



KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

101 S Capitol Boulevard, Suite 301, Boise, ID 83702 P 208.338.2683 F 208.338.2685

MEMORANDUM

Date: December 2, 2016 Project #: 13092

To: Kim Katz, Costco Wholesale

From: Chris Tiesler & Sonia Hennum Daleiden, PTOE

Project: Novato Costco Gasoline Addition

Subject: Costco Gasoline Fuel Station Transportation Characteristics

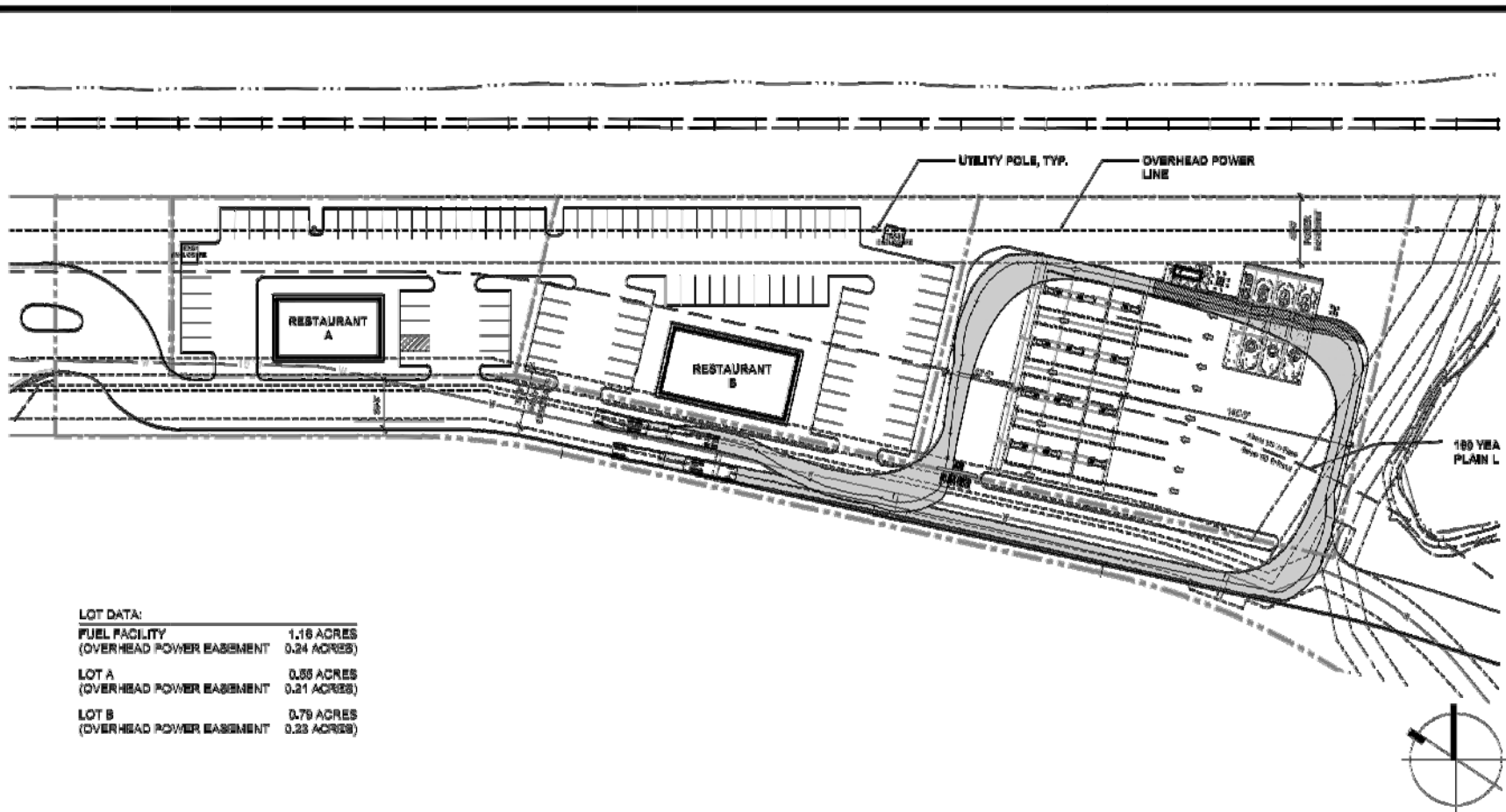
cc: Mike Dabrota, Northwest Atlantic Partners

As requested, Kittelson & Associates, Inc. (KAI) has prepared a trip generation estimate for the proposed Costco Gasoline fuel station addition near the existing Costco warehouse in Novato, California. Costco is proposing to add a 24 vehicle fueling position fuel station as an ancillary use to their existing warehouse in Novato. The Costco Gasoline fuel station addition is proposed to be located in the north corner of the proposed Hanna Ranch development, just south of the Rowland Boulevard/Vintage Way intersection. Figure 1 provides the proposed Costco Gasoline fuel station site plan. There is an existing approved EIR for the Hanna Ranch development but it did not specifically assume a Costco Gasoline fuel station as part of the land uses. This memorandum provides documentation of the expected trip generation and trip characteristics for the proposed Costco Gasoline fuel station.

APPROVED DEVELOPMENT

The approved EIR for the Hanna Ranch development assumed transportation impacts for an expected mix and intensity of land uses. The Hanna Ranch development EIR assumed primarily retail and office use throughout the site.

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LOT DATA:

FUEL FACILITY	1.18 ACRES
(OVERHEAD POWER EASEMENT)	0.24 ACRES
LOT A	0.55 ACRES
(OVERHEAD POWER EASEMENT)	0.21 ACRES
LOT B	0.79 ACRES
(OVERHEAD POWER EASEMENT)	0.23 ACRES

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MULVANNY G2
ARCHITECTS

1110 118TH AVE. #100 | SUITE 200
BILLINGS, MT. | 59004
1-406-466-3300 | F-406-466-8008

NOVATO, CA 94-1530-16
300 VINTAGE WAY PM: SB
FEBRUARY 17, 2014

P11.31A

**PROPOSED SITE PLAN
NOVATO, CALIFORNIA**

COSTCO GASOLINE TRIP GENERATION ESTIMATE

For the past 15 years, Kittelson and Associates, Inc. (KAI) has maintained a database of traffic data and travel characteristics for Costco Wholesale. The database contains transportation information such as trip rates, trip type percentages, and parking demand for Costco locations in the United States as well as Canada and Mexico. The database is updated and refined each time new Costco traffic counts or information become available to KAI. In order to best evaluate the anticipated transportation characteristics of the proposed fuel station addition to the existing Costco in Novato, California, the Costco database was used to develop the trip generation estimate since it provides use-specific data that most accurately represents the anticipated traffic characteristics of the unique development type.

Evaluating the transportation-related impact of the Costco Gasoline addition in Novato requires special consideration as there is an existing Costco warehouse that has been in operation for several years. As such, the site vicinity currently generates traffic based on the existing Costco development's characteristics, market, and Costco membership base. In evaluating the fuel station addition, it is essential to isolate out the new uses and characteristics of the project as these are the elements that will effect trip generation. Costco Gasoline fuel stations all function as ancillary uses to the main Costco warehouses. The fuel stations are only available for members and require a Costco membership card to activate the pumps for dispensing gasoline. Payment can only be made with credit card and, unlike traditional gas/service station operations, there are no other automotive services (such as repairs) or other type of sales (including food or sundries) associated with the Costco Gasoline facility. All Costco Gasoline facilities have a minimum of one attendant working at all times who is responsible for expediting members' use of the fuel pumps, directing entering vehicles to open pump locations, and managing on-site queues from the pumps.

The Costco transportation data base contains a large quantity of data related to Costco Gasoline fuel stations. Trip generation rates and trip type information for over 35 Costco Gasoline facilities located throughout the U.S. are included. Costco has invested significant effort into developing this use-specific trip generation database for both their warehouses and their fuel stations because of the unique characteristics of Costco customer travel that exist due to membership requirements and the nature of Costco sales. These unique elements apply to the trip generation for Costco warehouses, Costco Gasoline fuel stations, and the interaction of trips between the two.

Costco Gasoline Trip Characteristics

The data collected at existing Costco Gasoline sites indicate the trip generation characteristics described below for internal trip capture between the fuel station and the warehouse, as well as pass-by trip and diverted capture from the surrounding street system. The unique nature of Costco operations and its membership requirements result in different trip characteristics than those observed at the standard fuel stations summarized in the ITE Trip Generation Manual. The percentage of pass-by or diverted trips at Costco fuel stations is considerably lower than that quoted

in the ITE manual for typical fuel stations. Correspondingly, membership requirements also have a significant effect on trip internalization (or sharing of trips) between the warehouse and the fuel station. Fewer people exclusively visit a Costco fuel station (in comparison to a typical standalone station) because they have another primary purpose for visiting the site (that being a trip to the warehouse).

Internal Trips

A key finding from the studies conducted at Costco facilities is the fact that approximately 34% of the PM peak hour trips and 35% of the Saturday midday peak hour trips to and from Costco fuel stations are internal capture trips. Internal capture trips account for those members who patronize both the warehouse and the gasoline pumps during a single visit to the Costco site. As such, although they account for a trip to both the warehouse and the fuel station, they only account for one overall vehicle trip to the site and on the surrounding transportation system. Based on studies including surveys at Costco fuel stations and membership card transaction data, on average 34% of the members buying gas during the weekday p.m. peak hour and 35% of members buying gas during the weekend peak hours are members whose main purpose to the site is to visit the Costco warehouse. At some sites this number ranges as high as 75% but for the purposes of conservative analysis the average estimate is typically used.

Pass-by Trips

Another key trip characteristic that must be considered is that of pass-by trip capture. Pass-by trips represent members (and trips) that are currently traveling on the surrounding street network for some other primary purpose (such as a trip from work to home) and stop into the site en route during their normal travel. As such, pass-by trips do not result in a net increase in traffic on the surrounding transportation system and, typically, their only effect occurs at the immediate intersections and site access driveways where they become turning movements. Based on studies of customer surveys at Costco Gasoline fuel stations, on average 37% of the members buying gas during the weekday p.m. peak hour and 33% of the members buying gas during the Saturday midday peak hour can be classified as pass-by trip capture from the surrounding street system. This is lower than the average pass-by rate quoted in the ITE Trip Generation Manual for typical service stations (45%) and, again, is attributable to the unique travel characteristics that result from Costco's membership requirements. While it is possible there will be some pass-by trips to this proposed Novato site, its location at the end of Rowland Boulevard makes it unlikely that there will be a large portion of true pass-by trips at this site. In order to be conservative, it is recommended that not direct pass-by trip reduction be taken at this location. Instead of pass-by trips, it is likely that there will be a higher percentage than typical of diverted trips from existing traffic on Vintage Way, elsewhere on Roland Boulevard, and from traffic destined to the Vintage Oaks Shopping Center.

Diverted Trips

Diverted trips are similar to pass-by trips in that they represent members (and trips) that are currently traveling on the surrounding street network for some other primary purpose and stop into the site en route during their travel. However, as the name indicates, diverted trips divert from the normal roadways they would be traveling on to go to the Costco site. In the case of the Novato Costco, diverted trips will likely occur from traffic already on roadways in the surrounding area, such as Vintage Way, Roland Boulevard, and US 101, who make a short diversion from their normal route to go to the Costco site. Based on studies of customer surveys at Costco Gasoline fuel stations, on average 37% of the members buying gas during the weekday p.m. peak hour and 36% of the members buying gas during the Saturday midday peak hour can be classified as diverted trip capture from the surrounding street system. As outlined above, because of this site’s location, it is likely that there will be a higher than average percentage of diverted trips at this location. In order to remain conservative, it is recommended that the average percentage of diverted trips be used and no pass-by trips be assumed, however, it is very likely this represents a conservative approach to trip generation.

Costco Gasoline Trip Generation Estimate

Based on the above information, a trip generation estimate for the proposed Novato Costco Gasoline fuel station was prepared as summarized in Table 1.

TABLE 1 NOVATO COSTCO GASOLINE TRIP GENERATION

Costco Gasoline Fuel Station	Size (positions)	Weekday PM Peak Hour Trip Ends	Saturday Midday Peak Hour Trip Ends
Total Trip Ends (50/50 split)	24	505	585
<i>Internal Trips (34% wk, 35% Sat)</i>		<i>(170)</i>	<i>(205)</i>
Total External Trips		335	380
<i>Diverted Trips(37% wk, 36% Sat)</i>		<i>(125)</i>	<i>(135)</i>
Net New Trip Ends		210	245

As shown in Table 1, it is anticipated that the proposed Costco Gasoline addition will generate approximately 210 net new weekday p.m. peak hour trip ends (or 105 vehicles) and approximately 245 net new Saturday midday peak hour trip ends (or 120-125 vehicles). Again this represents a conservative estimate for net new trip generation as no accommodation for pass-by trips was taken and no adjustment to the percentage of diverted trips was made to account for this site’s specific location and the surrounding network travel characteristics.

We trust that this memorandum addresses the trip generation associated with the proposed Novato Costco Gasoline addition. If you have any questions or if you require any additional information, please contact us at ctiesler@kittelson.com.