

## MEMORANDUM

DATE February 16, 2016  
TO Palo Alto Comprehensive Plan Citizens Advisory Committee  
SUBJECT Transportation Data Requests

At the October 20, 2015 CAC meeting, staff received requests for the following data:

- A. Data on in-commuting by mode of travel.
- B. Data on the number of vehicle trips that are internal-external, external-internal, and internal-internal to complement the data on VMT .
- C. Data enabling us to compare car trips today to car trips in the 1990s.
- D. Pre-existing data on the impact/benefit of adding a ramp at San Antonio/101, if any.

This memo provides a response to these data requests as context for consideration of the preliminary Draft Transportation Element by the CAC at the upcoming meeting on February 16, 2016. In addition, the Draft EIR, published on February 5 and available at <http://www.paloaltocomplan.org/eir/>, contains extensive information on existing conditions and potential future impacts to traffic and transportation. See chapter 4.13.

### **A. DATA ON IN-COMMUTING BY MODE OF TRAVEL**

In response to this request, the February 16 packet included a deck of slides summarizing the results of a survey of Downtown employees conducted in May 2015 on behalf of Palo Alto's Transportation Management Authority (TMA). This is the most complete, statistically valid, recent survey available on in-commuting habits and the factors that contribute to transportation mode decisions.

### **B. DATA ON THE NUMBER OF VEHICLE TRIPS THAT ARE INTERNAL-EXTERNAL, EXTERNAL-INTERNAL, AND INTERNAL-INTERNAL**

The following two tables are taken directly from the Draft EIR on the Comp Plan scenarios, published Friday, February 5. There are two tables because the Draft EIR presents most data first for the City + its Sphere of Influence (SOI), which is the EIR Study Area, followed by data for the City limits only, which is the area over which the City actually has jurisdiction. The two tables show the current (2013) number of motor vehicle trips into (External-Internal), out of (Internal-External) and within (Internal-Internal) the city, as well as the total vehicle miles traveled (VMT) associated with those trips, based on the City's travel demand forecasting model.<sup>1</sup> This existing VMT data has been updated and

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<sup>1</sup> The Palo Alto travel demand forecasting model is based on VTA's countywide model and MTC's regional model, and includes validated survey data for the base year of 2013. A technical discussion of the model is included in

corrected since the *Traffic and Transportation Existing Conditions Report* published in August 2014.<sup>2</sup> The data for commercial truck traffic are reported separately because they are used as an input for the EIR's air quality analysis.

The greatest percentage of trips is the External-Internal trips, cars and trucks coming to Palo Alto from other places. The External-Internal trips account for 41.0 percent of daily trips in the city only, and, because they also have a slightly longer average trip distance, they are also the greatest proportion of VMT at 48.9 percent. Internal-External trips, people leaving Palo Alto, are close behind at 39.6 percent of daily trips and 45.3 percent of VMT. Internal-Internal trips, which begin and end in Palo Alto, are 19.4 percent of trips but, because they are so much shorter than trips that are traveling to or from destinations outside Palo Alto, Internal-Internal trips are only 5.8 percent of daily VMT.

It is important to understand that conclusions about traffic congestion cannot be drawn directly from VMT data. VMT is a measure of the cumulative distance of all trips. It is most relevant to understanding the GHG emissions associated with a community. It is not a measure of where drivers drive within Palo Alto, or at what times of day, or how these trips affect a given intersection.

### **C. DATA ENABLING US TO COMPARE CAR TRIPS TODAY TO CAR TRIPS IN THE 1990S.**

Average daily traffic volumes on key roadway segments for 1999 and 2013 is shown on the maps at the end of this memo; however, a fair comparison cannot be done with these data sets due to a large period of time between the two. There have been significant changes in Palo Alto in terms of population, employment, economic factors, roadway striping, land use changes (to name just a few) in the last 14 years. Going forward, transportation staff plans to collect this data and update the citywide ADT map every 3 years or so. Staff will be better able to provide the context and changes in trends/issues while comparing data from within a range of 3-4 years' time.

### **D. PRE-EXISTING DATA ON THE IMPACT/BENEFIT OF ADDING A RAMP AT SAN ANTONIO/101, IF ANY.**

The Valley Transportation Plan includes a project to build a new on-ramp to SB 101 from San Antonio and eliminate the ramp from Charleston. The potential project was evaluated against Highway Prioritization Criteria, however a study of the benefit for congestion/circulation of this project has not yet been completed. Additionally, this project is not included in the current MTC Regional Transportation Plan and therefore it is not a foreseeable project at this time.

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the *Palo Alto Comprehensive Plan Update Draft Transportation Impact Analysis (TIA)* included as Appendix H of this Draft EIR.

<sup>2</sup> The VMT data included in the 2014 Existing Conditions Report had computation errors that resulted in TAZs outside of Palo Alto being counted as if they were inside Palo Alto.

**TABLE 4.13-6 EXISTING DAILY MOTOR VEHICLE MILES TRAVELLED (VMT) BY DIRECTIONAL ORIENTATION (CITY + SOI)**

	Existing	
<b>Total Palo Alto+SOI VMT<sup>a</sup></b>	<b>6,391,293</b>	<b>100.0%</b>
Internal-External <sup>b</sup>	2,828,732	44.3%
External-Internal <sup>c</sup>	3,132,854	49.0%
Internal-Internal <sup>d</sup>	429,707	6.7%
<b>Total Motor Vehicle Trips<sup>a</sup></b>	<b>499,013</b>	<b>100.0%</b>
Internal-External <sup>b</sup>	190,992	38.3%
External-Internal <sup>c</sup>	200,982	40.3%
Internal-Internal <sup>d</sup>	107,039	21.5%
<b>Average Trip Length [Miles]<sup>e</sup></b>	<b>12.81</b>	
Internal-External	14.81	
External-Internal	15.59	
Internal-Internal	4.01	
<b>Total Palo Alto+SOI Commercial VMT<sup>f</sup></b>	<b>258,293</b>	<b>100.0%</b>
Internal-External <sup>b</sup>	119,252	46.2%
External-Internal <sup>c</sup>	135,372	52.4%
Internal-Internal <sup>d</sup>	3,670	1.4%
<b>Total Commercial Motor Vehicle Trips<sup>a</sup></b>	<b>9,776</b>	<b>100.0%</b>
Internal-External <sup>b</sup>	4,464	45.7%
External-Internal <sup>c</sup>	4,572	46.8%
Internal-Internal <sup>d</sup>	739	7.6%
<b>Average Commercial Trip Length [Miles]<sup>e</sup></b>	<b>26.42</b>	
Internal-External	26.71	
External-Internal	29.61	
Internal-Internal	4.96	

Note: Numbers may not add up to 100% due to rounding.

a. Trips with one trip end outside Palo Alto +SOI were counted as one trip, whereas trips with both ends in Palo Alto+SOI were counted as two trips.

b. "Internal-External" refers to VMT generated by motor vehicle trips that start in Palo Alto+SOI and end outside Palo Alto+SOI.

c. "External-Internal" refers to VMT generated by motor vehicle trips that start outside Palo Alto+SOI and end in Palo Alto+SOI.

d. "Internal-Internal" refers to VMT generated by motor vehicle trips that start and end in Palo Alto+SOI.

e. Average Trip Length is calculated by dividing the Total VMT by the Total Number of Motor Vehicle Trips..

f. Commercial VMT (related to heavy trucks) is not included in "Total Palo Alto+SOI VMT" shown in the table.

Source: Hexagon Transportation Consultants, Inc., 2015.

**TABLE 4.13-7 EXISTING DAILY MOTOR VEHICLE MILES TRAVELLED (VMT) BY DIRECTIONAL ORIENTATION (CITY ONLY)**

	Existing	
<b>Total Palo Alto+SOI VMT<sup>a</sup></b>	<b>5,320,931</b>	<b>100.0%</b>
Internal-External <sup>b</sup>	2,410,604	45.3%
External-Internal <sup>c</sup>	2,600,249	48.9%
Internal-Internal <sup>d</sup>	310,078	5.8%
<b>Total Motor Vehicle Trips<sup>a</sup></b>	<b>432,122</b>	<b>100.0%</b>
Internal-External <sup>b</sup>	171,108	39.6%
External-Internal <sup>c</sup>	177,227	41.0%
Internal-Internal <sup>d</sup>	83,786	19.4%
<b>Average Trip Length [Miles]<sup>e</sup></b>	<b>12.31</b>	
Internal-External	14.09	
External-Internal	14.67	
Internal-Internal	3.70	
<b>Total Palo Alto+SOI Commercial VMT<sup>f</sup></b>	<b>240,869</b>	<b>100.0%</b>
Internal-External <sup>b</sup>	111,444	46.3%
External-Internal <sup>c</sup>	126,369	52.5%
Internal-Internal <sup>d</sup>	3,056	1.3%
<b>Total Commercial Motor Vehicle Trips<sup>a</sup></b>	<b>9,182</b>	<b>100.0%</b>
Internal-External <sup>b</sup>	4,222	46.0%
External-Internal <sup>c</sup>	4,327	47.1%
Internal-Internal <sup>d</sup>	634	6.9%
<b>Average Commercial Trip Length [Miles]<sup>e</sup></b>	<b>26.23</b>	
Internal-External	26.40	
External-Internal	29.21	
Internal-Internal	4.82	

Note: Numbers may not add up to 100% due to rounding.

a. Trips with one trip end outside Palo Alto +SOI were counted as one trip, whereas trips with both ends in Palo Alto were counted as two trips.

b. "Internal-External" refers to VMT generated by motor vehicle trips that start in Palo Alto and end outside Palo Alto.

c. "External-Internal" refers to VMT generated by motor vehicle trips that start outside Palo Alto and end in Palo Alto.

d. "Internal-Internal" refers to VMT generated by motor vehicle trips that start and end in Palo Alto.

e. Average Trip Length is calculated by dividing the Total VMT by the Total Number of Motor Vehicle Trips..

f. Commercial VMT (related to heavy trucks) is not included in "Total Palo Alto VMT" shown in the table.

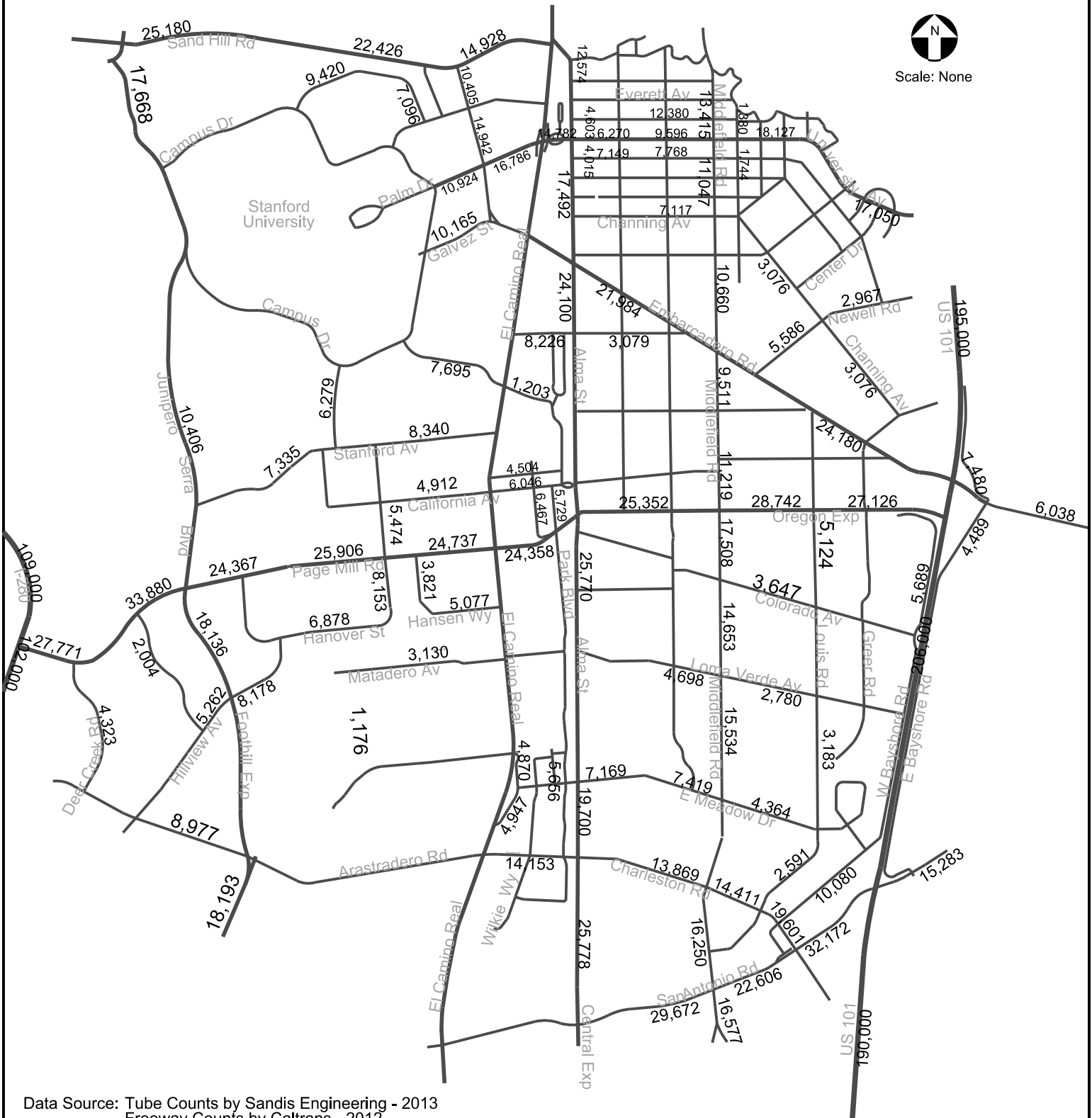
Source: Hexagon Transportation Consultants, Inc., 2015.



City of Palo Alto, California  
 1999 - Major Street Traffic Flow Map  
 24 Hour Counts (ADT)

# City of Palo Alto

## 2013 Average Daily Traffic (ADT) Volume Map



Data Source: Tube Counts by Sandis Engineering - 2013  
Freeway Counts by Caltrans - 2012

Last Update: 12-9-2013