

## **APPENDIX E**

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### Revised Trip Cap Policy

**DRAFT FINAL MEMORANDUM**

Date: ~~March 28, 2011~~ March 12, 2012  
 To: City of Menlo Park  
 From: Robert Eckols, Nikki ~~Herve~~ Nagaya, and Monica Altmaier  
**Subject: Facebook Menlo Park Campus  
 Documentation of Transportation Assumptions**

SJ09-1132

The following memorandum summarizes the transportation assumptions used in developing the vehicle trip cap proposed as part of Facebook's relocation to Menlo Park. The memorandum includes a summary of:

- Background and study purpose
- Person and vehicle trip generation rates and description of calculation methods

**BACKGROUND AND PURPOSE**

Facebook is considering relocation and expansion at the Sun Microsystems (or East) Campus, located at 14 Network Circle, and the General Motors (GM, or West) Campus, near the intersection of Bayfront Expressway and Willow Road in Menlo Park. The purpose of this evaluation is to inform Facebook and the Project Team of the transportation assumptions used in determining the proposed vehicle trip cap for the Menlo Park Campuses.

We have evaluated traffic conditions with occupancy of the two sites at 150 square feet per proposed employee, per direction from Facebook. Table 1 below summarizes the projected number of employees at each site based on this density assumption.

<b>TABLE 1: FACEBOOK EMPLOYEE PROJECTIONS FOR TRAFFIC ANALYSIS</b>			
<b>Site</b>	<b>Square Feet</b>	<b>Employee Density</b>	<b>Number of Employees</b>
East Campus	1,000,220	150 s.f./emp	6,668
West Campus	420,000	150 s.f./emp	2,800
Total	1,420,220	150 s.f./emp	9,468

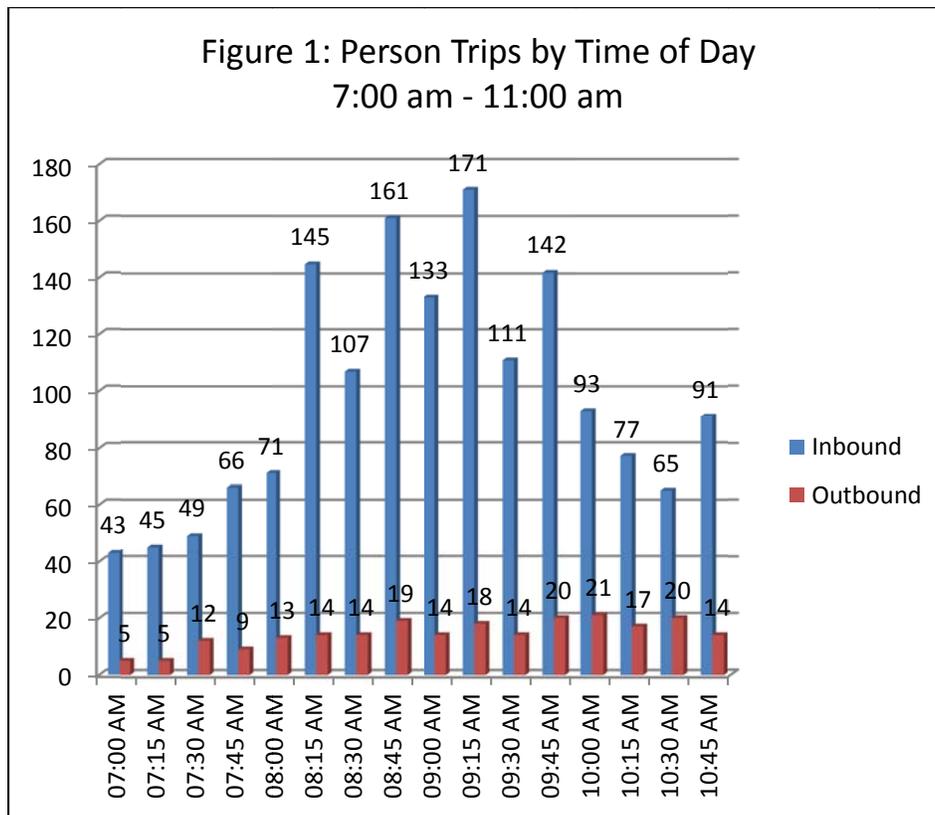
Source: Fehr & Peers, Facebook, July 2010.

**PERSON TRIP GENERATION**

Person and vehicular trip generation estimates were developed based on travel demand surveys conducted at Facebook's Palo Alto campus (1601 South California Avenue and 1050 Page Mill Road sites) over two (2) mid-week days in July 2010. The surveys collected the following data between 7:00 am and 11:00 am:

- Manual counts were collected at the driveways serving the Facebook parking areas at 1601 South California Avenue and 1050 Page Mill Road sites.
  - Vehicle Occupancy Counts – The driveway counts surveyed the number of persons in each vehicle (vehicle occupancy) to verify the number of solo drivers versus carpools and transit users.
  - Pedestrian Counts – Pedestrian counts were conducted to document the number of person walking into the campus during the peak period. Pedestrians were asked if they parked off-site and walked to the campus or if walking was their primary commute mode to the campus.
  - Bicycle Surveys – Bicycle counts were conducted at the driveways serving the sites.
  
- Shuttle Ridership – Facebook provided shuttle ridership data collected on the survey dates for the four shuttles provided for employees.

Using this data, we were able to determine the time distribution of persons entering and exiting the site during the morning peak hour, and the associated peak hour trip generation rate. Figure 1 presents the number of person trips arriving and departing the site by 15-minute intervals between 7:00 am and 11:00 am.



Based on this information, we were able to calculate the morning peak period (7:00 am to 9:00 am, the traditional morning commute peak period) and peak one-hour trip generation rate using the following process:

1. Calculated the total number of trips entering/exiting between 7:00 am and 9:00 am to be 687 inbound and 91 outbound, or 778 total trips
2. Determined one-hour maximum (peak hour) entering/exiting period to be 8:00 am to 9:00 am, with 484 trips inbound and 60 trips outbound, for 544 total trips
3. Calculated trip generation rate for peak hour to be 0.42 person trips per employee (544 trips / 1,300 employees = **0.42** trips per employee)
4. Correlated the peak-hour of traffic generated by Facebook to the industry standard peak hour rate from the Institute of Transportation Engineers (ITE) Trip Generation Manual (8<sup>th</sup> Edition, 2008)
5. Using industry standard ratios between morning peak hour and daily trip generation rates, calculated daily trip generation rates to be **3.41** person trips per employee

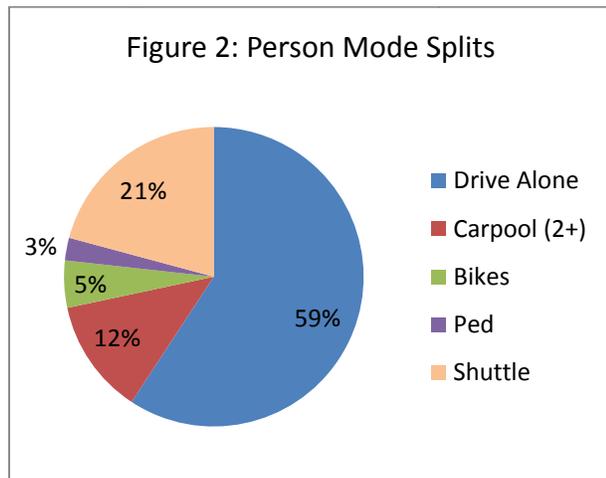
The trip generation rates described above represent the total number of person trips made per employee. The following section details our calculations of mode split, to reflect the number of vehicle trips per employee.

**MODE SPLIT**

The travel surveys described under the Trip Generation section also provided the data necessary to calculate the share for each mode of travel to/from the campus for the total on-site employment population. Table 2 and Figure 2 below summarize the total number and percent of person trips entering and exiting the site by mode.

TABLE 2: PERSON MODE SPLIT		
Mode	Trips by Mode	Percent Mode Split
Drive alone	968	59%
Carpool	203	12%
Bike	83	5%
Walk	40	3%
Shuttles/Transit	340	21%
Total	1,634	100%

Source: Fehr & Peers, Facebook, July 2010.



**VEHICLE TRIP GENERATION**

Based on the mode split data presented in Table 2 and Figure 1, the vehicle trip generation rates were calculated to be 65 percent of the person trip generation rate. This was derived from 59 percent (drive alone) plus 12 percent carpooling at average vehicle occupancy of 2.1 persons per

car<sup>1</sup>. Table 3 summarizes the daily, peak hour and peak period person and vehicle trip generation rates based on Facebook-specific data, as well as a comparison to traditional industry standard documentation from the Institute of Transportation Engineers' *Trip Generation*, 8<sup>th</sup> Edition (2009).

TABLE 3: FACEBOOK TRIP GENERATION RATES, PER EMPLOYEE					
Unit	Source	Description	Daily	Peak Hour	Peak Period
Per employee	Travel Surveys	Person Rate	3.41	0.42	0.60
Per employee	Travel Surveys	Vehicle Rate	2.22	0.27	0.39
Per employee	ITE Best Fit Equation	General Office (710)	2.27	0.37	n/a
Per k.s.f.	Travel Surveys	Vehicle Rate	13.60	1.73	2.48
Per k.s.f.	ITE Best Fit Equation	General Office (710)	7.86	1.18	n/a

Source: Fehr & Peers, Facebook, July 2010.  
 Institute of Transportation Engineers, *Trip Generation*, 8<sup>th</sup> Edition (2009).  
 Trip rates based on average rates defined for General Office (land use code 710).

As shown in Table 3, data collected from the existing Facebook campus shows employees generate 3.41 trips per day, 0.42 trips per peak hour, and 0.60 trips per peak period. The number of vehicle trips generated per employee, calculated based on the mode split summarized above, is 2.22 vehicle trips per day, 0.27 peak hour vehicle trips per day, and 0.39 vehicle trips per day. The comparison to ITE Trip Generation data shows that the best fit equation rates for a general office building is close to the total number of vehicle trips Facebook employees generate on a daily basis, within two (2) percent. The peak hour comparison shows that Facebook's trip generation rate is 27 percent lower than traditional office developments, since many of Facebook's employees travel outside of the traditional commute peak hours and 35 percent travel via alternative transportation modes.

On a per square foot basis, the number of vehicle trips generated by Facebook is substantially higher than the ITE rates, as the employee density is higher than a typical office use. On a daily basis, Facebook generates approximately 42 percent more trips per square foot; on a peak hour basis, Facebook's trip generation rate is 32 percent higher per square foot.

Table 4 below presents the number of vehicle trips estimated to be generated by the East Campus based on the rates defined in Table 3 above. As shown, the proposed vehicle trip cap was derived based on the survey rates, specific to Facebook employee travel patterns.

<sup>1</sup> From July 2010 travel demand survey data.

**TABLE 4: FACEBOOK TRIP GENERATION ESTIMATES**

Unit	Source	Description	Daily	Peak Hour	Peak Period
Per employee	Travel Surveys	Vehicle Rate	14,800	1,820	2,600
Per employee	ITE Best Fit Equation	General Office (710)	15,200	2,480	n/a
Per k.s.f.	Travel Surveys	Vehicle Rate	13,600	1,730	2,480
Per k.s.f.	ITE Best Fit Equation	General Office (710)	7,860	1,190	n/a
Proposed Trip Cap			15,000 <sup>1</sup>	n/a	2,600

Source: Fehr & Peers, Facebook, July 2010.

Institute of Transportation Engineers, *Trip Generation*, 8<sup>th</sup> Edition (2009).

<sup>1</sup> Trip cap rounded based on Facebook specific trip rates per employee.