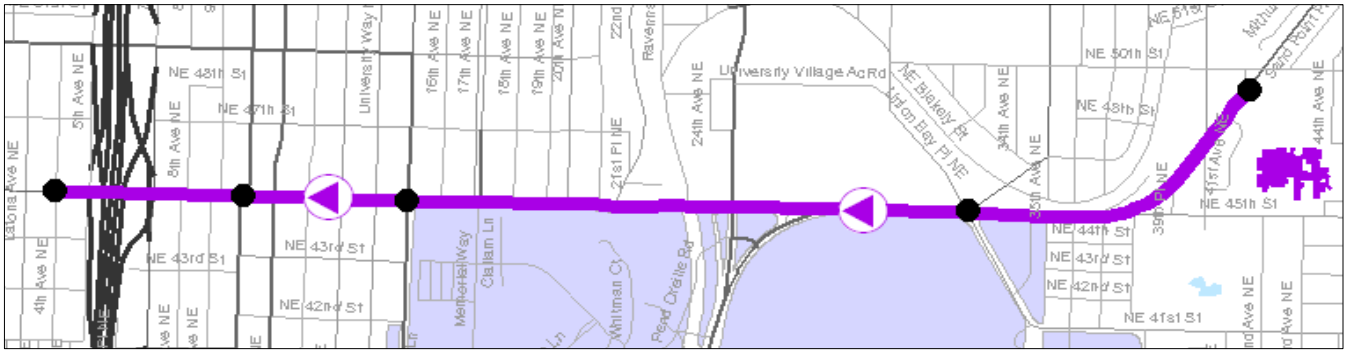


Travel Time Route Map



	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Average
Start Time	04:01:01pm	04:07:28pm	04:23:17pm	04:33:23pm	04:52:00pm	04:58:49pm	05:13:31pm	05:26:08pm	05:57:08pm	-
End Time	04:10:20pm	04:15:28pm	04:30:33pm	04:40:21pm	05:00:27pm	05:05:18pm	05:23:53pm	05:35:19pm	06:07:00pm	-
Total Time	10m, 19s	8m, 0s	7m, 16s	6m, 58s	8m, 27s	6m, 29s	10m, 22s	9m, 11s	9m, 52s	*8m, 33s*

Figure T-4F

NE 45th Street Westbound Travel Times - PM Peak Hour

Children's Hospital Master Plan

The Transpo Group

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Attachment T-5
Level of Service Definitions

Signalized intersection level of service (LOS) is defined in terms of the average total vehicle delay of all movements through an intersection. Vehicle delay is a method of quantifying several intangible factors, including driver discomfort, frustration, and lost travel time. Specifically, LOS criteria are stated in terms of average delay per vehicle during a specified time period (for example, the PM peak hour). Vehicle delay is a complex measure based on many variables, including signal phasing (i.e., progression of movements through the intersection), signal cycle length, and traffic volumes with respect to intersection capacity. Table A-1 shows LOS criteria for signalized intersections, as described in the *Highway Capacity Manual* (Transportation Research Board, Special Report 209, 2000).

Table A-1. Level of Service Criteria for Signalized Intersections

Level of Service	Control Delay Per Vehicle (Seconds)	General Description (Signalized Intersections)
A	≤10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable flow (acceptable delays)
D	>35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 - 80	Unstable flow (intolerable delay)
F	> 80	Forced flow (jammed)

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop-controlled and two-way stop-controlled. All-way, stop-controlled intersection LOS is expressed in terms of the average vehicle delay of all of the movements, much like that of a signalized intersection. Two-way, stop-controlled intersection LOS is defined in terms of the average vehicle delay of an individual movement(s). This is because the performance of a two-way, stop-controlled intersection is more closely reflected in terms of its individual movements, rather than its performance overall. For this reason, LOS for a two-way, stop-controlled intersection is defined in terms of its individual movements. With this in mind, total average vehicle delay (i.e., average delay of all movements) for a two-way, stop-controlled intersection should be viewed with discretion. Table A-2 shows LOS criteria for unsignalized intersections (both all-way and two-way, stop-controlled).

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

Level of Service	Average Total Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Attachment T-6
Children’s Transportation Management Program

Children's Transportation Management Program (TMP)

Children's Transportation Management Program (TMP) is an agreement between the City of Seattle, King County Metro, and Children's whereby all parties agree to utilize their resources to provide for maximum energy conservation as it relates to employees commute trips to and from Children's.

The agreement was first signed and implemented in 1985 and has been updated several times, with the latest update occurring in 2002. The primary purpose of the TMP is to reduce the number of single occupancy vehicle (SOV) trips through the use of incentives.

Children's is a regional leader among effective CTR and TMP programs. This leadership is demonstrated through the many awards and honors they have received for their program including the Environmental Protection Agency's Best Workplaces for Commuters in 2006; King County's Diamond Award in 2006, 2003, 2001, and 1997, and the Governor's Commute Smart Award in 1998 and 2002.

The TMP includes a range of elements and activities that are summarized in this document.

Commuter Services Information

Children's Commuter Services Coordinator works closely with an in-house Communications Specialist and outside marketing consultants to enhance communications regarding commute alternatives and incentives available to employees.

Information is distributed to a diverse staff with varying shifts through a variety of media, including an extensive program brochure, large boards, a Commuter Services webpage, new hire orientation, and Commuter Services staff available during regular office hours as well as extended hours to accommodate evening and night shift staff. Periodic promotions and updates are circulated via Children's weekly InHouse newsletter (electronically and in print), central email broadcasts, presentations at staff meetings, participation in several administrative committees, and an annual transportation fair.

Commuter Services maintains a comprehensive internal website and actively promotes participation through internal newsletters, email, posters, and promotions.

High-quality resources are important tools. Children's uses a 16-page color booklet that includes descriptions of each commute option, its financial benefits, and staff testimonials. This booklet was distributed to all staff in 2003, is available on a comprehensive internal website, and is distributed at new-hire orientations. Each new hire is provided with personalized commute research during their orientation day, listing available vanpools, offering ride-matching assistance, and outlining the best bus routes and safest bicycle routes.

Incentive Programs

The incentive programs include full subsidizes for hospital staff for transit, ferry, carpool, vanpool, and rail fares.

Children's offers a 100 percent subsidized, unlimited, annual King County Metro transit pass, called FlexPass, to all employees. In addition to King County Metro transit service, the pass also covers Community Transit, Sound Transit, and Pierce County Transit. Over 2,300 FlexPasses were distributed to Children's employees working on the main campus in 2006, nearly double the 2005 participation. Flexpass covers 100 percent of bus, vanpool, and vanshare costs. Children's invested over $500,000 in this important transportation tool in 2006.

In addition, Children's provides commute bonuses for using alternative modes: bicycling, walking, telecommuting, motorcycling, vanpooling, and carpooling. Commute bonuses vary depending on the number of days employees use a qualified alternate commute mode and their designated shift. Monthly commute bonuses can reach $50.

Other subsidies and incentives are available to Children's employees, in addition to the subsidies and incentives listed above. For example, bicyclists receive an annual free on-site bicycle tune-up and safety lesson, and carpoolers and vanpoolers receive free parking. Periodic promotions include quarterly drawings for all alternative commuters. Further, Children's provides monthly bus passes to over 75 non-payroll employees such as temps and contractors.

Carpool/Vanpool

Vanpools and carpools enjoy free parking, and have reserved, priority parking spaces. There are currently 204 parking spaces reserved for carpool and vanpool vehicles on the main campus.

Children's provides Guaranteed-Ride-Home to all alternative commuters to ensure that they can get home or to their families in case of unexpected events that interrupts their commute (overtime, illness, family emergencies, etc.).

Children's provides pro-rated carpool subsidies, and increased the subsidy amounts in 2005. Currently, full-time carpoolers can earn $50 per person per month.

Children's provides a 100 percent vanpool subsidy to all employee vanpool participants, so that they do not have to pay any money out-of-pocket to participate in vanpooling. For some riders, this subsidy is valued at over $200 per month. In 2006, Children's vanpool fleet grew to 35 vanpools from around the region, and continues to grow at a rate of one new group every month or two.

Vanpools are required by State law to have a minimum of 5 riders. Children's program (Vanshares) can start with only 3 riders. Children's works proactively to identify potential vanpool or Vanshare groups, encourage participation, and facilitate logistics. This pro-active approach has resulted in the doubling of the number of Children's vanpools in the last 4 years.

Children's provides incentives not only to vanpool drivers, but also to the bookkeepers and all back-up drivers. Incentives are:

Primary Driver	$250/ quarter
Bookkeeper	$75/ quarter
Back-up Drivers	$75/quarter

Children's uses promotions, ride-matching events, and incentives to increase ridesharing among employees. Ridesharing is promoted to staff, with varied socioeconomic and cultural backgrounds, who work diverse shifts and speak diverse languages.

Bicycle

Children's currently has five covered, fenced, and secured bicycle cages located throughout campus for bicycle commuters. There are three open racks near entrances for short-term visitors. There are open bicycle racks for visitors in the visitor parking lots and near the main visitor entrances (Giraffe and Whale 5). There is parking provided for up to 300 bicycles.

Lockers and showers are provided for both men and women. These facilities also include hair-dyers, full-length mirrors, benches, and a towel service.

A bike repair station is available on the main campus, and bicyclists receive an annual free on-site bicycle tune-up and safety lesson.

Children's provides pro-rated bicycle subsidies, and increased the subsidy amounts in 2005. Currently, full-time bicyclists can earn $50 per month.

Pedestrian

Children's offers umbrellas to pedestrians on an annual basis. In the autumn, when hours of darkness increase and the rainy season commences, Children's also provides safety updates and reflective lights to help keep pedestrians safe.

Children's provides pro-rated pedestrian subsidies, and increased the subsidy amounts in 2005. Currently, full-time pedestrians can earn $50 per month

Motorcycle

Children's offers free, covered motorcycle parking. The number of motorcycle spaces increased from 10 in 2003 to 26 in 2007.

Children's provides pro-rated motorcycle subsidies, and increased the subsidy amounts in 2005. Currently, full-time motorcyclists can earn $50 per month.

SOV Parking Fees

Since the adoption of the TMP, Children's has implemented parking charges for employees driving alone and parking on the main campus. Rates have been set to maintain progress toward the TMP goals. Employees have two choices: drive alone and pay the fee to park in employee-designated areas or use an alternative mode and receive a subsidy. Parking charges

for employees are grouped by the number of days the employee drives alone per pay period and the employee's designated work shift.

Parking assignments for employees are based on shift, seniority, position, and compliance with Children's parking policies as a condition of employment. Employee parking lots are monitored through license plate number recognition or through a key card system. All employees have key cards to open the parking gate in the garage. A Parking Operations staff person monitors the parking program by ticketing cars that have parked off grounds, are parked in visitor parking, or have been seen tailgating into the garage (two vehicles using one key card). Employees pay the parking fee by payroll deduction every two weeks. Non-payroll employees are billed once per month.

The biggest modification in parking charges and commute bonuses was implemented in 2005. At this time both the structure and rate for these charges and bonuses changed. The system is designed to encourage staff to drive less, thereby moving into a lower parking-charge category, and/or use commute alternatives more, thereby moving into a higher bonus category. In addition, the parking rates and the alternative commute bonus rates were nearly doubled to strengthen the disincentive to drive alone and the incentives to use alternative modes.

For the day shift, employees driving alone to work every day currently pay a monthly parking fee of $50.

As part of the TMP, Children's has an agreement with its neighbors that employees will not park in the neighborhood surrounding the main campus. Therefore, Parking Operations staff monitors neighborhood parking and tickets employees who park off grounds. Monitoring has been effective and Children's receives few calls from the neighborhood.

On-Site Flexcar

Flexcar is a progressive way to get around. Low-emission, fuel-efficient vehicles are conveniently parked near homes and workplaces. Flexcar members use them when they need them, paying an hourly rate that includes gas, insurance and maintenance.

Children's provides on-site Flexcars and access to the Children's business account, to accommodate mid-day business travel. More vehicles were added to the on-site Flexcar fleet in 2007 to support continued use of commute alternatives among staff. The Flexcars at Children's may also be used by any private Flexcar member, making these a valuable transportation resource available to the community.

Telework and Compressed Workweeks

Children's offers a compressed work week and offers telecommuting opportunities, which reduces total weekly commute trips to the hospital.

Attachment T-7
Traffic Forecasting Methodology

Development of the 2030 Travel Forecasts

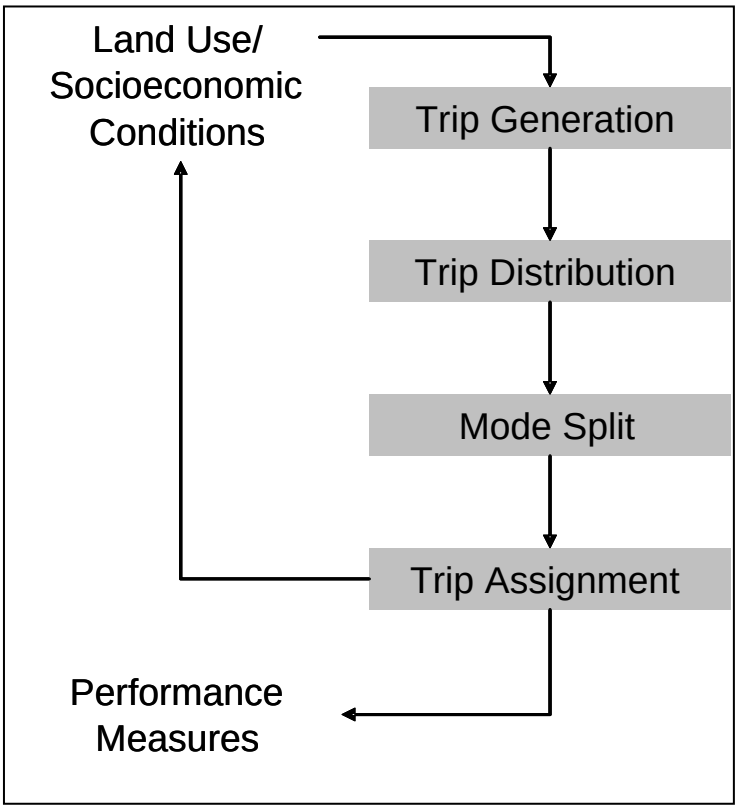
Forecasts of the baseline traffic volumes for the 2030 horizon year were developed to account for increases in traffic due to new development in the study area and regional traffic growth. The most current version (July 2007) of the SDOT travel demand model, which is a refined version of the Puget Sound Regional Council (PSRC) Regional Travel Demand Model, was used for this study. The SDOT model retains the PSRC model level of detail for areas outside Seattle boundaries while using a more detailed network and zonal structure for Seattle itself. The model includes smaller transportation analysis zones (TAZs) to provide more sensitivity to local arterials, and also incorporates other specific enhancements such as updates to the local transit network. Children's is represented by TAZ 139 in the City's model. The updated model reflects changes in residential and employment land uses, as well as future transportation projects, developed by the PSRC for this purpose. The model has a 2005 base year and a 2030 future horizon year. Since the proposed Children's MIMP is intended to accommodate approximately 20 years of growth a 2030 horizon year for analysis provides a reasonable, and conservative context within which to consider impacts of the Action Alternatives.

The SDOT model is a sophisticated model running on an EMME/2 software platform and uses the four step model process that includes trip generation, trip distribution, mode choice, and trip assignment. Documentation of the model and model updates were obtained along with each of the model databanks from SDOT.

The AM and PM 3-hour peak periods were used to evaluate 2030 baseline (No-Build) travel conditions. The model run was completed by confirming regional and study area land uses along with the future transportation network assumptions. No changes to Children's were assumed for the baseline scenario (i.e., land use was assumed consistent with existing conditions).

The model includes a four-step modeling procedure (schematically illustrated in Figure T-5a) which comprises trip generation based on the land uses, trip distribution among the TAZs, modal split among the various modes available, and trip assignment on the model network.

Figure T-7A. 4-Step Model



Trip Generation and Mode Share

The model estimates the number of person trips generated (produced or attracted) by each transportation analysis zone (TAZ) based on the types of land uses within the specified zone. Residential development is typically the producer of daily trips, whereas employment is typically the attractor of daily trips. The model includes a series of residential and employment land use categories by which it estimates travel. The mode choice component of the model estimates the allocation of person trips among the various travel modes such as single occupancy vehicles (SOV), high occupancy vehicles (HOV), buses, rail, ferries, trucks, bikes, and walk modes.

Trip Distribution and Assignment

The allocation or distribution of trips among the various TAZs in the model was estimated using the destination choice model (gravity model) which allocates trips based on impedances between the TAZs.

The trip assignment model estimates the volume of trips on each link in the transportation system. To capture the growth in trips throughout the study area, screenlines were defined along the major corridors. A screenline is an imaginary boundary through which all of the entering/exiting vehicles are collectively viewed. Screenlines are able to capture growth trends throughout the study area and avoid any model over-assignment or under-assignment along study area corridors. The growth across screenlines was then used to determine growth rates for study area intersection approaches. Further post processing of the forecast

volumes considered historical growth trends in traffic volumes along the study area corridors.

In general, growth per year was approximately 0.5 to 1 percent from 2007 to 2030 with specific screenline growth ranging from less than 0.5 percent per year to approximately 2 percent per year. This results in overall growth for the study intersections ranging from 10 to 13 percent at most locations. No-Build Alternative 2030 forecasts for the study area are provided in Appendix T-2 (Figures T-2B-1 and T-2B-2).

Attachment T-8
Planned Improvements

Planned Improvements

This section discusses the planned improvements considered under the No-Build Alternative conditions. These improvements were also carried forward into the Action Alternatives analysis.

Comprehensive Plan

The City of Seattle adopted their Comprehensive Plan in 1995. It was prepared to respond to the region's Vision 2020 plan, which has been updated to Destination 2030 which is developed by the Puget Sound Regional Council (PSRC). The Comprehensive Plan is implemented through the City's Transportation Strategic Plan. The City's Comprehensive Plan includes goals which place emphasis on environmental stewardship, prioritizing energy efficient transportation; changing and managing travel demand and travel behavior; ensuring that land use and transportation strategies are consistent with and support the concept of urban villages; optimizing existing street capacity to support a shift towards alternatives to single occupant vehicle (SOV) use; using level of service standards as a means of assessing system performance; increasing bicycle and walking travel by making the environment for these modes safer, and assuring that parking is adequate to sustain the economic viability of commercial areas while discouraging commuting by SOV.

PSRC's Destination 2030 contains a list of projects reflecting locally adopted plans and projects under discussion for key regional funding decisions. This project list was amended in April 2007. Based on the current list, there are several major projects deemed "Strategic" to the region that could affect transportation conditions in the study area. These projects include:

- **SR 520 bridge replacement and HOV project** – This WSDOT project would replace the SR 520 Bridge with a new four general purpose and two HOV lane (for a total of six lanes) bridge. The project is currently in mediation. Through mediation a group of 34 citizens and stakeholders will determine two to three design alternatives for WSDOT to study. All alternatives being considered would provide additional capacity at the SR 520/Montlake Boulevard on and off-ramps. The current schedule is for WSDOT to release the supplemental Draft EIS at the end of 2009, the Final EIS would be completed in 2010, and construction would likely be finished in 2016. Because the project is not fully funded, this analysis does not assume the improvements would be in place. However, Children's fully supports this project, and a sensitivity analysis shows that implementation of this project would not significantly change the findings of this analysis.
- **University Link Light Rail** – This is a 3.15 mile light rail extension that will run in twin-bored tunnels from Downtown Seattle north to the University of Washington, with stations at Capitol Hill and on the University of Washington campus near Husky Stadium. By 2030, the University Link line alone is projected to add 70,000 boardings a day to the light rail system. Construction is scheduled to begin in late 2008 and the University Link is projected to open for service in 2016.
- **North Link Light Rail** – This is the extension of the light rail from the University of Washington to Northgate. In April 2006, Sound Transit and the Federal Transit

Administration issued the North Link Final supplemental EIS to the 1999 Central Link Final EIS on the light rail transit project running from Downtown Seattle to Northgate. FTA has issued the Record of Decision for North Link which allowed Sound Transit to begin moving forward with acquiring land. The project is expected to be completed by 2020.

The horizon year for this analysis is 2030; therefore, the analysis assumes completion of the University Link Light Rail which is fully funded.

Capital Improvement Program

A citywide, six-year CIP is prepared each year that allocates existing funds and anticipated revenues to rehabilitate, restore, improve, and add to the City's capital facilities. The most recent City's proposed 2008 – 2013 CIP contains a wide range of capital improvements, including construction of new libraries, street repairs, park restoration, and work on electrical substations. The program addresses street systems as well as non-motorized and transit facilities. Specific improvement projects in the study area include:

- **35th Avenue NE Street Improvements –** This project upgrades and interconnects traffic signals along 35th Avenue NE, NE 65th Street, and NE 75th Street. It also provides asphalt resurfacing, sidewalk replacement, and new curb bulb installation throughout the project area.
- **Sand Point Way NE Pedestrian Improvements –** This project constructs a curb on the existing roadway from 40th Avenue NE to 41st Avenue NE and installs a walkway with ADA-compliant wheelchair ramps.
- **Sand Point Way NE/NE 40th Avenue Intersection Improvements.** This project would signalize the Sand Point Way NE/40th Avenue NE intersection in 2008. The project would provide protected left-turn phasing on the eastbound and westbound approaches of Sand Point Way NE as well as associated turn lanes. Split phasing would be provided on the southbound and northbound NE 40th Avenue approaches. Crosswalks and ADA accessible ramps would be provided on all approaches. This intersection meets criteria in the *Manual on Uniform Traffic Control Devices* (MUTCD) left-turn volume traffic signal warrant (FHWA 2003).
- **Bike Master Plan Implementation.** This program implements the Seattle Bicycle Master Plan. Work includes installing bike lanes and bicycle route signing, completing key links in the urban trails network, adding bicycle/pedestrian signals to complete the network, and reconstructing key sections of the trails. The goals of the program are to increase bicycle safety and access, while reducing bicycle crashes. This program is consistent with the focus in the City's Transportation Strategic Plan (TSP) on encouraging walking and biking.
- **Burke Gilman Trail Extension**. This project extends the Burke-Gilman Trail from its current terminus at 8th Avenue NW to Golden Gardens Park.
- **Intelligent Transportation Systems (ITS) Plan Implementation**. This project provides funding for high-priority projects identified in the City's Intelligent Transportation System (ITS) Strategic Plan and the ITS Master Plan, in combination with grant match and local ITS initiatives and spot improvements undertaken by City of Seattle crews. Examples of potential projects include transit signal priority

strategies, ITS information systems, use of closed-circuit television (CCTV) cameras to monitor traffic in key travel corridors, real-time traffic responsive control, parking guidance systems and traveler information. Within the study area, Montlake Boulevard improvements are included between NE 55 Street and Lake Washington Blvd and NE 45 Street from Montlake Blvd NE to Mary Gates Way. The focus of the project along Montlake Boulevard is traveler information because motorists frequently encounter long vehicle queues without being able to determine the extent of delays. This project would install queue detection, variable message signs, traffic cameras, and a system to automatically display messages based upon traffic conditions. Based upon this real-time traffic information, motorists may choose an alternate route.

- **Neighborhood Bike Improvements**. This citywide project responds to citizen and neighborhood recommendations for projects that facilitate bicycle travel in the City. The project provides improvements such as construction of bike lanes, ramps, drain grates, paved shoulders, railroad crossing improvements, and bicycle lane striping.

The horizon year for this analysis is 2030; therefore, the analysis assumes completion of these projects.

University Area Transportation Action Strategy

SDOT is currently updating its transportation plan for the area that includes all or parts of the University District, University Heights, Ravenna, Roosevelt, and Montlake neighborhoods. This update is called University Area Transportation Action Strategy and will address long-term transportation needs and impacts of new growth in the area for the 2030 horizon year. SDOT staff and consultants have engaged with community stakeholders to assess how conditions have changed since the last University Area Transportation Action Strategy was evaluated in 2002. The project recommendations are continuously being refined and a draft report is expected in February 2008. The preliminary list of projects includes the following locations within the study area:

- **NE 45th Street Corridor from 7th Avenue NE to 15th Avenue NE –** Along the north curb lane provide a westbound Business Access and Transit-only (BAT) lane by restricting left-turns to improve transit speed and reliability and reduce congestion. Left-turns would be prohibited off of NE 45th Street.
- **NE 45th Street Viaduct –** Convert the westbound climbing lane to a sidewalk to improve pedestrian safety.
- **I-5/NE 45th Street Overpass –** Widen NE 45th Street/I-5 overpass to reduce vehicle delays and incorporate better sidewalks and bicycle lanes.
- **I-5/NE 45th Street Interchange –** Provide additional lane on southbound I-5 on-ramp at NE 45th Street to reduce vehicle delay.
- **7th Avenue NE/I-5 Off-Ramp at NE 45th Street** – Provide transit queue bypass lane to improve transit speed and reliability.
- **Burke-Gilman Trail/25th Avenue NE** – Modify traffic signal timing and intersection design, and upgrade crossing to improve safety for pedestrians and bicyclists.

- **NE 45th Street Corridor & Burke Gilman Trail –** Construct a pedestrian and bicycle trail connection between NE 45th Street and the Burke Gilman Trail to improve mobility and safety.
- **Montlake Boulevard NE –** Extend the HOV lane on southbound Montlake Boulevard from NE Pacific Place to 25th Avenue NE to increase speeds of high-occupancy vehicles and encourage new transit service. Reconstruct pedestrian overpasses connecting the University of Washington main campus with the east side of Montlake Boulevard. Work with King County Metro and the University to introduce new transit service along this corridor.
- **Montlake Boulevard NE/NE Hamlin Street Intersection –** Extend northbound left-turn lane at E Hamlin Street to reduce congestion on Montlake Boulevard.
- **Montlake Boulevard NE/NE Shelby Street Intersection –** Modify traffic island to narrow intersection, and add bike lanes and widen sidewalks to improve safety.
- **Montlake Boulevard NE/NE 45th Street Corridors –** Install variable message signs in the vicinity of the Montlake Boulevard/NE 45th Street intersection to relay real-time traffic information.
- **36th Avenue NE/Burke Gilman Trail –** Create new ramp connection between 36th Avenue NE at NE 45th Street with Burke Gilman Trail.
- **Burke Gilman Trail/NE 47th Street/University Village** – Create new pedestrian connections along the NE 47th Street right-of-way and realign intersections along 25th Avenue NE.
- **Ravenna Avenue NE/55th Avenue NE/Ravenna Park** – Improve off-street multi-use trail parallel to Ravenna Avenue NE.
- **NE 50th Street/30th Avenue NE to 35th Avenue NE** – Complete sidewalk along south side of roadway and provide traffic calming devices.
- **Oreille Road, Brooklyn Avenue, and NE Blakely Street** – Modify traffic control and signage, and add raised/colored trail crossing.

These projects are currently under review and are not funded; therefore, the improvements were not assumed in the analysis. This assumption presents a conservative estimate of project impacts because many of the improvements would likely reduce congestion along major corridors in the study area.

Attachment T-9
Children’s Comprehensive Transportation Strategy

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M E M O R A N D U M

To: Paulo Nunes-Ueno, Seattle Children's (Children's)

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Date: October 30, 2008

Subject: Proposed Comprehensive Transportation Plan in Support of the 2008 MIMP

Introduction

This memorandum expands upon and amends the memorandum dated March 28, 2008 as presented in Appendix T-9 to the Children's Hospital and Regional Medical Center (now Seattle Children's) Draft Environmental Impact Statement (DEIS) for its Major Institution Master Plan (MIMP). The following document outlines the revised Comprehensive Transportation Plan (CTP) that Children's proposes as part of its anticipated MIMP. Children's would implement the proposed CTP upon MIMP approval.

This CTP is based on Nelson\Nygaard's recommendations and analysis, which are documented in Appendix A to this memorandum. Improvements and refinements to the plan as recommended in the March 28, 2008 memo were made in consultation with the Citizen's Advisory Committee, the City of Seattle Departments of Planning and Development (DPD) and Transportation (SDOT), and in response to comments made by the general public during the review period of the Major Institution Master Plan.

This proposed CTP supports Children's transportation goals, which focus institutional planning and investments to minimize Children's impacts on the transportation network and the environment, while at the same time making the most of precious healthcare dollars by limiting construction of expensive, new parking facilities. Children's transportation goals are to:

- Further reduce the percent of commute trips made by single-occupant vehicle (SOV)
- Further reduce AM and PM peak hour vehicle travel
- Reduce the need to build parking on campus or in nearby facilities within the area that would be affected by MIMP-related vehicle trips, and
- Support Children's continued leadership in delivering innovative transportation solutions in the context of climate change.

This CTP would represent a substantial investment in sustainable transportation programs and infrastructure beyond the hospital campus. The CTP is comprised of eight additive elements that reduce congestion and other negative transportation impacts related to the hospital's growth by making transit, walking, and biking not simply convenient choices, but rather the preferred way to travel to Children's.

Comprehensive Transportation Plan elements

Children's has long been recognized as a leader in Transportation Demand Management (TDM), receiving awards from the Governor's office, King County, and the U.S. Environmental Protection Agency for its excellent commuter benefits and achievements in vehicle trip reduction. The hospital's programs to reduce drive-alone commuting and vehicle trips to the campus have resulted in a drive-alone rate of only 38% among daytime employees in 2006, down from 73% in 1995 and 54% in 2001. This accomplishment is significant both for a hospital and for an employer located in a neighborhood with limited public transit service.

With the input of the Citizens Advisory Committee, SDOT, and DPD, Children's has developed a Comprehensive Transportation Plan (CTP) to focus on sustainable transportation programs. The first three elements of the proposed CTP represent major enhancements in programs that are operated within Children's as part of its highly successful Transportation Management Plan (TMP). This enhanced TMP would mitigate vehicle traffic related to MIMP expansion by shifting even more employees and visitors from single-occupancy vehicles (SOV) to bicycling, walking, shuttle, and transit. In addition, the proposed CTP goes above and beyond the traditional TMP components by including five new elements that go well beyond the measures usually associated with a transportation management plan, including a substantial investment in transportation infrastructure improvements outside the hospital campus.

Upon MIMP approval, Children's would implement the CTP, including the enhanced TMP shuttle, bicycle, and incentive programs that are expected to further reduce the percent of employees driving alone to work. This enhanced TMP would lead to an **SOV mode split of 30% or lower among daytime employees** at MIMP build out.[1] For comparison, this would meet or exceed the 2020 goal of 70% non-SOV travel set for the University District Urban Village in the City of Seattle's Comprehensive Plan (*see Appendix A to this memorandum for a complete discussion of the TMP enhancements and the methodology used to calculate the proposed TMP's SOV and vehicle trip reduction benefits).*

Elements 1-3: Enhanced Transportation Management Plan[2]

Children's proposed enhanced policies and programming for its TMP include expanding its Transportation Demand Management incentives and extending Children's shuttle system to offer new commute alternatives. These TMP enhancements would achieve a 30% SOV mode split or lower among existing and future employees, as measured under applicable TMP requirements. Modeling indicates that the enhanced TMP and its associated SOV mode split is expected to result in a 36% reduction in net new PM peak hour vehicle trips, reducing what would otherwise be additional peak hour vehicle traffic generated by the MIMP expansion. The level of additional investment in shuttles and other elements of the TMP is a significant commitment, and would represent additional costs on the order of several million dollars annually, in addition to capital expenditures. The three enhanced Transportation Management Plan elements are:

1) A robust shuttle-to-transit system linking Children's to regional transit hubs. Children's expanded shuttle system is designed to increase the number of employees who use transit by providing frequent and convenient service between Children's and regional transit hubs. Children's has already initiated a shuttle route to the Downtown Transit Tunnel and 3rd Avenue corridor, and plans a new route to Campus Parkway in the University District in 2009. If the MIMP is approved, Children's would additionally run shuttle routes to the Montlake Flyover stop at SR-520, the future LINK light rail station at Husky Stadium, and park and ride locations in south Snohomish County.

Expected outcome: 19 percent reduction in net new PM peak hour vehicle trips by 2028.

[1] As measured by Washington State Commute Trip Reduction (CTR) law reporting requirements.
[2] For a complete description of the proposed Enhanced TMP, see Appendix A to this memo.

2) Innovative bicycle programs. Children's is pioneering a number of creative programs to increase the use of bicycles for commute and mid-day trips, such as:

> *Company Bikes,* which offers free use of a bicycle to employees who commit to cycling at least two days per week, and
>
> *Flexbikes,* a shared-bicycle program which allows users to check out electric-assist bicycles for one-way travel to the 70th / Sand Point Way administrative building on the University of Washington Medical Center (UWMC).

Expected outcome: Increase in the percentage of employees who commute by bicycle from 6% (2007) to 10% by 2028

3) Increased financial rewards for employees who commute without driving alone. Children's rewards employees who use alternative forms of transportation with monthly financial bonuses. The amounts of these incentives would be increased, parking fees would rise, and Children's would also continue to provide many other programs such as free transit passes, fully subsidized vanpools, guaranteed taxi rides home in the case of emergency, and others.

Expected outcome: 17 percent reduction in net new PM peak hour vehicle trips in 2028, for a total 30-40% reduction in net new PM peak hour vehicle trips combined with Element 1.

Elements 4-8: Above and beyond a typical TMP

The additional five elements of the Comprehensive Transportation Plan would go above and beyond what is typically included in a Transportation Management Plan. Children's proposes these additional elements that relate to the basic design of the new facilities, and off-site investments that would benefit the broader community within northeast Seattle. These elements are:

4) Campus design and near-site improvements to encourage alternative transportation. Through careful arrangement of design elements such as pedestrian access, bicycle facilities, transit centers, and the buildings themselves, Children's would create a campus that supports the convenience and attractiveness of alternative transportation modes. This campus design would blend with the surrounding neighborhood and include adjacent improvements on Sand Point Way NE and 40th Avenue NE, to support vehicle and pedestrian movement near the campus both for Children's transportation and for the benefit of the surrounding neighborhood.

Expected outcome: A more attractive, safe, and pleasant built environment that encourages walking, bicycling, and transit use**.**

5) Intelligent Transportation Systems (ITS) for NE 45th Street / Montlake Boulevard / Sand Point Way NE. Children's would contribute up to $500,000 to directly fund Intelligent Transportation System (ITS) projects in the corridor most likely to be impacted by the hospital's expansion: Montlake Boulevard through Sand Point Way NE to the hospital. By applying smart signals that adapt to traffic conditions, ITS enhancements would optimize the performance of key intersections and produce substantial reductions in vehicle delay and travel time within the corridor. For example, when ITS

improvements were installed at Greenwood Avenue N and Holman Road NW in Seattle, the result was a 30 percent reduction in vehicle delay and a 15 percent reduction in travel time[3].

Expected outcome: 5-10 percent reduction in delay and travel time.

6) Contributions to capital projects that would improve the Northeast Seattle transportation network. The City of Seattle has identified a comprehensive list of projects in the area impacted by Children's traffic that could improve the movement of people and goods in the corridors leading to the hospital. These projects emerged from a number of planning efforts conducted by the City, including the University Area Transportation Study, the University Area Transportation Action Strategy, the Bicycle Master Plan and the Sand Point Way Pedestrian Plan. Children's would contribute a proportionate share of the cost of the projects on this list based upon the amount of traffic related to Children's, in an amount up to $1.4 Million.

Expected outcome: Currently unfunded improvements in the Northeast Seattle transportation network would receive substantial financial support.

7) Investments in Walkable + Bikeable Northeast Seattle. Children's would contribute up to $2 Million to a Bicycle + Pedestrian Fund that would be used to build capital projects – in some cases above and beyond those found in existing plans – that improve pedestrian and cyclist access, mobility, and safety for Children's employees, visitors, and members of the surrounding community. Projects listed in the Bicycle Master Plan that have a connection to Children's and are currently unfunded would receive first priority. Children's would work with the City and communities surrounding the hospital to identify improvements that would create wide-ranging community benefits, particularly those that promise to increase the numbers of families and children who feel safe and comfortable bicycling and walking in northeast neighborhoods. These projects should also lead to even further increases in the numbers of Children's employees who arrive at work on foot or by bicycle.

Expected outcome: Significant reductions in vehicle/bicycle crashes, and greater numbers of cyclists and pedestrians in the area.

8) Out-of-area parking. If the MIMP is approved, Children's intends to identify 100 to 200 out of area, off-site parking spaces per each phase of development as part of its CTP and as necessary to mitigate future transportation impacts. As a first step, Children's and Sound Transit have signed a Memorandum of Understanding committing both organizations to investigate options to create capacity for Children's employees at regional park and ride facilities.

Expected outcome: Every 100 cars parked in off-site, out-of-area facilities would result in a 5% reduction in traffic impacts surrounding the hospital**.**

Children's is committed to develop sustainable transportation programs in conjunction with its MIMP construction. Through the CTP, the hospital would mitigate vehicle traffic related to expansion by shifting even more employees and visitors from single occupant vehicle (SOV) to biking, walking, shuttle and transit. The CTP would allow Children's to:

- Achieve a 30% SOV rate, matching the 2020 mode share goal set by the City of Seattle comprehensive plan for the University District
- Reduce the number of parking spaces needed on campus by 500, and

[3] McManus, Aileen, ITS Project Manager King County Traffic Engineering, Conference: *Beyond Oil: Transforming Transportation: A National Demonstration Project Cascadia Institute* Presentation: *Puget Sound Traffic Technology and Management: Making the System Smarter*, September 4, 2008.

- Reduce vehicle miles traveled, and thus reduce the resulting green house gas emissions that would otherwise be generated with no further mitigation measures beyond Children's 2007 TMP.

Element I. Robust shuttle-to-transit system

Significant investment would be made in the operation of new shuttles from major transit hubs that connect riders directly to the campus. Shuttle routes would meet regional transit service at Westlake Station and 3rd Avenue downtown (*launched in April 2008*), the University District (*scheduled to launch in 2009*), the Montlake/SR 520 flyover stop, and the future light rail station at Husky Stadium. Another route would provide connections from south Snohomish County during peak commute times.

Table 1 summarizes Children's shuttle program as of 2007, and presents the enhancements that Children's would implement in conjunction with the MIMP. This enhanced Shuttle service, along with Elements 2 and 3 of the CTP, would together meet Children's TMP goals referenced above (i.e., pioneering innovative climate change solutions and further reducing SOV rates, vehicle trips, and parking demand). Expanding Children's existing shuttle routes to connect with regional transit services effectively extends the reach and convenience of the public transit system and allows more employees and other visitors to choose alternate modes to reach campus. (*See Appendix A to this memorandum for a detailed description of the Shuttle program, strategy development for the entire TMP, and expected effectiveness*.)

Table 1. 2007 Shuttle Service and Proposed Enhancements

2007 Program	Proposed Enhancements
• 6 routes offer free rides between the main campus and parking lots, other Children's facilities, and affiliated institutions, Mon-Fri • Shuttle fleet of 12 vehicles, equipped to carry bicycles • 2 routes connect the hospital campus with nearby off-campus parking lots: every 7-10 minutes, runs 5:30AM-9PM • 1 route between the 70th/Sand Point Way administrative building and main campus: every 15 minutes, 6AM-6:30PM • 1 route connecting the Magnuson Park lot and 70th/Sand Point Way building: every 10 minutes, 6AM-10AM, 3PM-7PM • 1 route between Children's main campus and Metropolitan Park West offices in downtown Seattle: every 30 minutes during peak, 20 minutes off-peak, 6AM-8PM • 1 route between Children's Hospital Research Institute Building 1 University of Washington Medical Center (UWMC), and Children's main campus: every hour, 8AM-5PM • Fred Hutchinson provides one route from the Seattle Cancer Care Alliance to UWMC and Children's: every 40 minutes, 7AM-7PM	• Initiate additional Transit Shuttle routes to public transit hubs • Increase shuttle fleet as needed to support service enhancements • *Launched in June 2008:* Route to 3rd Avenue/Westlake Station every 15 minutes (absorbing Metropolitan Park West route and 70th/Sand Point Way to hospital route) • *Planned for launch in 2009:* Route to University District NE 45th St and Campus Parkway hubs, every 10 minutes during peaks, every 15 minutes off-peak • Route to SR 520/Montlake Blvd. Station every 10 minutes during peaks, every 15 minutes off-peak • Route to Future UW light rail station at Husky Stadium, every 10 minutes during peaks, every 15 minutes off-peak • Route to south Snohomish County every 30 minutes, only during peaks

Element II. Innovative bicycle programs

Building on its history as an innovator in transportation management, Children's is piloting novel bicycle programs to bolster the number and proportion of its employees who commute by this physically active, non-polluting transportation mode. Children's campus provides the free use of showers, lockers, secure bicycle parking, and subsidized tune-ups for all employees. Lockers are currently available on a first-come, first-served basis to those who bike or walk to work or who exercise mid-day and utilize the shower and changing facilities.

On July 17, 2008, Children's launched its **Company Bikes** program. Under Company Bikes, Children's invites employees to pledge to bicycle to work at least two days every week, year-round. After completing two bike commuting courses offered by Children's Commuter Services staff, these pledged employees are provided with a bicycle free of charge from the hospital, for their use as long as they continue bike commuting twice a week. The Company Bikes program enjoyed an enormously positive start, assigning 30 bicycles within the first two days of its launch and committing all 100 bicycles for the 2008 program by September. Commuter Services has 27 bicycle commuting courses scheduled through November 2008. 100 more Company Bikes bicycles are planned for purchase and distribution in 2009.

Scheduled to launch in the first quarter of 2009, the **Flexbikes** bike-sharing program would house 20 bicycles on the hospital campus that employees can rent during the day, with the first half hour free. The bicycles would have an electric-assist motor that can be turned on to help climb hills. Children's program would link with a system of 40 Flexbikes to be housed on the University of Washington campus. Flexbikes would reduce the number of midday vehicle trips between the Hospital and nearby facilities such as the 70th and Sand Point administrative offices and the University of Washington Medical Center. In addition, the provision of bikes for mid-day trips would help employees who may not be ready or able to bicycle to campus to try biking for errands and meetings, reducing motorized vehicle trips during the day.

In order to support the projected 10% of employees cycling to work by 2028, Children's is planning for showers, lockers, and bike parking to accommodate 600 cyclists. The hospital is considering a locker-assignment system to ensure consistency and predictability for locker users.

Element III. Increased financial rewards for employees who commute without driving alone

Children's employees receive substantial financial and convenience incentives to choose non-drive alone commute modes. In conjunction with the MIMP, as part of the Comprehensive Transportation Plan, Children's proposes to greatly enhance its 2007 incentives programs to provide substantial economic motivation, supportive benefits, and ample information and guidance to encourage employees to get to work by transit or shuttle, carpool or vanpool, or by bicycle or on foot.

Children's would make the following enhancements to employee incentives:

Table 2. 2007 Incentive Programs and Proposed Enhancements

Element	2007 Program	Proposed Enhancement
Financial Incentives for Alternate Commutes	Children's employees and CUMG physicians can earn up to $50 per month in Commuter Bonus	Medical residents, fellows, and students also eligible for the monthly bonus; maximum incentive increased to $65 per month, matching parking fees
	Additional quarterly bonuses for vanpool drivers, backup drivers, and bookkeepers	Same
	FlexPass for all Children's and CUMG employees; PugetPass for others upon request	FlexPass for medical residents & fellows; UPASS subsidized for students (out of pocket portion)
	Free bicycle tune-ups, umbrellas, and reflective lights provided annually.	Institute a $100 per year gear bonus for commuters who walk or bike to work
Parking costs	Children's employees, CUMG Physicians, Pace temps, travelers, UW employees, and contractors who drive alone to work charged $50 per month for parking. Children's tracks University of Washington parking fee increases and raises hospital parking fees concurrently.	Raise on-campus SOV parking charge to $65 per month, with ongoing increases still made in step with University of Washington parking fee changes. Add medical residents, students and fellows to employees charged for monthly parking, similar to UW policies.
	Patients, families, carpools and vanpools park on campus for free, as do: medical residents, students, fellows, volunteers, community physicians, trustees, board members and vendors	Eliminate free parking with introduction of pay-per-use. Charge patients and families for parking, with the potential for validation or Medicaid vouchers for families. Institute parking charges for carpoolers to create a market incentive for carpoolers to increase the occupancy of their cars and the frequency with which they share the ride to work.
Carpool and Vanpool	Carpool groups managed internally by Children's Transportation staff. No incentives for formation, but $65/month bonus for full time carpooling and free parking. Therefore, carpoolers get enhanced utility from sharing the ride.	Children's would invest in technology that facilitates carpool matching by commuters themselves, including real-time matching. Children's would transition to a single carpool formation bonus and institute parking charges for carpoolers. These changes would create market incentives for carpoolers to maximize the number of rides they share and to increase the occupancy of their cars.
Supportive programs	Guaranteed Ride Home and carsharing memberships provided to employees. Shuttles are equipped to carry bicycles.	Continue proportional investment in GRH and Zipcar as employee populations grow.

Element IV. Campus design and near-site improvements to encourage alternate transportation

Research shows that the choice to drive, take transit or use human powered modes is influenced as much by the quality of the built environment along the way as by the availability transportation choices. For example, a well-designed campus portal located near transit, or deliberate placement of bicycle facilities near entrances, help to reduce any real or perceived penalty associated with the use of transit or non-motorized travel modes.

Making non-motorized transportation safe, attractive, and time-competitive with SOV travel is a guiding principle of the CTP. Children's has integrated pedestrian- and cyclist-supportive infrastructure into every design decision during the MIMP planning process, both within the campus and at access points, crossings, and pedestrian environments along the hospital's perimeter. Such detailed design efforts would support the effectiveness of all other Children's transportation programs, and make non-drive-alone travel modes feasible and appealing for all groups of people who come to campus, including clinical and administrative staff, medical students and community physicians, and volunteers and visitors.

On-Campus Capital Improvements

Children's is working with its architect to ensure that the campus would be designed to make walking, biking, and transit the best ways to commute to work. New on-site facilities would serve increasing numbers of shuttle and transit passengers, bike commuters, and pedestrians. Careful attention is being paid to walking and cycling connections between shuttle and bus stops, campus access points, and main buildings. Regardless of initial travel mode, visitors would navigate the campus by foot or using a mobility aid such as a wheelchair or walker when traveling from the parking garages, transit stops, bicycle cages, or between different buildings; safe, convenient, and clearly-marked on-site pedestrian facilities are necessary for all hospital visitors. Tables 3 and 4 describe facilities on Children's existing site and proposed enhancements that would be included in the MIMP design:

Table 3. 2007 On-Campus Shuttle/Transit Facilities and Proposed Enhancements

Travel Mode	2007 Facilities	Proposed Enhancements
Shuttle	Shuttles drop passengers off at the turn-around platform in front of the Giraffe Building	Enhanced shuttle service would require 4-6 bus bays for efficient drop off/pick up and vehicle turn around. Build a high-quality hub to serve Children's shuttles and public transit (*see "Proposed combined enhancement" below*)
	Passengers dropped off adjacent to hospital building	Support pedestrian circulation with clear, separated infrastructure between shuttle bays and hospital buildings
	Shuttles stored overnight at National Archives on Sand Point Way NE	Dedicate 18,000 sf. (on or off campus) for fleet storage, maintenance and operator facilities
King County Metro Transit riders	Route 75: Arriving passengers must walk up a steep hill on Penny Drive from the bus stops on Sand Point Way NE to buildings. Bus stops are covered adjacent to the hospital campus. However, stops near the Hartmann facility are unsheltered, and there is no signalized crossing to help passengers safely navigate the four lanes of traffic.	Create a pedestrian-oriented building entrance directly adjacent to the Route 75 stops (*see "Proposed combined enhancement" below*)

	Route 25: Passengers arrive in a protected turn-around but must walk through the Whale parking garage, or find a hidden stairway leading through a garden plaza, to reach the hospital	Enhance signage directing passengers to the path through the garden plaza. If possible after negotiations with King County Metro, co-locate the stops for routes 25 and 75.
Proposed combined enhancement: Transit/Shuttle Hub Depending on which MIMP alternative is chosen, Children's would work with King County Metro and SDOT to create a shared location where routes 75, 25, and Children's shuttles all stop. Under Alternative 7R, this hub would be located on both sides of Sand Point Way NE at 40th Avenue NE, in front of the hospital and the Hartmann property. The Transit/Shuttle Hub would be designed as a true gateway arrival point for the campus, with attractive and comfortable amenities such as seating, lighting, and weather protection. This would enable passengers to walk to and wait at a single stop and have the option of using any of these transportation services. As the hospital site exists today, passengers must choose a single option ahead of time – either one of the two Metro routes or a shuttle – because stops for each are located at different places around campus. Co-locating a Transit/Shuttle Hub would encourage more people to choose these modes to travel to and from the hospital by creating more travel options and greater arrival frequencies at one dedicated, safe, and appealing waiting area.		

Table 4. 2007 On-Campus Pedestrian/Bike Facilities and Proposed Enhancements

Travel Mode	2007 Facilities	Proposed Enhancements
Bicycle	Secure bicycle parking for 120 bicycles provided inside bike cages in parking garages, at building entrances, and uncovered locations.	Add enough bicycle parking to accommodate 600 cyclists. Focus bike parking in locations that create easy access to the desired destinations in the campus. Create dedicated central location for Flexbikes *(see Element II "Innovative bicycle programs" and Appendix A for details)*
	End-of-trip amenities, such as shower and locker facilities, provided free of charge.	Add shower/locker facilities to accommodate the demand generated by 600 cyclists per day as well as those traveling to campus on foot.
Pedestrian	Main campus access point at Penny and Sand Point Way NE is oriented to vehicles. Building entrances are located uphill and far from this main access point as well as all other bike/pedestrian access points.	Build a "front door" to the hospital campus and directly into the main hospital building on 40th Avenue NE and Sand Point Way NE, eliminating the hill climb on Penny Drive. Build ADA-compliant crossings on Penny between garages and buildings.
	Paved paths lead through campus, but it is difficult to discern where you are and where you should head while on foot outside of the hospital buildings.	Incorporate consideration of pedestrian flow as a fundamental element of all MIMP design work. Build clear, safe, and intuitive pedestrian circulation routes from nearby neighborhoods, transit and shuttle stops, and between buildings and parking garages. Use a system of gardens, courtyards, and plazas to create a beautiful pedestrian space. Utilize accepted national standards for public safety, such as Crime Prevention Through Environmental Design (CPTED). Develop a comprehensive wayfinding system for on foot circulation both to and within the campus, in support of all other elements of the CTP.
	Pedestrian crossings on Penny Drive are marked with crosswalks, signage, and flashing signal lights.	Carefully design all campus vehicle routes to safely serve people on foot as primary users
Proposed combined enhancement: Redesign Penny Drive Existing Penny Drive has narrow sidewalks, two lanes and center turn lane that pedestrians must cross, and no designated bike space. In addition to building a comprehensive system of dedicated pedestrian and cyclist circulation routes through campus, Children's would revamp Penny Drive and any new campus streets to create obvious places for pedestrians and cyclists, so that drivers are naturally aware of and yield to these travelers.		

Near-site improvements

This same attention is being applied to non-motorized safety and mobility treatments at existing and newly created major street crossings, where vehicles, pedestrians, transit riders, and cyclists meet. Children's will participate in improving intersections such as at Sand Point Way NE and Penny Drive and at Sand Point Way NE and NE 40th Street. Proposed near-site treatments are outlined in Table 5:

Table 5. 2007 Near-site Facilities and Proposed Enhancements

Travel Mode	2007 Facilities	Proposed Enhancements
King County Metro Transit riders	Route 75: In order to move between stops and the hospital buildings or Hartmann building, riders must cross five lanes of traffic on Sand Point Way NE.	Work with SDOT and WSDOT to suggest intersection designs at Sand Point Way NE at 40th Avenue NE that create priority for safe pedestrian crossings while balancing vehicle circulation requirements.
	Route 25: The dedicated turn-around on NE 45th Street allows for protected loading/off-loading westbound. Passengers cross NE 45th Street at unmarked crosswalks for eastbound stops.	From the turn-around, enhance signage directing passengers to the path through the garden plaza or Whale Garage. Consider marking crosswalks across NE 45th Street to the hospital.
Intersections on Sand Point Way NE	The intersection with Penny Drive is controlled by a traffic signal but requires pedestrians to push a button to request a "walk" phase. Crossing Sand Point Way NE here or at NE 50th Street requires navigating 4 lanes of traffic plus a center turn lane.	Improve the Penny Drive intersection to enhance safety and access for bicycles and pedestrians. If an alternative were chosen that includes a campus access point at NE 50th St, a signal and intersection improvements would be needed at NE 50th St.
	The 40th Ave NE intersection is uncontrolled. People run across Sand Point Way NE at this location, darting across five lanes of traffic between bus stops, Hartmann, and commercial destinations on the south side of Sand Point Way NE	It is currently in City plans to install a traffic signal at this intersection. It would be desirable to work with SDOT and WSDOT to encourage a design that integrates with the planned campus entrance and enhances pedestrian crossing safety.
Near-site pedestrian and cycling environment	Perimeter pedestrian entrances to the campus exist on 44th Avenue NE and on NE 45th Street close to 40th Ave NE, but are obscured by wooded areas.	Make the perimeter entrances off of 44th Avenue NE and NE 45th Street (including the bus pull-out) more obvious and inviting through wayfinding or design elements. Create additional pedestrian/ bicycle-only perimeter access points.
	The Burke-Gilman Trail runs north of the campus but does not extend to Sand Point Way NE. Connections between the trail and the hospital and Hartmann Building are unclear.	Create clear connection to the hospital from the trail using intersection enhancements and wayfinding. At Hartmann, build a trail connection that flows into the new crossing at 40th Ave NE to be implemented by SDOT. The crosswalk and level access to campus would greatly increase the convenience to pedestrians and cyclists as well as provide an ADA entrance near the transit drop-off.
	Main campus buildings are set far back from the roadway. The Hartmann Building is surrounded by a parking lot, discontinuous sidewalks, and a blank wall fronting Sand Point Way NE.	Create "Great Streets" along hospital-fronted roads, including Sand Point Way NE and 40th Ave NE Bring hospital buildings to the street, provide wide sidewalks and landscaped buffers, and install human-scale amenities such as lighting, seating, and weather protection. Consider adding retail on the first floor. If Hartmann is developed, enliven the street frontage on Sand Point so that pedestrians have a welcoming human-scale environment.

Element V. Intelligent Transportation Systems (ITS) for Sand Point Way and Montlake Boulevard

Above and beyond the trip reduction Children's would achieve through its enhanced TMP, the hospital is pledging capital dollars toward projects that would improve operations for all traffic on one of the most congested corridors impacted by the hospital's expansion. Children's would make a direct contribution of up to $500,000 to build Intelligent Transportation Systems (ITS) improvements through the corridor from Montlake Boulevard / NE 45th Street to Sand Point Way NE / NE 50th Street. These ITS projects will benefit all road users (not just Children's-generated traffic) by dynamically improving vehicle flow and travel times in response to changing traffic conditions. This contribution would implement and extend the ITS improvements identified by the City of Seattle in the University Area Transportation Action Strategy (UATAS).

ITS projects employ technology to optimize signal coordination and signal timing utilizing traffic cameras and variable message signs. ITS projects can be built quickly and do not require significant construction, so implementing such projects would result in minimal traffic disruption on affected corridors and is expected to provide the best results per dollar spent in terms of improving traffic flow. Beyond improving peak hour traffic conditions, ITS projects improve corridor travel at all times of the day and on weekends. Children's would fund these ITS projects from Montlake Boulevard through Sand Point Way NE to the hospital, up to $500,000. The contribution would be used to:

- Install a detection system that measures congestion along southbound Montlake Boulevard, linked to smart traffic control devices that adapt to traffic conditions,
- Install variable message signs to give real-time traffic information to drivers, including travel time estimates, updates on collisions and other traffic conditions, and even to implement variable speed limits throughout the day in order to keep traffic flowing as smoothly as possible,
- Optimize signal coordination and timing to move vehicles most efficiently and optimize intersection performance,
- Upgrade signal controllers as needed to allow signals to be interconnected, and/or
- Install traffic cameras as identified by the City of Seattle.

Practice-based research indicates that ITS enhancements achieve between 10-45% improvement in functional street capacity. For example, at Greenwood Avenue N and Holman Road NW in Seattle, an ITS implementation has led to a measured 30% reduction in vehicle delay and a 15% reduction in travel time[4]. While it is inappropriate to model such improvements when dealing with long range forecasts, **achieving functional street capacity improvements even on the low end of the 10-45% range would represent a level of improvement that meets or exceeds the identified impact of Children's added traffic in those areas where ITS projects were implemented.**

[4] McManus, Aileen, ITS Project Manager King County Traffic Engineering, Conference: *Beyond Oil: Transforming Transportation: A National Demonstration Project Cascadia Institute* Presentation: *Puget Sound Traffic Technology and Management: Making the System Smarter*, September 4, 2008.

Element VI. Contributions to capital projects that would improve the Northeast Seattle transportation network

Children's would contribute funds toward a pro rata share of projects designed to improve person- and vehicle-movement capacity, travel time, and safety through the area impacted by Children's traffic. The contribution amount is based on Children's pro rata share of its potential impact on the transportation system as applied to the cost of a comprehensive list of City projects in these corridors, and is proportionate to the amount of traffic related to Children's that would impact each project. The pro rata methodology used to calculate Children's contribution is consistent with the methods employed by the City of Seattle to calculate pro rata contributions toward transportation infrastructure improvements in other neighborhoods, including South Lake Union and Northgate. In conjunction with Children's MIMP, this methodology was applied to known impacts and project costs, and Children's contribution should be considered as an impact fee, agreed upon as part of project approval and later used by the City to fund projects as appropriate. Based on current estimates, Children's pro rata contribution would total up to $1.4 Million, or approximately $3,955 per new bed added over the course of MIMP construction.

Identifying a Comprehensive List of Projects

Children's worked with the Seattle Department of Transportation (SDOT) to identify a comprehensive list of potential capital improvement projects that would improve operations on corridors most impacted by Children's development: NE 45th Street, Montlake Boulevard, and Sand Point Way NE. Sources for the comprehensive list of projects include:

- **University Area Transportation Action Strategy (UATAS)**. HOV, bike and pedestrian, and capacity and flow projects that would improve the targeted corridors
- **Sand Point Way Pedestrian Study (SPW Ped Study)**. Projects within a one mile radius not otherwise funded or included in the Bicycle + Pedestrian Fund project list (*see Element VII "Investments in Walkable + Bikeable Northeast Seattle*").
- **Draft Environmental Impact Statement for the Children's MIMP (DEIS)**. Projects identified from the UATAS, by Children's, and by the City that were included in the DEIS, excluding those projects that the City requested be removed from consideration due to project cancellation, and including new projects requested by SDOT.
- **Bicycle Master Plan (BMP)**. Projects on the prioritized BMP project list falling within Children's impacted corridors, or creating connections to other identified bike/pedestrian projects or to broader bike/pedestrian networks, as per the goals cited in Element VII "Investments in Walkable + Bikeable Northeast Seattle." Projects included on the comprehensive list were specifically requested for consideration by SDOT Bicycle Program staff.

Projects included on the comprehensive list meet one or more of the following selection criteria:

- Tailored to achieving greater vehicle or person travel capacity, safety, and improved travel time through the corridors
- Have a direct nexus to mitigating the impact of Children's MIMP on traffic
- Support City of Seattle and sub-area transportation goals, including the Mayor's initiative to make Seattle the most walkable and bikeable city in the country
- Support HOV and non-motorized modes promoted through Children's TMP

- Deemed a feasible and cost effective solution, but not already funded and scheduled for construction
- Provide benefit to the widest range of people within the community, including Children's employees, patients, and visitors.

Table 6 presents a potential comprehensive list of projects. Most of these appear in existing plans approved by the public. The list is not definitive, and no projects are guaranteed implementation.

Table 6. Comprehensive List of Projects for Pro Rata Consideration

UATAS projects	
NE 45th St corridor	Add westbound Business Access and Transit-only (BAT) lane
15th Ave / NE 45th St	Extend left-turn lane pocket, modify signal to move more buses
Ravenna Ave NE / NE 55th St corridor	Reconfigure to provide curbs, gutters, sidewalks; delineate corners for safety
NE 45th and Burke-Gilman Trail (BGT)	Construct a ped/bike connection between BGT and NE 45th St
Montlake, NE Pacific Place to 25th Ave NE *	Extend HOV lane from NE Pacific Place to 25th Ave NE
36th Ave NE / BGT	Connect BGT with ramp from 36th Ave NE at NE 45th St
NE 47th St / BGT at University Village	Create new pedestrian connections on 47th, realign 25th Ave intersections
Montlake Blvd E / E Hamlin St	Extend northbound left/U-turn lane to reduce congestion
NE 45th St, 18th-22nd Ave NE	Widen sidewalks, install landscaped pedestrian refuge islands
Montlake Blvd NE / NE Shelby St *	Narrow intersection, add bike lanes, widen sidewalk
NE 50th St / 30th Ave to 35th Ave NE	Complete sidewalk south of roadway; install traffic calming devices
Montlake Blvd / NE 45th St corridors	Install variable message signs for real-time traffic information
Montlake Blvd E / E Shelby St	Modify traffic island, add a bike lane
Projects identified in the DEIS process	
Montlake Blvd / NE 45th St to Sand Point Way NE / NE 50th St (ITS to Children's door)	Provide signal coordination and ITS improvements, including cameras, interconnect, signal timing improvements, etc. (*see element V "ITS")*
Montlake Blvd (ITS extended to SR 520)	Additional ITS along Montlake (Roanoke to NE 45th)
NE 45th St (ITS extended to I-5)	Additional ITS along NE 45th Street (I-5 to Montlake)
40th Ave NE / NE 55th St	Install traffic signal
40th Ave NE / NE 65th St	Install traffic signal
Sand Point Way NE / NE 50th St	Install traffic signal
NE 45th St / 40th Ave NE left-turn lane	Install left-turn lane within existing ROW on eastbound NE 45th Street
Extend Montlake HOV *	Extend SB HOV land from 25th Ave NE to the Five Corners intersection

"Sand Point Way Pedestrian Study" projects	
Sand Point Way NE / 40th Ave NE	Install new signal and crosswalks
Sand Point Way NE, NE 50th St – 47th Ave NE	Install pedestrian-only signal when warranted
Sand Point Way NE, Princeton – 50th Ave	Construct sidewalk or walkway on north side
Sand Point Way NE, NE 58th or NE 60th St	Monitor for potential crosswalk in the future
Sand Point Way NE, NE 65th – NE 70th St	Construct sidewalk or walkway on west side
Bicycle Master Plan projects	
20th Ave NE, NE 45th St to Ravenna Blvd	Sharrows, two sides
Ravenna Pl NE, NE 55th St to 25th Ave NE	Sharrows, two sides
20th Ave NE, NE 65th St to NE 86th St	Sharrows, two sides
35th Ave NE, NE Blakely St to NE 65th St	Sharrows, two sides
NE 65th St, Ravenna to Magnuson Park	Bike lane one side, Sharrow other (partial), Sharrows two sides (partial)
NE 77th St and Sand Point Way NE	Signalize as part of east-west route

* *Note:* Projects marked with an asterisk are included for pro rata calculation purposes here, though the specific projects are in question and subject to change as a result of SR 520 planning outcomes.

Due to uncertainty surrounding SR 520, it is impossible to accurately determine Children's future impacts on the Montlake corridor or appropriate mitigation. However, information from the UATAS, the Sand Point Way Pedestrian Study, and the DEIS provide the best available understanding of future conditions and what future capital projects might include. This provides a basis for Montlake corridor projects included in the universe of projects to which Children's would contribute a pro rata share.

Calculating Children's Contribution

Children's and the City agreed upon using the City's established methodology for calculating a pro rata share of the overall cost of this comprehensive list of projects. This calculation is based on MIMP-generated traffic's estimated contribution to total traffic at MIMP build out, assuming all programs in the proposed TMP are implemented. The methodology is based on:

- Existing total PM peak hour vehicle trips from all sources, as measured in 2007 through each corridor,
- Estimated total PM peak hour vehicle trips from all sources, at MIMP build out through each corridor, and
- Children's net new PM peak hour vehicle trips expected in 2030 compared to 2007 through each corridor if the MIMP is built out. This is the net new trips expected with the proposed TMP mitigation in place.

Pro Rata contribution rate for each project based on Total Traffic:

Children's net new PM peak hour vehicle trips in 2030, divided by
the 2030 total PM peak hour vehicle trips expected from all sources.

For projects that would improve conditions for transit, bicycling, or walking, the pro rata contribution rate is further multiplied by a percentage based on the ratio of net new PM peak hour Children's trips expected to be made by those modes compared to in vehicles.

These pro rata contribution rates were then applied to the total cost of each project in the comprehensive list of projects, to achieve a pro rata contribution amount for each. The sum of each of these individual pro rata contribution amounts equates to Children's total pro rata contribution toward Northeast Seattle transportation network enhancements. Based on current estimates, Children's pro rata contribution would total up to $1.4 Million.

Project Prioritization and Implementation

Children's contribution was calculated by determining partial shares of many projects. It is anticipated that actual implementation would be determined by SDOT, and would be directed at funding high priority projects in the affected sub areas. The City should not be restricted to projects appearing on the comprehensive list if other higher-priority, as-yet-unplanned improvements are identified; however, there should be a relationship between any project funded and the identified transportation impacts of Children's development. Again, Children's pro rata contribution should be viewed as a one time fee for its impacts and is intended to also satisfy the institution's obligation for its share of any projects identified at a future date. Any amount of monies from Children's contribution could be applied to any individual project up to and including full funding, but Children's would not be required to make additional contributions once the hospital's pro rata contribution has been spent. Children's contribution may be phased to match the pace of MIMP development.

Element VII. Investments in Walkable + Bikeable Northeast Seattle

Children's TMP is centered on the premise of promoting transportation options that support environmental, community, and public health. Walking and biking are the most healthful forms of transportation, and Children's seeks to aggressively increase its numbers of walking and bicycling commuters through innovative on-campus programming (*as described under Elements II and III "Innovative bicycle programs" and "Increased financial rewards"*) as well as innovative off-site infrastructure improvements.

Although Children's is expected to achieve its reduction goals for vehicle trips, employee SOV rates, and parking demand entirely through the enhanced Transportation Management Plan detailed in Elements I – III, Children's proposes to also pay $2 Million for bicycle and pedestrian projects in Northeast Seattle. Children's would invest these Bicycle + Pedestrian fund monies over the timeframe of the MIMP. This Fund would implement key capital projects for pedestrian and cyclist connectivity and safety in neighborhoods and corridors leading to campus. The Bicycle + Pedestrian Fund would be applied to projects that:

- Improve safety for pedestrian and bicyclist access to campus for employees, visitors, and neighbors, particularly for people walking to and from transit stops and regional trails
- Create safe and pleasant routes in the neighborhoods where 24% of Children's employees live, within approximately three miles of campus
- Improve connections between residential streets and the Burke-Gilman Trail, particularly the safety of people crossing at intersections, and
- Add additional value by funding projects above and beyond those fully funded through existing City plans.

This fund would directly support the hospital's goal of enabling the most healthful, least impactful transportation modes while protecting the safety of all travelers. This investment would be intended to improve facilities and public health for both Children's visitors and the broader Northeast Seattle community.

Children's would work with the City, neighborhood residents, and pedestrian and bicycle advocates to identify potential improvements. The following represent potential categories of improvements that would guide the investment in bicycle/pedestrian infrastructure projects that Children's would consider funding:

- **Bicycle Master Plan priority projects.** A portion of the Bicycle + Pedestrian Fund would be allocated to projects listed in the Bicycle Master Plan that are currently unfunded and create a direct connection within Children's impact area. Examples of this category of projects include adding sharrows or bike lanes along significant sections of 20th Avenue NE, Ravenna Place, 20th Avenue NE, 35th Avenue NE, and NE 65th Street.
- **Connections between the hospital campus and larger bicycle/pedestrian networks.** A portion of the Bicycle + Pedestrian Fund would be dedicated to projects that improve safety, wayfinding, and connectivity between Children's and regional non-motorized transportation facilities such as the Burke-Gilman Trail.
- **Bicycle Boulevards.** Children's proposes that some of its funding would be devoted to the development of bicycle boulevards in Northeast Seattle, which would create wide-

ranging community benefits, particularly in increasing the numbers of families and children who feel safe and comfortable walking and bicycling in Northeast Seattle. Investing in bicycle boulevards is consistent with the core mission of the hospital, to enhance children's safety and welfare. In addition, it is consistent with the goal of enhancing travel options for cycling and walking to and from Children's, as well as from and within surrounding neighborhoods. Specific routes would be planned in collaboration with City staff, community members and bicycle advocacy organizations such as Cascade Bicycle Club.

These projects would be further screened based on general feasibility, cost effectiveness, and overall community benefit and approval. Children's would dedicate approximately 30% of the financial investments to project design, planning and public consultation costs.

Bicycle Master Plan Priority Projects

Children's would commit a portion of the Bicycle + Pedestrian Fund toward Bicycle Master Plan (BMP) projects that:

- Appear on SDOT's BMP project prioritization list
- Contribute to creating bicycle connections to Children's campus
- Were requested by SDOT Bicycle staff for inclusion in the pro rata list
- Are not already funded and scheduled for construction, and
- Fall within Children's impact area as studied in the DEIS (roughly bounded by I-5, NE 75th Street, and Roanoke St and Lake Washington)

Examples of candidate projects include:

Table 7. Prioritized Bicycle Master Plan Projects for Bicycle + Pedestrian Fund

Bicycle Master Plan projects	
20th Ave NE, NE 45th St to Ravenna Blvd	Sharrows, two sides
Ravenna Pl NE, NE 55th St to 25th Ave NE	Sharrows, two sides
20th Ave NE, NE 65th St to NE 86th St	Sharrows, two sides
35th Ave NE, NE Blakely St to NE 65th St	Sharrows, two sides
NE 65th St, Ravenna to Magnuson Park	Bike lane one side, Sharrow other (partial), Sharrows two sides (partial)

Connections from Campus to Larger Bike/Ped Networks

Examples of potential projects that would create connections from Children's campus to the regional Burke-Gilman Trail or to existing pedestrian networks appear in Table 8. These projects would improve conditions both for those walking, biking, and taking transit to Children's, as well as improving walking and cycling conditions for all neighborhood residents and visitors to the Northeast Seattle community. .

Table 8. Potential Projects Linking Children's to Bicycle/Pedestrian Networks

From Campus entrance at Penny Drive to Burke-Gilman Trail and sidewalks
Install clear wayfinding signs to and from campus and Sand Point Way NE to the Burke-Gilman Trail
Build sidewalk, west side on 41st Ave NE from Sand Point Way NE to NE 50th St (175')
Build sidewalk, both sides on NE 50th St from 40th Ave NE to Sand Point Way NE (connect to existing sidewalk on north side of the street extending from Sand Point Way NE to just west of 41st Ave NE) (475')
Build sidewalk, south side on Sand Point Way NE from NE 50th St to 47th Ave NE (1,800')

Bicycle Boulevards

Children's proposes to devote some of the Bicycle + Pedestrian Fund to create bicycle boulevards in Northeast Seattle. Wide-ranging community benefits have been associated with bicycle boulevards, including significant reductions in vehicle/bicycle accidents, increased property values, traffic calming, and greater numbers of women and children bicycling. There is a clear nexus between creating safer routes for bicyclists and working toward the principal mission of the hospital: to improve the health and safety of children.

In addition, twenty-four percent of Children's employees live within three miles of campus. This represents a great opportunity for bike commute mode shift even for novice cyclists. All Northeast Seattle community members, their children, and visitors would benefit from bicycle boulevards that improve safety and confidence for cyclists and calm traffic speeds on residential streets. Bicycle boulevard routes would be planned in collaboration with SDOT staff.

Further, Children's would be interested in seeking foundation support for a public health research project to test the efficacy of bicycle boulevards as a strategy for improving public health, by supporting increased physical activity and reducing crashes and injuries. This research would be valuable to other Seattle neighborhoods as well as communities nationwide in determining when, where, and how to most effectively implement bicycle boulevards.

Element VIII. Out-of-area parking

Children's existing parking policies are designed to manage demand for available parking supply and ensure no spill-over parking into surrounding neighborhoods. Children's proposed enhanced parking policies as part of the CTP are designed to go even further in removing vehicle trips from the most congested corridors.

Table 9. 2007 Parking Management Policies and Proposed Enhancements

Element	2007 Program	Enhancement
Parking management	Children's employees who drive alone to work assigned to on-campus or off-campus parking lots based on seniority and position. Medical residents and fellows park on campus. On-site employee parking lots are regulated by gates and accessed only by employee ID cards.	Parking assignments made on the basis of home address (*begun in March 2008*). Day-shift medical residents and fellows would be added to those who can be assigned off-campus. The hospital would pursue additional opportunities for off-site and out-of-area parking.
	Children's monitors speed limits, directs traffic, and enforces parking policies through a parking officer and security staff. Parking on neighborhood streets is forbidden, as strictly enforced by regular patrols who check license plates and issue warnings and tickets. Children's takes disciplinary actions for any employee found parking in the neighborhood, up to and including termination.	Children's would invest in technology to allow pay-per-use charges, control access to visitor lots, and more tightly manage on-campus parking supply. This would allow Children's to refocus FTE currently assigned to on-campus monitoring to patrol neighborhood streets for parking violations.

In addition to these policies detailed above, Children's would explore new off-site and out-of-area remote parking lots as a further method to bolster trip reduction. Requiring employees to park in off-site parking encourages the use of alternate modes to get to work (including Children's shuttles). Leasing or even constructing off-site parking may also be cheaper than constructing on-site structures, saving money and land that can be devoted to Children's primary mission of providing critical healthcare services.

Transpo's analyses indicate that for every 100 spaces reduced on-site (and located out-of-area), an approximately five to ten percent reduction in locally-generated traffic could occur.

Currently, 29% of the hospital's parking supply is leased at off-site lots, at the Church/Archives shared lot, Magnuson Park, and the E1 lot at Husky Stadium. In March 2008, Children's began assigning employees to off-campus lots on the basis of home address. This geographic parking assignment will be key to ongoing parking management strategies at Children's. For example, employees who live south of campus and would have to drive past the Husky Stadium E1 lot from their homes in order to reach the hospital will be assigned to park in the E1 lot. Employees then ride a dedicated shuttle route to complete their commute trip to the hospital. This program helps reduce the net number of vehicles proceeding further on Montlake and NE 45th Street and through Five Corners to reach Children's.

As detailed in Appendix A to this memorandum, Children's is forecasted to have a maximum parking demand for 3,100 spots at MIMP build-out if all proposed TMP enhancements are put in place. By ordinance, Children's is required to prove within its master plan that it will be able to accommodate all future parking demand. To demonstrate due diligence, Children's developed plans that show how the entire demand for 3,100 stalls can be accommodated on campus, if needed. At a minimum, Children's will be required to build at least 2,200 on-site parking spaces in order to meet ordinance requirements.

Securing off-site parking clearly supports the goal to reduce on-site parking, and it is Children's intent to pursue off-site parking wherever possible. Children's would:

- Identify 100 to 200 out of area, off-site parking spaces per each phase of development as part of its Comprehensive Transportation Plan and as necessary to mitigate future transportation impacts. It is expected that every 100 cars parked at out of area facilities would result in a five to ten percent reduction in traffic impacts surrounding the hospital. As a first step, Children's and Sound Transit have signed at Memorandum of Understanding committing both organizations to investigate options to create capacity for Children's employees at regional park and ride facilities. Children's would continue to pursue similar collaboration opportunities with Community and Pierce Transit.
- Pursue parking opportunities off-site both within and outside of the study area, including additional small-lot partnerships within Northeast Seattle (i.e., church parking lots). Children's would build on its positive relationships and parking agreements with the University of Washington and the City of Seattle to find further off-site locations and new partners.
- Expand shuttle service as needed in conjunction with new off-site parking locations, to bring employees between the lots and the hospital.

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APPENDIX A. Proposed Enhancements to Children's Transportation Management Plan in Support of the 2008 MIMP

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TMP Purpose[5]

Seattle Children's (Children's) has long been recognized as a leader in Transportation Demand Management (TDM), receiving awards from the Governor's office, King County, and the U.S. Environmental Protection Agency for its excellent commuter benefits and achievements in reducing vehicle trips. The hospital's programs and incentives are targeted to reduce single-occupant vehicle commuting to the campus, and have successfully resulted in a drive-alone rate of only 38% among daytime employees in 2006. This accomplishment is significant both for a hospital and for an employer located in a neighborhood with limited public transit service.

Children's achieves significant commute trip reduction through its current Transportation Management Plan (TMP). This Appendix describes Children's proposed enhancements to its existing TMP that would allow the hospital to achieve the following goals:

- Further reduce the percent of commute trips made by single-occupant vehicle (SOV)
- Further reduce PM peak hour vehicle travel
- Reduce the need to build parking on campus or in nearby facilities within the area that would be affected by MIMP-related vehicle trips
- Support Children's continued leadership in delivering innovative transportation solutions in the context of climate change.

This TMP was developed as part of the Major Institution Master Plan (MIMP) process, through which Children's is proposing to expand its main campus in northeast Seattle. With the input of the Citizens Advisory Committee, SDOT, and DPD, Children's has developed a Comprehensive Transportation Plan (CTP) to focus on sustainable transportation programs. The enhanced TMP described in this appendix forms the basis of the CTP, designed to mitigate vehicle traffic related to MIMP expansion by shifting even more employees and visitors from single-occupancy vehicles (SOV) to bicycling, walking, shuttle, and transit.

The planned expansion would better serve the growing, complex healthcare needs of children in the four-state service region. The Preliminary Draft MIMP alternatives included 1.5 million additional square footage, growth to 500-600 beds, up to 3,600 parking stalls (with 3,000 on-site), and two or three new access points to the main campus.

Children's is responding to City and neighborhood concerns regarding additional traffic to the campus in conjunction with MIMP approval. The major transportation issues, as identified in the DEIS, comments to the DEIS, and by the Citizens' Advisory Committee (CAC), focused on increased congestion and delay at intersections in the surrounding transportation network, such as NE 45th Street and the Montlake corridor. Neighbors have also expressed concerns for pedestrian safety stemming from increased vehicle volumes and additional egress and ingress points from the campus.

Expanding Children's existing successful TMP would demonstrate a commitment to reduce potential traffic impacts generated by increasing populations of employees and patients through MIMP build out in 2028. This memorandum Appendix describes Children's proposed enhancements to its existing TMP and outlines how these mitigation strategies would reduce new vehicle trips to the main campus. In preparing this TMP with Children's, the consultant team: a) relied on the EPA COMMUTER Model (v2.0), a widely accepted model developed for the United States Environmental Protection Agency for

[5] *Also see Introduction to this memorandum*

assessing TDM strategy impacts, and b) prepared shuttle routes that connect with regional transit hubs and effectively extend the reach and convenience of the public transit system. Full analysis of the elements presented in the section "TMP Components" using the COMMUTER Model is presented in the final section of this appendix, "Effectiveness: SOV Rates, Vehicle Trips, and Parking Demand."

Measurement

The consultant team identified the above four TMP goals against which to evaluate different strategy packages. Pursuing these goals also contributes to ameliorating the major traffic impacts described in the DEIS. In conjunction with MIMP build out, Children's would commit to continuing its historically effective TMP and adopt additional programs to reduce its future contribution to area traffic.

The Transpo Group (i.e., Transpo), the firm that is analyzing the proposed MIMP's effects on the transportation system as part of the Environmental Impact Statement (EIS) process, previously forecasted Children's contribution to daily vehicle trips at MIMP build out if no additional mitigation measures were put in place. Transpo identified 720 PM peak hour vehicle trips today, and that 1,410 PM peak hour vehicle trips could be expected in 2028 with development associated with the proposed MIMP if no additional TMP measures were taken. The unmitigated forecast is 690 net new PM peak hour vehicle trips at MIMP build out.

Transpo's Trip Generation Model for unmitigated conditions assumes that the proportion of people arriving by SOV and by other transportation modes would remain constant while the total number of people grows. Children's proposed enhanced TMP mitigation strategies seek to shift the mode split so that greater proportions of people would arrive by shuttle and transit, carpool and vanpool, and bicycle and on foot rather than by driving alone, in order to reduce vehicle trips even while person trips increase.

Children's is legally obliged to monitor its TMP plan under state, county, and city Commute Trip Reduction (CTR) requirements. This monitoring is conducted via employee travel behavior surveys. By law, Children's must administer the CTR survey bi-annually in order to gauge SOV rates and TMP effectiveness. These surveys have shown a remarkable reduction in Children's daytime employee SOV travel from 73% in 1993, to 54% in 2001, and to 38% in 2006.

Children's would commit to achieving a **30% SOV mode split goal among these daytime employees at MIMP build out**. For comparison, this would meet the 30% SOV goal set for the University District Urban Village in the City of Seattle's Comprehensive Plan.

Children's ongoing commitment to implementing the enhanced TMP and achieving desired transportation results would include:

- Continued bi-annual employee State CTR surveys, administered by King County
- Continued measurements as required in the signed TMP agreement with the City, and
- Monitoring according to the standard procedures based on the Department of Planning and Development Director Rule 9-99, which applies to major institutions and requires an annual report that includes an update on Children's mode splits.

TMP Components

Children's delivers a TMP that has achieved considerable success in reducing SOV travel to its campus. Children's Shuttle routes and array of incentives and benefits for alternate commuters are models of innovative transportation solutions both for reducing a worksite's contribution to local and regional traffic, and in the context of global climate change. Children's would work to shift an even greater percentage of drive-alone trips to carpools, vanpools, transit, bicycle, and walking in order to reduce the transportation impacts of MIMP build out.

This section describes each component of Children's existing TMP (as of 2007) along with enhancements proposed as part of the modeled strategy package. Under no element would Children's reduce its current programming. Instead, the Transit Shuttle service and enhanced TDM elements proposed below would build on Children's already notable successes.

1. Children's Shuttle

Children's Shuttle programs cannot be modeled by the EPA COMMUTER Model, but the enhanced services are part of Children's proposed and analyzed vehicle trip and SOV rate reduction goals. In 2007, Children's operated six shuttle routes to provide access to off-site employee parking lots and connections between the hospital, administrative buildings, research facilities, and affiliated institutions. Shuttle counts conducted in October 2007 found approximately 500 riders per day. Riding the shuttle is free, and all routes operate Monday through Friday. Children's 2007 shuttle program consisted of:

- Shuttle fleet of 12 vehicles, equipped to carry bicycles
- 2 routes connect the hospital campus with nearby off-campus parking lots: every 7-10 minutes, runs 5:30AM-9PM
- Added in 2008: 1 route between the Husky Stadium E1 lot and Children's main campus
- 1 route between the 70th/Sand Point Way administrative building and main campus: every 15 minutes, 6AM-6:30PM
- 1 route connecting the Magnuson Park lot and 70th/Sand Point Way building: every 10 minutes, 6AM-10AM, 3PM-7PM
- 1 route between Children's main campus and Metropolitan Park West offices in downtown Seattle: every 30 minutes during peak commute periods, every 20 minutes off-peak, 6AM-8PM
- 1 route between Children's Building 1, University of Washington Medical Center (UWMC), and Children's main campus: every hour, 8AM-5PM
- Fred Hutchinson provides one route from the Seattle Cancer Care Alliance to UWMC and Children's: every 40 minutes, 7AM-7PM

Proposed Shuttle enhancements:

Children's would expand its existing shuttle service to extend the reach and convenience of the regional public transit system. Children's would do this by introducing a "last mile" Transit Shuttle program, a collection of routes that connect the campus to major transit hubs. Public transit riders can take regional buses and eventually light rail to one of these hubs, and then transfer onto a shuttle to continue directly to the Children's campus. New Transit Shuttle routes would meet riders at the following hubs:

Table 10. Transit Shuttle Routes and Frequencies

Transit hub connections	Service Description
University District hub *(planned for launch 2009)*	Every 10 minutes during peaks; every 15 minutes off-peak
SR 520/Montlake Blvd. Station	Every 10 minutes during peaks; every 15 minutes off-peak
Future UW light rail station at Husky Stadium	Every 10 minutes during peaks; every 15 minutes off-peak
Westlake Center / 3rd Avenue and Downtown Transit Tunnel (*launched June 2008*)[1]	Every 15 minutes, all day
South Snohomish County	Every 30 minutes, only during commute peaks

1. Westlake Center / 3rd Avenue shuttle (the Green Line) combines the 2007 Metropolitan Park West and Children's to 70th/Sand Point Way shuttle routes, adding a stop at Building 1 and a brand new stop downtown at the Westlake Center Transit Tunnel entrance and proximate to the 3rd Avenue transit corridor.

This enhanced shuttle strategy package does not include any further investments in regional public transit beyond the current Transit Now improvements to King County Metro routes 25 and 75. Under this Transit Now partnership, Children's funds 63 additional weekly trips on these two routes that serve the hospital, especially concentrated during shift changes.

Children's would plan its Transit Shuttles as a dynamic system, responding to changes in the transportation network, transit service, and employee housing patterns. Children's is building on its existing partnership with King County Metro as the hospital goes forward with shuttle planning and Metro considers service changes to the area. In addition, Children's has secured a letter of intent with Sound Transit to identify long-term partnerships designed to encourage the use of alternate transportation. These partnerships may include:

- Identifying future service enhancements, such as Sound Transit buses and facilities, that link to Children's expanded shuttle services
- Identifying potential private-public partnerships which would allow Children's to access current or future park and ride lots owned and operated by Sound Transit (*see Element VIII of the CTP regarding "Out-of-area parking"*), or
- Participate in regional forums or workshops where Children's would help to advance regional transportation alternatives.

Children's is continuing to pursue similar collaboration opportunities with Community Transit and Pierce Transit, as appropriate based on concentrations of employee home addresses.

2. Commuter Services

Children's funds a full-time staff in Commuter Services to support its TMP. Commuter Services offers the following programs:

- Meets with new employees on their first day of work to provide personalized commuting assistance, including transit route plans and potential car and vanpool partners

- Follows up with support and advice year-round to help staff and visitors identify transportation options
- Distributes information and marketing materials and plans events that promote and reward transportation alternatives to driving alone.
- Materials are distributed via brochures, transportation bulletin boards, a weekly in-house newsletter, email broadcasts, and an annual transportation fair. Commuter Services also maintains a comprehensive internal website and up-to-date print resources.

Children's Commuter Services staff develop innovative social marketing programs to promote the use and benefits of alternate transportation modes, including environmental, social, and public health benefits. For example, Children's is piloting a social marketing program in partnership with King County Metro in Fall 2008. This program, called "In Motion," reaches out to 4,000 hospital staff and 8,000 households in Northeast Seattle, encouraging participants to drive less and use alternative transportation. The program features proven social marketing elements, including incentives, a pledge to drive two fewer days each week, and supporting information regarding alternative travel modes.

Proposed Commuter Services staffing enhancements:

Children's added three new hires in Spring 2008, including Leads for Vanpool Programs, Bicycle Programs, and Transit Programs. One of these Leads filled a previously temporary position. In Summer 2008, Children's also added a Shuttle and Parking Manager. In total:

- Children's would increase Commuter Services staff between 50% and 80% to administer, promote, and monitor this level of commitment to expanded TDM and shuttle programs.
- Children's would continue to pursue innovative social marketing elements and programs to promote walking, biking, carpooling, and taking transit.

3. Parking Pricing

As of 2007, Children's assigned employees to on-campus or off-campus lots according to seniority, shift, and position. Children's Shuttles connect employees from the off-campus Magnuson Park and Church and Archives Lots, as well as the Husky Stadium E1 lot. Parking management and cost policies as of 2007 include:

- Children's employees, Children's University Medical Group (CUMG) physicians, travelers, Pace temps, UW employees, and contractors who drive alone to campus paid $50 per month to park (through 2007).
- Children's monitors parking fees at the University of Washington to gauge increases in market rates for parking, and the hospital raises its rates concurrently with UW rate increases.
- Patients and their visitors park free of charge, as do volunteers, community physicians, board members and trustees, vendors, medical residents, students, and fellows.
- On-campus employee parking lots are regulated by gates and accessed by ID cards.
- Carpools and vanpools park on campus in reserved spots at no charge.
- Students are required to park at an off-site lot.
- Children's monitors speed limits, directs traffic, and enforces parking policies through a parking officer and security staff.

- Employees are prohibited from parking on local neighborhood streets.
- Children's offers valet patient parking between 7:00 AM and 3:30 PM and between 5:00 PM and 11:00 PM on weekdays in order to use the existing parking supply as efficiently as possible and reduce the number of on-site spaces required.

Parking pricing enhancements proposed by Children's:

- Charging no less than $65 per month for on-campus SOV parking (implemented in May 2008, a 30% increase from 2007). These fees would be adjusted to what is appropriate for the market, as suggested by UW parking rate increases. However, the EPA COMMUTER Model results suggest that a rate of $65 would be sufficient to achieve the targeted SOV rates and vehicle trip reduction (*see the section "Effectiveness: SOV Rates, Vehicle Trips, and Parking Demand" in this Appendix for details on the modeling process*).
- Investing in technology (for example, enhancing the gates currently used to regulate on-campus employee parking lots) to control access to visitor lots, allow pay-per-use charges as well as monthly fees, enforce carpool and vanpool occupancy, and more tightly manage on-campus parking supply. This technology would allow Children's to refocus FTE currently assigned to enforce and monitor on campus parking lots, to instead increase the number of parking enforcement personnel assigned to patrol neighborhood streets for parking violations.
- Similar to UW policies, students, medical residents, and fellows who currently park for free would be required to pay the monthly parking fee as paid by Children's and CUMG employees. Day-shift medical residents and fellows would be added to those who can be assigned to off-campus lots.
- Free parking would be eliminated. This would be supported by per-use-charges enabled through the new parking management technology. Children's may consider offering parking validation, reduced fees, or Medicaid parking vouchers to patients' families.

The above parking management measures were the only measures modeled using the EPA COMMUTER Model. The COMMUTER Model can only analyze parking policies that relate to pricing. **The Model results indicate that the above parking management policies, in combination with the other modeled TMP elements, would achieve Children's targeted trip reduction and SOV rate reduction goals with no further parking changes.**

For further parking management programs proposed by Children's beyond those modeled by the COMMUTER Model, see sub-section 6 below "Additional Above-and-Beyond Trip Reduction Strategies."

4. Incentives for Not Driving Alone

In 2007, Children's employees and CUMG physicians could earn up to $50 per month in Commuter Bonus incentives, depending on how many days per week they don't drive to the campus by themselves. Other 2007 incentives for those who choose non-drive alone commutes included:

Carpool:

- Free, reserved parking on campus (204 spaces for carpools and vanpools)

Vanpool:

- 100% subsidized vanpool fare

- $250 additional bonus per quarter for vanpool drivers, $75 for backup drivers, and $50 for bookkeepers
- Free, reserved parking on campus
- Internal rideshare matching

Transit:

- FlexPass - annual, unlimited transit pass purchased for all Children's permanent employees and CUMG physicians
- PugetPass - monthly transit pass provided upon request to contractors, consultants, Pace temps, and University of Washington staff
- Partnership with King County Metro "Transit Now" to fund 63 additional roundtrips per week on Routes 25 and 75, to provide for higher frequency during shift changes

Bicycle:

- Showers and lockers free of charge
- Approximately 120 total covered and secured bicycle parking spaces, located in each parking garage and at employee entrances
- Subsidized annual bicycle tune-up, on-site

Walk:

- Umbrellas and reflective safety lights provided on an annual basis

Motorcycle:

- Free, covered parking for this more efficient, less-polluting mode

Proposed Incentives enhancements:

In addition to continuing the above programs:

- Children's would invest in technology that facilitates carpool matching by commuters themselves, including real-time matching. Children's would transition to a single carpool formation bonus and institute parking charges for carpoolers. These changes would create market incentives for carpoolers to maximize the number of rides they share and to increase the occupancy of their cars.
- Children's would increase the Commuter Bonus award up to an amount equal to the cost of parking (at least $65 per month). This bonus would be extended to students, medical residents, and fellows in addition to the Children's employees and CUMG physicians who are already eligible.
- Medical residents and fellows would also begin receiving FlexPass, and Children's would purchase each student's portion of a University of Washington UPASS (currently $45 per quarter).
- 24% of Children's employees live within a three mile walking and biking distance of the main campus. Children's would offer cyclists and pedestrians an additional $100 award once a year for equipment, such as bikes, shoes, or clothing, to further reward non-motorized commutes.

5. Alternative Work Schedules

Approximately 2% of Children's staff whose work schedules begin between 6:00 AM and 9:00 AM telecommute. Though the consultant team has not modeled expansion of this program, telework and compressed work weeks represent the quickest, least expensive way to remove a commuter from the road. Employees need not telecommute every day; even one day a week at home provides a trip reduction benefit. Compressed work weeks, such as working 10 hours a day, 4 days per week, 9 hours a day for 9 days over two workweeks, or even the common Children's work schedules consisting of 12 hours a day, 3 days per week, are also potential options for reducing commute trips. The consultant team will work with Children's to further explore employee categories, work tasks, and accountability systems that could allow the hospital to expand these scheduling options.

Proposed Alternative Work Schedule enhancements:

No new alternative work schedule or telework programs are included in the modeled package.

6. Additional Above-and-beyond Trip Reduction Strategies

Children's offers several trip reduction programs – and is evaluating further strategies for the future – that are not included in the modeled TMP package described in sub-sections 1 through 5 above. The strategies described below cannot be modeled using the EPA Commuter Model, and therefore weren't included in the consultant team's analyses of Children's ability to reach targeted trip and SOV rate reductions. The programs described here in sub-section 6 are therefore not necessary to meet the mitigation goals modeled as a result of the other TMP enhancements outlined in Appendix A. Rather, if implemented, these strategies would result in *greater* trip reduction than is modeled in this study.

Parking Management

Above and beyond the modeled parking pricing policies outlined in sub-section 3., and to pursue trip reduction greater than that analyzed in this memorandum and the DEIS, Children's is also proposing the following parking management measures:

- Instituting parking charges for carpools in order to create market incentives for carpoolers to maximize the number of rides they share and increase the occupancy of their cars.
- Partnering with the University of Washington on an agreement that allows Children's staff as employees of an affiliated institution to use the University of Washington's E1 parking lot (implemented in March 2008).
- Reassigning employees to off-campus parking lots based on the direction from which they travel to campus, in order to reduce distances traveled and potentially remove vehicles from the most congested corridors impacted by Children's (implemented in March 2008).
- Identifying between 100 to 200 off-site and out-of-area parking spaces per phase of development as necessary to mitigate future transportation impacts.

Children's has begun assigning employees to off-campus leased parking space on the basis of their home address. For example, employees who live south of campus and would have to drive past the E1 lot from their homes in order to reach the hospital are assigned to park in that lot. Employees ride a dedicated shuttle route to complete their commute trip to the hospital. This program reduces the net number of vehicles proceeding further on Montlake and through Five Corners to reach Children's.

This geographic parking assignment will be a key part of future ongoing parking strategies at Children's. The hospital intends to identify 100-200 off-site and new out-of-area parking spaces per phase of development, as necessary to mitigate future transportation impacts. It is expected that every 100 cars parked at out of area facilities would result in a five to ten percent reduction in traffic impacts surrounding the hospital. This out-of-area parking approach comprises element VIII of the Comprehensive Transportation Plan.

AGAIN: This program was not modeled as part of the TMP package analyzed using the COMMUTER Model, and could further decrease SOV mode split beyond what is predicted by the consultant team.

Innovative Bicycle Programs

The innovative bicycle programs comprising Element II of Children's Comprehensive Transportation Plan were not modeled using the COMMUTER Model, but will serve to bolster and support those employees shifting to bicycling for their commute.

Building on its history as an innovator in transportation management, Children's is piloting novel bicycle programs to bolster the number and proportion of its employees who commute by this physically active, non-polluting transportation mode.

On July 17, 2008, Children's launched its **Company Bikes** program. Under Company Bikes, Children's invites employees to pledge to bicycle to work at least two days every week, year-round. After completing two bike commuting courses offered by Children's Commuter Services staff, these pledged employees are provided with a bicycle free of charge from the hospital, for their use as long as they continue bike commuting twice a week. The Company Bikes program enjoyed an enormously positive start, assigning 30 bicycles within the first two days of the program and committing all 100 bicycles for 2008 by September. Commuter Services has 27 bicycle commuting courses scheduled through November 2008. 100 more Company Bikes bicycles are planned for purchase and distribution in 2009.

Scheduled to launch in the first quarter of 2009, the **Flexbikes** bike-sharing program will house 20 bicycles on the hospital campus that employees can rent during the day, with the first half hour free. The bicycles will have an electric-assist motor that can be turned on to help climb hills. The provision of bikes for mid-day trips will help employees who may not be ready or able to bicycle to campus to try biking for errands and meetings, reducing motorized vehicle trips during the day. Children's program will link with a system of 40 Flexbikes to be housed on the University of Washington campus.

In order to support the projected 10% of employees cycling to work by 2028, Children's is planning for showers, lockers, and bike parking to accommodate 600 cyclists. The hospital is considering a locker-assignment system to ensure consistency and predictability for locker users.

AGAIN: These programs were not modeled as part of the TMP package analyzed using the COMMUTER Model, and could further increase non-SOV mode split beyond what is predicted by the consultant team.

Supportive Transportation Benefits

Children's will continue to fund on-site Zipcars, employee Zipcar membership, and the Guaranteed Ride Home program that subsidizes emergency taxi rides home for alternative commuters in the event of personal or family illness or unscheduled overtime. Children's will also continue to equip its shuttles to carry bicycles, so employees have more options for traveling, including combining bicycling with

shuttles to complete trips. The COMMUTER Model used to evaluate proposed TDM program impacts does not assume any mode shift resulting directly from these benefits, as they are too integrated and dependent on other programs being in place. Nevertheless, these benefits bolster the opportunity for campus visitors to leave personal cars at home.

No new supportive transportation benefits are included in the modeled package.

Neighborhood Transportation Programs

Children's offers various transportation programs and benefits to the neighborhood at large. The hospital sponsors annual Bike to Work Day commuter stations, serving over 700 bicycle commuters in 2007 and over 1,000 in 2008. The Zipcars that Children's funds add to the fleet of cars available for the entire community of Zipcar members. The addition of 63 new daily roundtrips on King County Metro routes 25 and 75 provide enhanced mobility to all riders along those routes. Near the research campus in South Lake Union, Children's participated in a streetscape pedestrian safety audit, sponsored by Feet First, King County Metro, and Vulcan. These and other potential neighborhood programs benefit the entire community and expose more people to transportation alternatives, though it is difficult to predict with certainty what effect these activities have on trip reduction and traffic.

Children's will continue working with King County Metro to pursue the opportunity to offer neighborhood residents free access to use the Children's shuttle system. Bringing passengers onto the shuttles who are not affiliated with Children's will require detailed analysis and approval from Metro to extend the shuttle service to the general public. If Children's acquires this approval, the hospital will publish the shuttle schedules and routes for distribution to neighborhood residents.

In addition, Children's agrees to fund the formation of a Residential Parking Zone (RPZ), should the neighborhood(s) determine that one is desirable. However, Children's has been successful in effectively limiting the impact of employee parking through its employee parking policies and follow-up enforcement. Children's has continued to express a high priority intention to provide a high quality experience for its patients and their families and visitors, and will continue to manage on-site parking to assure that patients and visitors always have a space to park upon arrival.

Patient Transportation

Children's TMP efforts primarily focus on employee groups who make up about 65 percent of the total population traveling to the hospital. As detailed in the following "Evaluation" section, Children's expects to achieve all of its proposed vehicle trip and SOV rate reduction within those employee groups, even if all other populations' trips remain unmitigated. By comparison, patients and families comprise only 17 percent of all traveling to campus, and their trips do not concentrate during the most congested peak-period commute times of day. Even with this comparatively small portion of trips, Children's works to communicate about and enable patient transportation alternatives through its Guest Services department.

In February 2007, Children's initiated a shuttle service for patient families with one vehicle and driver. The fleet has grown to four vehicles and drivers making 200 trips per month. The patient and family shuttle is offered free of charge and is available to all families who come to Children's. 92% of all trips occur on weekdays, with 93% between the hours of 6:00 AM and 8:00 PM. Between October 2007 through July 2008, the patient and family shuttle made 2,431 runs. 41% of these runs connected the hospital to Sea-Tac Airport, 31% to the Ronald McDonald House, and 8% to hotels. The initial philosophy behind the patient and family shuttle was to make the experience of arriving to Children's less overwhelming for families coming from out of town, offering connecting shuttle trips from the airport, train and bus stations, and ferry terminals.

The patient shuttle service decreases the number of vehicles entering Children's campus by enabling families to leave their cars at home. The average length of a hospital stay at Children's is five days. When a family arrives on campus without bringing a car, it has a cumulative effect, ensuring that they will take alternative modes of transportation the entire time they are at the hospital. Key features of patient and family transportation services include:

- When possible, Children's groups patient family shuttle runs in order for multiple families to ride together.
- Children's also encourages families to stay at hotels that offer shuttles, and is currently working on a walking map of the area with Feet First, a organization that promotes walking. This map will include the health benefits of walking as well as how to use walking as a form of meditation.
- In the month of April 2007, Hopelink, a transportation broker for DSHS, provided over 900 individual trips to Children's for families on DSHS. Hopelink currently does not group multiple families into single trips. Children's is working to house a Hopelink transportation coordinator on site at the hospital, partnering in order to group multiple DSHS families into single trips. This partnership will improve the Hopelink service, decrease the number of single family trips, and increase the number of families utilizing the bus system.
- In June 2007, Children's began transporting children to the Hutch School Monday-Friday. The Hutch School is located on the SCCA campus and is for siblings of patients who are here for long term care. At the end of the 2007-2008 school year, the bus was at capacity.
- In January 2008, Children's changed the shuttle run to the Ronald McDonald House from a scheduled bi-hourly service to one that is by reservation only. Fliers encourage families to walk between the two facilities. This change resulted in a decrease of runs from 200 per month to an average of 68 per month.
- Children's surveyed patient families and found that they prefer having all of their clinic appointments scheduled on the same day. Children's has purchased a new integrated scheduling software system to help achieve that goal (when medically appropriate). This new software will impact every clinical area of the hospital, and will enhance interdepartmental communication and the ability to collaborate. This in turn will decrease the number of trips families will need to make in order to receive care at Children's.
- Children's also provides valet patient parking between 7:00 AM and 3:30 PM, and between 5:00 PM and 11:00 PM on weekdays, in order to use the existing parking supply as efficiently as possible and reduce the number of on-site spaces required.

Proposed Patient Transportation enhancements:

Children's would implement pay-per-use parking fees (as outlined in sub- 3 above regarding "Parking Pricing"), with the option for providing parking validation or Medicaid vouchers for patients. Children's would also expand the distribution of information to patients about non-SOV travel options to the hospital, including the shuttle to transit system and public transportation.

Resource Impact

As of 2007, Children's spent millions of dollars annually to plan, implement, and monitor its excellent TDM and shuttle programs. The proposed TMP would require substantial increased financial investment in program operations, staffing, and enhanced monitoring and enforcement of parking policies, as well as capital funding for facilities as described in Element IV of the CTP (*see main body*

of the memorandum, above). The consultant team estimates that the hospital would need to substantially increase its annual financial commitment in order to implement these programs.

Effectiveness: SOV Rates, Vehicle Trips, and Parking Demand

The consultant team evaluated TMP strategy packages for expected reductions in SOV rates as measured under CTR requirements. In order to analyze associated reductions in vehicle trips and parking demand, the consultant team focused its attention on those trips made during the PM peak hour. Trips made in the middle of the afternoon or the night, when there are few cars on the road, have less potential for adding to overall delay than trips made during the morning and evening peak commute times. In its Trip Generation Model, Transpo forecasted Children's unmitigated vehicle trips at MIMP build out during the most congested hour of both the AM and PM peak. In order to achieve a substantive reduction of the otherwise unmitigated impacts described in the Preliminary DEIS, Children's should seek to reduce net new vehicle trips in peak periods, when traffic volumes are highest and intersection performance on Sand Point Way NE and in other impacted corridors is poorest. For analysis purposes, the consultant team chose the PM peak hour in addition to SOV rates as the standard of measurement for the TMP's effects, also because there are more patient trips during this period than in the AM, making it more challenging to mitigate vehicle travel.

EPA COMMUTER Model

The consultant team used the U.S. Environmental Protection Agency COMMUTER Model (v2.0) to predict future SOV rate and trip reduction achievements of the above-described TMP enhancements. The COMMUTER Model was created for use by government agencies and individual employers to model the effectiveness of various Transportation Demand Management and Transportation Control Measure strategies. TDM programs targeted with the COMMUTER Model include financial incentives (Commuter Bonus, transit fare), parking charges, and employer support programs (ridematching, Commuter Services staff time, etc). The COMMUTER Model analyzes financial and time savings as the core primary motivators of transportation choice, while supporting elements are offered primarily to meet increased demands on the employer's TDM programs.

The COMMUTER Model uses inputs of current and future population figures, existing mode splits and TDM incentives, and packages of TMP strategy and policy changes to forecast the mode split effects of the proposed programs. This is a logit mode-choice "pivot point" model, and environmental background characteristics that influence travel behavior – such as transit availability and land use patterns – are reflected in the starting mode splits. COMMUTER Model mode choice models have been developed for cities and regions nationwide, including the Puget Sound region. These mode choice coefficients reflect the willingness of people in the area to change travel modes in response to changing incentives or travel conditions. The values of these mode choice coefficients are based on travel models currently used by regional transportation planning agencies. The COMMUTER Model's forecasted future mode splits can be used to calculate future travel behavior and trip reduction, including daily trips, vehicle trips in the PM peak hour, and peak period parking demand.

The consultant team modeled the TDM enhancements outlined in sub-sections 2-5 under "TMP Components" above, assuming that full TDM offerings continue to apply to Children's employees and CUMG physicians, and that full benefits (including transit fare, parking management policies, and Commuter Bonus payments) are extended to medical residents, fellows, and students. These are the only groups included in the model. Other opportunities for trip reduction may exist in patient and non-employee populations, but non-employee travel cannot be modeled by the COMMUTER Model, and such reductions are not estimated here.

The COMMUTER Model results plus forecasted Transit Shuttle ridership combine to create an expected 36% reduction in predicted net new PM peak hour vehicle trips. The full reduction is expected to be achieved within the four populations evaluated using the COMMUTER Model:

- Children's daytime employees
- Children's non-daytime employees (including exempt & call, and evening and night shifts);
- CUMG physicians, and
- Medical residents, students, and fellows

For analyses of COMMUTER Model groups that combine several Trip Generation Model groups (i.e., Children's non-day and Residents/Students/Fellows), weighted averages were calculated for baseline modesplits and number traveling during PM peak hour, based on sub-group modesplits and numbers of people from the Trip Generation Model.

Among the total PM peak hour vehicle trips generated by these four groups in 2007, Children's daytime employees make the majority of the trips (74%, compared to 21% from non-day Children's employees, and 2% and 3% from CUMG physicians and students/residents/fellows, respectively). Correspondingly, the most absolute trip reduction is expected to be achieved among those daytime employees. Fortuitously, daytime employees tend to have the most regular work hours and set commuting schedules that make it more likely for them to travel during daylight (attractive to people on foot and on bicycle) and at times of peak public transit and Children's shuttle service, supporting a full range of commute alternatives.

The COMMUTER Model is set up to predict mode shift as a result of parking pricing, fiscal incentives for using an alternate mode, or TDM programs, but not changes in travel behavior that would occur as the result of new shuttle or transit service except with respect to reduced waiting or in-vehicle travel times. Expected Transit Shuttle ridership had to be calculated off model, and accounted for in the final analysis combined with COMMUTER Model outputs (*see "Transit Shuttle Calculations," below*).

Methodology

Base numbers were input into the COMMUTER Model, drawn from Transpo's Trip Generation Model data for current (2007) mode splits, current population, and expected 2028 population. The COMMUTER Model forecasts the following changes in mode splits from the unmitigated (2007) conditions solely as a result of the TDM strategies outlined above under "TMP Components":

Table 11. Percent mode splits with enhanced TDM strategies (not including Shuttle)

Modesplits (in percent %)	Children's Day-shift		Children's Non-day shift		CUMG Physicians		Students, Medical residents, & Fellows	
	Unmitigated	w/TDM	Unmitigated	w/TDM	Unmitigated	w/TDM	Unmitigated	w/TDM
SOV	38	30	63	58	66	60	73	53
Carpool	21	20	11	12	3	4	8	14
Vanpool	9	9	0	0	0	0	0	0
Transit	10	17	10	13	10	13	6	13
Bike	6	8	5	6	6	8	4	9
Walk	5	6	4	5	5	6	2	4
Other	11	10	7	6	10	9	7	7

The new mode splits achieved by TDM programs alone predict an SOV rate of 30% among Children's daytime employees in 2028. When the mode splits for each modeled group are input into the Trip Generation Model for future population, the calculations generate the following PM peak hour vehicle trips on motorized modes in 2028:

Table 12. PM peak hour vehicle trips expected in 2028 as a result of enhanced TDM strategies (not including Transit Shuttles)

	Number of PM peak hour vehicle trips by mode			Total (rounded)
	SOV	Carpool	Vanpool	
Children's Day-shift	389	113	19	520
Children's Non-day	212	19	-	230
CUMG	24	1	-	25
Students/ Residents/ Fellows	32	4	-	35
Total PM peak hour vehicle trips from all groups (rounded):				810

Without this TDM mitigation, the Trip Generation Model predicted 930 PM peak hour vehicle trips among these four modeled groups in 2028, representing 690 net new PM peak hour vehicle trips compared to today. The COMMUTER Model mode shift predicted based on TDM programs alone thus reduce 120 PM peak hour vehicle trips (930 – 810 = 120), representing a 17% reduction in net new vehicle trips in the PM peak hour at MIMP build out (120/690 = 17%).

Transit Shuttle Calculations

Shuttle ridership estimates then had to be accounted for in order to forecast the total reduction in SOV rates and in net new PM peak hour vehicle trips expected in 2028. Before running the model, the consultant team calculated the vehicle trip reduction that could be expected as a result of the enhanced Transit Shuttle service plan by calculating ridership and converting these person trips to vehicle trips. Shuttle patronage was based on projections of employee home locations, presence and quality of connecting public transit services, and the level of programmed shuttle service (headways). These estimates predict a peak hour Transit Shuttle ridership of 225 persons.

To calculate the Transit Shuttles' effect on mode split, the consultant team assumed that these 225 riders shift proportionally from each of the modeling groups, and, within each group, from among SOV, carpool, vanpool, and transit riders. We exclude bike and walk commuters from this shift, assuming that no one who lives close enough to the hospital to bicycle or walk to work will switch to taking transit to an out-of-area hub and transferring to a shuttle.

As with PM peak hour vehicle trips, the population of daytime Children's employees comprises the vast majority of all modeled persons; as a result, proportionally, most Transit Shuttle riders are expected to come from this group. Also among the four modeled populations, there is a higher proportion of individuals commuting today via SOV than by any other motorized mode. The 225 peak hour shuttle riders were not removed evenly from the groups (i.e., 225 / 4 = 56 riders taken from each of the four modeling groups, and then within the modeling groups 14 riders taken from each of the motorized modes). Rather, assuming that new shuttle passengers shift to shuttle proportionally from each motorized mode results in a greater reduction in SOV trips compared to trips by other modes.

These sub-proportions were calculated based on the baseline (2007) mode splits and relative numbers of PM peak hour person trips within each group, drawn from the Trip Generation Model. Existing mode split numbers were used to calculate the number of persons and vehicle trips shifted to Transit Shuttle from each mode to make up 225 peak hour riders. This allowed us to adjust the COMMUTER Model's mode split outputs to account for person and then vehicle trips shifted to shuttle, which results in the following PM peak hour vehicle trips including both the TDM effects combined with Transit Shuttle:

Table 13. PM peak hour vehicle trips expected in 2028 as a result of enhanced TDM strategies (COMMUTER model) and Transit Shuttles (forecasted ridership)

	Number of PM peak hour vehicle trips by mode			Total (rounded to nearest 10)
	SOV	Carpool	Vanpool	
Children's Day-shift	308	93	16	420
Children's Non-day	178	16	-	190
CUMG	20	1	-	20
Students/ Residents/ Fellows	26	3	-	30
			Total from all groups:	660

The Table below summarizes the net new PM peak hour vehicle trips expected from each model group, using the proposed TDM strategy and Transit Shuttle ridership to account for the effects of the complete TMP. These estimates include new PM peak hour vehicle trips generated by 2028 carpools, vanpools, and SOV vehicles, and net new trips from Transit Shuttle vehicles are added at the end.

Table 14. PM peak hour vehicle trips from modeled and non-modeled population groups, under full TMP mitigation (TDM strategies + Transit Shuttles)

PM Peak hour vehicle trips in 2028	Modeled mitigated populations				All non-modeled groups* *(unmitigated)*	Overall Total *(rounded to nearest 10)*
	CHRMC Day-shift	CHRMC Non-day	CUMG	Students, Residents, & Fellows		
Without mitigation (Trip Generation Model: unmitigated)	631	220	27	49	476	1,410
With TDM programs	521	231	25	36	476	1,290
Subtotal Reduced	110	-11	2	13	0	120
With TDM and Transit Shuttle	417	194	20	29	476	1,140
Total Reduced	214	26	7	20	0	270
					Net new PM peak hour vehicle trips created by Transit Shuttles:	20
					Overall net new PM peak hour vehicle trips including Transit Shuttles:	1,160
					Overall net new PM peak hour vehicle trips reduced:	250

*** Note**: Again, the COMMUTER Model cannot model non-employee travel. In order to ensure conservative estimates, no trip reduction is predicted from any Trip Generation Model group not modeled with the COMMUTER Model. This includes patient and family trips, volunteers, and consultants. Therefore, in the above table, the full 476 net new PM peak hour vehicle trips predicted from these groups in the Trip Generation Model for 2028 with no mitigation are assumed to hold steady with both TDM and Transit Shuttle mitigation. Programs targeted to patient or other non-employee trips could result in further reductions. The new Transit Shuttles will make 36 in and out trips during the PM peak hour; because the Green Line absorbs the former 6 trips during the PM peak hour from Met Park West, and 12 trips between Children's and 70th/Sand Point Way, net new shuttle trips is only 18 (rounded to 20 above).

20 net new PM peak hour vehicle trips are to be expected from the new Transit Shuttles, accounting for the existing shuttle routes absorbed by the new Transit Shuttle to downtown Seattle's Westlake Center / 3rd Avenue hub (*launched June 2008*). This results in a **net reduction of 250 net new PM**

peak hour vehicle trips (270–20 = ~250). The Trip Generation Model predicts 690 net new PM peak hour vehicle trips from all groups in 2028 if there is no mitigation and no mode shifts from baseline (2007) behaviors. Thus, the COMMUTER Model and Transit Shuttle ridership forecasts predict that the proposed TMP (TDM + shuttles) would achieve at least **30% reduction in net new PM peak hour vehicle trips** (250/690 = ~36%).

The proposed enhanced TMP programs are targeted only at the populations modeled using COMMUTER Model: Children's day- and non-day shift employees, CUMG physicians, and medical residents, students, and fellows. In the above calculations, all of the predicted mode shift and reduced PM peak hour vehicle trips are expected to occur among these groups only. This reduction, then, would be achieved even if vehicle trips from all other groups in the Trip Generation Model – including patients, consultants, and volunteers – increased as predicted under unmitigated conditions.

Results: Summary of SOV and Vehicle Trip Reduction

As shown in Table 11 above, the COMMUTER Model mode splits forecasted based on TDM programs alone would deliver a 30% SOV mode split among daytime Children's employees. Additional mode shift away from SOV should be expected due to use of the Transit Shuttles.

Final net new PM peak hour vehicle trips in 2028 calculated using these mode splits suggest that ***Implementing the proposed TMP could be expected to result in a 36% reduction in net new PM peak hour vehicle trips in 2028.*** Table 15 outlines the net new PM peak hour vehicle trips expected with and without enhanced TMP programs. All of these vehicle trip and SOV mode split estimates include expected net new vehicle trips generated by shuttle, carpool, vanpool, and SOV vehicles in 2028, from all population groups. These calculated reductions are achieved entirely within Children's day- and non-daytime employees, CUMG physicians, and medical residents, students, and fellows. Other opportunities for additional trip reduction may exist in other population groups, such as patients, contract and temporary employees, and volunteers.

Table 15. Net new PM peak hour vehicle trips in 2028 with and without enhanced TMP mitigation

Without additional mitigation	690
With expanded TDM programs	570
Subtotal Reduced	120
Percent Reduced	17%
With TDM and Transit Shuttle	420
Total Reduced	270
Net reduced with 20 net new Shuttle vehicle trips added back in	250
Percent Reduced	36%

Results: Parking Demand

SOV mode split reductions and vehicle trip reductions resulting from Children's proposed TMP package would also reduce the amount of parking needed. Rather than the 3,600 stalls that Transpo forecasted would be necessary at MIMP build out without further mitigation, Children's would need only 3,100, a reduction of 500 parking spaces. Parking may be accommodated on campus, or in leased stalls in off-campus parking lots. Under this mitigation package, Children's would need a total supply of 3,100 total stalls on and/or off campus.

Table 16. Future Peak Parking Demand at MIMP Buildout

Peak Parking Demand in 2028	Without mitigation	With TDM programs	With TDM and Transit Shuttle
Children's Employees - Day Shift	830	690	510
Children's Employees - Non-day	635	610	550
CUMG Physicians	270	250	240
Students, Medical residents, & Fellows	290	200	190
Other employees[1]	555	550	560
Patients (in- and out-)	890	890	890
Total:	3,470	3,190	2,940
Effective demand (+ 5% for circulation):	3,600	3,350	3,100

1. "Other employees" include EE Off-site Children's Employees, Pace temps, construction, consultants, community physicians, vendors, and volunteers. All numbers are rounded to the nearest 5.

Children's intends to pursue off-site parking opportunities when possible, and will continue to utilize geographic parking assignment plus shuttles to intercept vehicle trips that would otherwise enter the most congested impact area (*see Element VIII of the CTP)*. Regardless, the enhanced TMP with expanded TDM + Transit Shuttle services alone would achieve the targeted 500 parking space demand reduction, as well as the 30% SOV rate and 30% reduction in net new PM peak hour vehicle trips as described in this memorandum.

Attachment T-10
Transit Agreement Between King County and Children's

TRANSIT SERVICE DIRECT FINANCIAL PARTNERSHIP AGREEMENT BY AND BETWEEN KING COUNTY AND CHILDREN'S HOSPITAL AND REGIONAL MEDICAL CENTER

THIS TRANSIT SERVICE DIRECT FINANCIAL PARTNERSHIP AGREEMENT (the "Agreement") is made by and between King County, a political subdivision of the State of Washington and home rule charter county with broad powers to provide public transportation within the County's geographic boundaries, by and through the King County Department of Transportation, Metro Transit Division (the "County" or "Metro Transit") and Children's Hospital and Regional Medical Center, a Washington non-profit corporation ("Service Partner" or "Children's Hospital"), both of which entities may be referred to hereinafter individually as "Party" or collectively as "Parties."

WHEREAS, in September, 2006 the King County Council adopted Ordinance 15582, the Transit Now Ordinance, directing the submission of a proposition to King County voters to fix and impose an additional sales and use tax of one-tenth of one percent to fund expansion of the King County Metro public transportation system and a variety of transit service improvements; and

WHEREAS, the Transit Now ordinance identified a number of transit service measures to be implemented using the one-tenth of one percent sales and use tax collected through Transit Now that focus on capital, operating, and maintenance improvements that are expected to expand and improve bus service on local streets and arterials within King County; and

WHEREAS, mutually beneficial contractual arrangements with other public and private entities ("service partnerships") that leverage public and private funds to provide both new and better bus service to cities and major employers is one of four key strategies (the "Service Partnership Program") identified in the Transit Now proposition approved by King County voters in the general election on November 7, 2006; and

WHEREAS, the Service Partnership Program is also designed and intended to support the service development objectives and financial strategies of the 2002-2007 King County Metro Transit Six-Year Transit Development Plan (or its successor plans), including service allocation implementation strategy IM-3; and

WHEREAS, Service Partner has submitted an application for a direct financial partnership for transit service and has met the criteria established by the County for awarding such partnerships; and

WHEREAS, the proposal submitted by Service Partner has been deemed to show a potential gain in ridership; and

WHEREAS, the proposal submitted by Service Partner has been approved by the King County Council.

NOW, THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES, COVENANTS AND AGREEMENTS SET FORTH HEREIN, AND FOR OTHER GOOD AND VALUABLE CONSIDERATION,

THE RECEIPT AND SUFFICIENCY OF WHICH ARE HEREBY ACKNOWLEDGED BY BOTH PARTIES, THE PARTIES HEREBY AGREE AS FOLLOWS:

1. PURPOSE OF AGREEMENT

The purpose of this Agreement is to enter into a mutually beneficial contractual relationship for enhanced transit services consistent with the goals and directives of the Transit Now ordinance and initiative as authorized by King County Council Ordinance 15582 (approved in September, 2006) and passed by the voters of King County as Transit Now in the general election on November 7, 2006 to leverage sustainable local resources for transit service and to increase transit ridership.

This Agreement establishes the responsibilities of both Parties in relation to the transit service partnership, including methods for monitoring, improving and terminating the partnership.

2. COUNTY'S RESPONSIBILITIES

2.1 The County will provide transit service enhancements in accordance with the service specifications set forth in Attachment A, which is incorporated herein and made a part of this Agreement by this reference, pursuant to which the County and Service Partner will share the fully-allocated cost of the increased service hours at a rate of two-thirds from County funds to one-third from Partner funds, (actual contribution specified in Attachment A); provided, however, that Service Partner's annual cost contribution will not exceed $300,000 as specified in Attachment A; and provided further, that, should such annual cost cap be reached, the County's contribution shall not be required to exceed two-thirds of Service Partner's cost contribution cap. Fully-allocated costs include the cost of fuel, maintenance, driver wages, service supervision, infrastructure maintenance, revenue collection, scheduling, rider information, data analysis; and administrative and management costs. The County's cost allocation model will be used to determine the Service Partner's contribution. The County will operate the service in accordance with its regular procedures and as may be further specified in this Agreement. The Parties understand and agree that, notwithstanding Service Partner's financial contribution, the transit service referenced herein will be open to the general public.

2.2 The County will include the new transit service enhancements in its annual route performance monitoring. Enhanced transit service provided via Service Partnerships will be expected to perform at or above the subarea average for its particular type of service in at least three of the following four standard indicators monitored in Metro's annual *Route Performance Report*:

a) Rides per revenue hour;
b) The ratio of fare revenue to operating expense;
c) Passenger miles per revenue hour;
d) Passenger miles divided by platform miles.

2.3 More specific performance benchmarks applicable to the enhanced transit service provided for herein are set forth in Attachment A. Three (3) years after implementation of the enhanced transit service provided for herein, the County will make a determination as to the productivity and viability of the service. The County will notify Service Partner of its assessment of the service's productivity, performance, and ongoing viability. If the County deems that changes can be made to improve the service, the County and Service Partner will discuss possible modifications and may agree on any decisions to modify the service enhancements provided for herein; provided, however, that any such modifications shall be consistent with the requirements set forth in KCC 28.94.020(B)(2). After consultation with Service Partner, if the County determines that the enhanced service provided for herein is not viable based upon performance, and

proposed changes are insufficient to boost productivity beyond a minimum threshold as may be established, the County will notify Service Partner of its intention to terminate the Agreement.

3. SERVICE PARTNER'S RESPONSIBILITIES

Service Partner will contribute, via billings twice per year, as specified in Section 5.1 of this Agreement, at least one-third (1/3) of the fully allocated cost of the enhanced service described in Attachment A, in an amount not less than US$100,000 per year for five (5) years to add to existing transit service or US$200,000 per year for five (5) years to implement new transit service. The amount of Service Partner's actual yearly contributions, over and above the minimum yearly contributions specified in this Section 3.1, are to be determined by application of the cost allocation calculation specified in Attachment A.

4. TERM OF AGREEMENT AND APPROVAL BY KING COUNTY COUNCIL

The term of this Agreement is for five (5) years which shall commence on September ____, 2007 and expire at the end of that initial five year term in September, 2012 unless extended or earlier terminated pursuant to the terms of this Agreement. If after five (5) years the enhanced transit service is deemed viable by the County pursuant to the performance indicators set forth in Section 2.2 of this Agreement and the additional performance benchmarks specified in Attachment A, and Service Partner desires to have Metro Transit continue to provide the enhanced transit service beyond the initial five year period, this Agreement may be extended by the Transit General Manager for an additional five years without additional approval by the King County Council.

This Agreement is subject to review and approval by the King County Council.

5. INVOICES/PAYMENT PROCEDURES

5.1 The County will invoice Service Partner twice each year for its contribution, as specified in Section 3.1 of this Agreement, to the transit service provided for herein. Service Partner will receive two (2) billings each calendar year for the Service Partner's share of the actual costs incurred by the County to operate the service.

5.2 An estimate of the total service costs based on scheduled service hours is shown in Attachment A. This estimate will be adjusted in January each year, based on the per mile and per hour rates for that year. This adjustment will be provided to the Service Partner.

5.3 Service Partner shall make payment within forty-five (45) days after receipt of an invoice. Should Service Partner fail to pay the County the amount due within forty-five (45) days of receipt of a billing invoice from the County, a late payment assessment shall be applied to any outstanding balance due for that invoice. The late payment assessment shall be fixed at a rate not to exceed that allowable under Washington law.

6. INDEMNIFICATION AND LEGAL RELATIONS

6.1 It is understood and agreed that this Agreement is solely for the benefit of the Parties hereto and gives no right to any other person or entity. No joint venture or partnership is formed as a result of this Agreement. No employees or agents of one Party or its contractors or subcontractors shall be deemed, or represent themselves to be, employees, agents, contractors or subcontractors of the other Party.

6.2 Each Party shall comply, and shall ensure that its contractors and subcontractors, if any, comply with all federal, state and local laws, regulations, and ordinances applicable to the work and services to be performed under this Agreement.

6.3 Each Party shall protect, defend, indemnify and save harmless the other Party, its elected officials, officers, officials, employees and agents while acting within the scope of their employment as such, from any and all costs, claims, judgments, and/or awards of damages, arising out of or in any way resulting from each Party's own negligent acts or omissions. Each Party agrees that it is fully responsible for the acts and omissions of its own subcontractors, their employees and agents, acting within the scope of their employment as such, as it is for the acts and omissions of its own employees and agents. Each Party agrees that its obligations under this provision extend to any claim, demand, and/or cause of action brought by or on behalf of any of its employees or agents. The foregoing indemnity is specifically and expressly intended to constitute a waiver of each Party's immunity under Washington's Industrial Insurance act, RCW Title 51, as respects the other Party only, and only to the extent necessary to provide the indemnified Party with a full and complete indemnity of claims made by the indemnitor's employees. The Parties acknowledge that these provisions were specifically negotiated and agreed upon by them.

6.4 Each Party's rights and remedies in this Agreement are in addition to any other rights and remedies provided by law.

6.5 This Agreement shall be interpreted in accordance with the laws of the State of Washington. The Superior Court of King County, Washington, located in Seattle, Washington, shall have exclusive jurisdiction and venue over any legal action arising under this Agreement.

6.6 The provisions of this section shall survive any termination of this Agreement.

7. CHANGES AND MODIFICATIONS

This Agreement may be amended or modified only by prior written agreement signed by the Parties hereto.

8. TERMINATION OF AGREEMENT

8.1 Either Party may terminate this Agreement, in whole or in part, in writing if the other Party substantially fails to fulfill any or all of its obligations under this Agreement through no fault of the other; provided, that, insofar as practicable, the Party terminating the Agreement will give not less than 135 calendar days prior to the County's February, June or September service change, by written notice delivered by certified mail, return receipt requested, of intent to terminate.

8.2 In addition to termination under Paragraph 8.1 of this Section, the County may terminate this Agreement pursuant to the provisions of Paragraph 2.3 of this Agreement; provided, that Service Partner will be given not less than 135 calendar days prior to the County's February, June or September service change, by written notice delivered by certified mail, return receipt requested, of intent to terminate.

8.3 If either Party terminates, Service Partner will pay the County a pro-rated amount for services performed in accordance with the Agreement to the date of termination.

9. FORCE MAJEURE

Either Party shall be excused from performing its obligations under this Agreement during the time and to the extent that it is prevented from performing by a cause beyond its control, including, but not limited to:

any incidence of fire, flood, earthquake or acts of nature; strikes or labor actions; commandeering material, products, or facilities by the federal, state or local government; national fuel shortage; when satisfactory evidence of such cause is presented to the other Party, and provided further that such non-performance is beyond the control and is not due to the fault or negligence of the Party not performing. In no event, however, shall this provision eliminate the obligation to make payment to the County for work performed in accordance with this Agreement.

10. WAIVER OF DEFAULT

Waiver of any default shall not be deemed to be a waiver of any subsequent default. Waiver of breach of any provision of this Agreement shall not be deemed to be a waiver of any other or subsequent breach and shall not be construed to be a modification of the terms of this Agreement unless stated to be such in writing, signed by authorized Parties and attached to the original Agreement.

11. ASSIGNMENT

This Agreement shall be binding upon the Parties, their successors, and assigns; provided, however, that neither Party shall assign or transfer in any manner any interest, obligation or benefit of this Agreement without the other's prior written consent.

12. NO THIRD PARTY BENEFICIARIES

Nothing in this Agreement, express or implied, is intended to confer on any person or entity other than the Parties hereto and their respective successors and assigns any rights or remedies under or by virtue of this Agreement.

13. MUTUAL NEGOTIATION AND CONSTRUCTION

This Agreement and each of the terms and provisions hereof shall be deemed to have been explicitly negotiated between, and mutually drafted by, the Parties, and the language in all parts of this Agreement shall, in all cases, be construed according to its fair meaning and not strictly for or against either Party.

14. ALL TERMS AND CONDITIONS

This Agreement merges and supersedes all prior negotiations, representations and agreements between the Parties related to the subject matter hereof and constitutes the entire agreement between the Parties. This Agreement may be amended only by written agreement of both Parties.

This Agreement contains all the terms and conditions agreed upon by the Parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the Parties hereto.

15. CONTACT PERSONS

The County and Service Partner shall designate a contact person for purposes of sending inquiries and notices regarding the execution and fulfillment of this Agreement.

	Service Partner
Contact Name	Stephanie Frans

Title	Manager, Commute Services
	Children's Hospital
Address	4800 Sand Point Way, NE
	Seattle, WA 98105
Telephone	(206) 987-1297
Fax	(206) 987-5061
E-Mail	Stephanie.Frans@seattlechildrens.org

	King County
Contact Name	Matt Hansen
Title	Supervisor, Market Development
	King County Metro Transit
Address	400 Yesler Way
	YES-TR-0600
	Seattle, WA 98104
Telephone	(206) 263-3598
Fax	(206) 684-2058
E-Mail	Matt.hansen@metrokc.gov

IN WITNESS WHEREOF:
The Parties hereto have executed this Agreement on the _____ day of _____, 2007.

CHILDREN'S HOSPITAL AND REGIONAL MEDICAL CENTER

By_____

Title_____

KING COUNTY

By_____

Title_____

ATTACHMENT A

Direct Financial Service Partnership Scope of Work
Children's Hospital and Regional Medical Center

A. Minimum Actions

1. Minimum Actions to be Undertaken by Service Partner

Service Partner agrees to contribute $234,767 per year ($253,359 with 10% contingency) for five (5) years for additional service on Routes 75 and 25 as defined below in Section C, "Service Description," of this Attachment A. The actual annual cost Service Partner agrees to pay on an annual basis shall be determined in accordance with Section 5.2 of this Agreement.

2. Minimum Actions to be Undertaken by County

The County will advertise the new service via its normal marketing channels, including timetables in customer service kiosks throughout King County and, particularly, at Children's Hospital, Metro Transit's website, and information signs at bus stops.

B. Supporting Actions

1. Service Partner agrees to implement additional actions that are likely to increase ridership on the new services, including promotions, incentives, parking management and other activities. The following activities included in Service Partner's current program (or similar activities) will be continued:

a. *Promotion*
- Provide promotional materials about commute alternatives to employees.
- Promote bus service to employees, with special attention on new service.
- Provide bus maps, timetables, and bike maps.
- Provide employee assistance in commute planning.

b. Incentives to employees
- Provide a free transit pass for employees.
- Provide a 100% subsidy for employees who vanpool.
- Provide a commute bonus for using specified commute alternatives.
- Provide Flexcar(s) on-site for employee use in running business errands and attending off-site meetings.
- Provide shuttle between Children's Hospital main campus and primary satellite worksites.
- Provide covered bicycle racks and cages.

- Provide subsidized annual tune-ups and basic repair supplies for employees who commute by bicycle.
- Provide showers and clothes lockers for employees who bicycle, walk, or motorcycle.
- Provide Guaranteed Ride Home for employees who use alternative commute modes.

c. Parking management

Charge employees for single occupancy vehicle (SOV) parking.
Provide free, reserved parking for vanpools.
Provide free preferential parking for qualified carpools.

2. The County agrees to undertake the following supporting actions:

a. Additional promotion of service

Designate new trips funded by partnership in the bus timetables for the affected routes.

Work with Service Partner to promote transit use on the enhanced service routes.

C. Service Description

County and Service Partner agree to share in the cost and responsibilities of adding to service on routes 75 and 25. The intent of these service enhancements is to provide additional trips on routes that serve Children's Hospital in order to allow a larger number of Children's Hospital employees to commute to and from the Children's Hospital campus by bus. The trips added to the route 75 schedule would bring this route closer to being a full-time, seven-day-a-week route with a minimum level of service of 30 minutes during its entire span. It would enable employees to rely on this route, regardless of the time of day or day of the week on which they work. The trips added to route 25 would allow riders, particularly those coming from the Eastside via SR-520 and Montlake, to reach the Children's Hospital campus by making only one transfer.

Route 75
Route description: The eastern half of route 75 operates between Northgate, Lake City, Sand Point, and the University District. Children's Hospital plans to improve only this portion of the route.

Route 25
Route description: Route 25 operates between downtown Seattle and Laurelhurst via North Capitol Hill and the University District.

D. Service Costs

(Based on spreadsheet attached hereto as Exhibit 1 entitled "Preliminary Cost Estimate," which is incorporated into and made a part of this Agreement by this reference.)

Total annual hours: 6671 (7338 with 10% contingency)

Estimated fully-allocated annual cost (County's + Service Partner's cost):
$704,301
$760,077 (with 10% contingency)
Service partner's estimated annual share of fully-allocated annual cost:
$234,767
$253,359 (with 10% contingency)

Service Partner annual limit on costs under this Agreement: $300,000

E. Benchmarks for Evaluating Route Performance

Metro has a consistent, formal route performance evaluation process to identify individual routes that may require modification, expansion or termination. Routes are grouped by subarea and time period for similarity in operating conditions. Each partnership route will be compared by time period to other routes in its subarea to ascertain performance level. Data for a particular year is typically available by the middle of the following year. The comparison will be made at the time the data is available.

A group of routes will have both "strong" and "below minimum" performance routes, as defined by thresholds based on the average performance of the group. Routes at the extremes of performance are considered for changes. Routes with "strong performance" are considered for expansion; "below minimum performance" routes are evaluated for changes to improve performance, or for discontinuation if performance does not improve after changes are tried.

The benchmarks for the service additions applicable to this Agreement are as follows:

West Subarea – Peak (applies to most of the route 25 trips)
Rides/revenue hour: Strong - 72.1; weak - 33.9
Fare revenue/operating expense: Strong - 37%; weak - 15%
Passenger miles/revenue hour: Strong – 298; weak – 89
Passenger miles/platform miles: Strong – 14.5; weak – 6.5

West Subarea - Off-peak (applies to the route 75 weekend service before 6 p.m.)
Rides/revenue hour: Strong - 72.9; weak 30.7
Fare revenue/operating expense: Strong – 32%; weak – 13%
Passenger miles/revenue hour: Strong – 207; weak – 87
Passenger miles/platform miles: Strong – 15.9; weak – 6.5

West Subarea – Night (applies to route 25 and route 75 evening trips)
Rides per revenue hour: Strong – 44.6; weak 20.4
Fare revenue/operating expense: Strong – 18%; weak – 7%
Passenger miles/revenue hour: Strong – 150; weak – 53
Passenger miles/platform miles: Strong - 9.2; weak - 3.4

Performance Measures on Routes 25 and 75, Fall 2005

Route	Period	Rides/Rev Hour	FR/OE	Pass Miles/Plat Mile	Pass Miles/Rev Hr	Rides/Rev Mile
25	OffPeak	20.12	9.59%	6.45	77.66	1.67
25	Peak	29.23	18.55%	6.66	91.34	2.57
75	Night	31.69	12.32%	6.74	115.92	2.11
75	OffPeak	50.11	22.21%	12.37	173.92	3.67

EXHIBIT 1

Preliminary Cost Estimate

Route	Day	Direction	Time		Description	# of trips	Est'd hours	Rate/hour $83.61	Est'd miles	Rate/mile $2.16	Total Cost
75	M-F	south	5:15	A.M.	Northgate to UW	1	233	$19,481.13	2,438	$5,266.94	
75	M-F	both	6:30-midnight	P.M.	Between Northgate and UW	11	2743	$229,342.23	26,822	$57,936.38	
75	M-F	north	7:31	A.M	Between UW and Northgate	1	132	$11,036.52	2,438	$5,266.08	
75	Sat	both	6:00-8:30	A.M.	Between Northgate and UW	8	310	$25,919.10	3,994	$8,626.18	
75	Sat	both	7:00-8:30	P.M.	Between Northgate and UW	4	203	$16,972.83	1,997	$4,313.09	
75	Sun	both	6:30-8:00	all day	Between Northgate and UW	32	1846	$154,344.06	19,622	$42,383.36	
25	M-F	north	6:00-7:00	A.M.	Montlake to U Dist	2	81	$6,772.41	579	$1,250.90	
25	M-F	north	5:44	A.M.	CBD to Laurelhurst	1	157	$13,126.77	2,697	$5,826.56	
25	M-F	north	6:30	P.M.	CBD to Laurelhurst	1	449	$37,540.89	2,697	$5,826.56	
25	M-F	south	6:30	P.M.	Laurelhurst to CBD	1	191	$15,969.51	1,979	$4,273.91	
25	M-F	south	7:45	P.M.	Laurelhurst to CBD	1	326	$27,256.86	2,578	$5,568.70	
			Subtotal			**63**	**6671**	**$557,762.31**	**67,842**	**$146,538.64**	**$704,300.95**
			W/ 10% contingency				**7338**	**$613,538.54**			**$760,077.19**
										King County Metro Transit contribution	**$469,533.97**
										Children's Hospital contribution	**$234,766.98**
										W/ 10% hour contingency	

King County Metro Transit contribution	**$506,718.12**
Children's Hospital contribution	**$253,359.06**

Attachment T-11
Letter of Intent Between Sound Transit and Children's

Children's
Hospital & Regional Medical Center

Letter of Intent
between
Children's Hospital and Regional Medical Center
and the Central Puget Sound Regional Transit Authority

Children's Hospital and Regional Medical Center is a nonprofit corporation in Washington exempt from federal income tax under Section 501(c)(3) of the Code, and fulfills its charitable health care mission in part through the operation of an acute care children's hospital and other children's health services in Seattle, Washington.

The Central Puget Sound Regional Transit Authority (Sound Transit) is a duly organized regional transit authority and has all the powers necessary to implement a high capacity transportation system. Sound Transit has implemented a regional transit system consisting of ST Express bus, Sounder commuter rail, Tacoma Link light rail and the capital infrastructure that supports these services. In mid 2009, Central Link light rail will offer service from downtown Seattle to Tukwila, followed by service to SeaTac Airport in December 2009.

Purpose
The purpose of this Letter of Intent is to document our mutual interest in discussing and identifying short-term and long-term partnerships designed to encourage alternative transportation uses.

General Approach
Sound Transit and Children's Hospital and Regional Medical Center will work together to:

(a) Identify future service enhancements such as Sound Transit buses or facilities that link to Children's expanded shuttle service.
(b) Identify potential private-public partnerships which will allow Children's to access current or future park and ride lots owned and operated by Sound Transit.
(c) Participate in regional forums or workshops where we advance regional transportation alternatives.

Both parties also recognize the need to hold coordinated discussions with other local and regional transit agencies related to service enhancements and other transit related arrangements.

Agency Representatives
Sound Transit and Children's Hospital and Regional Medical Center will each identify a single point of contact for carrying out this Letter of Intent.

Conclusion
Sound Transit and Children's Hospital and Regional Medical Center recognize the importance of our collaboration in ensuring effective transportation options that enhance regional mobility. We recognize that potential service or capital project partnerships will be subject to approval by the Sound Transit Board and the Children's Hospital and Regional Medical Center Board of Trustees.

Thomas N. Hansen — 3.26.09

Children's Hospital and Regional Medical Center
Thomas N. Hansen, MD, Chief Executive Officer

Date

Joni Earl — 3-26-08

Sound Transit
Joni Earl, Chief Executive Officer

Date

Attachment T-12
Letter of Intent Between Community Transit and Children's

Letter of Intent
Between
Seattle Children's Hospital ~~and Regional Medical Center~~
and
Community Transit

Seattle Children's Hospital ~~and Regional medical Center~~ is a nonprofit corporation in Washington exempt from federal income tax under Section 501(c) (3) of the Code, and fulfills its charitable health care mission in part through operation of an acute care children's hospital and other children's health services in Seattle, Washington.

Community Transit is a Public Transportation Benefit Area incorporated in 1976 under RCW 36.57 A. It operates 33 local bus routes, 31 commuter routes and DART paratransit service throughout Snohomish County. Community Transit also offers carpool matching, one of the nation's largest vanpool programs and offers travel training to disabled and senior citizens

Purpose

The purpose of this Letter of Intent is to document our mutual interest in exploring short-term and long-term partnerships designed to encourage alternative transportation and a "think transit first" lifestyle.

General Approach

Community Transit and Seattle Children's Hospital ~~and Regional Medical Center~~ will work together to:

1. Where possible, coordinate connections between Children's shuttle service and Community Transit's bus service.
2. Explore potential private-public partnerships
3. Research transit efficient locations for future Children's facilities within Snohomish County
4. Explore targeted TDM programs to help employees access Community Transit services without driving

Both parties also recognize the need to participate in regional forums and hold coordinated discussions with other local and regional transit agencies and jurisdictions related to service enhancements and other transit related arrangements.

Conclusion

Community Transit and Seattle Children's Hospital ~~and Regional Medical Center~~ recognize the importance of our collaboration in ensuring effective transportation options that enhance regional mobility. We recognize that potential service or capital project partnerships will be subject to approval by the Community Transit Board and the Seattle Children's Hospital ~~and Regional Medical Center~~ Board of Trustees.

Seattle Children's Hospital ~~and Regional Medical Center~~
Thomas N. Hansen, MD, Chief Executive Officer

8/04/2008
Date

Community Transit
Joyce Eleanor, Chief Executive Officer

10/2/08
Date