

4. Traffic Forecasts

Traffic forecasts for the CTIP projected traffic conditions for the years 2010 and 2030 with and without the CTIP's recommended transportation improvements. The City of Seattle provided the travel demand forecasting model, which includes assumptions for future land use and roadway network configurations. King County Metro and Sound Transit provided information on anticipated modifications to the transit network. The model was also adjusted to reflect anticipated development projects and associated trip generation and distribution patterns. It was then tested for accuracy using actual 2004 traffic counts.

Household and Employment Assumptions

The City's travel demand forecast model includes household and employment forecasts derived from anticipated land uses for the study area. **Table 4-1** shows a summary of the 2000 and the forecast 2010 and 2030 household, employment, and student demographics. This information, divided into a series of transportation analysis zones, forms the foundation for projecting future travel demand. The traffic analysis zones pertaining to the study area and land use forecast details are located in **Appendix 4-1**.

Table 4-1. 2010 and 2030 Household, Employment, and Student Forecasts for the CTIP Study Area

Year	Household	Percent Increase	Employment	Percent Increase	Full-time Equivalent Student	Percent Increase
2000	14,233	-	17,092	-	4,035	-
2010	15,717	10.4%	19,906	16.5%	4,405	9.2%
2030	20,572	44.5%	27,271	59.6%	5,152	27.7%

Source: City of Seattle

Roadway, Transit, and Land Use Assumptions

2010 and 2030 Land Use

The 2010 and 2030 travel demand forecasts assume that eight new development projects ("pipeline" projects) will be completed, with several developments phased in over time (see **Figure 4-1**). **Table 4-2** provides a summary of the assumed land use changes associated with each pipeline project for 2010 and 2030.

Table 4-2. Northgate CTIP Traffic Analysis: 2010 and 2030 Pipeline Development Project Assumptions

Pipeline Projects	Analysis Year	Use	Area (SF)	Units		
Northgate Civic Center	2010	Community Center	20,000			
		Library	10,000			
Northgate Mall Expansion	2010	Retail	100,000			
Northgate Commons	2010	Residential (rental)		250	units	
		Residential (condo)		110	units	
		Residential (senior)		129	units	
			Retail	20,000		
			Restaurant (sit-down)	15,000		
			Restaurant (eateries)	15,000		
			Theater		3,260	seats
			KC Metro Park and Ride		400	stalls
	King County Northgate TOD	2010	NE 112th Street Park & Ride Removal		-296	stalls
			Residential		120	units
2020		Restaurants	25,000			
		Retail Shops	40,000			
		Hotel	46,000	170	units	
		Restaurants	15,000			
2030		Retail Shops	30,000			
		Residential	75,000			
		Retail	16,000			
		Residential	327,000	340	units	
		Health Club	24,000			
		Daycare	16,000			
Wallace Development	CURRENT	Retail	50,609			
	2010	Retail Removal	-50,609			
		Retail New	100,000			
		Residential New		350	units	
Mullally Development	CURRENT	Residential		200	units	
		2010	Residential Removal	-100	units	
		Residential Addition		500	units	
	2030	Hotel		135	rooms	
		Commercial	100,000			
		Residential Removal		-100	units	
		Residential Addition		500	units	
		Commercial	9,000			
Kauri Investments	CURRENT	Residential		144	units	
	2010	Residential Addition		200	units	
Northgate Medical Pavilion	2010	Medical Office	67,937			

Source: City of Seattle

The growth forecasts shown in **Appendix 4-2** include all currently identified “pipeline” development projects and the City of Seattle’s 2030 growth projections.

Figure 4-1. Pipeline Development Projects in the Study Area



2010 Arterial/Transit Network

The 2010 forecasts assumed completion of the following roadway and transit improvements by 2010:

- New 3rd Avenue NE between NE 100th Street and NE 103rd Street with three lanes.
- King County Metro Park and Ride’s 296 spaces located at 5th Avenue NE north of NE 112th Street will be removed. These spaces will be transferred to the new garage that is being built for the Northgate Commons project at the southwest corner of the NE 103rd Street and 5th Avenue NE intersection.

2030 Arterial/Transit Network

In addition to the 2010 changes, the 2030 baseline network assumed that the following transit improvements would occur by 2030:

- Sound Transit North Link Light Rail station on 1st Avenue NE and NE 103rd Street will be constructed.
- King County Metro's Transit Center will be moved to 1st Avenue NE. The transit center will occupy parts of 1st Avenue NE.
- As part of the new light rail station and reconfigured transit center operations, one general-purpose lane in each direction on 1st Avenue NE between NE 100th Street and NE 103rd Street will be converted to bus bays for the transit station.
- King County Metro's 1,400 park-and-ride spaces in the analysis area will be consolidated at the current Northgate Transit Center.
- The signals on Northgate Way between Meridian Avenue N and Roosevelt Way NE will be optimized for maximum throughput.

2010 and 2030 Traffic Volumes (PM Peak Hour)

The forecast traffic volumes for 2010 from the City of Seattle's model were adjusted against existing traffic counts and checked for consistency through the traffic corridors within the study area. **Figure 4-2** shows the existing, 2010, and 2030 PM peak hour approach volumes at key arterial intersections for the Northgate Area. **Figure 4-3** shows this information for the Northgate core area.

2010 and 2030 Levels of Service (PM Peak Hour)

CTIP used the 2010 and 2030 traffic volumes to calculate future levels of service. ¹ **Figure 4-4** shows the results for each intersection in terms of level of service (LOS) and average

¹ Signal operations at intersections were individually "optimized" except for the signals around the Transit Center and along the commercialized portion of Northgate Way, which operate independently and cannot be optimized as part of a system. The remaining signals were interconnected and coordinated. Optimization of signals consists of minimizing the average overall intersection delay experienced by a driver through adjustments in the signal timing for each movement and/or changing the overall cycle length.

intersection delay for 2010.² **Figure 4-5** shows the 2010 arterial corridor LOS and average speeds by direction for each selected segment. **Figure 4-6** shows the results for each intersection in terms of LOS and average intersection delay for 2030.³ **Figure 4-7** shows the 2030 arterial LOS and average speeds by direction for each selected segment. **Appendix 4-3** provides more detail above the intersection delay by movement and approach.⁴

2010 Key Findings

- Two signalized intersections along Northgate Way will operate at LOS F during the PM peak hour:
 - N Northgate Way and Meridian Avenue N (average PM peak hour delay of about 100 seconds)
 - NE Northgate Way and 5th Avenue NE (average PM peak hour delay of about 90 seconds)
- Several unsignalized intersections will operate at LOS F on one of the stop approaches in 2010:
 - I-5 northbound off-ramp and 5th Avenue NE
 - Pinehurst Way NE and 15th Avenue NE
 - New 3rd Avenue NE and NE 100th Street
 - College Way N and N 92nd Street
 - 1st Avenue NE and NE 92nd Street
- Average speeds on most arterials will decrease from existing levels. However, the only arterial segment that will operate at LOS F is 15th Avenue NE between Northgate Way and NE 125th Street in the northbound direction. The greatest contribution to the LOS F condition is the increased delays at the unsignalized intersection at 15th Avenue NE and Pinehurst Way NE. All other corridors will operate at LOS E or better in 2010.
- Northgate Way between Meridian Avenue N and Lake City Way will operate at LOS E despite a few intersections operating at LOS F.

² This analysis assumed the new intersection at 3rd Avenue NE and NE 103rd Street was signalized. The intersection at 3rd Avenue NE and NE 100th Street was kept as an unsignalized intersection with stop control in the north-south movements.

³ For this analysis, 1st Avenue NE between NE 100th Street and NE 103rd Street will only have one general-purpose through lane in the southbound direction. See **Figure 5-8**, page 5-12, for the 1st Avenue NE lane configuration details. At 1st Avenue NE and NE 100th Street, the west leg of the intersection will be eliminated as part of the park-and-ride consolidation at the Northgate Transit Center.

⁴ For unsignalized intersections, LOS and delay was provided for the worst movement.

2030 Key Findings

By 2030, Northgate Way will be heavily congested between Meridian Avenue N and Roosevelt Way NE, even if all intersections in this segment are interconnected and optimized for signal operations. In addition,

- The average travel speeds in most corridors in the study area will be slower, especially along N 130th/Roosevelt Way NE/NE 125th Street and Northgate Way, in both directions.
- Northgate Way between Meridian Avenue N and Lake City Way will operate at LOS F in both directions down from LOS E in 2010. Among the six intersections along this segment,
 - two will operate at LOS F
 - three will operate at LOS E
- In addition to the Northgate Way intersections, three other signalized intersections will operate at LOS E in 2030:
 - NE 125th Street and 15th Avenue NE
 - N 130th Street and 1st Avenue N
 - NE 92nd Street and 5th Avenue NE

Those unsignalized intersections operating at LOS F in 2010 will operate with even higher delays in 2030. The following unsignalized intersections will operate at LOS F:

- 1st Avenue NE and NE 92nd Street
- New 3rd Avenue NE and NE 100th Street
- 1st Avenue NE and I-5 off-ramp
- 15th Avenue NE and Pinehurst Way NE
- Meridian Avenue N and N 115th Street
- College Way N and N 92nd Street

Figure 4-2. PM Peak Hour Intersection Approach Volumes (Existing, 2010, 2030 Forecasts) outside the Core Area

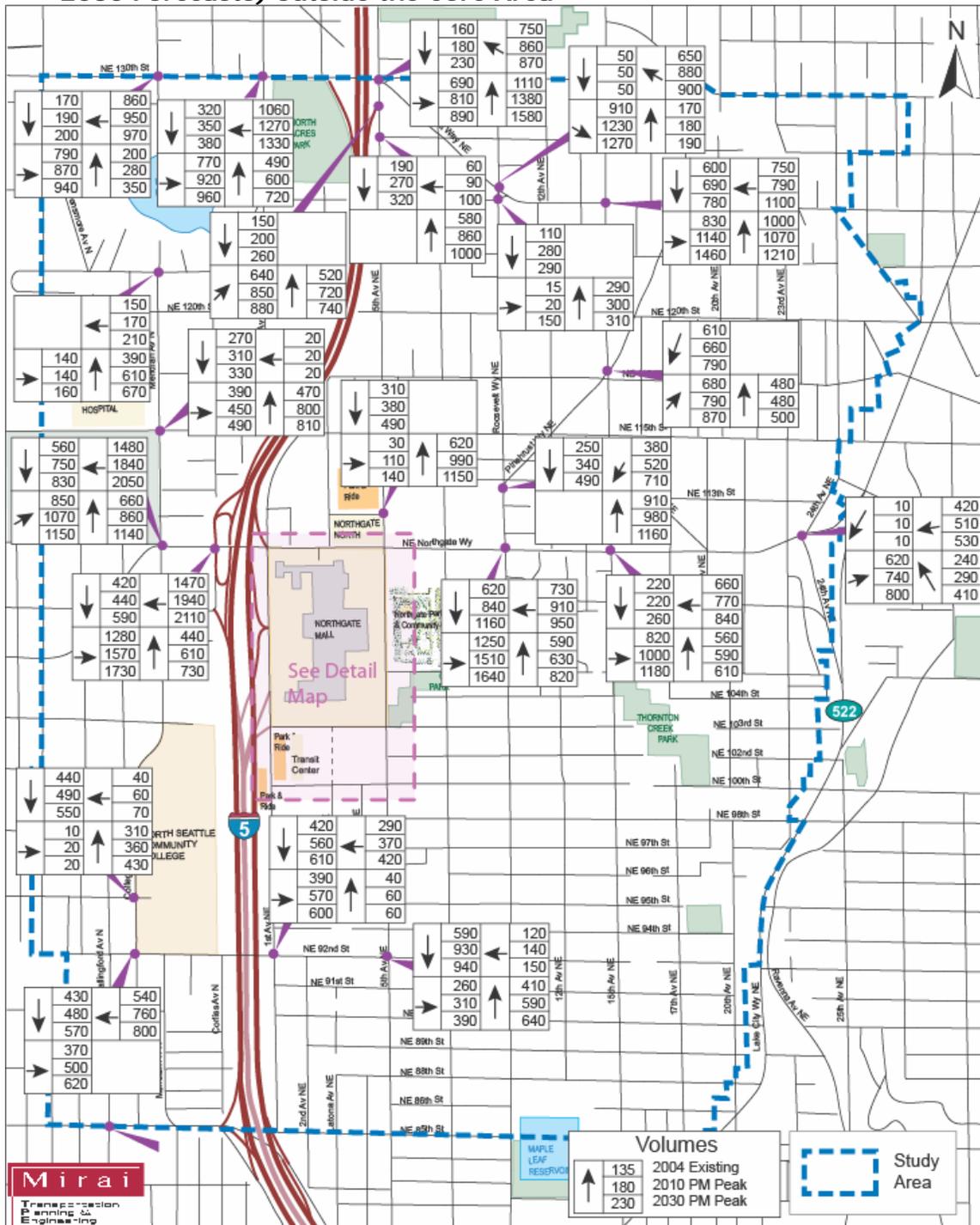


Figure 4-3. PM Peak Hour Intersection Approach Volumes (Existing, 2010, 2030 forecasts)—Northgate Core Area

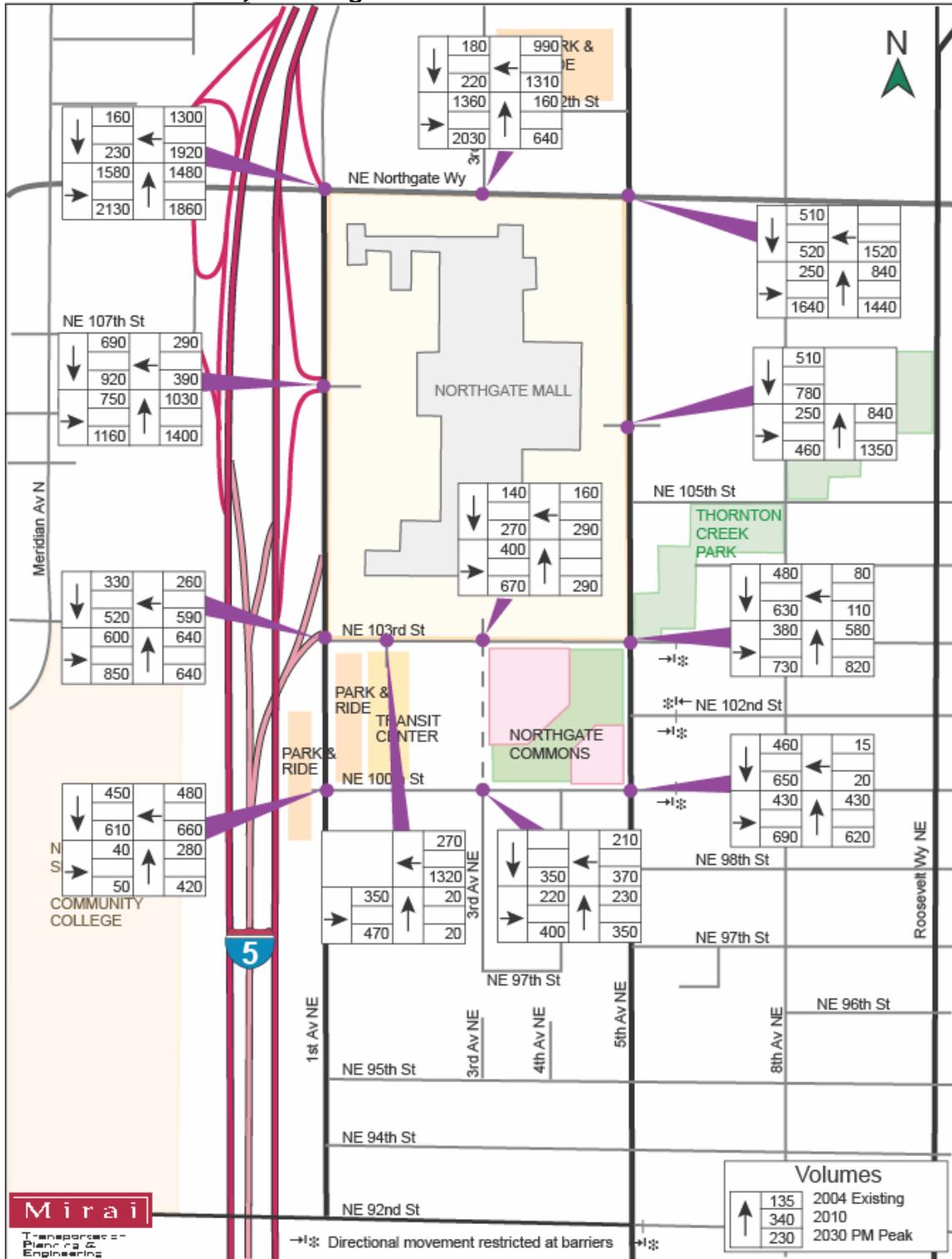


Figure 4-6. PM Peak Hour 2030 Baseline Intersection Level of Service and Delay

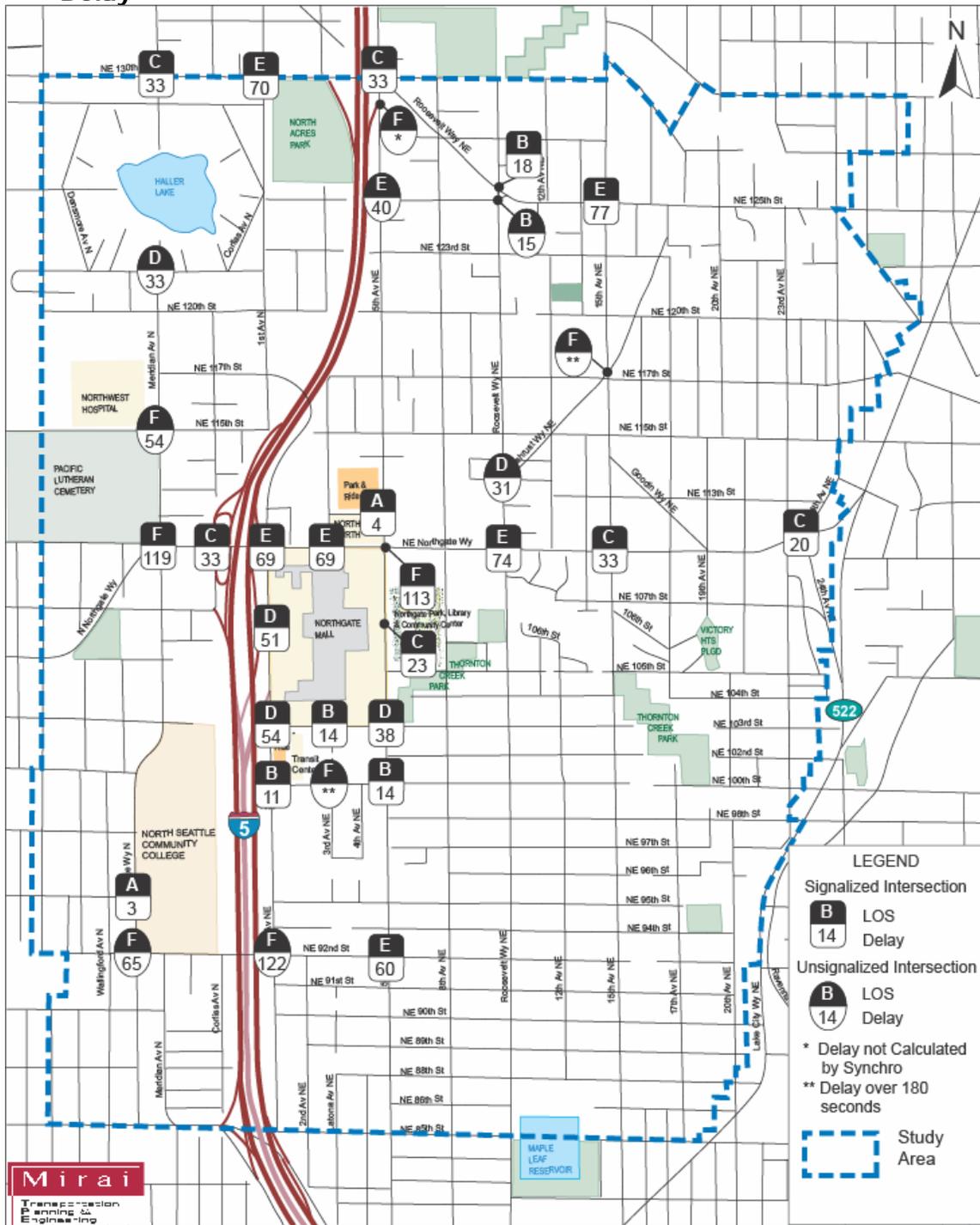


Figure 4-7. 2030 Baseline Arterial LOS and Average Speed

