

Traffic Impact Analysis

KIRKLAND COSTCO GAS STATION
KIRKLAND, WA

August 2008

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Introduction

This report summarizes the traffic impact study prepared for the proposed Kirkland *Costco Gasoline* addition to the existing *Costco Wholesale* in Kirkland, Washington. The purpose of this analysis is to identify potential transportation-related impacts associated with the proposed development and to identify appropriate measures to mitigate identified project impacts, as necessary. The following analysis has been carried out in accordance with the State Environmental Policy Act (SEPA) and is consistent with the City of Kirkland Traffic Impact Analysis Guidelines.

Project Location and Description

The project would develop a fuel station with 16 fuel positions on the northern most portion of the existing *Costco Wholesale* parking lot in the City of Kirkland. The property is located off of I-405 via the 85th Street Exit at 8629 120th Avenue NE. The project vicinity and study intersections are illustrated in Figure 1 with a preliminary site plan provided as Figure 2.

Costco Gasoline fuel stations function as an ancillary use to Costco warehouse developments and are not like traditional gas stations. These gasoline stations are self-serve, only available to Costco members, and do not provide any other automotive services (auto repair) or sales (including food or convenience items).

Transportation Analysis Scope and Approach

The transportation analysis scope and approach were identified through coordination with the City of Kirkland staff. In addition to the site access driveways off of 120th Avenue NE and NE 90th Street, six intersections were identified for analysis in conjunction with the proposed project. The study intersections include those identified as significant based on the City's proportional share impact worksheets shown in Appendix A, as well as closely spaced intersections impacting operations of adjacent significant intersections. The study intersections, listed below, represent locations within the project vicinity that would experience the greatest impact as a result of project traffic:

- NE 90th Street/120th Ave NE
- NE 90th Street/122nd Ave NE
- NE 90th Street/124th Ave NE
- NE 85th Street/120th Ave NE
- NE 85th Street/122nd Ave NE
- NE 85th Street/124th Ave NE

In addition to the study intersections above, the three site access driveways were also evaluated. The analysis was conducted for the PM peak hour which represents the one-hour of the day with highest combined background and project traffic volumes. The report first documents the existing study area characteristics, including the surrounding roadway network, traffic volumes, traffic safety, and non-motorized facilities. Future 2010 without-project (baseline) conditions were analyzed to provide a basis for evaluating project impacts. Project-generated traffic was added to future baseline conditions to form the basis of the future with-project conditions. Finally, mitigation measures to offset potential project impacts were determined, as necessary.



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Figure 1
Site Vicinity and Study Intersections

Kirkland Costco Gas Station

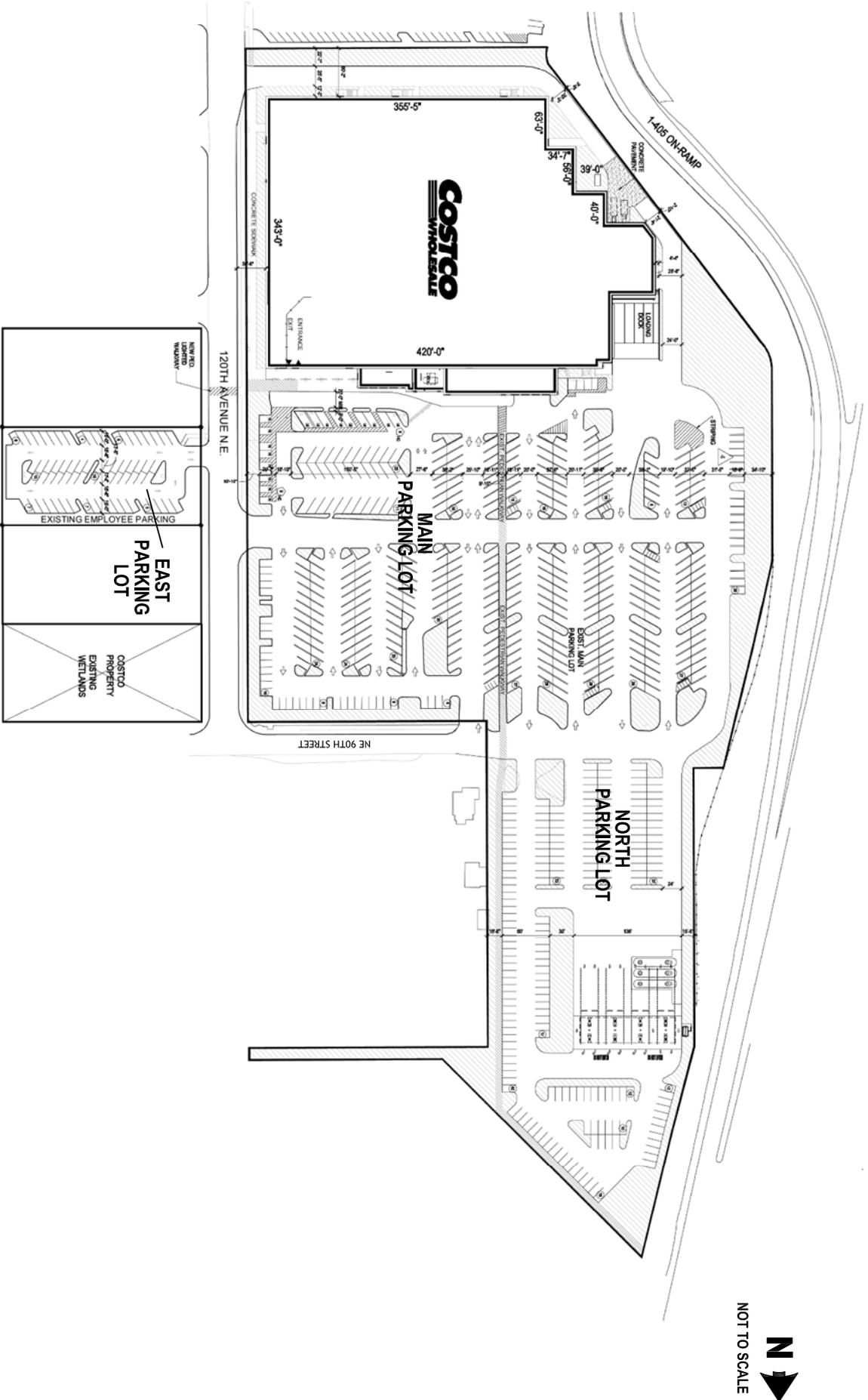


Figure 2

Preliminary Site Plan

Kirkland Costco Gas Station

Existing and Future Baseline Conditions

This section of the report documents the background conditions without the proposed project. It includes the existing conditions and forecast baseline (without-project) conditions for 2010, the year the proposed project is anticipated to be completed and occupied. The analysis of background conditions provides the basis by which the impacts of the proposed project are measured.

Existing Roadway Network

The primary roadways impacted by project-generated traffic are described below.

NE 85th Street is classified by the City of Kirkland as a principle arterial. It runs east-west from Downtown Kirkland east to the City of Redmond. Within the study area, it is a four-lane roadway with a curb and gutter on both sides. Near the intersections with 120th Avenue NE, 122nd Avenue NE, and 124th Avenue NE, the roadway has sidewalks on both sides. The posted speed limit is 35 mph.

NE 90th Street is classified as a collector by the City of Kirkland. It runs east-west from 128th Avenue NE to *Costco Wholesale*. Within the study area, it is a two-lane roadway with intermittent gaps in the sidewalk between 120th Avenue NE and 124th Avenue NE.

120th Avenue NE is classified as a collector by the City of Kirkland. In the study area, the roadway runs north-south from Lake Washington High School at NE 80th Street to *Costco Wholesale* at NE 90th Street. In the study area, the roadway has one lane in each direction with a center two-way left turn lane. There are sidewalks, curb, and gutter on the east side. The posted speed is 25 mph.

122nd Avenue NE is classified as a collector by the City of Kirkland. In the study area, the roadway runs north-south from NE 60th Street to NE 90th Street. In the study area, the roadway is two lanes, and there are sidewalks, curb, and gutter on the west side between NE 85th Street and NE 90th Street. The posted speed is 25 mph.

124th Avenue NE is classified as a principal arterial by the City of Kirkland. The roadway runs north-south from NE 60th Street north through the City of Kirkland. In the study area, the roadway has one lane in each direction with a center two-way left turn lane. The posted speed is 35 mph.

Traffic Volumes

Existing intersection turning movement counts were collected during a weekday PM peak hour in January 2008 for all six off-site study intersections and the three site-access driveways. The count data is provided in Appendix B. The existing counts were then rounded to the nearest five vehicles to account for day-to-day fluctuations. The resulting existing weekday PM peak hour traffic volumes are shown in Figure 3.

Future 2010 with-project traffic volumes were provided by City of Kirkland Staff based on future traffic projections derived from the City's travel demand model. The City's travel demand model takes into consideration future growth within Kirkland as well as surrounding communities such as Redmond and Bellevue. It also accounts for the traffic

generated by all pipeline developments in the City. Anticipated project traffic volumes were subtracted from the with-project volumes to determine future 2010 baseline traffic volumes. Figure 4 shows the 2010 baseline weekday PM peak hour traffic volumes at the study intersections.

Transportation Improvements

According to the *City of Kirkland 2008-2013 Capital Improvement Program (CIP)*, there are funded improvements scheduled for completion by the 2010 horizon year for the intersection of NE 85th Street and 124th Avenue NE. This improvement is part of the NE 85th Street Corridor Improvements and would include the addition of a second eastbound left-turn lane and extending the outside northbound receiving lane. As part of the NE 85th Street Corridor Improvements, improvements to sidewalks and pedestrian safety, illumination, signal interconnection, and midblock access management strategies are being evaluated to improve operations and safety along the corridor. There are no other improvements in the study area that are planned to be completed prior to the 2010 horizon year. As a result, the existing conditions at the other intersections were used for the future 2010 capacity analyses.

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Figure 3

Existing (2008) PM Peak Hour Traffic Volumes

Kirkland Costco Gas Station

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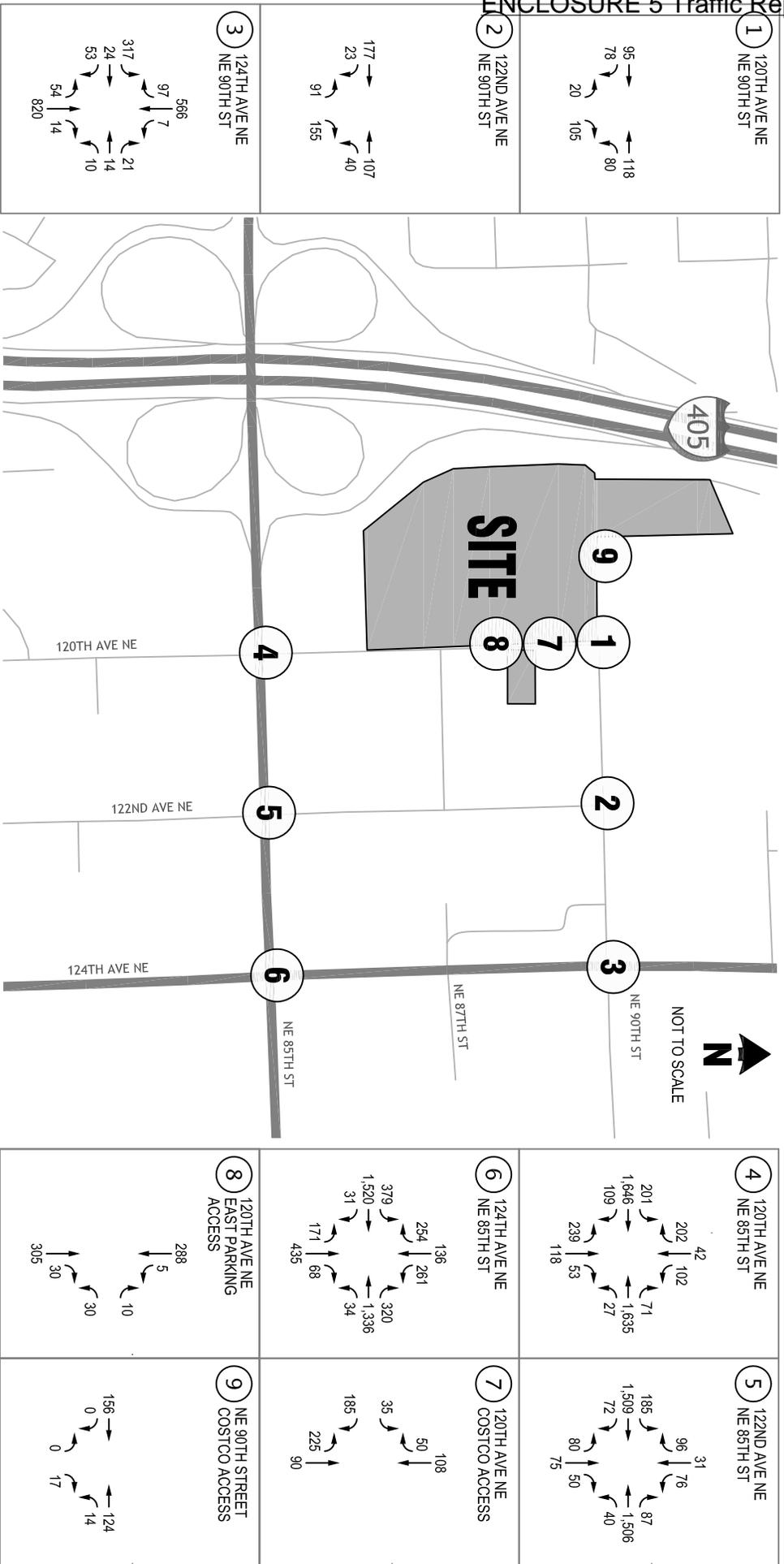


Figure 4

Baseline (2010) PM Peak Hour Traffic Volumes

Kirkland Costco Gas Station

Traffic Operations

This section summarizes traffic operations in the project vicinity under existing conditions and 2010 future baseline conditions. Traffic operations in the project vicinity are characterized through a level of service (LOS) analysis at the study area intersections. LOS is a widely applied analysis technique for measuring the quality of traffic flow through intersections and comparing the resulting traffic operations to adopted standards. Kirkland's adopted intersection LOS standard is LOS D or better. Based on the City's *Traffic Impact Analysis Guidelines* revised February 2004, the project would impact intersections operating at LOS E or F if it contributed to more than 15 percent of the total intersection traffic volume at an intersection operating at LOS E and more than 5 percent at an intersection operating at LOS F.

LOS values range from LOS A, which is indicative of free-flow conditions, to LOS F, which indicates extreme congestion and long delays. The LOS for each intersection was calculated using methodologies consistent with the *Highway Capacity Manual, 2000*. A more detailed description of the LOS criteria has been included in Appendix C. This methodology uses peak hour traffic volumes, intersection geometry, intersection control devices, and roadway characteristics as inputs to evaluate intersection operations. Table 1 shows the PM peak hour level of service results. Detailed LOS worksheets are included in Appendix D.

Table 1. Existing and 2010 Baseline Weekday PM Peak Hour LOS Summary

Intersection	Existing			2010 Baseline		
	LOS ¹	Delay ²	V/C ³ or WM ⁴	LOS	Delay	V/C or WM
<u>Unsignalized</u>						
NE 90th Street/120th Avenue NE	A	8.2	-	A	8.9	-
NE 90th Street/122nd Avenue NE	A	9.1	-	B	10.1	-
Costco Driveway/120th Avenue NE	B	11.8	EB	B	12.5	EB
East Parking Lot Driveway/120th Avenue NE	B	12.4	WB	B	13.0	WB
Costco Driveway/NE 90th Street	A	7.7	-	A	8.0	-
<u>Signalized</u>						
NE 90th Street/124th Avenue NE	C	20.2	0.70	C	33.1	0.88
NE 85th Street/120th Avenue NE	C	20.3	0.72	C	31.0	0.94
NE 85th Street/122nd Avenue NE	B	13.6	0.67	B	16.6	0.77
NE 85th Street/124th Avenue NE	D	38.7	0.84	D	48.1	0.93

1. Level 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 or approach reported for Stop-controlled intersections; worst movement not reported for all-way stop intersections.

As shown in Table 1, all of the study area intersections currently operate within the City's LOS D standard. It should be noted that intersection operations operate within acceptable standards but westbound vehicle queuing and congestion often occur on NE 85th Street due to the high traffic demand heading to I-405 from the Redmond area.

Analysis of 2010 baseline conditions (i.e., without the proposed project) shows that all intersections would continue to operate at LOS D or better. These calculations assumed the improvement at the NE 85th Street/124th Avenue NE intersection per the current City of Kirkland CIP.

Traffic Safety

Collision history for the most recent three-year period (2004-2006) was provided by the City of Kirkland. Collision analysis results can be found in Table 2. Typically, intersections experiencing an average rate of five or more collisions per year at an unsignalized intersection, and 10 collisions per year at signalized intersections or a rate of more than 1.0 accidents per million entering vehicles (MEV) are considered high accident locations (HAL). Table 2 summarizes the average number of accidents per year and the accident rate per MEV at the study intersections.

Table 2. Collision Analysis Summary

Intersection	Collision History				Average per Year	Collisions per MEV ¹
	2004	2005	2006	Total		
NE 90th Street/120th Street	1	0	0	1	0.3	0.24
NE 90th Street/122nd Street	0	0	0	0	0.0	0.00
NE 90th Street/124th Street	3	2	1	6	2.0	0.33
NE 85th Street/120th Street	2	1	4	7	2.3	0.17
NE 85th Street/122nd Street	7	3	2	12	4.0	0.32
NE 85th Street/124th Street	2	3	7	12	4.0	0.28

1. MEV = Million Entering Vehicles.

As shown in Table 2, none of the study area intersections are considered HALs as all of the collision rates per MEV are below 1.0.

Non-Motorized Facilities

Many of the streets within the study area provide sidewalks. This includes sidewalks along the west side of 120th Avenue NE, along the south side of NE 90th Street (west of 120th Avenue NE), on both sides of NE 85th Street, on both sides of 122nd Avenue NE, and intermittently along 124th Avenue NE. There is a lack of sidewalks and safe pedestrian routes to the east of 120th Avenue NE along NE 90th Street. The City has identified long term improvements in the City's CIP to install curb, gutter, and sidewalks along NE 90th Street, but no source of funding has been identified; therefore, it can not be predicted when these improvements would occur.

Push-button activated pedestrian crossings are provided at all signalized study intersections to provide safe crossings of the major streets in the study area. In addition, a mid-block pedestrian crossing with embedded lighting is provided across 120th Avenue NE between the existing Costco Wholesale and the east parking lot.

A pedestrian trail connection through the site provides a north/south connection from Slater Avenue NE to NE 90th Street and NE 85th Street.

Transit Service

Transit service in the area is provided by King County Metro Transit. The closest transit stops are southeast of the site near the intersection of NE 85th Street and 120th Avenue NE. These locations are served by:

- **Metro Transit route 230** provides daily service between Bellevue and Redmond with stops in Kirkland including the Kirkland Transit Center, Totem Lake, and the Kingsgate P&R. Typical headways are approximately 30 minutes on weekdays, and 60 minutes on Saturdays and Sundays.
- **Metro Transit route 238** provides daily service to Kirkland Transit Center, Lake Washington Technical College, Totem Lake, Kingsgate P&R, Finn Hill, Brickyard P&R, Bothell P&R, UW Bothell Campus, and Cascadia Community College. Typical headways are approximately 30 minutes on weekdays, and 60 minutes on Saturdays and Sundays.
- **Metro Transit route 248** provides daily service between Redmond and Avondale with stops in Kirkland including the Kirkland Transit Center. Typical headways are approximately 30 minutes on weekdays and Saturdays and Sundays.
- **Community Transit route 441** provides weekday service between the Edmonds P&R and Overlake. This service is offered twice during the AM peak period and twice during the PM peak period.

There are additional transit services slightly farther from the site near the intersection of NE 85th Street and 124th Avenue NE.

Project Impacts

This section of the report describes the characteristics of the project and identifies the potential transportation-related impacts associated with the proposed development. In order to establish project impacts, the results of the with-project analysis are compared to the 2010 baseline conditions analysis.

Costco Gasoline Characteristics

It is important to understand that *Costco Gasoline* fuel stations function as an ancillary use to Costco warehouse developments and are not like traditional gas stations. These gasoline stations are self-serve, only available to Costco members, and do not provide any other automotive services (auto repair) or sales (including food or convenience items).

Travel to and from Costco is unique because of membership requirements and the nature of Costco sales; this pertains to Costco warehouses, *Costco Gasoline*, and the interaction between the two. Some key characteristics of *Costco Gasoline* fuel stations are summarized below and a more detailed list of travel characteristics derived from studies conducted by Kittelson & Associates, Inc. has been attached.

- *Costco Gasoline* fuel stations are an ancillary use for the warehouses, and a large portion of trips generated by the site are shared between the two (this will be discussed further in the following Project Trip Generation section).
- The fuel stations are self-service and open to members only; fuel positions require inserting a Costco membership card.
- All payments are made at the fuel position with debit, American Express, or Costco cash card, accompanied by a Costco membership card. Cash is not accepted.
- The fuel stations do not offer other services, such as automotive care, food, or convenience items.
- The fuel stations are staffed by a minimum of one attendant, who is trained to help members operate the fuel pumps, direct entering vehicles to open fuel positions, and manage on-site queues and circulation.

Trip Generation

Since *Costco Gasoline* fuel stations have unique characteristics (described above), daily and weekday peak hour trip generation for the proposed Kirkland *Costco Gasoline* development was estimated based on a trip generation study conducted by Kittelson & Associates, Inc. specifically for this type of use. A memorandum titled “Trip Generation & Internal Trip Capture Rates for the Costco Gasoline” summarizes these results and has been included in Appendix E.

The trip generation rates calculated in the Kittelson & Associates, Inc. study were based on data collected at 24 representative Costco facilities in California, Arizona, New

Mexico, and Washington. The studies documented total fuel station trip generation rates, internal trip capture between the fuel station and the warehouse, and pass-by and diverted link trip capture from the surrounding street system. Costco fuel stations are a specialized land use that can not be adequately represented by generalized land uses found in standard reference manuals, such as the ITE *Trip Generation*, 7th Edition (2003). The most accurate way to estimate the trip characteristics of the proposed fuel station is to use data collected at other similar *Costco Gasoline* fuel station sites.

A key finding from the Kittelson & Associates, Inc. study is that approximately 54 percent of daily trips and 50 percent of weekday PM peak hour trips to and from *Costco Gasoline* fuel stations are internal capture trips. Internal capture trips accounts for those customers who patron both the warehouse and the fuel station in a single visit to a Costco site; each of these customers' visit accounts for only one vehicle trip to the site and on the surrounding transportation system. As such, the trip generation characteristics can not be accurately estimated for a *Costco Gasoline* fuel station without the inclusion of estimated internal trips between the existing warehouse and the proposed fuel station. ITE trip generation rates do not account for internal trips.

The trip generation numbers presented in the table are vehicle trip ends, meaning that each vehicle to the site accounts for two trip ends (one inbound trip and one outbound trip).

Table 3 summarizes the estimated trip generation for the proposed Kirkland *Costco Gasoline* development.

Table 3. Estimated Project Trip Generation

	Size	Weekday Daily Trip Ends		AM Peak Hour Trip Ends		PM Peak Hour Trip Ends		Saturday Peak Hour Trip Ends	
		Percent	Trip Ends ¹	Percent	Trip Ends	Percent	Trip Ends	Percent	Trip Ends
Costco Gasoline fuel station	16 fuel positions		2,775		365		390		410
Internal Trips		54%	(1,500)	0% ²	(0)	50%	(194)	60%	(245)
Total External Trips			1,275		365		196		165
Pass-by Trips		24%	(305)	58%	(215)	24%	(46)	29%	(50)
Net New Trips			970		150		150		115

Source: Kittelson & Associates, Inc. (2005)

1. Two trip ends equals one vehicle inbound and outbound.
2. Costco warehouse is not open during the AM peak hour.

As shown in Table 3, the proposed Kirkland *Costco Gasoline* development is expected to generate about 970 net new daily trips, with 150 trips occurring during the PM peak hour (75 entering trips and 75 exiting trips).

It should be noted that with the proposed opening of the Bellevue and Redmond Costco stores, it is anticipated that existing attendance levels and associated traffic is anticipated to decline by 15 to 20 percent with the opening of each store. This reduction is anticipated to be more than that generated by the addition of the Gasoline fueling

station. As a conservative approach, these reductions were not accounted for in evaluating the traffic impacts from the Gasoline fueling station.

Trip Distribution and Assignment

Traffic associated with the Kirkland *Costco Gasoline* project was distributed to the surrounding roadway network based on the City's travel demand model and concurrency analysis. Figure 5 summarizes the generalized distribution patterns with the detailed traffic model distribution output provided in Appendix F. The anticipated net new PM peak hour trip generation for the development was then assigned to the study intersections based on these distribution patterns, as illustrated in Figure 6.

Traffic Volumes

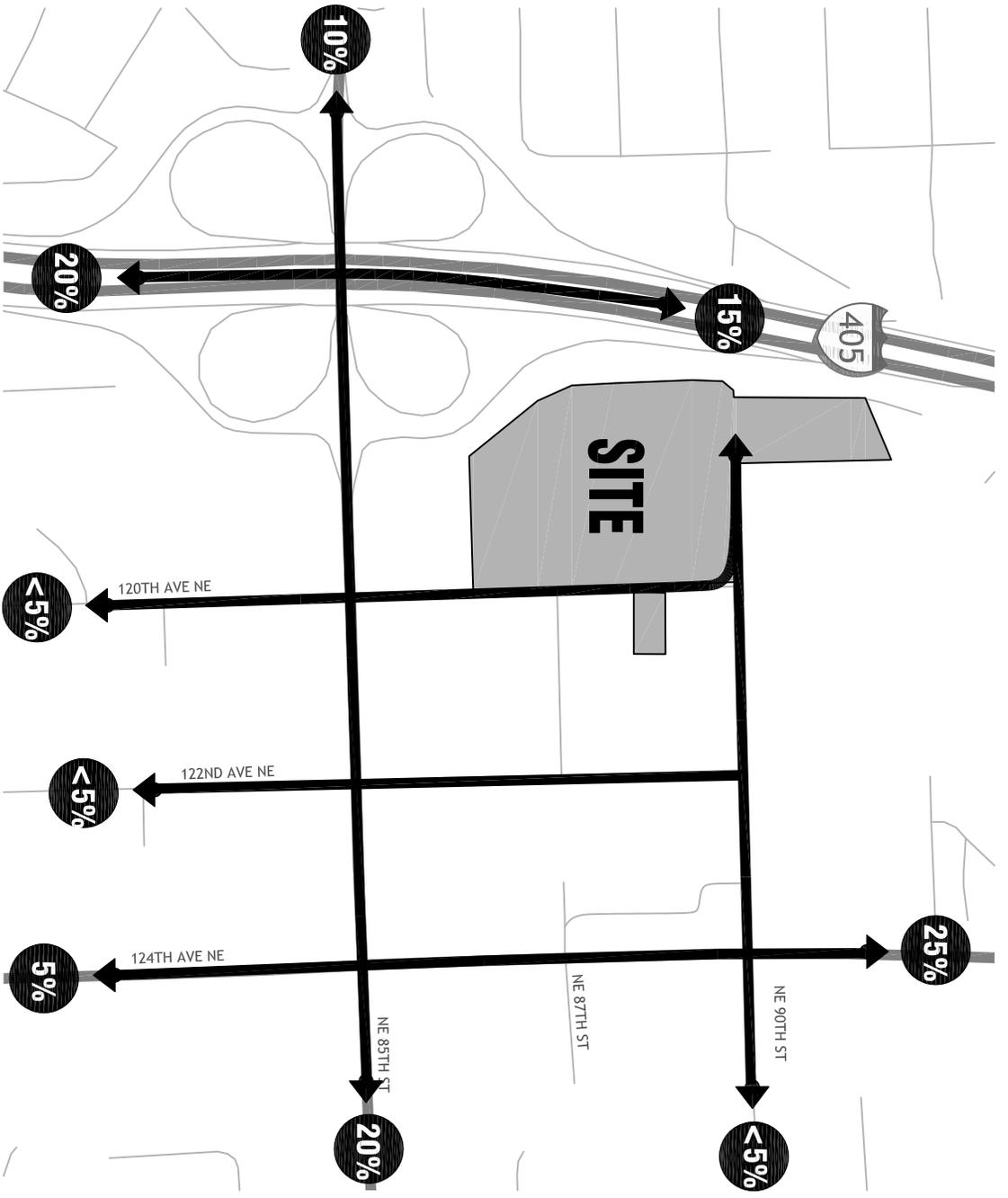
The City of Kirkland provided the 2010 with-project PM peak hour traffic volumes summarized in Figure 7. Table 4 provides a summary of project traffic at each study intersection, and the percent impact upon future traffic volumes.

Table 4. Traffic Volume Impact – Weekday PM Peak Hour

Study Intersection	2010 With-Project Volume	Project Traffic	Percent Impact
NE 90th Street/120th Avenue NE	692	196	28.3%
NE 90th Street/122nd Avenue NE	685	92	13.4%
NE 90th Street/124th Avenue NE	2,056	59	2.9%
NE 85th Street/120th Avenue NE	4,550	105	2.3%
NE 85th Street/122nd Avenue NE	3,849	42	1.1%
NE 85th Street/124th Avenue NE	4,985	40	0.8%

Source: The Transpo Group, 2008

As shown in Table 4, project-related traffic will account for less than 3 percent of the total weekday PM peak hour traffic volumes at the intersections along NE 85th Street and 124th Avenue NE. Project impacts will be greatest at the NE 90th Street/120th Avenue NE and NE 90th Street/122nd Avenue NE intersections in terms of percent impact due to close proximity to the project and the relatively low volumes that currently utilize these adjacent streets.

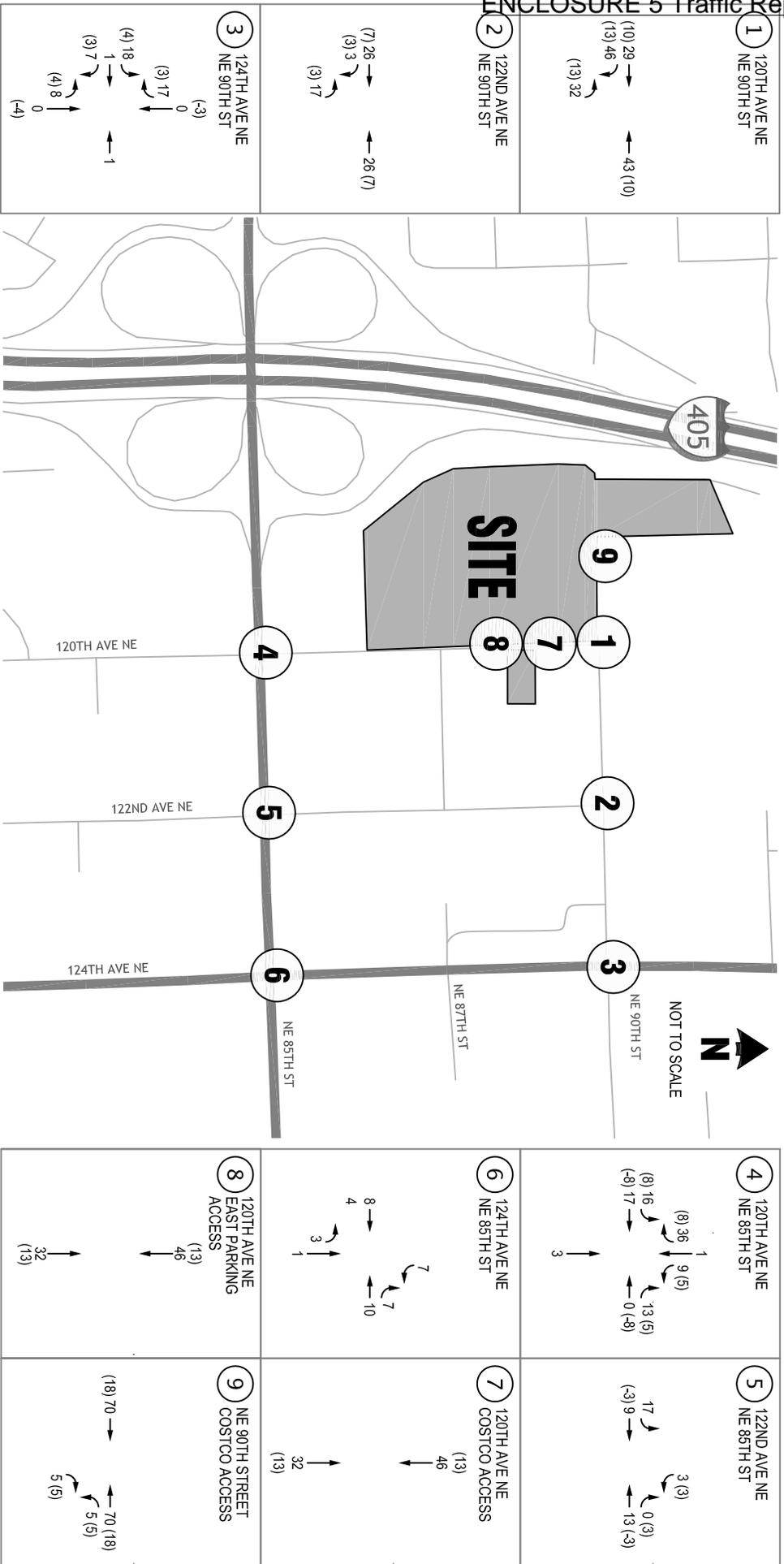


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Figure 5
Project Trip Distribution

Kirkland Costco Gas Station

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LEGEND
 X = NET NEW PROJECT TRIPS
 (X) = PASS-BY TRIPS

Figure 6
 Project PM Peak Hour Trip Assignment
 Kirkland Costco Gas Station



ENCLOSURE 5 Traffic Report

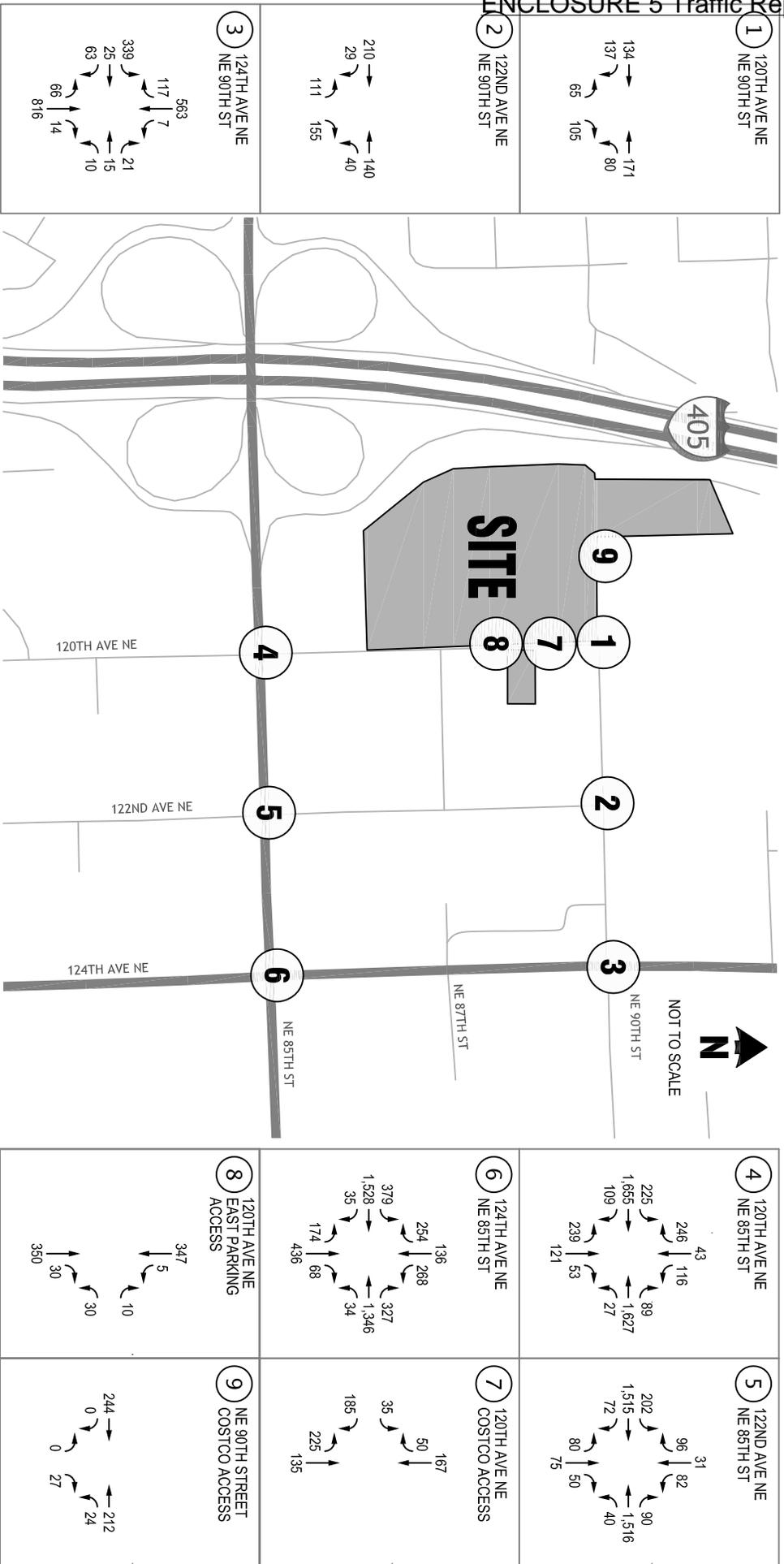


Figure 7

With Project (2010) PM Peak Hour Traffic Volumes

Kirkland Costco Gas Station

Traffic Operations

LOS analysis was conducted at the study intersections for 2010 weekday PM peak hour with-project conditions. The results of the with-project analysis were compared to the results of the baseline analysis to identify the potential impacts of the proposed project. The results of the analysis are summarized in Table 5.

Table 5. 2010 Baseline and With-Project Weekday PM Peak Hour LOS Summary

Intersection	2010 Baseline			2010 With-Project		
	LOS ¹	Delay ²	V/C ³ or WM ⁴	LOS	Delay	V/C ³ or WM ⁴
<u>Unsignalized</u>						
NE 90th Street/120th Avenue NE	A	8.9	-	B	10.5	-
NE 90th Street/122nd Avenue NE	B	10.1	-	B	11.2	-
Costco Driveway/120th Avenue NE	B	12.5	EB	C	15.6	EB
East Parking Lot Driveway/120th Avenue NE	B	13.0	WB	C	17.6	WB
Costco Driveway/NE 90th Street	A	8.0	-	A	9.1	-
<u>Signalized</u>						
NE 90th Street/124th Avenue NE	C	33.1	0.88	C	34.5	0.90
NE 85th Street/120th Avenue NE	C	31.0	0.94	C	34.9	0.95
NE 85th Street/122nd Avenue NE	B	16.6	0.77	B	17.4	0.76
NE 85th Street/124th Avenue NE	D	48.1	0.93	D	48.6	0.94

Source: The Transpo Group, 2008

1. Level 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 or approach reported for Stop-controlled intersections; worst movement not reported for all-way stop intersections.

As shown in Table 5, the LOS at all of the study intersections will remain at acceptable levels. However, the proposed project is expected to degrade the LOS at the NE 90th Street/120th Avenue NE and NE 90th Street/122nd Avenue NE intersections from LOS A to LOS B. It will also degrade operations at the Costco Driveway/120th Avenue NE and the east parking lot driveway/120th Avenue NE intersections from LOS B to LOS C for the worst movements.

The City requires that project's mitigate their impact to intersections operating at LOS E when the project's proportionate share exceeds 15 percent. For LOS F intersections, the City requires that project's mitigate their impacts when the project's proportionate share exceeds 5 percent. Because the study intersections all operate at acceptable levels of service (LOS D or better) with the proposed project, no project mitigation is required.

Neighborhood Cut-Through Traffic

Cut-through traffic typically occurs when it is more convenient and faster to cut through neighborhoods than it would be to drive on the City's collector and arterial streets. The amount of traffic generated by the *Costco Gasoline* fueling station is not expected to exacerbate congestion along the NE 85th Street corridor to the point where it would encourage drivers to cut through the neighborhoods going to or leaving the fueling station. It should be noted that NE 90th Street east of 124th Avenue NE has speed

humps installed that deter this as a cut-through street. In addition, the City is currently designing improvements along the NE 85th Street corridor that include access management, signal priority/optimization, and turn lanes that will improve the flow of traffic along this corridor, which will minimize the desire to use local neighborhood streets as cut-through routes.

In the immediate vicinity of the site, NE 90th Street, 120th Avenue NE, and 122nd Avenue NE are classified as collector streets north of NE 85th Street and west of NE 124th Street and will be utilized the most by patrons of the fueling station. These streets are designed to accommodate the additional traffic flows, and the City would unlikely allow neighborhood traffic calming measures to be installed on these streets.

Fuel Station Queuing

The preliminary site plan for the proposed Kirkland *Costco Gasoline* fueling station provides queuing storage for approximately 48 vehicles. Costco's experience with these facilities has shown that typical queuing at the gasoline fueling station is between 15 to 25 vehicles during the peak periods. Maximum queuing can reach between 30 and 40 vehicles depending on arrival patterns and patrons' efficiency when filling up their vehicles. The site has been designed to accommodate typical peak conditions and in the unusual event that the queue exceeds the storage, the additional vehicles would spill-over into the adjacent, on-site drive aisles and would not impact operations of adjacent City streets.

Transportation Concurrency

A transportation concurrency test was completed for this project by City of Kirkland staff on January 28, 2008. The proposed project passed the concurrency test based on the project having a fuel station with 16 fuel positions. The concurrency test results are shown in Appendix G.

Site Access

There are three site access driveways at the *Costco Wholesale*. There are two site access driveways off of 120th Avenue NE (one leading to the main parking lot and the other leading to the east parking lot), and an access via NE 90th Street. The NE 90th Street access would provide the primary access to the fueling station. This section discusses the proposed site access operations.

Intersection Operations

The site access driveways on 120th Avenue NE will degrade from LOS B to LOS C at the worst movements, and the all-way stop access via NE 90th Street will operate at LOS A with the proposed project. It is expected that the exiting movements from the main parking lot and the east parking lot will experience some increased delays due to the increase in traffic related to the proposed gasoline fueling station. The LOS at all site access intersections would operate within acceptable levels.

Parking

Parking is currently provided in three parking areas referred to as the main lot, the north lot, and the east lot. The main parking lot currently is located immediately north of the store and provides 410 spaces (including 24 handicap spaces), the north parking lot is located north of NE 90th Street providing 230 spaces, and the east parking lot is located east of 120th Avenue NE providing 69 spaces, for a total supply of 709 parking spaces.

Parking demand for the existing site was evaluated through field observations during typical weekday and weekend conditions. This included data collection on a typical Thursday and Saturday in April 2008.

Based on observations, the east parking lot is the most highly utilized because of its adjacency to the Costco main entrance. This lot is typically used by both Costco employees and patrons. The project is being proposed in the north parking lot, where parking is furthest from the Costco main entrance and the least utilized.

Weekday Parking

Peak parking demand during the weekday occurs between 12:00 and 3:00 p.m. At this time, approximately 60 to 65 percent of the total parking supply was utilized.

During this time period, utilization in the main parking lot ranged between 75 and 85 percent, the east parking lot exceeded the supply, and the north parking lot was between 15 and 20 percent utilized. Specifically, the maximum utilization in the northern parking lot (where the Gasoline fueling station is proposed) occurred between 1:00 and 2:00 p.m. when approximately 17 percent of the supply was utilized.

Weekend Parking

Peak parking demand is busier during the weekend condition between 12:00 p.m. and 5:00 p.m. During these times the overall parking utilization ranged between approximately 75 and 85 percent full.

During the peak periods, the main parking lot was approximately 90 percent full and the east parking lot was over 95 percent full; patrons of Costco are often founding waiting for parking to become available in these parking lots that are closest to the warehouse entrance. The northern parking lot (where the Gasoline fueling station is proposed) was the least utilized of the three parking lots given the proximity to the entrance. The peak weekend demand in the northern parking lot occurs between 3:00 and 5:00 p.m. with approximately 75 to 80 percent of the parking utilized. At all other times during observations, utilization in the northern parking lot was less than 60 percent.

Table 6 shows the typical peak parking utilization during the weekday and weekend conditions.

Table 6. Existing Peak Parking Utilization for the Kirkland Costco Wholesale

Parking Lot	Supply	Weekday (2:00 to 3:00 p.m.)		Weekend (3:00 to 4:00 p.m.)	
		Observed Parked Vehicles	Percent Utilization ¹	Observed Parked Vehicles	Percent Utilization
Main Parking Lot	410	349	85%	361	88%
East Parking Lot	69	69	100%	71	103%
North Parking Lot	230	33	14%	181	79%
<i>Total</i>	<i>709</i>	<i>451</i>	<i>64%</i>	<i>613</i>	<i>86%</i>

1. Percent utilization is the number of parked vehicles relative to the parking supply

Project Impact on Parking

The proposed fuel station would be located in the north parking lot where parking is the least utilized. With the development of the *Costco Gasoline* fueling station, the north lot would be restriped to replace the existing angled spaces with 90 degree parking stalls. Providing 90 degree parking stalls allows for two way circulation aisles and minimizes the loss of parking stalls to 34 spaces. This would result in a new total of 196 parking spaces in the northern lot or 675 parking spaces overall.

Since the *Costco Gasoline* fueling station will not provide any other services or amenities than gasoline, the only added demand to parking would be from the one employee that would oversee the operations.

The impact from the net loss of 34 spaces and the increased demand from one employee would only impact the utilization of the northern parking lot. This would result in the peak weekday utilization increasing from 17 to 19 percent with ample parking being available.

During the peak weekend conditions (between 3:00 and 5:00 p.m.) the utilization of the northern lot would increase from between 75 and 80 percent to between 90 and 95 percent. Total parking utilization for the site would range between approximately 80 and 92 percent between 12:00 p.m. and 5:00 p.m. Table 7 shows the estimated peak parking utilization during the weekday and weekend with the addition of the fueling station and the resulting reduction in the parking supply.

Table 7. Estimated Peak Parking Utilization for the Kirkland Costco Wholesale with *Costco Gasoline*

Parking Lot	Supply	Weekday (2:00 to 3:00 p.m.)		Weekend (3:00 to 4:00 p.m.)	
		Parked Vehicles	Percent Utilization ¹	Parked Vehicles	Percent Utilization
Main Parking Lot	410	349	85%	361	88%
East Parking Lot	69	69	100%	71	103%
North Parking Lot ²	196	34	17%	182	93%
<i>Total</i>	<i>675</i>	<i>452</i>	<i>67%</i>	<i>614</i>	<i>91%</i>

1. Percent utilization is the number of parked vehicles relative to the parking supply

2. Includes the increased parking demand for one fueling station employee

In general, sufficient parking will be available during typical weekday and weekend peak periods. Parking management strategies that include having employees park off-site will continue to occur at the site during busy holiday seasons to reduce the potential increased parking demand. The hourly parking data collected in April 2008 is provided in Appendix H.

Frequently Asked Questions

What is the proposed development?

The proposed development would provide a *Costco Gasoline* fueling station with 16 fueling stations in the northern parking lot as an ancillary use to the Costco Warehouse.

How many additional PM peak hour vehicle trips will the proposed project generate?

The gasoline fueling station is an ancillary use to the Costco warehouse with approximately half of the traffic originating from existing patrons of the warehouse and approximately a quarter of the traffic originating from vehicles that would normally be passing by the site on NE 85th Street or 124th Avenue NE. This results in a net new trip impact of approximately 150 trips occurring during the weekday PM peak hour (75 entering trips and 75 exiting trips).

Will the study intersections operate at acceptable levels with the development of the project?

The levels of service at all of the study intersections would operate at an acceptable LOS D or better with the addition of project traffic.

Did the project pass the City's Transportation Concurrency test?

The City of Kirkland conducted a concurrency test, where the project passed concurrency, concluding that increased traffic impacts from the project would be concurrent with the level of transportation improvements planned for the system.

Will the project install any traffic calming devices or create any cut-through traffic in the adjacent neighborhoods?

The project will increase traffic volumes on NE 90th Street, 120th Avenue NE, and 122nd Avenue NE west of NE 124th Avenue NE and north of NE 85th Street. These roadways are classified as collector streets and are designed to accommodate the additional traffic demand. The City would unlikely allow neighborhood traffic calming measures to be installed along these roadways.

The amount of cut-through traffic in adjacent neighborhoods is anticipated (such as along NE 90th Street east of 124th Avenue NE) is anticipated to be minimal. NE 90th Street east of 124th Avenue NE already has traffic calming measures, including speed humps, to deter cut through traffic. In addition, the City is currently designing improvements along the NE 85th Street corridor that include access management, signal priority, and additional turn lanes that will improve traffic flow along this corridor and minimize the desire for drivers to cut-through local neighborhoods.

Will queuing at the fueling station spill into City streets?

The facility is designed to accommodate approximately 48 stacked vehicles, which will meet the typical peak conditions. If in an unusual event this is exceeded, vehicles will be able to queue on-site along the adjacent drive aisles and will not spill over onto neighborhood streets.

Will there be enough parking on-site to accommodate the typical peak demands?

The project is being proposed in the northern parking lot where parking is furthest from the store and least utilized. The development will result in restriping the stalls in the northern parking lot to 90 degree spaces to provide two-way drive aisle circulation and minimize the loss to 34 spaces. This will result in a total supply of 675 spaces, which will meet the typical peak parking demands for the entire site.

What is being proposed to mitigate the projects traffic impacts?

With the development of the proposed *Costco Gasoline* fueling station, some additional traffic will be added to the adjacent roadway network, but all of the study intersections would operate within acceptable standards. This additional traffic volume is not high enough to trigger any intersection operational issues and do not warrant any off-site transportation improvements based on the City's methodology for identifying mitigation. The project will be required to pay the City's traffic impact fees, which will go toward planned transportation improvements within the City.

Through several community meetings and input from the local neighborhoods, Costco recognizes that the community has a real emphasis toward pedestrian safety and mobility. It is also understood that there is a lack of pedestrian connections to the east of 120th Avenue NE along NE 90th Street and that Costco and the community would benefit from the development of pedestrian improvements in the area. Costco is volunteering to improve pedestrian safety and mobility by installing sidewalks along some of the critical gaps, a new pedestrian crossing, and contributing to a future trail head. These items are described in more detail below:

Sidewalk Improvements

The following sidewalk improvements are being proposed by Costco:

- 120th Avenue NE – along the east side of the street between NE 90th Street to the south side of the east parking lot.
- NE 90th Street – along the south side of the street from 120th Avenue NE connecting to the sidewalk along the frontage of the Digio development.
- NE 90th Street – along the south side of the street from 122nd Avenue NE to 123rd Lane.

These connections will provide for the needed pedestrian connection along NE 90th Street from 120th Avenue NE and 124th Avenue NE, which is currently identified as part of the City's unfunded CIP project titled NE 90th Street Sidewalk (Phase II).

Pedestrian Crossing

A new north/south pedestrian crosswalk will be painted across NE 90th Street just east of 122nd Avenue NE to provide an improved crossing that can be used to access the Rose Hill Presbyterian Church.

Contribution to a Future Trail Head

Costco will provide \$10,000 to the City of Kirkland to establish a future trail head in the vicinity of NE 90th Street/120th Avenue NE to provide access to Forbes Lake, which is located northeast of the Costco Warehouse.

The City Council,
City of Kirkland

Re.: Costco's Proposed Gas Station

Costco's neighbors have been negotiating with City staff regarding the proposed gas station. Our main concern is that Costco's proposal is cutting in line. A long-standing storm-water problem needs to be addressed before we look at potential problems with the gas station. The Planning Department suggests that it is unrelated to the gas station and wants the proposal on a fast track towards approval in December. It amounts to an end run around ongoing negotiations.

Contrary to the planners' opinion, the storm-water problem is very much related. Due to neglected maintenance of the City's storm-water system, the water table near NE 90th Street is now 5-feet higher than it was before Costco's warehouse and parking lot went in. FIVE FEET!! Storm water flows across private properties and the staff effectively dictates that the resulting disaster be labeled wetland.

We do not know what the problems with the gas station will be. But once it is in place, twenty years of experience assures us that we will get no help in solving them from the City. The City Council told the staff to enter negotiations with Costco's neighbors. The staff member who set them up also represents the City there and it happens to be the same person who has stopped all previous attempts to solve the storm-water problems.

The City must stop using storm-water to deprive us of our land-use rights. Negotiations are give-and-take propositions but if the City locks up our land-use rights, we have nothing to bring to the table. The proceedings become dictation.

We need to put an end to the environmental disaster. There are better ways of protecting the environment than unjustified labeling of private properties as wetland.

Our representatives must free us to be partners with Costco and City staff in working out an acceptable plan for the area.

- 0 -

One handout discusses "A Setback for the Environment" and another shows ways of "Reducing the Environmental Footprint".

Odd Hauge
11844 NE 90th Street

(Impact09, 8-4-2008)

Submitted to City Council 8-5-08

The Council,
City of Kirkland

Re.: A Setback for the Environment

The environment suffered a setback when Adolfson Associates were given a monopoly on wetland determination. Unfortunately, the monopoly tempts them to keep finding wetland because that secures their income. The environment and landowners takes second and third place. By now, you would think the Everglades had moved to Kirkland. (The Watershed Company has now replaced Adolfson with the monopoly on wetland determination intact.)

Under "Limitations", Adolfson Associates explain that "delineation of wetland boundaries and functional value assessments are inexact sciences" and recommends that "this wetland study be verified with the appropriate regulatory agencies as soon as practical." They do not mention that their monopoly makes them the regulatory agency.

Landowners in Kirkland they have the same chances of freeing themselves from accusations of "wetland possession" as they would if they were suspected of witchcraft. We all want to protect the environment; we just do not want the staff to assume imperial powers and decide which properties to take and whether of not the owners will be compensated.

An internal memo from the Director to the City Manager dated January 25, 2006 excuses the City from maintaining a storm-water system as well as from compensations. It states: "Small normally dry streams high in the watershed such as this one have substantial influence over water quality lower in the watershed." The memo continues: "Because an upstream open-channel portion of the stream has been classified, that same classification or greater will apply to downstream sections of the stream."

Of course, the Public Works Department cannot touch a stream!

Today, 100-times more water crosses the NE 90th Street than in the past. It carries large amounts of roadway debris containing toxic elements that have plugged all channels to Forbes Lake - resulting in permanent flooding. One hundred parts of polluted storm water now mixes with one part of stream water and you do not have to be especially talented to figure out that it is the storm water that influences the stream water and not the other way around! The City Council needs to have a chat with Public Works so it will get off its high horse.

Who made the "such-as-this-one" decision anyway?

The memo goes on to circumvent the "takings clause" by stating: "If the City explores this option, then the City must be clear that it is exploring acquisition of the properties for conservation purposes and not for the purpose of resolving legal claims that the property owners may believe they have against the City. The City Attorney's Office is familiar with the history of these properties and is of the opinion that the presence of wetlands on the properties does not constitute a compensable taking. The fact that the properties would be acquired for conservation purposes must be taken into account when negotiating an appropriate purchase price."

Has the City Council put the Public Works Department in charge of interpreting the Constitution of the United States?

We have complained to no avail. Various City Councils have reacted as the authorities did when Galileo presented evidence of moons around Jupiter. It was not until John Paul II that they became official. By that measure, it could take a while before elected officials change policies to be in line with federal and state regulations. We do not want to be outlived by another epic time delay; it is time to conduct a public hearing where the City's Environmental Stewards must defend themselves in front of the City Council. Otherwise, they will continue to ignore a substantial amount of evidence that they are wrong.

A gas station will increase the City's income but income is not the elephant in the room; it is money the City owes - roughly between 50 and 200-million. Those of us who have been trampled by the no-compensation elephant would like to remove the blinders from the rest so all can see the beast clearly.

Odd Hauge,
11844 NE 90th Street

Reducing the Environmental Footprint

1. Reduce Local Automobile Use

All attempts to ease congestion leads to bigger roads and more congestion. It is a vicious cycle but many of us depend on it for a living so it is difficult to slow it down. We need attractive alternatives to the automobile that do not aim to eliminate it. An automobile add a couple of tons to be moved when you pick up a six-pack at the grocery store. It is not energy efficient at all.

A person on a bicycle moves more pounds farther for less energy than any other mode of transportation. Vehicle-free bicycle, pedestrian, and wheel chair attract people. Why not start a trail system on the City's right-of-way between NE 90th Street and Slater Ave NE? It can be connected to Woodland Park, extended into the neighborhoods to the north and to 85th Street to the south. Would you take offence if some had the option of getting to Costco or nearby businesses on a bike or in a wheel chair - without encountering an automobile?

Monorail, and light rail do not have to slow down at intersections. Instead of eliminating the Renton-Snohomish railway, it should be converted to a double-track light rail system connecting us to Seattle. It will drain traffic off the roads and leave more room for others who still must drive.

The City must take the initiative and restore dignity to foot-power.

2. Make Buildings Greener

Buildings consume vast amounts of energy and they, along with their parking lots, interrupt the process of returning precipitation directly to the atmosphere. Only 1% of rainfall in Western Washington ends up in streams if there are no impervious surfaces. Asphalt sends 100% of it toward streams. If you do the calculation, you will find that when the watershed above NE 90th Street has 50% asphalt, storm-water flow is 100-times larger than the original stream flow.

Switzerland has just passed a bylaw which states that new buildings must be designed to relocate the green space covered by the buildings footprint to their roofs – even existing buildings – including historical buildings – must now green 20% of their rooftops. By moving the landscape up on top, you maintain evapotranspiration and keep buildings cool in the summertime. What if Costco's existing warehouse had been designed to support a green house? Roof-tops without gardens are ecological wastelands; Chicago instead uses roof-tops to increase its "lung-capacity".

We must install rooftop gardens and perhaps an array of solar panels. Extra insulation reduces energy consumption. Excess storm water can be used for evaporative cooling and that also saves energy. Heat pumps and geothermal power are proven technologies that have been underused because of inexpensive power.

3. Consider Storm Water to Be a Resource

The watershed above NE 90th Street produces runoff that can be treated, stored, and used in a number of ways. The City must not over-restrict catchments. Storm-water flow is now 100-times larger than the original flow due to asphalt.

In addition to flow problems, roadway debris containing toxic elements has filled all natural and artificial channels and water now proceeds over land. The City simply uses private land to filter storm water

before it runs into Forbes Lake. The practice is detrimental to the environment and property owners consider it to be trespassing. We can do better than that.

4. Design People-Friendly Buildings

The Digeo building is nice but most of us would never think of walking in there. Buildings have "attitudes" and some, like those at Park Place and Costco's warehouse structure, "invite" you in.

Underdeveloped land near Costco can support 3 separate buildings. They ought to have "welcome mats" such as barber shops, good restaurants, etc. on the first floor, offices for medical/dental clinics etc. on the second floor, and apartments above that. A day-care center would be handy and a cafeteria in the middle of a rooftop garden can serve lunch in a setting with a view.

Whether you work in one of those buildings or just visit, it would be nice to have the option of leaving the automobile at home.

5. Create a Network of Automobile-Free Trails

The area at the South end of Forbes Lake could have been a nice park except the City has rendered it useless by trucking out enough dirt in attempt to let water from Forbes Lake swamp it. It was an Adolfsen-delineated wetland that the owner could not touch. It did not fit the definition of wetland except Adolfsen Associates decided it was. "Alleged" wetland in the path of I-405 has now been "moved" there by removing the upper landscape. We can now admire forlorn phone-poles-in-the-rough with eagle bars on top. It is not much of a trade for a first-class picnic area.

Disasters aside, the City has enough land for a 60-Ft wide park with a walkway that can be connected to Woodland Park via a tunnel under 124th Ave NE. The trails can be extended into the neighborhoods.

6. Create a Stream

A storm-water treatment facility can be designed to store water from the rainy season for use later. It can be used for watering, evaporative cooling of buildings and anything else - except dumping it into a stream.

No stream runs from NE 90th Street to Forbes Lake today. If we want one, we will have to make it. Five horsepower will pump enough water from the lake to near the intersection of NE 85th Street and 122 Ave NE. It will create a reasonable flow for a stream that, with some goodwill on the part of landowners, can snake along their property lines with a pedestrian trail alongside it. The stream will appear to carry more water if we create a series of shallow pools with low waterfalls between them. The arrangement will aerate the lake.

Summary

We can win one for the environment.

Odd Hauge
11844 NE 90th Street

1. Not long ago we adopted the NE 85th St. Corridor Plan....now we are being asked to make a major change at the expense of local residents.
2. This piecemeal change limits the overall character and development for other nearby properties.
3. This change intensifies development in an area where infrastructure is already inadequate...just ask your Planning Dir, Public Works Dir. and City Attorney and Costco's Attorney what they saw on our recent tour of the area.
 - a. drains working in reverse
 - b. dangerous shoulders on both sides of 90th
 - c. complete flooding of residential lots that were once a retail garden center at 120th & 90th
4. Costco's traffic studies have not been independently verified....local citizens who drive and walk on these streets, laugh at the claims being made.
5. The ideal solution would be to follow the drainage schematic we neighbors designed with professional engineers at the request of City and Mediator. When completed this **Forbes Creek Restoration** will allow the land to be returned to pre-annexation condition and thereby realize the current Commercial Zoning which provides greater revenue to the City of Kirkland. This project would also:
 - a. Create the desired park lands as requested by C of K for the city to purchase.
 - b. Allow Mr. Hauge to develop a mixed use project (more tax revenue)
 - c. Allow Costco to own and control 3 adjacent lots on 120th and install their gas station there, much closer to 85th (desired by current zoning and keep auto-service traffic out of the neighborhood)
 - d. With these three lots for a gas station, traffic could access from both 90th and 120th

We love Costco and Kirkland, but not enough to give up our property to a TAKING

Respectfully submitted: Mike Nienaber, 7829 NE 14th St. Medina, WA on behalf of our family estate at 8734 120th Ave. NE. Kirkland, WA 98033 8/5/08

Submitted to City Council 8-5-08