Santa Cruz County

Travel Model Development Report

Santa Cruz County Regional Transportation Commission

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FEHR & PEERS

Santa Cruz County

Prepared For:

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ACRONYMS

AMBAG Association of Monterey Bay Area Governments

CDP Census Designated Place

CEQA California Environmental Quality Act

CHTS California Household Travel Survey

CTC California Transportation Commission

CTPP Census Transportation Planning Package

LEHD Longitudinal Employment Housing Dynamics

MPO Metropolitan Planning Organization

MTP Metropolitan Transportation Plan

MXD Mixed Use Development

RTDM Regional Travel Demand Model

RTP Regional Transportation Plan

RTPA Regional Transportation Planning Agency

SCC Santa Cruz County

SCCRTC Santa Cruz County Regional Transportation Commission (also RTC)

SCMTD Santa Cruz Metropolitan Transit District (also METRO)

TAMC Transportation Agency for Monterey County

TAZ Transportation Analysis Zone

TOD Transit Oriented Development

UCSC University of California-Santa Cruz

VMT Vehicle Miles Traveled

VTA Santa Clara Valley Transportation Authority

TABLE OF CONTENTS

1 – MODEL OVERVIEW

The Santa Cruz County Travel Demand Model (SCC Model) is designed to forecast future travel patterns on both roadway and transit routes throughout Santa Cruz County (SCC). The model can be used to assess how changes in population, employment, demographics and transportation infrastructure affect travel patterns within the county. This Model Development Report provides information on the main input data sources, descriptions of the model components and methodologies, and model calibration and validation results. The SCC Model is a four-step travel demand model based on the TransCAD platform. The geographic projection data is listed in Appendix A1.Model.

1.1 – Purpose

The Santa Cruz County Regional Transportation Commission (RTC) serves as the Regional Transportation Planning Agency for Santa Cruz County (SCC) including the Cities of Capitola, Santa Cruz, Scotts Valley, and Watsonville, and County of Santa Cruz unincorporated area. The SCC Model was developed to provide more detailed information on travel patterns within Santa Cruz County than could be accomplished by the regional travel demand model.

The regional travel demand model is developed and overseen by the Association of Monterey Bay Area Governments (AMBAG), and covers Monterey, San Benito, and Santa Cruz Counties. The AMBAG RTDM has been designed to support development of the AMBAG Metropolitan Transportation Plan (MTP), regional land use, economic and planning efforts such as the Sustainable Communities Strategy (SCS), and regional air quality emissions analyses. While the AMBAG RTDM is a useful tool for analyzing regional travel, it is not designed to provide more specific traffic forecast information for the Santa Cruz County roadway network, including more detailed bicycle/pedestrian demand and transit ridership.

The SCC Model is the most appropriate mechanism to assess finer-scale transportation impacts as a result of multimodal investments and to identify what transportation investments would provide the greatest benefits to sustainability goals. It is a relatively common practice for counties to develop a travel demand subregional model for an individual county that is consistent with a larger regional model.

The primary reasons for developing the SCC transportation modeling tools were to 1) support development of a Unified Corridors Plan, and 2) analyze the transportation impacts of multimodal transportation and land use programs and projects within the County of Santa Cruz. The Unified Corridors Plan will identify transportation investments that maximize usage of the three parallel north to south transportation corridors in Santa Cruz County: Highway 1, Soquel Drive/Avenue and the Santa Cruz Branch Rail Line while also advancing sustainable transportation targets. The County of Santa Cruz may consider revisions to its adopted general plan or conduct complimentary planning efforts, such as the

Sustainable Santa Cruz County Plan, to support sustainable communities. The SCC travel demand model will assist the County in analyzing the impacts of possible future transportation and land use changes.

Other potential uses of the SCC Model include:

- Assist local jurisdictions within Santa Cruz County to analyze traffic impacts of land use changes and/or changes in transportation infrastructure for use in Corridor Planning Studies and circulation elements in General Plans.
- Assess ability for local jurisdictions to advance/meet sustainability targets in performance based climate action plans including assessment of changes in vehicle miles traveled and mode share due to changes in land use and transportation infrastructure.
- Assist the Santa Cruz Metropolitan Transit District in Transit Planning Studies based on changes in route structure, headways, and amenities.
- Assist in any potential future Rail Transit Planning Studies for the rail line.
- Provide Caltrans with a finer scale modeling tool for assessing affects of transportation investments in the highway infrastructure.
- Provide information about the impacts of multimodal transportation investments on sustainable transportation goals using performance measures.
- Provide a tool for analyzing the traffic impacts of construction projects on traffic operations of a facility.
- Obtain information about trade-offs between transportation operations resulting from multimodal investments in future years
- Inform decision makers and public about traffic impacts of multimodal transportation investments within Santa Cruz County

1.2 – California Transportation Commission (CTC) 2010 RTP Guidelines for Travel Demand Modeling

The CTC publishes and periodically updates guidelines for the development of long range transportation plans that include SCCRTC's Regional Transportation Plan. Although not a requirement, the model development process followed the most recent update to the RTP guidelines was published in 2010, and

includes new provisions for complying with Senate Bill 375 as well as new guidelines for regional travel demand modeling. Although the AMBAG RTDM model will be used in developing the MTP and RTP for Santa Cruz County, the SCC Model was still developed to adhere to the CTC RTP guidelines as closely as possible to allow them to evaluate multi-modal plans. These guidelines include sensitivity to the following policies/programs including:

- Land Use – demographic characteristics that influence travel behavior
- Geographic scale – land use and transportation system refinements in Transit Oriented Development (TOD)/Central Business District (CBD)/Mixed Use Development (MXD)
- Sensitivity to mode – person trips, mode choice, transit assignment (including bus and rail)
- Pricing – auto operations (fuel, maintenance, etc), parking, toll, transit fare
- Sensitivity to congestion – time of day refinements and distribution
- Validation – formal static and dynamic tests, identifying areas for project level refinement
- Documentation – Clear and fully documented for executive/public and technical staff

1.3 – Beyond SB 375 and RTP Guidelines

In addition to addressing the CTC requirements, the SCC Model includes a number of other model enhancements:

- Standardized process – knowledge, data, parameter, documentation/graphics/reports, and other processes
- Ease of use – Development and Application modes, Graphical User Interface, utilize GIS and Excel
- Coordination with AMBAG Model – Networks, zones, and data structures aggregate to AMBAG
- Stand Alone Bike Model (SABM) – Integrate with the AMBAG SABM for localized bike project evaluation
- Stand Alone Transit Model (SATM)– Export data for evaluating transit amenities and influence on mode share

1.4 – Organization of Documentation

The following section contains model flow charts for each of the main components of the model, illustrating the interaction between data inputs, processes, and outputs at a conceptual level. The remainder of this document covers the main sources of input data, the model components including the detailed functions, parameters, and calibration procedures, and the static and dynamic validation results.

A separate SCCRTC Model User Guide provides step-by-step instructions on how to run the model and perform the common modeling tasks. The SABM and SATM also include their own documentation and user guides.

1.5 – SCCRTC Model Flow Charts

The SCC Model is an enhanced four step model. The four primary sub-models making up the four step model process are:

1. Trip Generation. This initial step calculates person ends using trip generation rates established during model estimation and refined to Santa Cruz County. Truck trips are currently included in non-home based and are not estimated separately.

2. Trip Distribution. The second general step estimates how many trips travel from one zone to any other zone. The distribution is based on the number of trip ends generated in each of the two zones, and on factors that relate the likelihood of travel between any two zones to the travel time between the two zones such as distance, cost, time, and varies by accessibility to passenger vehicles, transit, and walking or biking. This step also determines how many trips enter or leave the model area. Mode Choice. This step uses demographics and the comparison of distance, time, cost, and access between modes to estimate the proportions of the total person trips using drive-alone or shared-ride passenger auto, transit, walk or bike modes for travel between each pair of zones.

3. Trip Assignment. In this final step, vehicle trips and transit trips from one zone to another are assigned to specific travel routes between the zones. Congested travel information is used to influence each of the steps described above starting with vehicle availability for all models, and starting with land use location for integrated land use transportation models.

The following contain flow charts of the interaction between the data sources and provide detail on each of the four steps.

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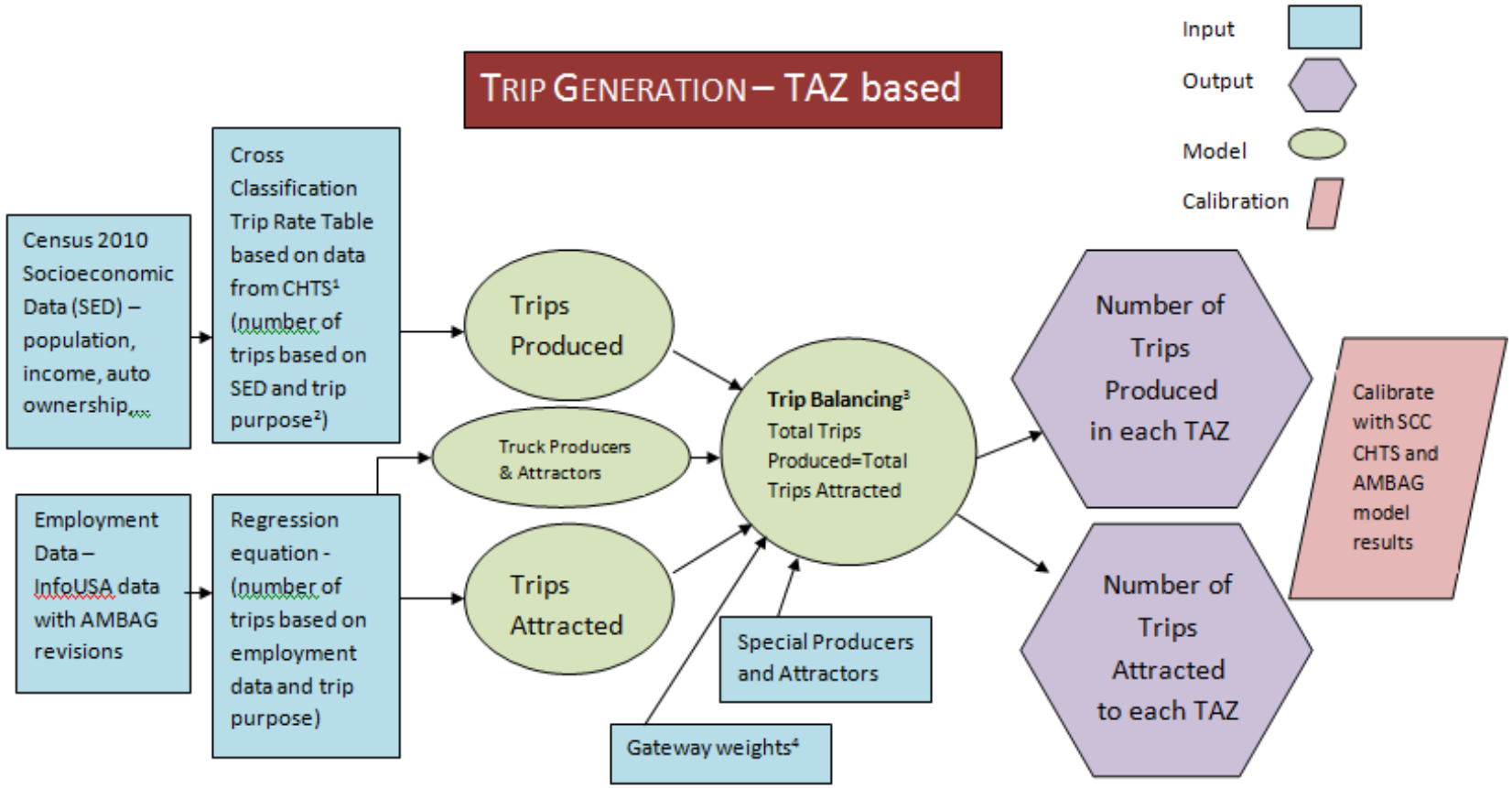
Trip Generation Step of SCC Travel Demand Model – determines the number of trips produced and attracted to each transportation analysis zone (TAZ)



1. Trip table based on 2012 California Household Travel Survey Data from the counties of Santa Cruz, Monterey, San Benito, San Luis Obispo and Santa Barbara.
2. Trip Purposes are defined as home based work (HBW), home based shop (HBSH), home based school (HBSch), home based college (HBColl), home based other (HBO), work based other (WBO)
3. Home based trips are balanced to production and non-home based trips are balanced to attractions.
4. The number of trips produced and attracted at the gateways is determined from AMBAG O&D study, AMBAG model, statewide TDM.

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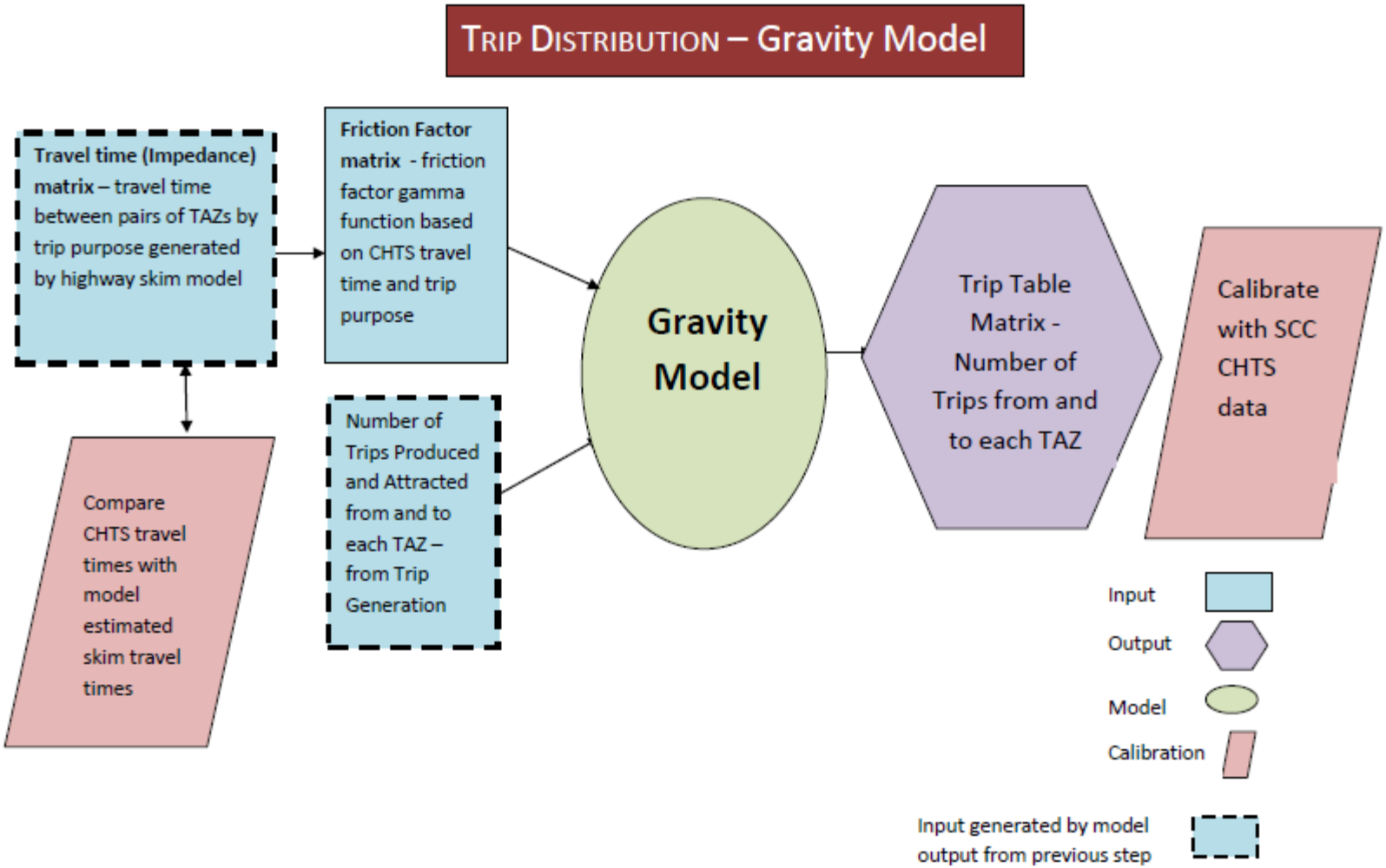
Trip Distribution Step of SCC Travel Demand Model – connects trip productions and attractions in each TAZ by creating origin and destination pairs.



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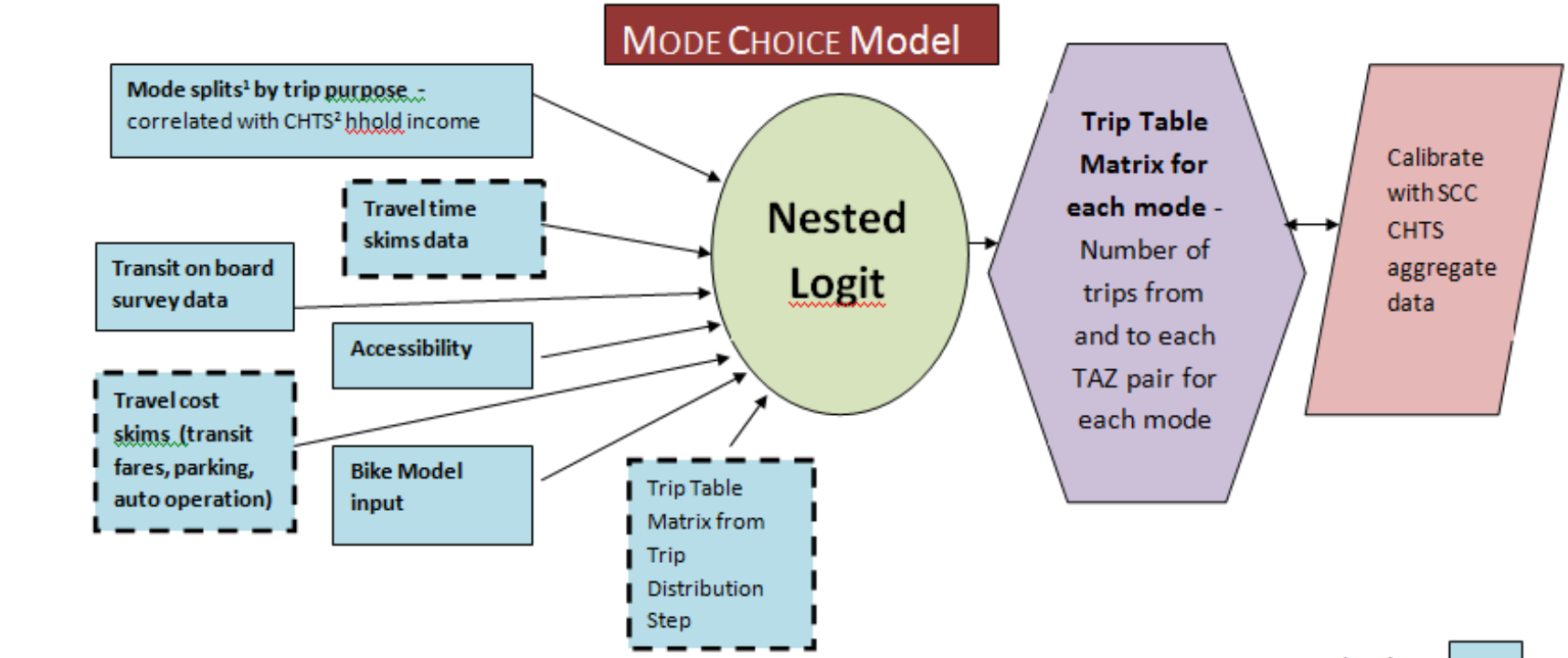
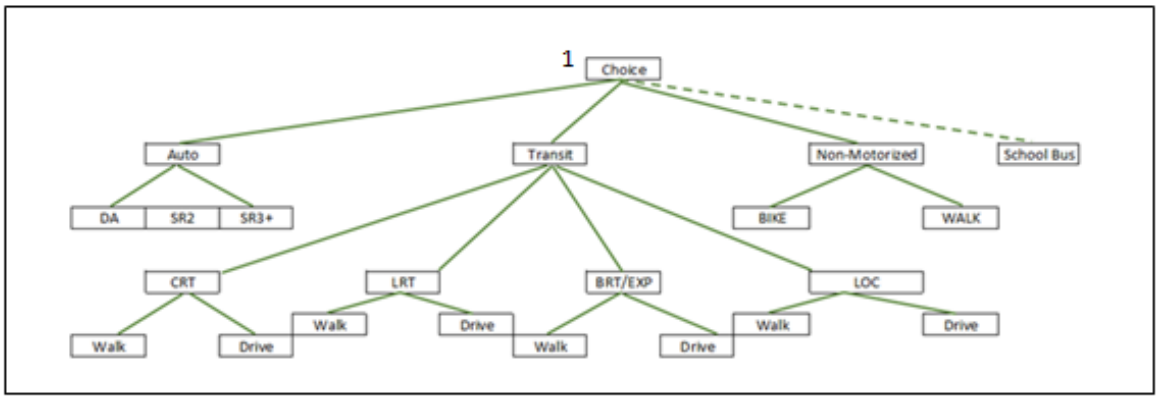
Mode Choice Step of SCC Travel Demand Model – determines how trip table matrix is split between modes.

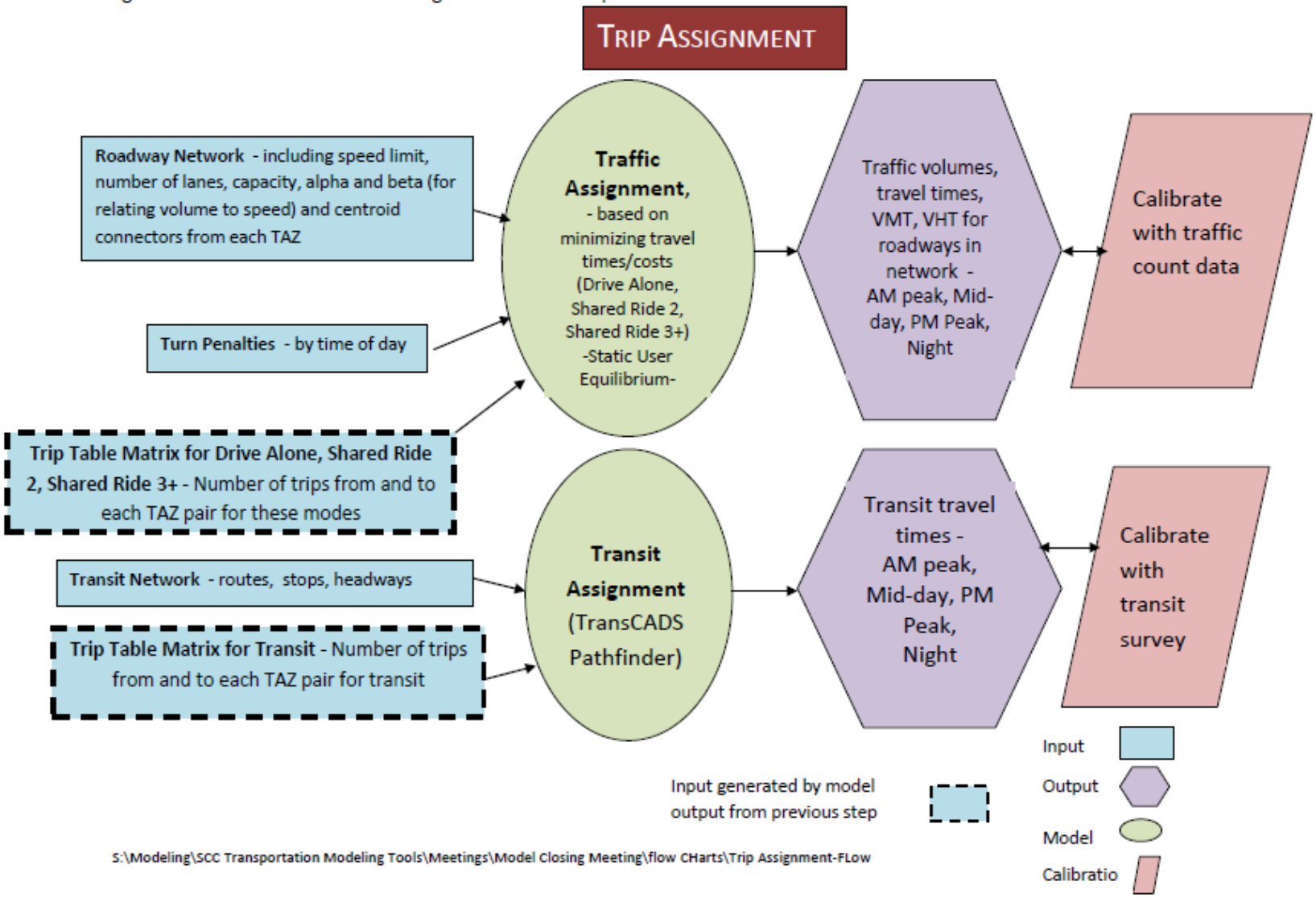




2. 2012 California Household Travel Survey Data from the counties of Santa Cruz, Monterey, San Benito, San Luis Obispo and Santa Barbara.

FEHR PEERS

Trip Assignment Step of SCC Travel Demand Model – auto traffic is assigned to roadways and transit is assigned to transit routes to connect origin and destination pairs.



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2 – MODEL INPUT DATA

The input data for the SCC Model is documented in this chapter. The data for the SCC Model comes from a multitude of sources including the Census 2010 data, the American Community Survey data, and the Association of Monterey Bay Area Governments (AMBAG) travel demand model. Data used for estimation, calibration and validation of the SCC Model such as the 2012 California Household Travel Survey (CHTS), the 2012 Transit On-Board Survey and traffic count data will be discussed in later sections.

2.1 – LAND USE DATA

2.1.1 Transportation Analysis Zones (TAZs)

TAZs are the fundamental land use building block structure for travel demand models and, therefore, require a focused effort and consideration in development and review. In consultation with the SCCRTC and Santa Cruz County, the transportation analysis zone (TAZ) geography for the SCC Model is based on the AMBAG TAZ geography with revisions for Santa Cruz County. The revised TAZ geography incorporates a more detailed zonal structure with consideration for city boundaries, highway networks and census block group boundaries. Thirty-six of the AMBAG TAZs in Santa Cruz County were split for a total of 716 TAZs in the SCC model. The following list of files were used to perform the splits:

- AMBAG TAZ
- Google Earth Images
- Census Block Group
- City boundary
- General Plan Boundaries
- City Sphere of Influence
- Unified Corridors Shape file
- Urban services line

Given the list of boundaries above, a TAZ can be split in multiple ways depending on an analyst's perception. Therefore, in order to standardize the process, Fehr & Peers devised a set of rules to split TAZ's, update TAZ numbering and check for correct typology. The rules, in order of priority are, listed below.

Rules to update TAZ detail for subarea

- Refinements to TAZ structure are based on input from RTC and County of SC based on information about future development. TAZ boundaries nest with the major boundary files in

the region. In addition, proper accessibility needs to be considered for each TAZ when shape the TAZs.

- TAZ numbers are grouped alphabetically by jurisdiction sphere of influence beginning with cities and ending with the County, allowing for gaps in numbering between each jurisdiction. Within jurisdictions, grouping by established districts or neighborhoods, or within census tracts is implemented. Multiple attributes such as correspondence to previous TAZ number, jurisdiction, school district, zip code, and/or census tract are included.
- TAZs with current or future development should be split to minimize the combination of urbanized and rural areas and should align with census block group boundaries. Where possible, future roadway and/or development plans should be used in determining size and shape of TAZs.
- The TAZs will be renumbered using a structure that is easy to organize and update/add to in future.
- External stations will be at the boundary of the model, and post-processing methods will be used to determine travel distance to regions outside of the model area. For consistency, gateway numbering is provided by Fehr & Peers using the following general numbering scheme.
    - 1-20 gateways external to the Santa Cruz County
    - 101-1,590 internal zones
    - 1,590+ Nodes
- Develop standard external gateway station screen lines in models to allow consistent distribution of trips by purpose between the SCC and AMBAG models.
- The geography for roadways and TAZs should have correct topology. Meaning, the roadway intersections should connect with the roadway legs at their end points, no duplicate lines, no over or under-shoots, and freeway interchanges should be corrected to reflect real-world operation. TAZ boundaries should match perfectly with the neighboring TAZ polygons. There should be no slivers, gaps, or duplicates.

TAZ Numbering

The TAZ numbering was updated to include major cities and Census Designated Places (CDPs). Each jurisdiction was allocated a certain number of TAZs. The allocation takes into account possible future growth that might need splitting or adding new TAZs. **Table 1** below shows the allocation and new numbering adopted.

Table 1: Santa Cruz TAZ Numbering

Jurisdiction	Count	Min	Max	Total Allocated
External	20	1	100	100

Table 1: Santa Cruz TAZ Numbering

Jurisdiction	Count	Min	Max	Total Allocated
Amesti CDP	3	101	110	10
Aptos CDP	16	111	140	30
Aptos Hills-Larkin Valley CDP	10	141	170	30
Ben Lomond CDP	17	171	200	30
Bonny Doon CDP	9	201	220	20
Boulder Creek CDP	13	221	250	30
Brookdale CDP	4	251	260	10
Capitola city	37	261	360	100
Corralitos CDP	4	361	370	10
Davenport CDP	2	371	380	10
Day Valley CDP	5	381	390	10
Felton CDP	13	391	420	30
Freedom CDP	4	421	430	10
Interlaken CDP	11	431	460	30
La Selva Beach CDP	12	461	490	30
Live Oak CDP	40	491	590	100
Lompico CDP	2	591	600	10
Mount Hermon CDP	2	601	610	10
Pajaro Dunes CDP	2	611	620	10
Paradise Park CDP	1	621	630	10
Pasatiempo CDP	1	631	640	10
Pleasure Point CDP	22	641	740	100

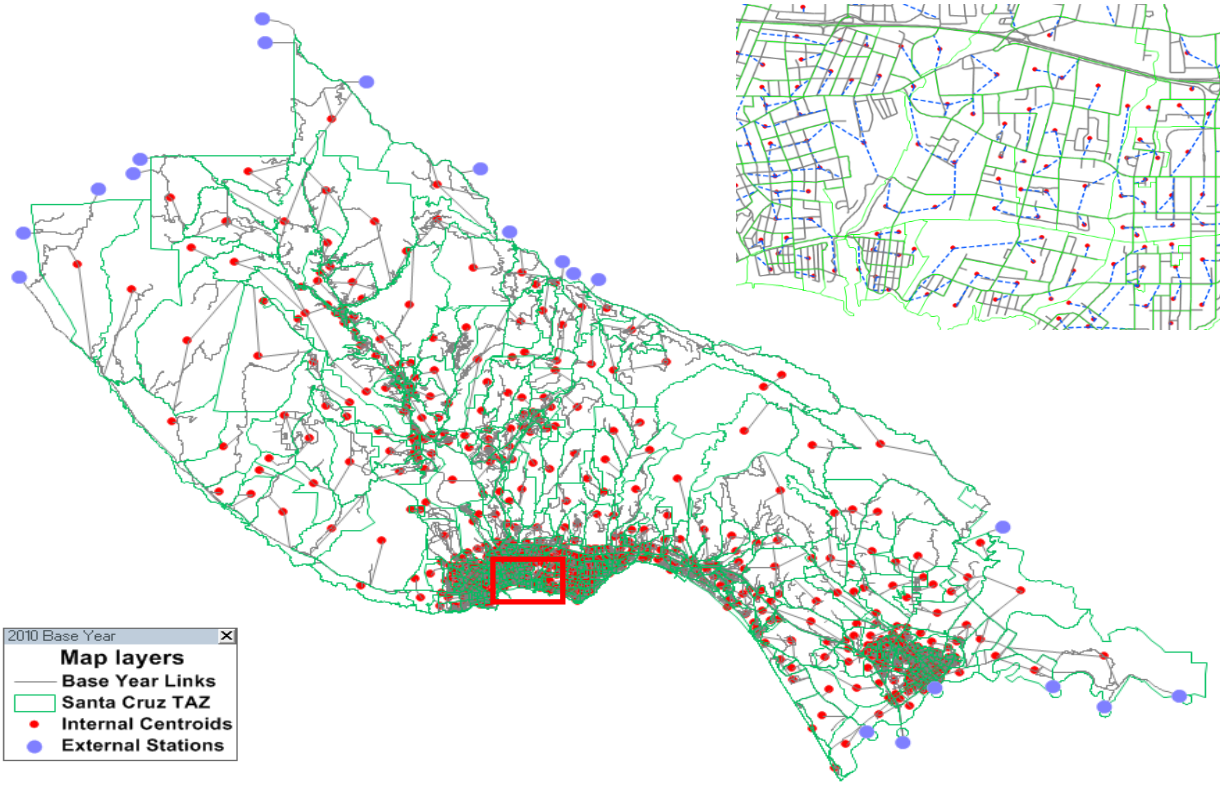
Table 1: Santa Cruz TAZ Numbering

Jurisdiction	Count	Min	Max	Total Allocated
Rio del Mar CDP	17	741	770	30
Santa Cruz city	171	771	1070	300
Scotts Valley city	17	1071	1100	30
Seacliff CDP	8	1101	1120	20
Soquel CDP	14	1121	1150	30
Twin Lakes CDP	18	1151	1180	30
Watsonville city	106	1181	1380	200
Zayante CDP	2	1381	1390	10
Santa Cruz Cnty	110	1391	1590	200

Each TAZ contains one centroid node that defines where the trips in that TAZ begin. The location of the centroid was located at the central location of the TAZ and only moved to another location if necessary to better represent the average distance from the TAZ to the highway network.

Figure 1 shows the TAZ structure, centroid locations and the centroid connectors from the centroid to the Santa Cruz County model network.

Figure 1: TAZ, Centroid and Centroid Connectors for the SCC Model



2.2 – LAND USE INPUTS

The land use inputs for the SCC Model are developed for each TAZ from a number of different sources as outlined in Table 3 below. The Decennial 2010 census data at the census block level are aggregated to the model TAZ level to create base year land use household and population information. 2012 American Community Survey (ACS) data was used as the inputs for the socio-demographic information. ACS 2012 data was collected for census tracts and then disaggregated to the TAZs based on the percent of the number of parcels in a tract that are located in a given TAZ. This method more accurately captures urbanized areas than simply using TAZ area.

The AMBAG model used a population synthesizer and the Public Use Microdata Sample (PUMS) data to generate a number of the land use attributes including households by auto ownership, and the cross-classification of households as described in the trip generation section.

Employment data for the SCC Model was determined from the AMBAG model input data. AMBAG purchased 2010 employment data from InfoUSA. The point data was used to populate the TAZs based on the various employment types. AMBAG compared this data set to the 2010 Employment Development Department data and the 2012 Dunn & Bradstreet employment data. Manual adjustments were made if needed to correct for inconsistencies. Fehr & Peers, as part of the SCC Model development effort, compared the AMBAG model employment data to the Longitudinal Employment-Housing Dynamics (LEHD) data set. The LEHD dataset is modeled data based off the Quarterly Workforce Indicators and Census data. It was downloaded as a point shapefile and then was aggregated to each TAZ. The total number of jobs reported for Santa Cruz County from LEHD is approximately 90,000 whereas the AMBAG model contained approximately 110,000 jobs for the County. It was determined that the AMBAG model incorporated more job types and small employers where the LEHD excluded them. Jobs from the AMBAG model are used in the SCC Model, instead of from LEHD. See Appendix A2 for a more detailed discussion of the land use data check for the SCC Model.

Table 2: Land Use Variables

Attribute	Description	Units	Data Source
Residential [1-6]			
Pop	Population	People	2010 Census
TOTHH	Total Households	Households	2010 Census
HHSIZE [1]	Households by Household Size	Households	2012 ACS
HHINC [2]	Households by Annual Income (2010$)	Households	2012 ACS
MEDINC	Median Household Income (2010 $)	Dollars	
AUTO [3]	Households by Auto Ownership	Households	AMBAG Population Synthesizer??
Vehx	Number of Households with x Number of Vehicles	Households	
VEH_HH	Average Number of Vehicles per Household	Vehicles	
WORKERS [4]	Households by Workers	Households	
AUTOSpWkr [5]	Household by Autos/Worker	Households	

Table 2: Land Use Variables

Attribute	Description	Units	Data Source
TOT_WORK	Total Workers	People	
AGE [6]	Person by Age Group	People	
Non-Residential [7]			
Totl	Total employees	Employees	AMBAG/InfoUSA
Agri	Agriculture, Forestry, Fishing and Hunting (11)	Employees	AMBAG/InfoUSA
Cons	Construction (23)	Employees	AMBAG/InfoUSA
Inds	Mining (21), Utilities (22) and Manufacturing (31-33)	Employees	AMBAG/InfoUSA
Retl	Wholesale Trade (42) and Retail Trade (44-45)	Employees	AMBAG/InfoUSA
Serv	Transportation and Warehousing (48-49), Information (51), Finance and Insurance (52), Real Estate Rental and Leasing (53), Professional, Scientific, and Technical Services (54), Management of Companies and Enterprises (55), Art, Entertainment, and Recreation (71), Accommodation and Food Service (72) and Other Services (81)	Employees	AMBAG/InfoUSA
Publ	Administrative and Support and Waste Management and Remediation Services (56), Educational Services (61), Health Care and Social Assistance (62), and Public Administration (92)	Employees	AMBAG/InfoUSA
K-12	K-12 school enrollment	Student Enrollment	
Univ	College enrollment	Student Enrollment	
ACRES	TAZ Acreage	Acres	
Household Cross-classified Variables			

Table 2: Land Use Variables

Attribute	Description	Units	Data Source
WORKERS x HHINC x AUTOSPERWORKER	Cross-classified among the three sets of variables, 4x8x3=96 variables in total	Households	
HHSIZE x HHINC x Vehx	Cross-classified among the three sets of variables, 4x8x4=128 variables in total	Households	

Notes:

1. See Table 3 for household size categories.
2. See Table 4 for annual household income categories.
3. See Table 5 for auto ownership categories.
4. See Table 6 for number of workers categories.
5. See Table 7 for autos per worker categories.
6. See Table 8 for population distribution by age range category
7. Non-residential description contains NAICS sector number(s).

Source:

Table 3: Household Size

Variable	Description
HHSIZE1	# of HH with 1 Person in a HH
HHSIZE2	# of HH with 2 Person in a HH
HHSIZE3	# of HH with 3 Person in a HH
HHSIZE4+	# of HH with 4+ Person in a HH

Data sources:
Estimation: CHTS
Calibration: MPO base year data

Table 4: Number Household by Income

8-category grouping	Category	Number of HH with income
HHINC1	INC1	Less than $10,000
HHINC2	INC2	$10,000 to $24,999
HHINC3	INC3	$25,000 to $34,999
	INC4	$35,000 to $49,999
HHINC4	INC5	$50,000 to $74,999
HHINC5	INC6	$75,000 to $99,999
HHINC6	INC7	$100,000 to $149,999
HHINC7	INC8	$150,000 to $199,999
HHINC8	INC9	$200,00 or more
	INC10	SPARE -- unused

Data sources:

Estimation: CHTS
Calibration: Census

Table 5: Auto Ownership

Category	Description
Veh0	# of HH with no Vehicle
Veh1	# of HH with 1 Vehicle
Veh2	# of HH with 2 Vehicles
Veh3+	# of HH with 3+ Vehicles

Data sources:
Estimation: CHTS
Calibration: Census

Table 6: Number of Workers

Category	Description
Workers0	# of HH with no Worker
Workers1	# of HH with 1 Worker
Workers2	# of HH with 2 Workers
Workers3+	# of HH with 3+ Workers

Data sources:
Estimation: CHTS
Calibration: Census

Table 7: Autos per Worker

Category	Description
AutopWkr0	# of HH with no Auto
AutopWkr1	# of HH with less than 1 auto per worker (car insufficiency)
AutopWkr2	# of HH with 1 or more than 1 auto per worker (car sufficiency)

Data sources:
Estimation: CHTS
Calibration: Census

Table 8: Population Distribution by Age Group

Category	Description
Age0004	Number of persons under 4
Age0514	Number of persons between 5 and 14
Age1517	Number of persons between 15 and 17
Age1824	Number of persons between 18 and 24
Age2535	Number of persons between 25 and 35

Age3664	Number of persons between 36 and 64
Age65	Number of persons above 65
Age0017	Number of persons 17 and under
Age18	Number of persons between 18 and 35
Age36	Number of persons above 36

Data sources:
Estimation: CHTS
Calibration: Census
Application: land use inputs

2.3 – HIGHWAY NETWORK

The base year highway network and network attributes for the Santa Cruz County model are directly extracted from the AMBAG base year highway network, by excluding the network outside Santa Cruz County. In the highway network, the critical attributes of functional class, number of lanes, and posted speed were reviewed by SCCRTC and local jurisdiction staff and revised as necessary to correct for accuracy. Given the lack of free-flow speed data, posted speed data was used for free-flow speeds in the SCC Model. Future enhancements could include spot and\or route speed data from GPS travel runs or Big Data (Inrix, HERE, etc).

Table 11 contains a list of the attributes contained in the roadway network.

The line layer used in the model is an all-streets network, although for the highway mode component of the model, centroid connectors generally connect to the more major local roads and other higher classified facilities such as collectors and minor arterials. The remaining local streets do remain in the model network and do not seem to create any problems, and are primarily used as access links for other modes such as walking and bicycling. In addition, the roadway network is consistent with the bike network and includes link attributes that denote the type of bike facility and bike-only facilities.

The link capacity per direction of travel utilized in the traffic assignment stage was calculated using a combination of link characteristics. Consistent with AMBAG model's link capacity based on the Highway Capacity Manual, the ideal capacity is determined by the functional classification of the highway links, and then adjusted based on the specific posted speed, area type and the lane width of each highway link. In addition to the capacity, appropriate parameters for the volume delay function used in the traffic assignment stage are coded as link attributes and populated using a look-up table that varies these parameters by functional class of roadway. Note that the model will only apply the look-up table to those

links with missing values on those parameters in the input highway network; for those links with values, the model will directly use them assuming those values are already validated.

Figure 2 illustrates the functional classification of the highway facilities within the County of Santa Cruz. **Table 9** lists all the major node and link variables in the highway network. Except those variables identified as new variables, all the other variables and their values are directly inherited from the AMBAG networks, and updated based on the SCCRTC's review results.

Figure 2: Santa Cruz County Highway Network by Functional Classification

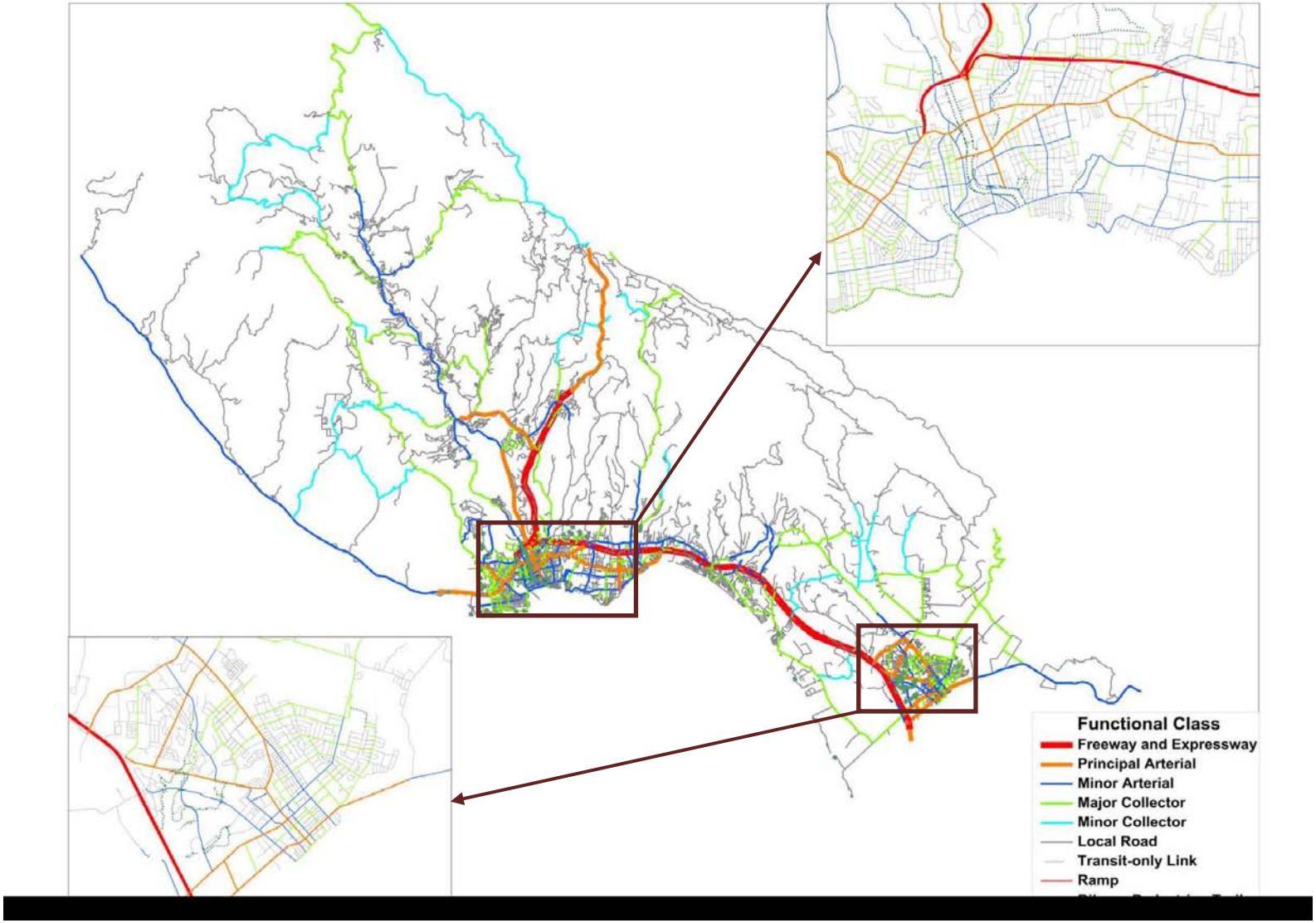


Table 9: Standard Master Highway Network Variables

Attribute	Description
Nodes	
ID	Unique Node ID
X	X-coordinate of node in Nad 83
Y	Y-coordinate of node in Nad 83
AMB AG_TAZ	Node Number in the AMBAG Model
External Node	If external station
External Station Name	External Station Name
ParkandRide	If PNR lot
Study_Intersection	If intersection that needs to output turning movement
Links	
ID	Unique Link ID
Length	Distance in miles
Dir	Link Direction: 0 – two ways; 1 – one way
Functional_Class	Functional Classification of the link
Functional_Class_Description	Functional Classification Name
Street Name	Street name
Jurisdiction	Screenline by direction (See Appendix D)
Bike Facility	Bike Facility
Bike_Class	The class of the bike facility
Bike_Name	Bike Route Name
AB_Lanes	Number of lanes in the AB direction
BA_Lanes	Number of lanes in the BA direction
Area Type	Area type
Lane Width	The width of each lane
Shoulder Width	The width of the shoulder
Divided	If the road is divided
Posted_Speed	Posted Speed of the roadway
WalkTime	Walk time on the highway link
BikeTime	Bike Time on the highway link
RAILTIME	Rail travel time on transit-only links (for rail service only)
AB_HourCap	Hourly capacity for AB direction (factored by number of lanes already)
BA_HourCap	Hourly capacity for BA direction (factored by number of lanes already)

Table 9: Standard Master Highway Network Variables

Attribute	Description
Alpha	Parameter used in the volume delay function during the traffic assignment stage (from AMBAG model)
Beta	Parameter used in the volume delay function during the traffic assignment stage (from AMBAG model)
Mode	1: used by walk, bike or auto; 2: used by bike only; 99: used by auto only
County	County the link is located.
Distance (new)	Same as Length, but the aggregate distance on the external connectors.
AM_PrdHrs (new)	Period factor to convert hourly capacity to the capacity in the AM Peak Period
MD_PrdHrs (new)	Period factor to convert hourly capacity to the capacity in the MD Time Period
PM_PrdHrs (new)	Period factor to convert hourly capacity to the capacity in the PM Peak Period
NT_PrdHrs (new)	Period factor to convert hourly capacity to the capacity in the NT Time Period

Notes:

1. See Table 10 for details on detailed definition of functional classification.
2. See Table 11 for details on Ideal Capacity by functional classification and posted speed.
3. See
4.
5.
6. Table 12 for capacity adjustment by area type.
7. See Table 13 for capacity adjustment by lane width.

Source: SCCRTC Highway Network

Table 10: Functional Classification Definition

Code	Functional Classification Name
1	Interstate
2	Freeways or Expressways
3	Principal Arterial
4	Minor Arterial
5	Major Collector
6	Minor Collector
7	Local
8	HOV2 Facility
9	HOV3+ Facility
33	Proposed Facility
44	Transit-only Link
77	Ramp
88	Bike/Ped Trail

Table 10: Functional Classification Definition

Code	Functional Classification Name
98	External Connector
99	Centroid Connector

Table 11: Ideal Capacity by Functional Classification, and Posted Speed

Functional Classification	Ideal Capacity	Speed Ranges (MPH)				
		0-25	25-35	35-45	45-55	55+
1. Interstate	2200	1600	1800	1900	2000	2200
2. Expressways/Freeway	2350	1600	1800	2000	2200	2350
3. Principal Arterial	2000	1500	1700	1800	1900	2000
4. Minor Arterial	1800	1400	1500	1600	1700	1800
5. Major Collector	1600	1200	1300	1400	1500	1600
6. Minor Collector	1400	850	900	1000	1000	1000
7. Local	1000	850	900	1000	1000	1000

Note: Capacity shown as passenger car per hour per lane (PCPHPL) based on HCM
Source: AMBAG Model Documentation

Table 12: Capacity Adjustment by Area Type

Area Type	Access Points per Mile	Reductions
1. Rural	0 to 10	1.0 (no reduction)
2. Suburban	10 to 20	0.94
3. Urban	20 to 30	0.90
4. Dense Urban	30+	0.88
5. Commercial	30+	0.88

Source: AMBAG Model Documentation

Table 13: Capacity Adjustment by Lane Width

Lane Width	Freeway and Multi-Lane Roadways	Reductions
12 feet or more	1.0 (no adjustment)	1.0 (no adjustment)
11 feet	0.97	0.94

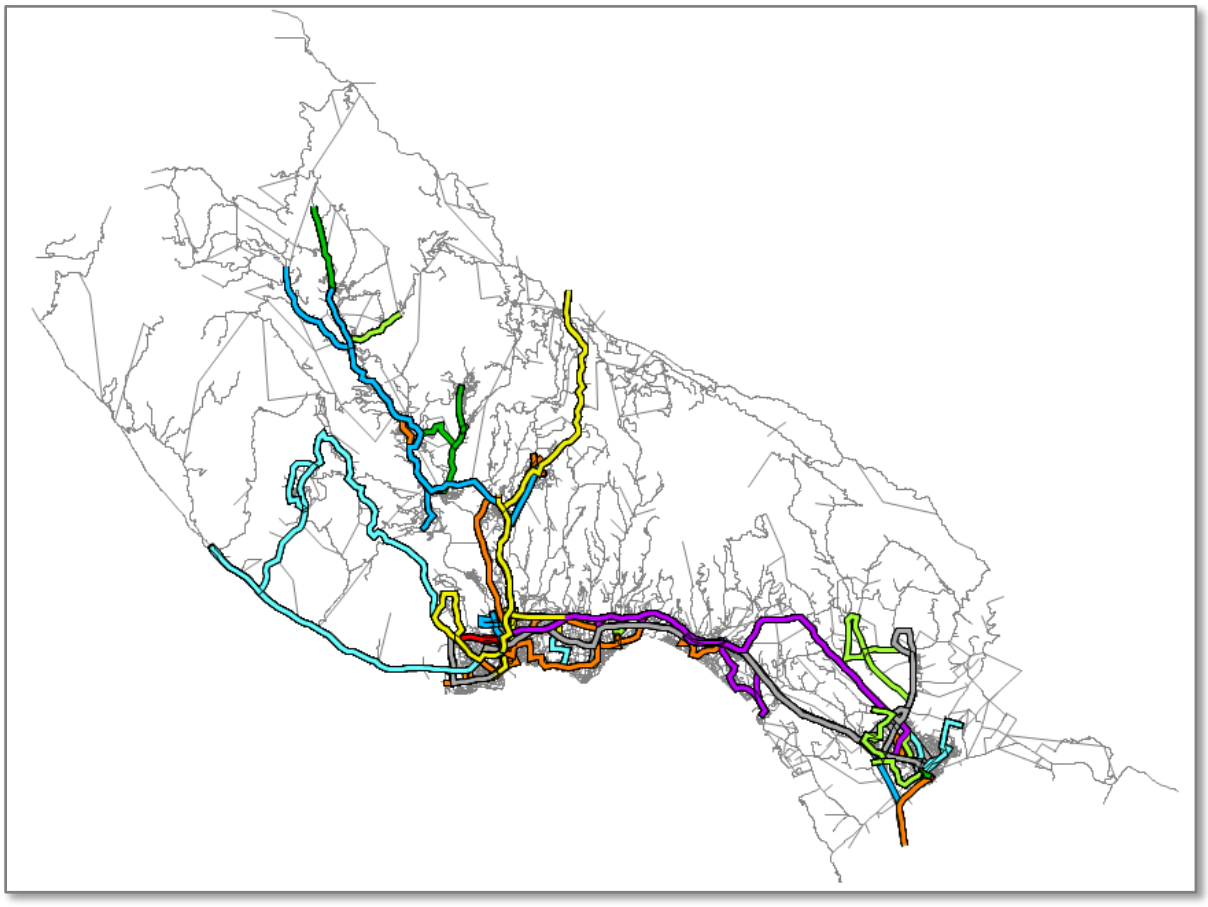
10 feet	0.91	0.87
9 feet or less	0.87	0.76

Source: AMBAG Model Documentation

2.4 – TRANSIT NETWORK

The base year transit network for the Santa Cruz County model is directly extracted from the AMBAG base year transit network, by excluding the transit service outside the Santa Cruz County, as shown in **Figure 3** below.

Figure 3: Santa Cruz County Base Year Transit Network



The transit network, in addition to its underlying highway network, includes route layer and stop layer. In the base year transit network, only local bus and express bus transit services serve Santa Cruz County, however light rail and commuter rail services are also included in the model for potential future use.

The MODE in transit coding is not the same as travel mode, i.e. drive alone, rideshare, biking, etc. Instead, it defines all the transit-related modes, including transit modes (local bus, express bus, light rail, etc.) and non-transit modes (walk access or drive access links). A recommended MODE structure is shown in **Table 14**.

Table 14: Transit-related Modes

Attribute	Description
Transit Lines	
1- WALKLINKS	Define all the links used for walk access or egress.
2- Drive Access	Replaced by PNR highway skims
3- Local Bus	Links used by local bus
4- Express Bus/BRT	Links used by express bus/BRT
5- Light Rail	Links used by light rail service
6- Commuter Rail	Links used by commuter rail

Source: Santa Cruz County Model

Transit travel time is represented as a function of the congested travel time for auto by transit mode. The transit travel time function will be validated based on the actual transit service operating time. The standard network variables included in the transit system are listed in **Table 15**.

Table 15: Standard Transit Variables

Attribute	Description
Route System	
Route_ID	Unique ID for each transit route.
Route_Name	Unique common name for transit line.
MODE	Integer indicating mode of the transit line.
Agency Name	Transit operating agency
PK_HEADWAY/OP_HEADWAY	Interval, in minutes, between two vehicles on a line. More than one HEADWAY may be specified (for example, peak and off-peak headways may differ).
FARE	Transit fare
FARE_INDEX	The index in the fare matrix if zonal fare
FARE_TYPE	Fare Type: 1- Flat fare, 2- Zonal fare
PK_INIT_WAIT/ OP_INIT_WAIT	Initial wait time for peak and off-peak periods
Transit Stop	
ID	Unique ID for each transit stop
Longitude/ Latitude	Coordinates of a stop

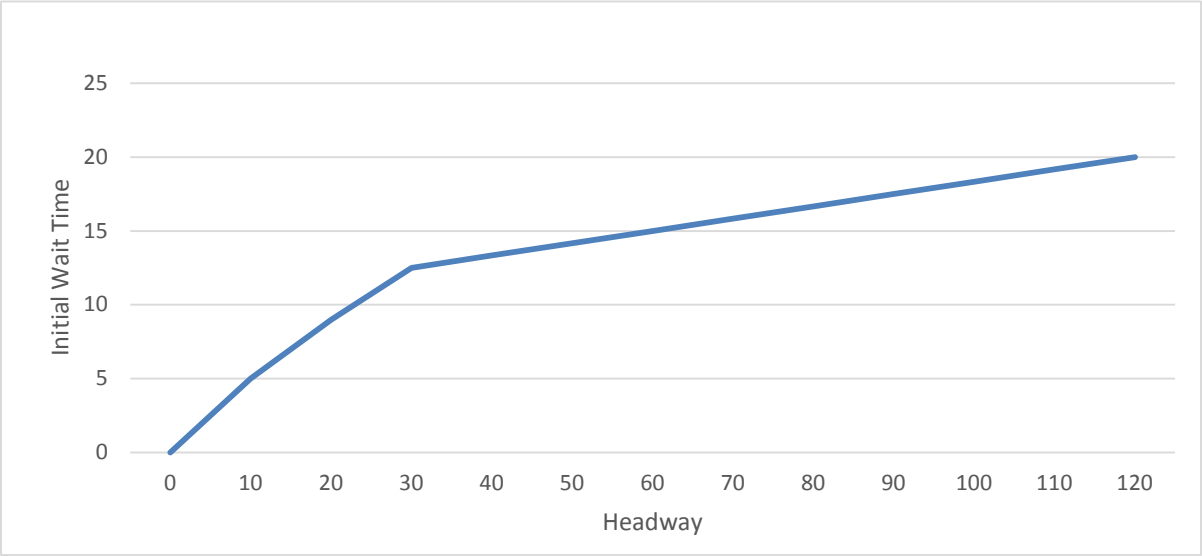
Table 15: Standard Transit Variables

Attribute	Description
Route_ID	The Route ID that the stop belongs to
Pass_Count	The number of times that the transit service passing this stop
Milepost	The Milepost of this stop on this route
Physical_Stop_ID	The physical stop ID that this stop corresponds to
STOP_ID	The ID of this stop, same as ID
NodeID	The highway node ID that this stop connects to
RealStop	If this stop is a real stop, 1- yes, 0- no.

Source: Santa Cruz transit network

The initial wait time, by default, is half of the headway of the transit routes. However in reality, for transit service with longer headway, the transit users often come at the time following the schedule, instead of simple randomly arrived. Therefore, the initial wait time for the SCC Model is calculated from an empirical step-wise function based upon headways (Figure 4), rather than simply half of the headways.

Figure 4: Relationship between Initial Wait Time and Headway



2.5 – OTHER INPUT FILE UPDATES

In addition to the land use and highway/transit networks, the following input files need to be prepared for the base year scenario or a specific year scenario.

- Through Trip Table
- Gateway Producers – Attractors (PAs) for the IX and XI Trips
- Special Generator Input

The through trip table and the gateway PAs are generated through a subarea analysis of the AMBAG model. Using AMBAG base year scenario, the subarea for Santa Cruz County was defined, and the subarea OD matrix files by time period was generated through the subarea analysis in TransCAD, which include all the internal zones within Santa Cruz County and the external zones to the county. In those subarea OD matrix files, the trips related to the external zones are used in the through trip table (XX trips) and gateway PAs (IX and XI trips). In addition, the California Statewide Travel Demand Model (CSTDM) was used for determining the external gateway weighted average distance for trips exiting the gateway, and for future year evaluation of gateway and through trips.

Special generator input file includes two sets of data, one is the visitor PAs and the other is the group quarter PAs. The visitor PAs can be directly obtained from the visitor-shopping purpose and visitor-tourism purpose in the AMBAG model. However for the group quarter PAs, they cannot be directly estimated due to the lack of data, but are generated through a simplified methodology, which is explained in details in Section 4.2.1.

3 –MODEL DEVELOPMENT

3.1 – NETWORK SKIMMING

3.1.1 –Highway Skimming

With the highway network built for Santa Cruz County, the model performs a highway skimming process that determines the shortest path from centroid node to centroid node. The free flow travel times, calculated based on posted speeds, are used when the model run starts, and then the congested travel time from the last trip assignment stages are applied over a series of model feedback loops and used in the highway skims. Both peak and off-peak skim matrices are created. Peak skim matrices are based upon the AM (6-9am) peak period highway network condition while the off-peak skim matrices are based upon the mid-day (9am-4pm) period condition.

Skim matrices are generated based on the path of the least generalized cost, and based on this path, travel time and distance are skimmed as well. Note the generalized cost is a function of the travel time weighted by the value of time and auto operating costs based on the distance. After the skims are generated, the terminal times (additional time at each end to finish each trip) are added, and the intra-zonal travel times are calculated as the average of the shortest travel time to the three neighboring TAZs. In addition to the auto skims, walk and bike skims are generated using similar methodology.

Table 16: Highway Skim File Structure

Travel Mode	Time of Day	Skim Matrix
Drive Alone	AM Peak Period	Time, Distance, Cost
	MD Off-peak Period	Time, Distance, Cost
Shared Ride 2	AM Peak Period	Time, Distance, Cost
	MD Off-peak Period	Time, Distance, Cost
Shared Ride 3+	AM Peak Period	Time, Distance, Cost
	MD Off-peak Period	Time, Distance, Cost
Walk	AM Peak Period	Distance, Time
	MD Off-peak Period	Distance, Time
Bike	AM Peak Period	Distance, Time
	MD Off-peak Period	Distance, Time

Source: Santa Cruz County Model

3.1.2 –Transit Skimming

Similar to highway skimming, transit skims are computed from centroid node to centroid node, however this process take place on the transit route layer and its underlying highway network. TransCAD minimizes generalized cost when determining the best path from origin to destination nodes. The generalized cost is a weighted sum of in-vehicle travel times, access, egress and transfer times, waiting times and fares. The model uses the Pathfinder method for both skimming and assignment, which combines routes together into trunk links when determining best paths using a combined headway approach.

The SCC model assumes a hierarchy of transit modes to build skims for each primary mode, i.e., the hierarchy in the order of local bus, express bus/BRT, light rail and commuter rail, as shown in **Table 17**. For example, local bus and express bus will serve as supporting modes to light rail. **Table 18** lists the weights of the walk time (including access, egress and transfer walk times), in-vehicle travel times and wait times for each mode.

Table 17: Transit Skimming Mode Setup

MODE_NAME	MODE_ID	LOC_USED	EXP_USED	LRT_USED	CRT_USED	ALL_USED
WALKLINKS	1	1	1	1	1	1
LOC	3	1	1	1	1	1
EXP	4		1	1	1	1
LRT	5			1	1	1
CRT	6				1	1

Table 18: Transit Skimming Mode Setup

MODE_NAME	MODE_ID	IMP_FLD_PK	IMP_FLD_OP	RFAC_LOC	RFAC_EXP	RFAC_LRT	RFAC_CRT	RFAC_ALL	WAITFAC
WALKLINKS	1	WalkTime	WalkTime	2	2	2	2	2	
LOC	3	LocTime	LocTime	1	1.5	1.5	1.5	1	2.5
EXP	4	ExpTime	ExpTime		1	1.5	1.5	1	2.0
LRT	5	RailTime	RailTime			1	1.5	1	1.75
CRT	6	RailTime	RailTime				1	1	1.75

Similar to highway skimming, two skim matrices are calculated for peak and off-peak periods respectively. Transit skims are generated by transit mode, access mode and time period. For example in the base year, only local bus and express bus are available in Santa Cruz County, therefore, a total of eight transit skims are generated, i.e., walk access to local bus , walk access to express bus, drive access to local bus and drive

access to express bus for both peak and off-peak periods. In addition, a set of combined transit skims is calculated by access mode and time period, also called "Best Path Transit Skims". The transit skims for each individual transit mode are used in the mode choice utility calculation for each choice, while the best path transit skims can be used in the calculation of impedance in the trip distribution step to represent the overall accessibility of transit.

Table 19: Transit Skimming File Structure

Attribute	TOD	Local Bus		Express Bus		Light Rail		Commuter Rail	
		Walk Access	Drive Access	Walk Access	Drive Access	Walk Access	Drive Access	Walk Access	Drive Access
Fare	AM, MD	X	X	X	X	X	X	X	X
In-Vehicle Time	AM, MD	X	X	X	X	X	X	X	X
Initial Wait Time	AM, MD	X	X	X	X	X	X	X	X
Transfer Wait Time	AM, MD	X	X	X	X	X	X	X	X
Initial penalty time	AM, MD	X	X	X	X	X	X	X	X
Transfer penalty time	AM, MD	X	X	X	X	X	X	X	X
Transfer walk time	AM, MD	X	X	X	X	X	X	X	X
Access walk time	AM, MD	X	X	X	X	X	X	X	X
Egress walk time	AM, MD	X	X	X	X	X	X	X	X
Access drive time	AM, MD		X		X		X		X
Total Time	AM, MD	X	X	X	X	X	X	X	X
# of transfer	AM, MD	X	X	X	X	X	X	X	X
In vehicle time local bus	AM, MD	X	X	X	X	X	X	X	X
In vehicle time express bus	AM, MD			X	X	X	X	X	X
In vehicle time light rail	AM, MD					X	X	X	X
In vehicle time commuter rail	AM, MD							X	X

3.2 – TRAVEL MODEL ESTIMATION AND CALIBRATION

This section documents the development details of the trip generation, trip distribution, and mode choice components of the SCCRTC model. The trip generation, trip distribution, and mode choice models were estimated and calibrated mainly using data from the 2012 California Household Travel Survey and the 2012 Transit On-Board Survey. These data sets are described below and in further detail in Appendices A3 and A4.

3.2.1 2012 California Household Travel Survey

To increase sample sizes, model estimation utilized data from Santa Cruz County along with several neighboring counties: San Benito, Monterey, San Luis Obispo, and Santa Barbara. For the mode choice model only, data from Santa Clara County was also used, along with the transit on-board survey. The survey records from Santa Clara County were used to estimate trips on modes that do not currently exist in Santa Cruz County. The distribution of CHTS households in the estimation counties is as follows:

County	Number of weekday-surveyed households in CHTS
Monterey	1,022
San Benito	268
San Luis Obispo	847
Santa Barbara	435
Santa Clara	2,136
Santa Cruz	674

The estimation dataset consists of trips in the CHTS which satisfy the following criteria:

- For household-level variables, only residents of the following counties will be used:
  - Santa Cruz, Monterey, San Benito (the three AMBAG counties)
  - San Luis Obispo and Santa Barbara counties (two Central Coast counties with similar characteristics to Santa Cruz County)
  - Santa Clara County (a neighboring county with widespread transit service, only used to provide transit data for transit model estimation)
- Only weekday trips are included
- Trips are included from the full year of the CHTS, including winter and summer

- Trips with both trip ends outside the 5 counties listed above are excluded. Note that survey records for the Santa Clara County are not used in the trip generation and distribution estimation, but only used to estimate transit model components.

The CHTS dataset was further processed to generate key variables, required to estimate and calibrate the model. For example, trip purpose, travel mode, and time periods are example key variables that were generated from the CHTS dataset. Trip purpose is the basic concept to differentiate travel behavior and estimate trips individually, and used throughout the model process, including trip generation, distribution, mode choice, and at the end all the trips estimated by purpose are combined and assigned to the network. Travel modes and time periods are also important variables as the estimated person trips are further disaggregated by mode and time period in the mode choice and time of day stages. The detailed household survey dictionaries are included in Appendix A3, as well as the survey data process to generate key variables.

To process the CHTS dataset and generate the information for model estimation, other important variables are introduced to represent location efficiency by incorporating the Ds into Travel Model, i.e., service population. This variable is defined as the number of jobs within 45 minutes and the number of workers within 45 minutes from the EPA Smart Location Database (SLD). From the CHTS dataset, the trip rates are generated by service population category, in addition to other cross-classifications. Detailed definition of service population and its categories are explained in Appendix A3.

Note that the CHTS dataset does not have the detailed information for origin and destination coordinates, therefore the trip information from this dataset cannot be defined at a more detailed geographical level, i.e., the model TAZ level. The travel time and distance information gathered from the CHTS dataset are from the reported data in the survey.

3.2.2 Transit On-Board Survey

The Santa Cruz County transit onboard survey data (2012) was used to generate calibration targets for the transit modes and other transit-related analysis. shows the number of records (ridership) captured by route in the survey. This data was later expanded using observed ridership data to generate transit trip targets for the mode choice model.

Table 20: Number of Records by Route and Period

Route	Off peak	Peak
3	8	13
4	4	8
8	2	2

Table 20: Number of Records by Route and Period		
Route	**Off peak**	**Peak**
10	59	44
12	3	18
15	120	124
16	176	98
17	42	29
19	72	98
20	17	48
30	7	9
33	9	6
35	33	42
40	13	5
41	10	11
42	3	2
55	2	3
56	4	9
66	64	2
68	7	24
69	34	11
71	87	53
72	6	75
74	8	8
75	11	3
79	8	12
91	8	6
69W	47	10

Similar to the CHTS data process, key variables, such as trip purpose, transit mode, access modes, and time period, were generated. The transit modes in the survey include local bus and express bus, while the access modes include walk access (including transit access) and drive access. The survey data was further expanded to the observed ridership by transit route and time period, and factored by the # of transfers from the same trip record in the survey to generate the transit trips. Note that the transit on-board survey does not have detailed number of transfer information, but can only be roughly estimated through the

survey questions on access and egress modes, which may affect the accuracy in the number of transit trips calculated based on the boardings and number of transfers.

The resulting transit trips from the survey are summarized by transit mode, access mode and time period, and used as the calibration targets for the mode choice model calibration, combined with the targets from CHTS dataset for auto and non-motorized trips. The detailed data process and results are shown in Appendix A4 – Transit On-Board Survey Data Process.

3.2.3 –Trip Generation

The following trip purposes are present in the SCC Model. For sake of comparison, trip purposes from the AMBAG model are also shown. Since household travel surveys report travel by residence of the area and residence of California only, the Non-Home Based Recreation purpose and the three truck purposes are not estimated in the current SCC model since local data were not available. Those purposes are just placeholders in the model now, and can be filled in in the future when estimation data is available.

Table 21: Trip Generation Purposes

Trip Purpose	Abbreviation	SCCRTC Model	AMBAG Model
Home-Based Work	HBW	X	X
Home-Based Shop	HBS	X	X
Home-Based School (K-12)	HBK	X	X
Home-Based College	HBC	X	X
Home-Based Other	HBO	X	X
Work-Based Other	WBO	X	X
Other-Based Other	OBO	X	X
Visitors			X
NHB Recreation		X	
Trucks Small		X	
Trucks Medium		X	
Trucks Heavy		X	

Trip Rates

Trip generation rates for the SCC Model were estimated from the 2012 CHTS, with the exception of NHB Recreation and Truck purposes, for which trip generation is discussed separately.

Trip generation rates are calculated and applied in three steps: first, base trip production and attraction rates were calculated via cross-classification and regression models. Next, these base rates were split on a percentage basis into ii, ix, and xi trips, by trip purpose and geography. Each of these steps is explained below. These trip generation rates, when applied to the socio-economic data in a model SED file, result in the productions and attractions generated at each TAZ. The trip generation rates for the SCC Model can be found in Appendix B1.

Home-based Productions: Cross-Classification Models

Trip rates for three of the home-based trip productions (HBW, HBS, HBO) were estimated using cross-classification models. The estimated trip rates are applied to SED data which has been cross-classified by several variables, which differ somewhat by trip purposes, as described in the table below. Table text indicates the categories used for each variable; the eight income categories are described using the seven breakpoints between categories.

Table 22: Variables Included in Trip Generation

	Workers Per Household	Autos Per Worker	Autos Per Household	Household Size	Household Income
HBW	0, 1, 2, 3+	0, <1, 1+			10K, 25K, 50K, 75K, 100K, 150K, 200K
HBS			0, 1, 2, 3+	1, 2, 3, 4+	10K, 25K, 50K, 75K, 100K, 150K, 200K
HBO			0, 1, 2, 3+	1, 2, 3, 4+	10K, 25K, 50K, 75K, 100K, 150K, 200K

Estimation of trip rates using cross-classification models must ensure that all cross-classification groups have large enough sample size to produce sufficient variability to obtain a stable average trip rate. Because not all cross-classifications of the variables above do in fact have a large enough sample size, some cross-classifications were estimated in aggregate, resulting in identical trip rates being estimated for some cross-classification combinations.

Variables were added to the cross-classification model sequentially, and with each added variable existing groups were only subdivided if there was sufficient sample size (generally at least 40 households) to support a split. The order in which variables were added to the cross-classification models was as follows:

- HBW productions: Workers per Household, then Autos per Worker, then Household Income.
- HBS and HBO productions: Household Size, then Autos per Household, then Household Income.

Although the model is coded to allow for eight income categories and three autos-per-worker categories, the data available did not allow for distinctions to be determined this finely (either because of a lack of sufficient amount of data, or differences which weren't statistically significant, or both). In effect, this means that the estimated trip rates differ only among three income categories: low (under $50,000), medium ($50,000 - $100,000), and high (over $100,000); and only between two autos-per-worker categories (0 or <1 autos per worker, versus 1 or more autos per worker).

Trip generation rates were not significantly different among all the area types once the cross-classification above was accounted for (most likely because the available data was limited) so the estimated trip generation rates do not differ by area type. The resulting production rates are listed in Appendix B1.

Home-Based Productions: School Purposes

The remaining home-based trip productions, HBK and HBC, were estimated using regression models. The units of analysis for these models were households, and the explanatory variables were the numbers of household members in the age categories listed in the table below.

Table 23: Variables Included in School Trip Generation

	Age 3-14	Age 15-17	Age 18-24	Age 25-34
HBK	X	X		
HBC		X	X	X

Two separate models were estimated for each trip purpose, one for households in area types 1 and 2 (with fewer than 75,000 workers+jobs within a 30 minute auto trip); and one for households in area types 3 and 4 (with more than 75,000 workers+jobs within a 30 minute auto trip).

The resulting trip production rates, per person in the age ranges specified, are listed in Appendix B1. Note that while one might reasonably expect each child to make two school trips per day (to and from), the actual trip rates are somewhat lower: the survey includes days when individual children don't go to school due to school holidays or illness. Furthermore, if children make intermediate stops between school and home, the resulting trips will not appear as HBK trips in the household survey but instead as multiple trips (eg OBO and HBO). The resulting coefficients for the regression models are listed in Appendix B1.

Attractions and Non-home Based Productions

Trip attractions, along with trip productions for non-home-based trips, were estimated using regression models. Units of analysis for these regression models were groups of census tracts; aggregation techniques are described below. The explanatory variables for these models were the total number of jobs in each of six employment categories, school enrollment totals at the K-12 and university levels, and the total number of households. The six employment categories used are listed below:

Table 24: Employment Categories for SCC Model

Category	Description and NAICS code(s)
Agri	Agriculture, Forestry, Fishing and Hunting (11)
Cons	Construction (23)
Inds	Mining (21), Utilities (22) and Manufacturing (31-33)
Retl	Wholesale Trade (42) and Retail Trade (44-45)
Serv	Transportation and Warehousing (48-49), Information (51), Finance and Insurance (52), Real Estate Rental and Leasing (53), Professional, Scientific, and Technical Services (54), Management of Companies and Enterprises (55), Art, Entertainment, and Recreation (71), Accommodation and Food Service (72) and Other Services (81)
Publ	Administrative and Support and Waste Management and Remediation Services (56), Educational Services (61), Health Care and Social Assistance (62), and Public Administration (92)

The units of analysis for these regression models were defined using a combination of geography (census tracts, census designated places, or counties) and area type (as measured by jobs+workers within a 30 minute auto trip). A "rolling up" process was used where the smallest possible analytic units with sufficient sample size were used. Where census tracts attracted at least 50 trips of a given purpose, they were used as analytic units; otherwise census places or full counties, grouped by area type, were used instead.

For the school (HBK and HBC) trip attractions, the household survey data was only available at the full county level, so attractions were estimated at the county level. The location of school enrolment is geographically accurate and the rates apply to all schools.

The table below summarizes the number of analytic units used for each regression model, by trip purpose and attraction (A) versus production (P). For example, the 27 analytic units used for the HBW attractions model includes one census tract (a census tract in Monterey County with sufficiently many work trips attracted to it), fourteen subsets of census places with the same area type (e.g., Santa Cruz, type 3; Santa

Cruz, type 4; Paso Robles type 1; Unincorporated Monterey County type 2), and twelve subsets of counties grouped by area type (e.g., Santa Cruz County, types 1 and 2 or Monterey County, types 3 and 4).

Table 25: Summary of Geographic Units Used in in Trip Generation Estimation

Trip Purpose	Census Tracts	Census Places by Area Type	Counties by Area Type	Total Analytic Units
HBW (A)	1	14	12	27
HBK (A)	0	0	6	6
HBC (A)	0	0	6	6
HBS (A)	2	11	11	24
HBO (A)	37	28	13	78
WBO (P)		5	9	14
WBO (A)		6	10	16
OBO (P)	17	22	12	51
OBO (A)	15	19	13	47

Potential explanatory variables for these models include the total employment per census tract, categorized by sector. Data for this purpose is obtained from the EPA's Smart Location Database (SLD). The employment categories in the SLD do not fully match those in the model, so the model's Construction, Agricultural, and Industrial categories are combined; the resulting trip rate for the combined category is then applied to each of the three model categories. Additional explanatory variables tested include the number of households per tract, and the school enrollment per tract. School enrollment data is obtained from the California Department of Education (K12, public school enrollments only) and from the California Postsecondary Education Commission (College, public and private 2- and 4-year institutions).

All of the regression models estimated were simple linear regressions with no intercept. In the case of non-home-based trips (WBO and OBO), the same variables were used for the production and the attraction models. The coefficients estimated for each regression model are listed in Appendix B1. As an example of interpreting these models, the home-based other attraction model states that each retail, service, and public sector job will attract roughly 2 HBO trips, each k-12 school enrollment will attract roughly 1.5 HBO trips, and each household will attract roughly 1.1 HBO trips.

Proportion of ii, ix, xi trips

Once the base trip production and attraction rates were established, trip productions for each TAZ were further segmented into ii and ix trips, while trip attractions were further segmented into ii and xi trips.

This segmentation was calculated separately for each trip purpose and each Census Designated Place (referred to below as simply places), as described below. Note that this segmentation simply describes the proportion of trips which enter or leave the county from each listed place; it does not govern the location of those trips, which is still governed by the trip distribution model.

First, all CHTS trip ends and households were associated with a place or were determined to fall in unincorporated areas. This process was made more complicated by the fact that the publically-available version of the CHTS has all locations geocoded by census tract; however census tract boundaries may not align well with place boundaries, and each census tract may have multiple places associated with it. In cases where multiple places are associated with a single census tract, the place with the largest population in the tract (identified at the census block level) is used. If the largest population in the tract is outside all named places, then the tract is identified as an unincorporated portion of the relevant county. Note that some named places are not the largest population center in any census tract, and thus do not appear in the summaries of CHTS data, having been aggregated into either neighboring places or the unincorporated portion of the county.

Next, trip productions for each place and trip purpose were segmented into ii and ix trips; while trip attractions were segmented into ii and xi trips. In cases where the CHTS contains fewer than 30 trips for the place/purpose combination, the county-wide average ii versus ix or ii versus xi percentage was substituted. The tables below shows the percentages of ix trip productions and xi trip attractions for each place in Santa Cruz County. Places with enough trips to calculate an ix or xi percentage based on only the place, as opposed to county-wide data, are indicated in **bold**.

Table 26: Percentage of Trip Productions Leaving Santa Cruz County (ix %)

	HBW	HBS	HBK	HBC	HBO	WBO	OBO
Aptos Hills – Larkin Valley	17%	9%	4%	16%	**11%**	8%	4%
Boulder Creek	17%	9%	4%	16%	**20%**	8%	4%
Capitola	**11%**	**0%**	4%	16%	**1%**	8%	**0%**
Felton	17%	9%	4%	16%	**2%**	8%	**4%**
Live Oak	**17%**	9%	4%	16%	**7%**	8%	**0%**
Rio del Mar	17%	9%	4%	16%	**3%**	8%	4%
Santa Cruz	**7%**	**5%**	**0%**	16%	**5%**	**2%**	**2%**
Scotts Valley	**16%**	9%	4%	16%	**8%**	8%	**5%**
Seacliff	17%	9%	4%	16%	**16%**	8%	4%
Soquel	**20%**	**5%**	4%	16%	**5%**	8%	**3%**
Twin Lakes	17%	9%	4%	16%	**2%**	8%	4%

Watsonville	**34%**	**56%**	4%	16%	**10%**	**12%**	**9%**
All Others	17%	9%	4%	16%	6%	8%	4%
Unincorporated	**34%**	9%	4%	16%	**15%**	8%	4%
Countywide Average	**17%**	**9%**	**4%**	**16%**	**6%**	**8%**	**4%**

Table 27: Percentage of Trip Attractions from Outside Santa Cruz County (xi %)

	HBW	HBS	HBK	HBC	HBO	WBO	OBO
Aptos Hills – Larkin Valley	18%	7%	4%	7%	9%	10%	9%
Boulder Creek	18%	7%	4%	7%	**13%**	10%	9%
Capitola	18%	**0%**	4%	7%	**2%**	10%	**6%**
Felton	**14%**	7%	4%	7%	**13%**	10%	**8%**
Live Oak	**15%**	7%	4%	7%	**8%**	**3%**	**1%**
Rio del Mar	18%	7%	4%	7%	**6%**	10%	9%
Santa Cruz	**8%**	**3%**	**0%**	7%	**7%**	**5%**	**10%**
Scotts Valley	**18%**	7%	4%	7%	**9%**	**12%**	**15%**
Seacliff	18%	7%	4%	7%	**7%**	10%	9%
Soquel	**19%**	**1%**	4%	7%	**2%**	**18%**	**2%**
Twin Lakes	18%	7%	4%	7%	9%	10%	9%
Watsonville	**36%**	**51%**	4%	7%	**19%**	**5%**	**14%**
All Others	18%	7%	4%	7%	9%	10%	9%
Unincorporated	**45%**	7%	4%	7%	**17%**	10%	9%
Countywide Average	**18%**	**7%**	**4%**	**7%**	**9%**	**10%**	**9%**

Visitor Trips and Group Quarters

Visitor trips are represented in the model as special generator productions and attractions. Visitor trips which enter or leave the county are included as xi attractions with the HBO (Home-Based Other) trip purpose, while visitor trips within the county were included as OBO productions and attractions (Other-Based Other). Trip counts for these special generators were determined using the AMBAG model. Productions and attractions for the AMBAG visitor trip purposes are added to the relevant TAZs as special generators.

Persons living in "group quarters" (GQ) are not considered households and therefore not represented by the 2012 California Household Travel Survey. For purposes of the SCC Model, Group Quarters population represents university students living in dormitories or other group living situations. Special trip rates were developed to represent this population's trips, using the process outlined below. These trips are then added to the model as special generator productions and attractions.

GQ trip rates were developed based on the ITE estimated trip rate for colleges and universities of 2.38 vehicle trips per enrolled student. However this trip rate include trips made by university employees and commuting students as well as dormitory residents, and is a vehicle trip rate rather than a person trip rate as used in the model. Therefore, some simple assumptions were made about the number of trips made by each of the three populations, and about the relationship between vehicle trips and person trips for the dormitory population. Finally, the total trip ends per dormitory resident were divided among trip purposes and productions versus attractions based on simple assumptions: 30% each HBC productions and attractions, 30% HBC productions, 10% each HBW, HBS, and HBO productions, 4% each OBO productions and attractions, and 1% each WBO productions and attractions. These assumptions were based on general splits and verified by comparison to CHTS data. The table below lists the final GQ trip rates:

Table 28: College Dormitory Residents Trip Rates

	HBW	HBS	HBO	HBK	HBC	WBO	OBO
Productions	0.61	0.61	0.61	0	1.83	0.06	0.24
Attractions	0	0	0	0	1.83	0.06	0.24

For the model base year, a group quarter population of 8,000 students was modeled, based on the following assumptions:

- Cabrillo College, while a significant source of college enrollments, is a commuter-only campus and therefore does not have a "group quarters" population.
- UC Santa Cruz had an undergraduate enrollment of approximately 16,000[1] in 2011-2012, approximately half of whom live in dormitories.[2]

Trips from these 8,000 students were assigned to two TAZs on the UC Santa Cruz campus with the largest university enrollment in the SED data, and were split between the two TAZs based on the proportion of university enrollment in each.

[1] Source: University of Santa Cruz historical enrollment data from Institutional Research, Assessment & Policy Studies.

[2] Source: University of Santa Cruz Housing Frequently Asked Questions

3.2.4 – Trip Distribution

The trip distribution model for the SCC Model uses a traditional gravity model. The required inputs to implement the trip distribution model are:

- Composite travel time incorporating travel time for highway, transit, and walk/bike based on the least cost path.
- Balanced productions and attractions
- Friction factor computation

The first two sets of inputs can be generated from network skimming and trip generation stage. To calculate friction factors, the gamma function is used, consistent with the AMBAG model.

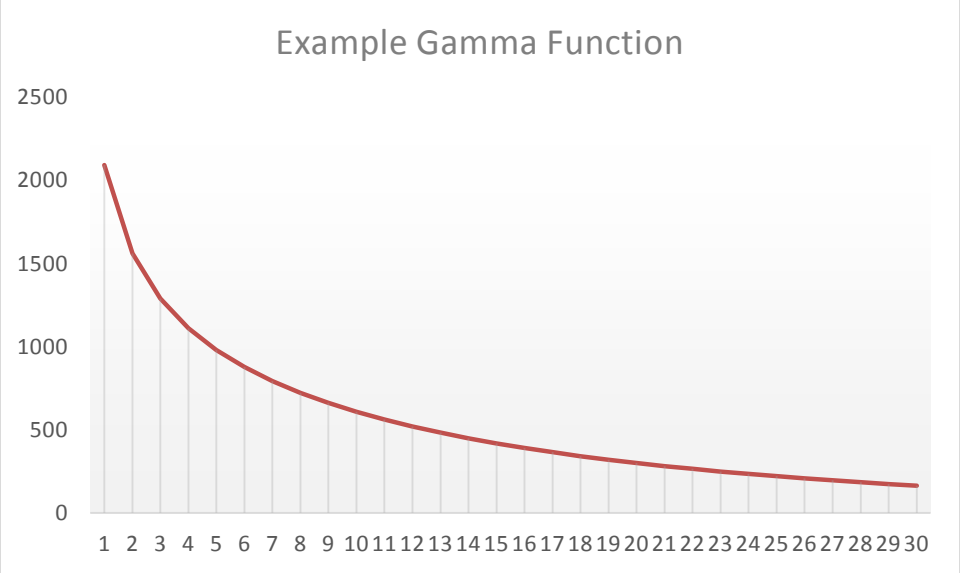
$$FF = \alpha * (Time)^{-\beta} * e^{-\gamma * Time}$$

Where

α = Alpha parameter

β = Beta parameter

γ = Gamma parameter



The alpha, beta and gamma parameters used in the Gamma Function were estimated and calibrated to fit trip length frequency curves obtained from 2012 CHTS data. For each trip purpose the frequency of travel times for trips within Santa Cruz County for all travel modes combined was calculated at one-minute intervals.

It should be noted that the publically-available 2012 CHTS data has no origin and destination zone information, because the geographic data is reported by census tract only, and zones are typically smaller than tracts. As a result, the travel times reported directly in the survey are used rather than using the model-estimated travel time by OD pair. Note that this creates an unavoidable inconsistency between reported travel time and model-estimated travel time. In addition, travel times in the 2012 CHTS are reported by survey respondents and thus may be more accurately thought of as "perceived time" rather than actual travel time. To assist in the calibration process, trip-length frequency curves were also created using CHTS trip distances (which were calculated as routed distances based on the respondent's mapped origin and destination), and modeled distances were compared to observed distances. Although an exact match of both time and distance was not possible, most trip purposes matched reasonably well.

The alpha, beta, and gamma parameters estimated for each trip purpose are listed below, along with the average distance, time, and speed of both model and CHTS trips. The graphs of the trip time frequencies (after flattening and smoothing) are included in Appendix B2 – Trip Time Frequency.

Table 29: Trip Distribution Parameters and Averages

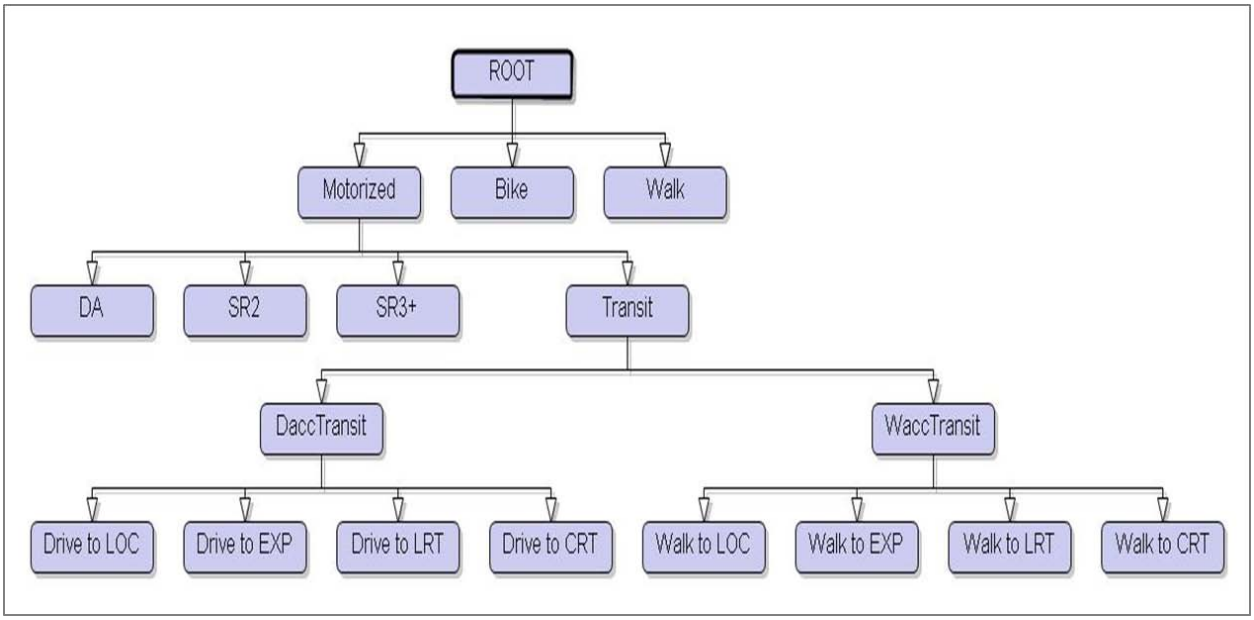
Trip Purpose	Alpha	Beta	Gamma	CHTS average time (minutes)	Model average time (minutes)	CHTS average distance (miles)	Model average distance (miles)	CHTS average speed (mph)	Model average speed (mph)
HBW	2777.875	0.9	0.05	16.7	13.4	5.7	6.3	20.6	28.0
HBS	2777.875	1.2	0.5	9.7	7.6	2.7	2.6	16.6	20.4
HBO	2777.875	0.5	0.125	12.8	11.2	3.9	4.3	18.0	22.7
HBK	2777.875	0.5	0.1	12.8	10.8	3.7	4.2	17.4	23.1
HBC	2777.875	0.05	0.2	24.5	12.5	8.7	5.7	21.4	27.6
WBO	2777.875	0.025	0.1	13.9	11.5	3.4	4.2	14.7	21.9
OBO	2777.875	0.5	0.075	12.4	11.3	3.6	4.1	17.3	22.0

3.2.5 – Mode Choice

The mode choice component of the SCC Model was transferred from the VTA model, then calibrated to match observed trip targets from both the California Household Travel Survey and the Transit On-board Survey conducted for Santa Cruz Metro.

The mode choice model structure is shown in the figure below. The structure has 4 levels of nesting, with a motorized nest containing both drive and transit modes; a transit nest containing walk- and drive-

access to transit, and each of the transit sub-nests containing local bus, express bus, light rail, and heavy commuter rail options.



Appendix B3 details the variables present in the mode choice model for each trip purpose, along with the model coefficients.

The estimated mode choice model is calibrated to match the calibration targets generated from the 2012 CHTS data and the transit on-board survey conducted by Santa Cruz Metro. The resulting calibrated mode shares are compared to the mode share targets by time period, as shown in the tables below.

As shown from the comparison in the tables below, the model-estimated mode shares are consistent with the mode share targets, except HBC trip purpose. For the HBC trip purpose, the drive alone mode share and non-motorized mode shares were deliberately calibrated to reflect generally shorter trips than were present in the CHTS. This was done because a significant percentage of HBC trips, unlike other trip purposes, result not from households but rather from students living in dormitories and other group quarters residences. Because a large proportion of the HBC trips made by this special population are short trips, the non-motorized and possibly shared ride mode shares increases, while the drive alone mode share decreases. This discrepancy in the is shown in the table below by the HBC trips in the model reflecting actual travel and transit surveys rather than the under surveyed results from the CHTS.

Table 30: Mode Choice Calibration Results – Peak Period

Mode	Peak Mode Share															
	HW		HS		HK		HC**		HO		WO		OO		Total	
	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets
DA	69%	70%	59%	60%	3%	3%	26%	37%	40%	40%	88%	88%	35%	33%	45%	46%
SR2	10%	9%	24%	25%	28%	28%	19%	2%	25%	25%	5%	5%	39%	36%	25%	23%
SR3+	3%	2%	9%	6%	47%	43%	16%	1%	23%	23%	5%	5%	14%	13%	17%	15%
Drive to LOC	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to EXP	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to LRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to CRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to LOC	4%	3%	1%	1%	0%	1%	4%	37%	0%	0%	0%	1%	1%	1%	1%	1%
Walk to EXP	0%	0%	0%	0%	0%	0%	0%	12%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to LRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to CRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bike	10%	10%	1%	3%	4%	4%	20%	3%	3%	3%	1%	1%	5%	2%	5%	3%
Walk	4%	5%	5%	6%	17%	21%	16%	2%	8%	9%	1%	1%	6%	16%	7%	12%
Total	100%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 31: Mode Choice Calibration Results – Off-Peak Period

Mode	Off-Peak Mode Share															
	HW		HS		HK		HC**		HO		WO		OO		Total	
	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets
DA	72%	74%	54%	56%	5%	5%	19%	32%	42%	42%	75%	72%	40%	37%	44%	46%
SR2	8%	6%	24%	26%	28%	28%	19%	9%	27%	27%	11%	9%	28%	25%	25%	23%
SR3+	5%	4%	12%	5%	44%	43%	6%	1%	19%	17%	5%	3%	20%	16%	17%	15%
Drive to LOC	0%	0%	0%	0%	0%	0%	1%	6%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to EXP	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to LRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to CRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to LOC	3%	2%	1%	0%	0%	2%	6%	28%	0%	1%	2%	2%	1%	1%	1%	1%
Walk to EXP	0%	0%	0%	0%	0%	1%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to LRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to CRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bike	7%	6%	1%	1%	6%	7%	41%	17%	4%	4%	1%	1%	5%	1%	5%	3%
Walk	5%	7%	8%	11%	17%	15%	8%	3%	9%	9%	5%	13%	7%	19%	7%	12%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	229%	100%	100%	100%

Table 32: Mode Choice Calibration Results – Daily

Mode	Daily Mode Share															
	HW		HS		HK		HC**		HO		WO		OO		Total	
	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets	Model	Targets
DA	70%	72%	56%	57%	4%	4%	20%	33%	41%	41%	81%	79%	38%	36%	45%	46%
SR2	9%	8%	24%	25%	28%	28%	19%	7%	26%	26%	8%	7%	31%	28%	25%	23%
SR3+	4%	3%	11%	5%	46%	43%	8%	1%	21%	19%	5%	4%	18%	15%	17%	15%
Drive to LOC	0%	0%	0%	0%	0%	0%	1%	6%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to EXP	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to LRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Drive to CRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to LOC	3%	3%	1%	0%	0%	1%	5%	30%	0%	1%	1%	1%	1%	1%	1%	1%
Walk to EXP	0%	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to LRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Walk to CRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bike	9%	8%	1%	2%	4%	5%	36%	13%	3%	4%	1%	1%	5%	1%	5%	3%
Walk	5%	6%	7%	9%	17%	18%	10%	3%	8%	9%	3%	7%	7%	18%	7%	12%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

3.2.6 – Trip Assignment

Trip assignment includes both traffic assignment and transit assignment components, which will be explained respectively in this section.

Traffic Assignment

In the highway assignment step, vehicle trips from the OD trip matrices are assigned to the network to determine flows on links and route choice between any origin and destination pair. Four assignments are performed for AM peak (6-9am), Mid-day (9am-4pm), PM Peak (4-7pm) and Night periods (7pm-6am). The Bi-Conjugate User Equilibrium (BFW) method is used for each of these assignments. The objective of any User Equilibrium-based model is to attempt to assign the flow in such a manner to find a solution where no user can improve his or her travel time from their origin to destination by choosing a different path. Traffic assignments will be combined to a multi-class assignment which separately evaluates and reports the following four vehicle types:

- Drive Alone
- Shared Ride 2
- Shared Ride 3+
- EE

Traffic assignment can also assign vehicle trips by trip purpose. In addition to the regular time period assignment, the model also runs assignment for the AM and PM peak hours, i.e. 7-8am and 5-6pm.

The model is run to either a maximum of 200 iterations per assignment period or a relative gap of 0.0001, whichever is achieved first. Most assignments for SCC Model converge in about 10-30 iterations in the most congested time periods.

The results presented below are based on daily flows calculated by summing the results of all the four time period assignments.

Table 33: Model-Estimated VMT and VHT by Functional Class: Base Year

Functional Classification Name	VMT	VHT	VMT%	VHT%
Freeways or Expressways	1,933,492	43,704	38%	31%
Principal Arterial	943,900	27,361	19%	19%
Minor Arterial	900,011	28,540	18%	20%
Major Collector	549,413	16,602	11%	12%
Minor Collector	72,263	2,277	1%	2%
Local	322,852	12,602	6%	9%
Ramp	144,478	4,558	3%	3%
Centroid Connector	171,755	6,872	3%	5%
Total	5,038,164	142,515	100%	100%

Transit Assignment

A transit assignment step is added to the SCC Model with the mode choice model. For the transit assignment, the model uses TransCAD's Pathfinder methodology, the same method as used in the transit skimming procedure. In the Pathfinder method, generalized cost is minimized. Generalized cost is computed using weighted values of in-vehicle, access, egress, dwelling, and waiting times and other costs such as transfer penalty costs and areas. Pathfinder also performs route combinations, which reduces effective initial waiting times and assigns trips based upon the relative frequencies of the routes combined. Routes are combined if they serve the same origin-destination pair and if their travel times are relatively close to each other. The model captures intra-county transit only, so interregional transit should be accounted for off-model.

Peak and off-peak transit trips are assigned separately. A post-process routine aggregates these assignments into a total transit flow table.

Table 34: Model-Estimated Transit Ridership by Mode: Base Year

Mode	Peak Boardings	Off-Peak Boardings	Daily Boardings
Local Bus	7,088	14,246	21,334
Express Bus	60	107	167
Total	7,148	14,353	21,501

3.2.7 – Feedback Loop

In the feedback loop, the congested travel times from the latest iteration are used to update the input travel times into both the highway and transit networks. Both the highway and transit skimming routines then use these congested times to produce congested highway and transit skim matrices. The feedback loop ensures the travel times used as input to trip distribution and mode choice models are consistent with the travel times on the final reported congested road network,. The logic of feedback is that the congested times are a more accurate measure of travel time than the initial free flow times, and can have a profound effect on the trip distribution and mode choice steps.

During the feedback process, all models following the skimming stage are run again until an updated set of congested times is found following the highway assignment. The oscillations between iterations are dampened using the Method of Successive Iterations. A total of 3 feedback loops are performed in the SCC Model. Three loops were found to be sufficient to ensure stability in the final solution.

3.3 – INTERREGIONAL TRAVEL

The AMBAG and the State-wide model data are used to generate interregional travel data. In this county-wide model, the interregional travel data includes the following:

- Through trips to Santa Cruz County
- Trips entering or exiting Santa Cruz County through external gateway
- The weighted average trip distance for trips leaving the county

Subarea analysis has been conducted on the AMBAG model by defining the subarea as Santa Cruz County. The results of the subarea analysis function in TransCAD include the OD trip tables for those zones inside the subarea (i.e., inside Santa Cruz County) and the external gateways for each of the four time periods. Using these OD trip tables, the through trip tables between external gateway and the productions and attractions of those external gateways for external-internal and internal-external trips can be generated. The base year and future year interregional travel data for Santa Cruz County-wide model are generated from AMBAG base year and future year model data respectively.

In addition, the CSTDM was used to generate weighted average distance for trips leaving Santa Cruz County from external gateways, based on the state-wide OD trips estimated in the CSTDM.

3.4 – MODEL STATIC VALIDATION

In the static validation tests, we run the model to ensure that the model output matches available traffic counts, roadway speeds, transit ridership, etc. In addition, the model should be validated across screenlines composed of several roadways to ensure that overall traffic flows are captured. The goal is to meet or exceed Caltrans and Federal Highway Administration static model validation guidelines. As part of the static validation procedure, elements of the trip generation, trip distribution, and traffic assignment modules are adjusted when necessary.

The model-estimated data from the model steps other than assignment are summarized and compared against the CHTS summary, as shown in the table below. As shown in the comparison below, the average person or vehicle trips per household are higher than the CHTS data, this is because the CHTS only captures residents, while the model estimates include the non-residents as represented by visitor and group quarters as discussed in Section 4.2.1.

Table 35: Trip Distribution Validation Summary

Category	Type	Model				CHTS			
		HBW	HBO	NHB	Total	HBW	HBO	NHB	Total
Trip Distribution (All Modes)	II	68%	83%	88%	83%	70%	87%	87%	84%
	IX	15%	8%	3%	7%	20%	5%	4%	7%
	XI	17%	9%	9%	10%	10%	8%	9%	9%
	Total	100%	100%	100%	100%	100%	100%	100%	100%
Average Internal Trip Distance (miles)	DA	6.7	4.0	4.2	4.5	5.9	3.7	3.4	4.1
	SR2	5.6	3.9	4.3	4.2	3.5	3.9	3.0	3.5
	SR3+	6.4	4.2	4.3	4.2	4.4	3.1	4.8	3.6
	Bike	2.6	1.3	0.9	1.4	4.5	1.4	1.3	2.2
	Walk	1.2	0.9	0.2	0.7	0.8	0.7	0.4	0.6
Average Internal Trip Duration (minutes)	DA	16.5	10.6	11.9	12.1	16.3	12.8	13.1	13.7
	SR2	14.4	10.8	12.1	11.6	15.5	12.5	11.0	12.1
	SR3+	16.6	11.1	12.4	11.8	25.1	10.6	14.4	12.1
	Bike	13.5	6.5	4.6	7.1	27.0	16.7	15.4	19.2
	Walk	24.4	17.6	5.3	13.6	21.9	11.9	8.8	11.0
All Trips	Person Trips Per HH	1.6	5.7	5.2	12.5	1.6	5.0	3.3	9.8
	PMT Per HH	22.5	44.4	37.3	104.3	23.1	40.5	31.1	94.7
	PHT Per HH	0.7	1.3	1.2	3.2	0.8	1.7	1.2	3.7

Table 35: Trip Distribution Validation Summary

Category	Type	Model				CHTS			
		HBW	HBO	NHB	Total	HBW	HBO	NHB	Total
	Vehicle Trips Per HH	1.3	3.2	2.4	6.9	1.3	2.8	2.0	6.1
	VMT Per HH	21.4	29.8	23.4	74.7	21.6	22.9	21.8	66.2
	VHT Per HH	0.6	0.9	0.8	2.3	0.7	0.9	0.7	2.2
Internal Trips Only	Person Trips Per HH	1.1	4.7	4.6	10.4	1.1	4.3	2.9	8.3
	PMT Per HH	6.0	16.2	17.1	39.3	5.8	14.1	8.6	28.5
	PHT Per HH	0.2	0.7	0.8	1.8	0.3	1.0	0.6	1.9
	Vehicle Trips Per HH	0.8	2.6	2.1	5.5	0.9	2.5	1.7	5.1
	VMT Per HH	5.5	10.9	12.3	28.7	4.9	9.1	6.0	20.0
	VHT Per HH	0.2	0.5	0.6	1.3	0.2	0.5	0.4	1.1

3.4.1 – Traffic Assignment Validation

Traffic counts are essential for model validation. Count data was compiled within Santa Cruz County, and were filtered to exclude any redundant counts or counts collected in summer and winter break seasons. The counts were used to compare to the assigned model volumes and validate the model.

The highway validation results are shown below. Based on this summary, the overall daily model volume/count ratio is low for most time periods (the late night and early morning is low by 17%) except the AM and PM peak hours which are slightly high (2% high) compared to counts. The overall estimated trips (including both person and vehicle trips) match with the trips from the CHTS and for some purposes are higher than CHTS, however the model estimated volume is lower than counts, indicating the inconsistency of the data between the CHTS and the counts.

The VMT from HPMS for 2010 showed substantial increase compared to the trend line indicating potential issues with the count data used in the VMT estimation. To minimize the potential influence of counts from a single year, the HPMS VMT estimate for 2010 is the interpolated value between 2009 and 2011, both of which match the trend of VMT for the last 5 years. The VMT comparison shows that the model-estimated VMT is under-estimated by 4% compared to VMT estimated from HPMS and CHTS.

Table 36: Static Highway Validation Summary

Criteria	*Target*	Daily	AM (6AM-9AM)	MID (9AM-4PM)	PM (4PM-7PM)	OFF (7PM-6AM)	AM Peak Hour (7AM-8AM)	PM Peak Hour (5PM-6PM)
Model Volume/Count Ratio	0.90-1.10	1.02	0.96	0.95	0.95	0.83	1.02	1.02
Percent Within Caltrans Maximum Deviation	> 75%	66%	68%	73%	72%	56%	58%	51%
Percent Root Mean Square Error	< 40%	50%	63%	47%	61%	78%	77%	79%
Correlation Coefficient	> 0.88	0.95	0.87	0.86	0.79	0.74	0.90	0.89

Table 37: VMT Comparison

Category	*Model*	HPMS
VMT	5,038,164	5,250,000
Difference%		-4.0%

3.4.2 TRANSIT VALIDATION

The system-wide transit ridership is compared to the observed ridership provided by SC Metro, and the comparison results are shown below. From this table, the local bus ridership is over-estimated by 11%, while the express bus ridership is significantly under-estimated. The major reason for the under-estimation of express bus ridership is because majority of the express bus routes extend their service outside Santa Cruz County and mainly serve the inter-county travel. However in the SCC Model, these express bus lines are cut at the county boundary and inter-county travel is not considered on the transit side in the model, which greatly decreases the use of express bus. Overall, the system-wide ridership over-estimates by 2% compared to the observed data. Intercounty transit should be accounted for off-model.

Table 38: Transit Ridership Comparison by Mode

Mode	Model			Observed			Difference%		
	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Local Bus	7,088	14,246	21,334	6,791	12,508	19,299	4%	14%	11%
Express Bus	60	107	167	495	1,206	1,701	-88%	-91%	-90%
System-wide	7,148	14,353	21,501	7,286	13,714	21,000	-2%	5%	2%

3.5 – MODEL DYNAMIC VALIDATION

The static validation tests described above ensure that the model can replicate existing traffic counts and speeds. While these tests are useful at confirming that the model can replicate existing conditions, models are generally used to forecast change, which static tests say nothing about. To determine how well the model responds to changes in land use and the transportation network, we will perform a set of dynamic validation tests. Dynamic tests may include testing the changes in the following:

Examples of dynamic tests may include evaluation of the following:

- Dynamic validation will include the following household location, density, diversity, and other household attributes (income, size, age, auto ownership)
- employment location, density, diversity, and type
- roadway network
- transit service
- parking or other pricing programs travel demand programs

For the final three bulleted items, (and per 2010 RTP Guidelines, p.54), dynamic validation includes the following model sensitivity tests.

- Add lanes to a link
- Add a link
- Delete a link
- Change link speeds
- Add 100 households to a TAZ
- Add 1,000 households to a TAZ
- Add 5,000 households to a TAZ
- Add 10,000 households to a TAZ
- Transit headway change
- Add a new transit route

Review of the dynamic validation tests should indicate that changes to the model volumes occurred in the appropriate direction and magnitude.

3.5.1 DYNAMIC LAND USE VALIDATION

Land use data validation is performed by adjusting demographic information within the TAZs. The model is tested by increasing households in selected TAZs. As the number of households are increased the model should react by showing increased volumes on the centroid connectors. **Table 39** shows the model behaved as expected.

Table 39: Increasing Households

	Increase in Households	TAZ ID	Total
Original	0	144	173
Added Households	100	144	303
		Total Change	130
Original	0	382	838
Added Households	1000	382	1,471
		Total Change	633
Original	0	1084	1,352
Added Households	10000	1084	7,651
		Total Change	6,299
Original	0	1196	894
Added Households	5000	1196	3,945
		Total Change	3,051

Source: Santa Cruz County Model, 2015

3.5.2 DYNAMIC HIGHWAY VALIDATION

Dynamic traffic assignment validation of the Santa Cruz County travel model is presented in the following sections.

Adding & Removing Lanes

One location in an urbanized area was selected for each test (adding and removing lanes). The locations were selected based on two criteria: the availability of screenlines and a high volume over capacity ratio. Screenlines are important to isolate the effects of modifications whereas the volume over capacity ratio is important to ensure that only congested links are being tested. If the volume or demand for the link is not high than adding or removing lanes may have no effect on the traffic assignment.

When a lane is added the model should show increased volume on the subject link and a decrease in volume on the parallel facility. When a lane is removed the model should show a decrease on the subject link and an increase on the parallel facility. **Table 40** below shows that the model behaved as expected.

Table 40: Adding and Removing Lanes

Roadway	Test or Parallel	Peak Period Volume		Volume Change	
		NB/EB	SB/WB	NB/EB	SB/WB
Adding Lanes					
Whispering Pines Dr / Estrella Dr	Test	489	594	*+12*	*+24*
Mt Hermon Rd	Parallel	402	529	*-7*	*-13*
			Total Change	*+5*	*+11*
Removing Lanes					
Soquel Ave	Test	246	215	-3	+0
Water St	Parallel	229	188	+25	+11
			Total Change	*+13*	*+3*

Source: Santa Cruz County Model, 2015

Adding & Deleting Links

One location was selected for each test (adding and removing links). The locations were selected based on the availability of screenlines and the volume over capacity ratio. Screenlines are important to isolate the effects of modifications whereas the volume over capacity ratio is important to ensure that only congested links are being tested.

When a link is added the model should show volumes on the new link and a decrease in volume on the parallel facility. When a link is removed the model should show a comparable increase on the parallel facility. **Table 41** below shows that the model behaved as expected.

Table 41: Adding and Deleting Links

Roadway	Location	Test or Parallel	Peak Period Volume		Volume Change	
			NB/EB	SB/WB	NB/EB	SB/WB
Adding Link						
New Link	Chanticleer extension between Soquel Ave and Soquel Dr	Test	820	369	+820	+369
Soquel Drive	Between Soquel Ave and SR 1 Ramp NB	Parallel	2,369	1,842	- 471	-107
41st Ave	Between Soquel Dr and Cory St	Parallel	623	527	-235	-202
				Total Change	*+114*	*+60*
Removing Link						

Table 41: Adding and Deleting Links

Roadway	Location	Test or Parallel	Peak Period Volume		Volume Change	
			NB/EB	SB/WB	NB/EB	SB/WB
High St	Between Limekiln and Bay St	Test	0	0	-1,531	-1,533
Cardiff Ct	Between Cardiff Ct and Bay St	Parallel	0	1318	0	+1,252
Iowa St	Between Cardiff Ct and Bay St	Parallel	1192	23	+1,178	-22
				Total Change	*-353*	*-303*

Source: Santa Cruz County Model, 2015

As shown in **Table 41**, when a new link was added trips diverted from alternative routes (Soquel Drive and 41st Avenue) onto the new Chanticleer Street extension. The two parallel facilities demonstrated a decrease in volume. The disproportional difference between the volumes on the new facility and the decrease in volumes on the parallel facilities may be due to new demand generated by the new link.

When a link was removed from the network trips diverted to a parallel facility that provides a similar connection. (The presence of a median and the offset intersections on Bay means that southbound trips have to use Iowa where vehicles can turn left whereas northbound trips can use Cardiff.) In this area the removal of the link resulted in an overall decrease in trips.

Changing Link Speed

One location in an urbanized area was selected for this test. Speeds were tested by increasing and decreasing speeds by 10 mph on the test links. As the posted speed is decreased, the volume on the selected link should decrease and volume on the adjacent screenline links should increase. As posted speed is increased, the volume on the selected link should increase and volume on adjacent screenline links should decrease. **Table 42** demonstrates that the model behaved as expected.

Table 42: Changing Speed

Roadway	Test or Parallel	Peak Period Volume		Volume Change	
		NB/EB	SB/WB	NB/EB	SB/WB
Increasing Speed					
Brommer St	Test	785	825	210	137
Portola Dr	Parallel	319	284	-152	-40
Capitola Rd	Parallel	887	1031	-142	-95
			Total Change	*-81*	*2*
Decreasing Speed					

Table 42: Changing Speed

Roadway	Test or Parallel	Peak Period Volume		Volume Change	
		NB/EB	SB/WB	NB/EB	SB/WB
Brommer St	Test	106	122	-467	-567
Portola Dr	Parallel	533	423	61	98
Capitola Rd	Parallel	1361	1670	395	454
			Total Change	*-11*	*-15*

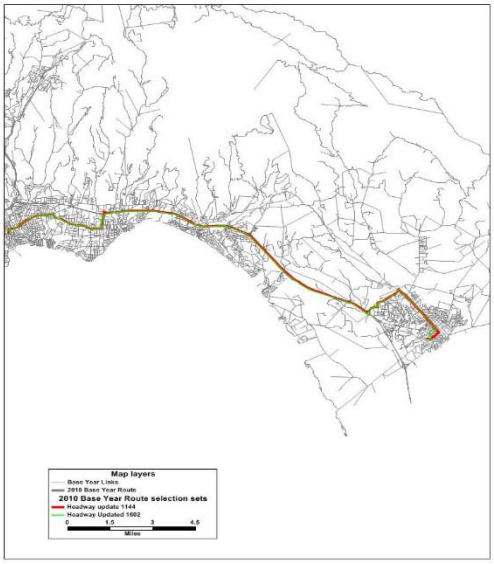
Source: Santa Cruz County Model, 2015

As expected, Brommer Street experienced added volume with the speed increased on the link and diminished volume levels when the speed was decreased. Parallel routes saw the reverse effect; traffic shifted to/from these routes when the speed on Brommer Street was decreased/increased.

3.5.3 DYNAMIC TRANSIT VALIDATION

A series of dynamic tests were performed to determine the Santa Cruz County model's sensitivity to changes transit system and parameters that may be changed users. Tests were not conducted for transit capacity or fare changes.

Transit Headway Change



The peak and off-peak headway for Route 71 and Route 69 (see image to right) were reduced from approximately one hour to thirty minutes. The changes to the input headways are summarized in **Table 43**. The expectation is that by connecting two primary destinations with a transit option twice as frequent that the ridership will increase significantly.

The model responded as expected in terms of direction and magnitude. As shown in **Table 44**, the ridership on both lines increased by 34% to 109% depending on the route, stop locations, and time of day. The ridership along the corridor served by these lines increased by 68% in the off-peak and 83% in the peak.

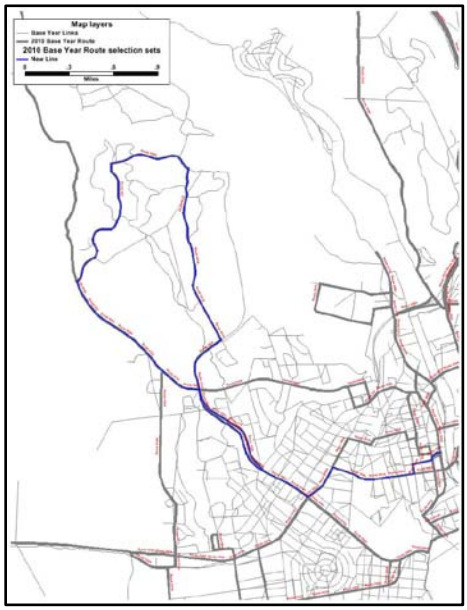
Table 43: Headway Test Inputs

Route	Name	Description	Headway (Peak/Off-Peak)	
			Before	After
572A	Route 71	Capitola Rd. / Watsonville via Airport Blvd.	59/59	30/30
492A	Route 69	Capitola Rd. / Watsonville via Airport Blvd.	61/61	30/30

Table 44: Headway Test Ridership

Route	Name	Riders (Peak/Off-Peak)		Change (Peak/Off-Peak)	
		Before	After	Riders	Percent
572A	Route 71	188/316	392/614	204/298	109% / 94%
492A	Route 69	122/248	175/331	53/83	43% / 34%
Total		310/564	567/945	257/382	68% / 83%

New Transit Route



A new transit route was added (see image to right) to evaluate potential of new riders and evaluate potential impact to other routes. The input headways are summarized in **Table 45** with the new route in **bold**. The expectation is that by adding additional connectivity trips along the new route will shift to transit, and also trips on parallel lines may shift to the new line.

The model responded as expected in terms of direction and magnitude. As shown in **Table 46**, the ridership on the new route attracts new trips and with the headway of 15 minutes also attracts trips from lines that overlap. Based on the land use in the new route area and the overlap with parallel routes, the new transit route test produced results as expected with approximately 170 new riders and shifting between routes with higher headways to the new route.

Table 45: Route Characteristics

Route	Name	Description	Headway	
			Peak	Off-Peak
1298	Route 646A	Davenport / Bonny Doon	120	120
1297	Route 645A	Bonny Doon	120	120
1296	Route 644A	Bonny Doon	120	120
1295	Route 643A	Bonny Doon	120	120
1271	Route 619A	UCSC via Delaware	120	60
1269	Route 617A	UCSC via Westside	120	120
1268	Route 616A	UCSC via Westside	120	60
1073	Route 421A	UCSC Via High	120	120
1072	Route 420A	UCSC via Laurel West	120	120
996	Route 344A	UCSC via Lower Bay	120	120
983	Route 331A	UCSC / East Side Direct	120	120
1270	Route 618A	UCSC via Westside	60	120
981	Route 329A	UCSC Via High	60	60
1264	Route 612A	UCSC via Lower Bay	30	30
982	Route 330A	UCSC Via High	30	29
984	Route 332A	UCSC via Laurel West	27	27
1074	Route 422A	UCSC via Laurel West	25	55
986	Route 334A	UCSC via Laurel East	25	34
985	Route 333A	UCSC via Laurel East	24	19
1075	Route 423A	UCSC via Laurel East	23	120
1976	**Route 999-1**	**UCSC via Laurel West-New route**	**15**	**15**

Table 46: New Route Test Ridership

Route	Name	Riders (Peak/Off-Peak)		Change (Peak/Off-Peak)	
		Before	After	Riders	Percent
1298	Route 646A	19 / 46	16 / 39	-2 / -7	-13% / -15%
1297	Route 645A	10 / 29	9 / 29	-1 / 0	-11% / -1%
1296	Route 644A	12 / 33	11 / 29	0 / -4	-1% / -12%
1295	Route 643A	17 / 36	12 / 27	-5 / -9	-29% / -25%
1271	Route 619A	1 / 1	1 / 2	0 / 0	1% / 27%
1269	Route 617A	26 / 34	24 / 36	-2 / 2	-8% / 5%
1268	Route 616A	27 / 92	26 / 91	-1 / -1	-4% / -1%
1073	Route 421A	92 / 120	89 / 116	-3 / -4	-3% / -3%
1072	Route 420A	23 / 74	18 / 70	-5 / -4	-23% / -5%
996	Route 344A	3 / 6	3 / 6	-1 / 1	-18% / 9%
983	Route 331A	37 / 75	35 / 72	-2 / -3	-5% / -4%
1270	Route 618A	62 / 49	60 / 50	-3 / 2	-5% / 3%
981	Route 329A	117 / 141	115 / 140	-2 / -1	-2% / %
1264	Route 612A	36 / 251	32 / 68	-4 / -183	-12% / -73%
982	Route 330A	197 / 375	178 / 360	-19 / -16	-10% / -4%
984	Route 332A	80 / 289	82 / 302	2 / 14	2% / 5%
1074	Route 422A	112 / 141	78 / 124	-34 / -18	-31% / -12%
986	Route 334A	121 / 269	85 / 113	-36 / -156	-30% / -58%
985	Route 333A	18 / 60	14 / 50	-5 / -10	-26% / -17%
1075	Route 423A	10 / 2	10 / 6	1 / 4	7% / 260%
1976	**Route 999-1**	**DNE**	**146 / 542**	**146 / 542**	**NA**
Total		1,020 / 2,121	1,042 / 2,271	22 / 149	2% / 7%

Appendix A:
Data

Appendix A1 – GIS Projections

Appendix A2 – Land Use Check

Appendix A3 – CHTS Data Process

Appendix A4 – Transit On-Board Survey Data Process

Appendix A1:
GIS Projections

The projections used in the model and other GIS data used for this project are shown below.

NAD_1983_StatePlane_California_III_FIPS_0403_Feet: This is the projection used for all geo-processing and data management processes.	NAD_1983_StatePlane_California_III_FIPS_0403_Feet WKID: 2227 Authority: EPSG Projection: Lambert_Conformal_Conic False_Easting: 6561666.666666666 False_Northing: 1640416.666666667 Central_Meridian: -120.5 Standard_Parallel_1: 37.06666666666667 Standard_Parallel_2: 38.43333333333333 Latitude_Of_Origin: 36.5 Linear Unit: Foot_US (0.3048006096012192) Geographic Coordinate System: GCS_North_American_1983 Angular Unit: Degree (0.0174532925199433) Prime Meridian: Greenwich (0.0) Datum: D_North_American_1983 Spheroid: GRS_1980 Semimajor Axis: 6378137.0 Semiminor Axis: 6356752.314140356 Inverse Flattening: 298.257222101
WGS_1984_Web_Mercator_Auxiliary_Sphere: Was the standard projection used to share data over the web. It is the standard projection used by ESRI base maps and thus makes sharing online data easier and useable.	WGS_1984_Web_Mercator_Auxiliary_Sphere WKID: 3857 Authority: EPSG Projection: Mercator_Auxiliary_Sphere False_Easting: 0.0 False_Northing: 0.0 Central_Meridian: 0.0 Standard_Parallel_1: 0.0 Auxiliary_Sphere_Type: 0.0 Linear Unit: Meter (1.0) Geographic Coordinate System: GCS_WGS_1984 Angular Unit: Degree (0.0174532925199433) Prime Meridian: Greenwich (0.0) Datum: D_WGS_1984 Spheroid: WGS_1984 Semimajor Axis: 6378137.0

Appendix A2:
TAZ and Land Use Updates

Introduction

Santa Cruz County RTC and Santa Cruz County reviewed the first draft of restructured TAZ's and provided comments and suggestions. Fehr & Peers This round of TAZ restructuring was conducted based on those comments.

TAZ Numbering

The TAZ numbering was updated to include major cities and Census CDP's. Each jurisdiction was allocated a certain number of TAZ's. The allocation takes into account possible future growth that might need splitting or adding new TAZ's. Table 1 below shows the allocation and new numbering adopted.

Table1: Santa Cruz TAZ numbering

Jurisdiction	Count	Min	Max	Total Allocated
External	20	1	100	100
Amesti CDP	3	101	110	10
Aptos CDP	16	111	140	30
Aptos Hills-Larkin Valley CDP	10	141	170	30
Ben Lomond CDP	17	171	200	30
Bonny Doon CDP	9	201	220	20
Boulder Creek CDP	13	221	250	30
Brookdale CDP	4	251	260	10
Capitola city	37	261	360	100
Corralitos CDP	4	361	370	10

Jurisdiction	Count	Min	Max	Total Allocated
Davenport CDP	2	371	380	10
Day Valley CDP	5	381	390	10
Felton CDP	13	391	420	30
Freedom CDP	4	421	430	10
Interlaken CDP	11	431	460	30
La Selva Beach CDP	12	461	490	30
Live Oak CDP	40	491	590	100
Lompico CDP	2	591	600	10
Mount Hermon CDP	2	601	610	10
Pajaro Dunes CDP	2	611	620	10
Paradise Park CDP	1	621	630	10
Pasatiempo CDP	1	631	640	10
Pleasure Point CDP	22	641	740	100
Rio del Mar CDP	17	741	770	30
Santa Cruz city	171	771	1070	300
Scotts Valley city	17	1071	1100	30
Seacliff CDP	8	1101	1120	20
Soquel CDP	14	1121	1150	30
Twin Lakes CDP	18	1151	1180	30
Watsonville city	106	1181	1380	200
Zayante CDP	2	1381	1390	10
Santa Cruz Cnty	110	1391	1590	200

TAZ splits

This Santa Cruz TAZ file was reviewed for boundary conflicts with the city boundary, highway network and census block group boundaries. The following list of files were used to perform the splits:

- AMBAG TAZ
- Google Earth Images
- Census Block Group
- City boundary
- General Plan Boundaries
- City Sphere of Influence
- Unified Corridors Shape file
- Urban services line

Given the list of files above, a TAZ can be split in multiple ways depending on an analyst's perception. Therefore, in order to standardize the process, Fehr & Peers devised a set of rules to split TAZ's. The rules, in order of priority are, listed below.

Rules

1. Only Split the TAZ's. This allows for easy disaggregation of the existing data.
2. Do not over split, particularly the CBD and Urban TAZ's.
    - The idea is to avoid creating too many TAZ's.
3. Keep TAZ accessibility in mind. Make sure, TAZ's have proper access to major roads.
4. Keep TAZ boundaries nested with (in order of preference)
    - AMBAG TAZ
    - City Boundary
    - Census BG
    - General Plan Boundaries
    - City sphere of Influence
    - 3Route Corridor
    - Urban services line
5. If the TAZ is split then population and households (from AMBAG TAZ) will be reassigned based on the proportional area.
    - **However,** if the split separates a small developed area from large undeveloped area then manually allocate the share based on Google satellite image. Additional development data will be used if available.
6. Where census blocks allow, separate across census boundary.
7. Finally some TAZ's were split based on explicit recommendations from RTC.

Based on the above rules total of 35 TAZ's were split as shown in the Table 2 below.

Table1: Split TAZ's

AMBAG TAZ	TAZ	Allocation	Split	Note
12	1405	90	1	Split the developed east end of TAZ along scott creek/little basin rd. Allocate 90%
12	1406	10	1	Split the developed east end of TAZ along scott creek/little basin rd. Allocate 10%
13	1404	70	1	Split TAZ along Jurisdiction boundary and highway to separate isolated development in TAZ
13	371	30	1	Split TAZ along Jurisdiction boundary and highway to separate isolated development in TAZ
16	1402	10	1	Separate the correctional facility from the rest of TAZ across clear LU change. Allocate 10%
16	1411	90	1	Separate the correctional facility from the rest of TAZ across clear LU change. Allocate 90%
17	1410	25	1	Split TAZ along Jurisdiction boundary to separate north/south access. Allocate based on area
17	372	75	1	Split TAZ along Jurisdiction boundary to separate north/south access. Allocate based on area
19	221	15	1	Split the developed part of TAZ along GP boundary. 15% allocation
19	1407	85	1	Split the developed part of TAZ along GP boundary. 85% allocation
22	201	71	1	Split TAZ along road cutting through the original TAZ to separate north south access points. Allocate based on area
22	203	29	1	Split TAZ along road cutting through the original TAZ to separate north south access points. Allocate based on area
36	1422	5	1	Split based on clear change in LU. Allocate 5%
36	1456	95	1	Split based on clear change in LU. Allocate 95%
40	1455	85	1	Split airport from rest of TAZ along GP boundary line
40	208	15	1	Split airport from rest of TAZ along GP boundary line

AMBAG TAZ	TAZ	Allocation	Split	Note
41	174	20	1	Split the south end that has school along clear LU change. allocate 20%
41	176	80	1	Split the south end that has school along clear LU change. allocate 80%
50	1430	20	1	Split the south end of TAZ along the jurisdiction boundary to separate isolated development. 20% of original
50	172	80	1	Split the south end of TAZ along the jurisdiction boundary to separate isolated development. 80% of original
67	1453	15	1	Split the TAZ along census BG and GP boundary to separate development on edges. 15% allocation
67	845	85	1	Split the TAZ along census BG and GP boundary to separate development on edges. 85% allocation
71	780	43	1	Split along the jurisdiction boundary. Allocate based on area
71	1421	57	1	Split along the jurisdiction boundary. Allocate based on area
87	591	15	1	Split along jurisdiction boundary to separate access to development. Allocate 15%
87	1436	85	1	Split along jurisdiction boundary to separate access to development. Allocate 85%
153	1071	95	1	Split along city limits. Allocate 95%
153	1448	5	1	Split along city limits. Allocate 55%
197	1441	95	1	Split south end based onGP boundary. Allocate 95%
197	1442	5	1	Split south end based onGP boundary. Allocate 5%
221	1079	44	1	Split along GP boundary to separate developed from un developed. Allocate based on area
221	1478	56	1	Split along GP boundary to separate developed from un developed. Allocate based on area
295	1445	5	1	Split developed south end based on GP boundary. Allocate 5% of AMBAG number
295	1446	95	1	Split developed south end based on GP boundary. Allocate 95% of AMBAG number
317	1466	10	1	Split along city boundary. Allocate 10%

AMBAG TAZ	TAZ	Allocation	Split	Note
317	1077	90	1	Split along city boundary. Allocate 90%
324	1156	95	1	Split along the SOI boundary to separate access point on TAZ. Allocate 95%
324	1158	5	1	Split along the SOI boundary to separate access point on TAZ. Allocate 5%
327	496	69	1	Split along SOI boundary. Allocate based on area
327	497	31	1	Split along SOI boundary. Allocate based on area
341	491	67	1	Split based on RTC recommendation. Area allocation
341	531	33	1	Split based on RTC recommendation. Area allocation
356	647	80	1	Split along sphere of influence boundary. Allocate 80%
356	1155	20	1	Split along sphere of influence boundary. Allocate 20%
406	1124	85	1	Split along the city boundary. Allocate 85%
406	1474	15	1	Split along the city boundary. Allocate 15%
416	1130	48	1	Split based on RTC recommendation. Area allocation
416	1137	52	1	Split based on RTC recommendation. Area allocation
447	1134	34	1	Split based on RTC recommendation. Area allocation
447	1135	66	1	Split based on RTC recommendation. Area allocation
470	1126	41	1	Split based on RTC recommendation. Area allocation
470	1136	59	1	Split based on RTC recommendation. Area allocation
478	1104	80	1	Split to line with City boundary limits. Allocate80%
478	283	20	1	Split to line with City boundary limits. Allocate 20%
492	1423	5	1	Split along clear change in LU to separate development. Allocate 5%
492	1479	95	1	Split along clear change in LU to separate development. Allocate 95%
594	381	5	1	Split south end based on GP boundary. Allocate 5%
594	382	95	1	Split south end based on GP boundary. Allocate 95%

AMBAG TAZ	TAZ	Allocation	Split	Note
700	465	10	1	Split along clear change in LU. Allocate 10%
700	471	90	1	Split along clear change in LU. Allocate 90%
835	422	90	1	Split across city boundary. Allocate 20%
835	424	20	1	Split across city boundary. Allocate 80%
894	1489	5	1	Split along city boundary line. Allocate 5%
894	1208	95	1	Split along city boundary line. Allocate 95%
897	1193	90	1	Separate along census boundary. Allocate 90%
897	1194	10	1	Separate along census boundary. Allocate 10%
924	436	10	1	Split TAZ across city boundary. Separate school from rural area. Allocate 10%
924	1184	90	1	Split TAZ across city boundary. Separate school from rural area. Allocate 90%
1024	441	60	1	Split TAZ based on city boundary. Allocate base on area
1024	1239	40	1	Split based on city boundary. Allocate based on area

Appendix A3:
CHTS Data Process

The 2012 California Household Travel Survey (CHTS) is a statewide dataset of multi-modal travel behavior and household demographics. The survey includes data from a total of 42,431 households, collected using telephone surveys and GPS devices from all counties in California. The dataset includes travel patterns, including activity purpose, duration, travel distance, travel time, and mode choice. Demographics include household size, income, vehicle availability, and the additional characteristics of the individuals within the household. A subset of this data was cleaned and prepared by Fehr & Peers for use in the SCC Model to estimate and calibrate the travel behaviors associated with the demographics of residents of Santa Cruz County. The CHTS data set consists of the attributes shown in the following "Households" and "Trips" data dictionary tables

Table A2.1: Households File Data Dictionary

Variable	Description
sampno	Household ID
hctract	Census tract of household residence. A 10-digit ID which includes the county FIP as well as the census tract.
placeCode, placeName	Census Designated Place of household residence
ctfip,countyName	County of household residence
MPOcode, MPOname	MPO of household residence. Same as county for 1-county MPOs.
income, incomeImputed	Household income category, flag for imputed data
hhsize	Number of household residents
hhemp, hhstu, hhlic	Number of household workers, students, driver's license holders
hhveh, hhbic	Number of vehicles and number of bicycles owned by household
restype, restypeImputed	Residential unit type, flag for imputed data
headAge, headAgeImputed	Age category of HH head, flag for imputed data
tripMonth	Month of travel day
tripDay	Day of week for travel day
householdTrips	Total number of person-trips taken by household members on the travel day
Age0004, Age0514, Age1517, Age1824, Age2554, Age5564, Age6574, Age75	The number of household residents in each age category
hhweight	Household weight

Data sources: 2012 CHTS household and person files, as cleaned and prepared by F&P; for details see the CHTS data preparation memo.

Table A2.2: Trips File Data Dictionary

Variable	Description
sampno, perno	Household ID, person ID
oTract, dTract	Census tract of trip origin and destination. (10-digit number, includes county FIP code)
oPlace, oPlaceName, dPlace, dPlaceName	Census Designated Place of trip origin and destination
oFIP, oCountyName, dFIP, dCountyName	County of trip origin and destination
oMPO, oMPOname, dMPO, dMPOname	MPO of trip origin & destination (same as county for one-county MPOs)
tripPurp	Trip purpose (7 categories)
totalDist	Total trip distance (including transit access/egress)
accessDist, xferDist, egressDist	Transit access, transfer , egress distances
totalTime, IVT	Total trip time (including transit access, wait, etc); in-vehicle time
accessTime, xferTime, egressTime, waitTime	Transit access, transfer, egress, and wait times
modeString	Trip mode (16 categories)
autoDriver	Flag for driver of auto trips
nonHHDriver	Flag for trips where the respondent is a passenger on a trip where a non-HH member is the driver
hhmem, nonhhmem	Count of HH and non-HH passengers on trip (not including the driver)
accMode, egrMode	Transit access and egress modes
accOcc, egrOcc	Vehicle occupancy of access and egress modes
dep_hr, dep_min, arr_hr, arr_min	Time of trip departure & arrival (hour, minute)
age	Age of trip-maker
gender,ntvty, hisp,race,disab	Gender,nativity, Hispanic & racial identity, disability status of trip-maker
worker,student, schoolType	Worker & student status, and school type of trip-maker
license, transPass	Driver's license, transit pass status of trip-maker
tcf, tripweight	Trip correction factor , trip weight

Data sources: 2012 CHTS person, place, and activity files, as cleaned and prepared by F&P; for details see the CHTS data preparation memo.

Trip purpose categorization:

To identify trip purposes, the activity purpose from the activities file and the place name from the place file were used. The activity codes provided in the CHTS data are as follows:

1. PERSONAL ACTIVITIES (SLEEPING, PERSONAL CARE, LEISURE, CHORES)
2. PREPARING MEALS/EATING
3. HOSTING VISITORS/ENTERTAINING GUESTS
4. EXERCISE (WITH OR WITHOUT EQUIPMENT)/PLAYING SPORTS
5. STUDY / SCHOOLWORK
6. WORK FOR PAY AT HOME USING TELECOMMUNICATIONS EQUIPMENT
7. USING COMPUTER/TELEPHONE/CELL OR SMART PHONE OR OTHER COMMUNICATIONS DEVICE FOR PERSONAL ACTIVITIES
8. ALL OTHER ACTIVITIES AT MY HOME
9. WORK/JOB DUTIES
10. TRAINING
11. MEALS AT WORK
12. WORK-SPONSORED SOCIAL ACTIVITIES (HOLIDAY OR BIRTHDAY CELEBRATIONS, ETC)
13. NON-WORK RELATED ACTIVITIES (SOCIAL CLUBS, ETC)
14. EXERCISE/SPORTS
15. VOLUNTEER WORK/ACTIVITIES
16. ALL OTHER WORK-RELATED ACTIVITIES AT MY WORK
17. IN SCHOOL/CLASSROOM/LABORATORY
18. MEALS AT SCHOOL/COLLEGE
19. AFTER SCHOOL OR NON-CLASS-RELATED SPORTS/PHYSICAL ACTIVITY
20. ALL OTHER AFTER SCHOOL OR NON-CLASS RELATED ACTIVITIES (LIBRARY, BAND REHEARSAL, CLUBS, ETC)
21. CHANGE TYPE OF TRANSPORTATION/TRANSFER (WALK TO BUS, WALK TO/FROM PARKED CAR)
22. PICKUP/DROP OFF PASSENGER(S)
23. DRIVE THROUGH MEALS (SNACKS, COFFEE, ETC.) [SHOW IF PTYPE <> 1 (HOME)]
24. DRIVE THROUGH OTHER (ATM, BANK) [SHOW IF PTYPE <> 1]
25. WORK-RELATED (MEETING, SALES CALL, DELIVERY)
26. SERVICE PRIVATE VEHICLE (GAS, OIL, LUBE, REPAIRS)
27. ROUTINE SHOPPING (GROCERIES, CLOTHING, CONVENIENCE STORE, HH MAINTENANCE)
28. SHOPPING FOR MAJOR PURCHASES OR SPECIALTY ITEMS (APPLIANCE, ELECTRONICS, NEW VEHICLE, MAJOR HH REPAIRS)

29. HOUSEHOLD ERRANDS (BANK, DRY CLEANING, ETC.)
30. PERSONAL BUSINESS (VISIT GOVERNMENT OFFICE, ATTORNEY, ACCOUNTANT)
31. EAT MEAL AT RESTAURANT/DINER
32. HEALTH CARE (DOCTOR, DENTIST, EYE CARE, HIROPRACTOR, VETERINARIAN)
33. CIVIC/RELIGIOUS ACTIVITIES
34. OUTDOOR EXERCISE (PLAYING SPORTS/JOGGING, BICYCLING, WALKING, WALKING THE DOG, ETC.)
35. INDOOR EXERCISE (GYM, YOGA, ETC.)
36. ENTERTAINMENT (MOVIES, WATCH SPORTS, ETC)
37. SOCIAL/VISIT FRIENDS/RELATIVES
38. OTHER (SPECIFY) [NOTE: LISTED ON DIARY] (O_APURP)
39. LOOP TRIP (FOR INTERVIEWER ONLY-NOT LISTED ON DIARY)
99. DONT KNOW/REFUSED

Each place visited was assigned a place category based on the following criteria:

- If the place name is "HOME", then the place is "HOME", regardless of the activity purposes.
- If the place includes an activity with purpose code between 9 and 16, then the place is "WORK".
- If the place includes an activity with purpose code between 17 and 20, then:
    - If the place name includes identifying strings such as "COLLEGE", "UNIV", "UCLA", or "USC", then the place is "COLLEGE".
    - If the place name includes "PRESCHOOL" or "DAYCARE", then the place is "OTHER".
    - Otherwise the place is "K12"
- If the place includes an activity with purpose code 27 or 28, then the place is "SHOP".
- Otherwise, the place is "OTHER".

Once the purpose for each place has been determined, assigning a purpose to each trip is straightforward. For non-transit trips, the purpose at the trip origin is the purpose of the immediately preceding place record, and the purpose at the trip destination is the purpose of the place record itself. Then:

- If one end of the trip is "HOME" and the other is "WORK", then the trip is home-based work ("HBW").
- If one end of the trip is "HOME" and the other is "K12", then the trip is home-based K-12 ("HBK").
- If one end of the trip is "HOME" and the other is "COLLEGE", then the trip is home-based college ("HBC").
- If one end of the trip is "HOME" and the other is "SHOP", then the trip is home-based shop ("HBS").

- If one end of the trip is "HOME" and the other is either "OTHER" or "HOME", then the trip is home-based other ("HBO").
- If one end of the trip is "WORK" and the other end is anything but "HOME", then the trip is work-based other ("WBO").
- In all other cases, the trip is other-based-other ("OBO").

In some cases it is useful to consolidate these trips into a simpler scheme:

- Home-based work ("HBW") is the same as above.
- Home-based other ("HBO") includes "HBO", "HBK", "HBC", and "HBS" above.
- Non-home-based ("NHB") includes "WBO" and "OBO" above.

Travel mode categorization:

The CHTS provides the survey response noting the mode used for the purpose of the trip. All modes were used as received except for trips that included transit, which was aggregated to mode of access for transit rather than district modes for portions of a trip. This is similar to the trip purpose where trips going to transit were coded as the ultimate activity of the trip rather than a purpose of accessing transit. For example, the survey would report walk to transit, then transit boarding a bus followed by exiting a bus at work and this trip would be coded as a walk access to bus home-work trip. The modes used based on the survey response for the SCC Model were simplified in comparison to the modes specified in the 2012 CHTS as shown below.

SCC Model modes	CHTS modes specified
Walk	Walk; Wheelchair / Mobility Scooter Other Non-Motorized
Bike	Bike
Drive Alone	Auto / Van / Truck Driver Auto / Van / Truck Passenger Carpool / Vanpool Motorcycle / Scooter / Moped Rental Car / Vehicle
Drive Shared 2, Drive Shared 3+	Auto / Van / Truck Driver Auto / Van / Truck Passenger Carpool / Vanpool Motorcycle / Scooter / Moped Rental Car / Vehicle
Taxi	Taxi / Hired Car / Limo

SCC Model modes	CHTS modes specified
Shuttle	Private shuttle (SuperShuttle, employer, hotel, etc.) Other Private Transit
Walk to Bus, Drive to Bus	Greyhound Bus Local Bus, Rapid Bus Express Bus / Commuter Bus (AC Transbay, Golden Gate Transit, etc.) Premium Bus (Metro Orange / Silver Line) Public Transit Shuttle (DASH, Emery Go Round, etc.) AirBART / LAX FlyAway Amtrak Bus Other Bus
Walk to Rail, Drive to Rail	BART, Metro Red / Purple Line ACE, Amtrak, Caltrain, Coaster, Metrolink Metro Blue / Green / Gold Line, Muni Metro, Sacramento Light Rail, San Diego Sprinter / Trolley / Orange/Blue/Green, VTA Light Rail Street Car / Cable Car Other Rail
Walk to Ferry, Drive to Ferry	Ferry / Boat
School Bus	School Bus
Paratransit	Dial-a-Ride / Paratransit (Access Services, etc.)
(removed from cleaned data)	Plane
NA	RF

Aggregating Survey Records to Census Designated Places:

Census Designated Places (CDPs) are a useful identification which includes cities as well as unincorporated but named places. CDPs contain population and demographic characteristics that can be used in survey weighting and also in estimation of travel characteristics. Although some of the demographic characteristics are also available at smaller geographic scales, due to sample size the survey records were aggregated to CDPs to be statistically significant. Once aggregated, survey records were processed to obtain variables such as trips external travel by purpose, mode share, and service population.

The process of identifying a CDP for each trip origin and destination was made slightly more complex by the fact that the publically-available CHTS data is geo-coded only by census tract. Because the boundaries of CDPs do not match neatly to census tracts, each census tract may have multiple Places associated with them. In cases where multiple Places make up a single census tract, the place with the largest population in the tract (as identified at the census block level) is used. If the largest population in

the tract is outside all named Places, then the place is identified as an unincorporated portion of the relevant county.

Service population:

In addition to locating households and trip ends using census tracts, census designated places, and counties, each household location and trip end is also assigned a service population category using the process described below.

1. For each household location and trip end, obtain the number of jobs within 45 minutes and the number of workers within 45 minutes from the EPA Smart Location Database (SLD) (http://www2.epa.gov/smartgrowth/smart-location-mapping#SLD). Note that these measures are time-decay weighted using a formula suggested in NCHRP 365:

$$D5\ Acc_i = \sum_{j=1}^{n} Emp_j * f(d)_{ij}$$

where

$D5\ Acc_i$ is the destination accessibility for CBG *i*,
Emp_j is the measure of Working-Age Population in the CBG *j*, and
$f(d)_{ij}$ is the measure of impedance between CBG *i* and CBG *j*.

$$f(d)_{ij} = a * d_{ij}^{-b} * e^{-c*(d_{ij})}$$

Where, **a** = 1, **b** = 0.300, and **c**= 0.070; please note that **e**, is the exponential function.

D_{ij} = distance between i and j.

2. Because the geographic resolution of the SLD is the Census Block Group and the geographic resolution of the (public) CHTS is the (larger) Census Tract, the number of jobs and number of workers within 45 minutes for each census tract is estimated as the *median* of the corresponding measures for all block groups within the tract.
3. The service population for each census tract – and thus for each household and trip end – is the sum of the number of jobs within 45 minutes, and the number of workers within 45 minutes.
4. Service populations are grouped into five categories as follows. The data generated from the CHTS will be stratified by these categories, such as trip rates.
    1. Under 40,000
    2. 40,000 – 75,000
    3. 75,000 – 130,000
    4. 130,000 – 450,000

5. Over 450,000

Appendix A4:
Transit On-Board Survey Data Process

Transit trips were summarized by trip purpose, transit & access mode and time of day. The survey collected enough information to identify the trip purpose, time the trip was made and how the person got to the bus stop. Questions 9 and 10 on the survey provided the origin and destination purpose information. This data was used to classify each trip into one of the following purposes:

Purpose	Origin	Destination	Age	Education
Home based Work	Home/Work	Work/Home		
Home Based shop	Home/Shop	Shop/Home		
Home Based College	Home/School	School/Home	16 yrs +	Higher than 12th grade
Home based Other	Home/Other	Other/Home		
Home Based School	Home/School	School/Home	16 yrs or younger 16 yrs +	Education below 12th grade
Other based Other	Other/Other	Other/Other		
Work Based Other	Work/Other	Other/Work		

Peak (6:00AM to 9:00AM or 4:00PM to 7:00 pm) and off peak period data was separated by timestamp of the survey.

Egress and Access modes were classified as:

Mode	Condition
Walk	Emode < 4 or Emode >6
Drive	Emode = 4 or Pmode=5
Transit	Emode =6
Other	Everything else

Where Emode/Pmode is:

1. Walk more than 5 min
2. Walk less than 5 min
3. Bicycle
4. Shared ride/dropped off
5. Drove self
6. Transit
7. Other

Often times survey respondent's transfer from one bus to another, in this case the trip is a continuation of the previous trip. We identified such trips using the access/egress mode codes. If the access and egress modes were transit then the trip was trip (in progress) however if the egress or access modes were transit then the trip was classified as a trip (ending).

Finally, express bus routes carried "Exp" designation and were separated from local routes.

Ridership Data

The transit boarding data for the month of April was provided by the Metro. The data was evaluated and summarized by route and used to expand the records in the transit on-board survey. The analysis excluded data from weekend and the average weekday ridership is shown below in the month of April 2015. Note that the Highway 17 express ridership data are from VTA ridership summary document.

Route	Off Peak Ridership	Peak Ridership
3	95	58
4	129	57
8	0	9
10	824	558
12	0	56
15	1592	612
16	2937	1085
17	635	495
19	1043	531
20	1088	591
30	16	12
33	11	4
35	868	542
40	26	54
41	22	56
42	11	0
55	137	8
56	10	43
66	366	7
68	233	208
69	496	175

Route	Off Peak Ridership	Peak Ridership
71	1550	313
72	102	887
74	65	57
75	157	36
79	57	87
91	571	28
692	673	358

Based on the observed ridership and the surveyed ridership, the final weights used to expand the on-board survey are shown in the table below.

Route	Off Peak weight	Peak Weights
3	11.875	4.461538
4	32.25	7.125
8	0	4.5
10	13.9661	12.68182
12	211.6867	27.49667
15	13.26667	4.935484
16	16.6875	11.07143
17	15.12048	17.0669
19	14.48611	5.418367
20	64	12.3125
30	2.285714	1.333333
33	1.222222	0.666667
35	26.30303	12.90476
40	2	10.8
41	2.2	5.090909
42	3.666667	0
55	68.5	2.666667
56	2.5	4.777778
66	5.71875	3.5
68	33.28571	8.666667
69	14.58824	15.90909
71	17.81609	5.90566

Route	Off Peak weight	Peak Weights
72	17	11.82667
74	8.125	7.125
75	14.27273	12
79	7.125	7.25
91	71.375	4.666667
692	14.31915	35.8

Once the trips were weighted and expanded, the survey data was summarized by time period, mode, purpose and type of route (local, express) for developing calibration targets. Table A3.1 and Table A3.2 shows the off peak and peak transit trip targets.

Table A3.1 – Off-Peak Period Transit Trip Targets

		HBC	HBO	HBSCH	HBSH	HBW	OBO	WBO	Grand Total
Local	*Total*	*5,459*	*1,850*	*339*	*196*	*1,198*	*2,200*	*590*	*11,831*
	Drive Access	258	139	18		80	108		603
	Transit Access	88	53	4	9	20	67	18	258
	Walk Access	5,113	1,658	318	187	1,097	2,024	572	10,970
17 Express	*Total*	118	76	30	15	134	78	60	512
	Drive Access	68	23			30	8	15	144
	Transit Access	5				5	10		20
	Walk Access	45	53	30	15	98	60	45	348
91 Express	*Total*	143	71	71		71	143	-	500
	Transit Access							-	-
	Walk Access	143	71	71		71	143		500
	Grand Total	5,720	1,997	441	211	1,402	2,421	650	12,842

Table A3.2 – Peak Period Transit Trip Targets

		HBC	HBO	HBSCH	HBSH	HBW	OBO	WBO	Grand Total
Local	*Total*	*2,145*	*645*	*200*	*127*	*1,610*	*858*	*383*	*5,967*
	Drive Access	78	55	15		161	41	39	388
	Transit Access	49	34	9	2	53	48	16	212
	Walk Access	2,017	556	176	125	1,396	769	327	5,367
17 Express	*Total*	68	43			282	14	9	415
	Drive Access	34				102			137
	Transit Access		26			17	14	9	65
	Walk Access	34	17			162			213
91 Express	*Total*	161	72			54		12	298
	Transit Access							12	12
	Walk Access	161	72			54			286
	Grand Total	2,374	760	200	127	1,946	872	403	6,681

Appendix B:
Model Estimation

Appendix B1 – Trip Rates

Appendix B2 – Trip Time Frequency

Appendix B3 – Mode Choice Estimation Results

Appendix B1:
Trip Rates

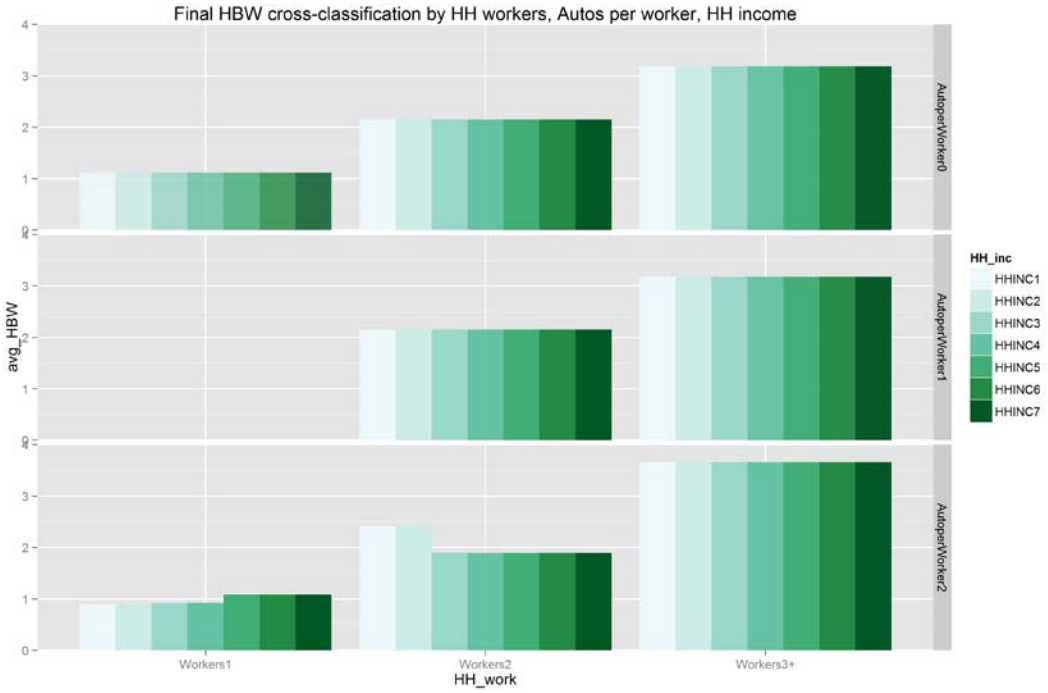
HBW Household Trip Production Rates (Per household)			
	1-worker HH	2-worker HH	3+-worker HH
Fewer autos than workers	1.68	3.23	4.77
Equal or greater autos than workers	Low income: 1.34 Med income: 1.38 High income: 1.64	Low income: 3.62 Med income: 2.84 High income: 2.84	5.49

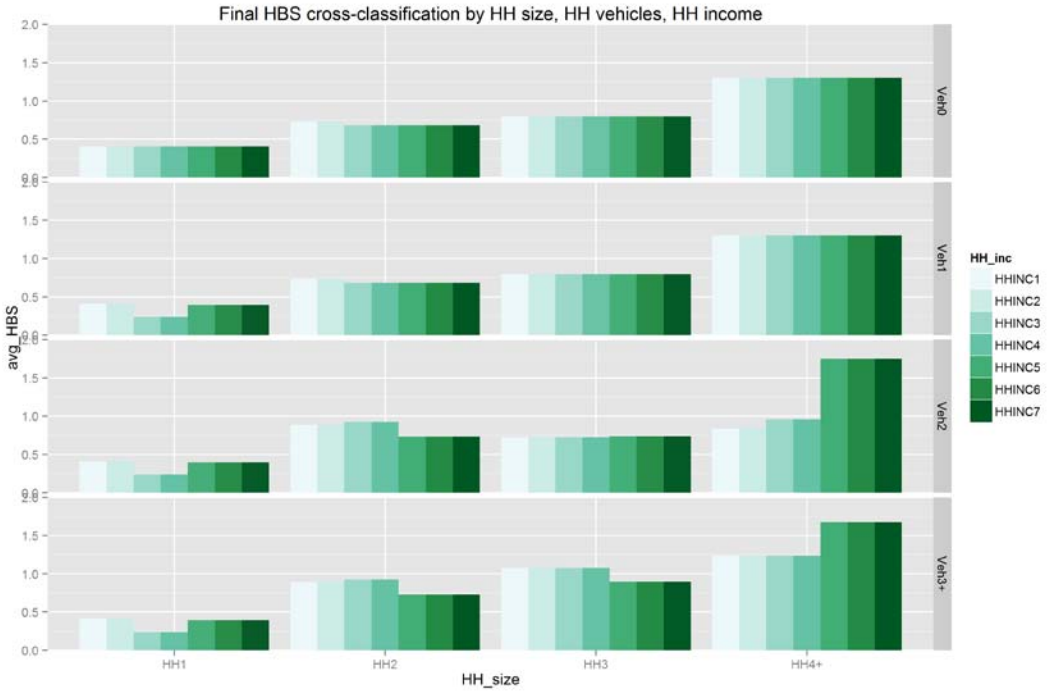
HBS Household Trip Production Rates (Per household)				
	1-person HH	2-person HH	3-person HH	4+-person HH
0 vehicles	0.41	Same as 1-vehicle	Same as 1-vehicle	Same as 1-vehicle
1 vehicle	Low income: 0.41 Med income: 0.23 High income: 0.39	Low income: 1.08 Med income: 1.02 High income: 1.02	1.2	1.95
2 vehicles	Same as 1-vehicle	Low income: 1.34 Med income: 1.4 High income: 1.1	1.08	Low income: 1.26 Med income: 1.44 High income: 2.63
3+ vehicles	Same as 1-vehicle	Same as 2-vehicle	Low income: 1.62 Med income: 1.62 High income: 1.34	Low income: 1.86 Med income: 1.86 High income: 2.51

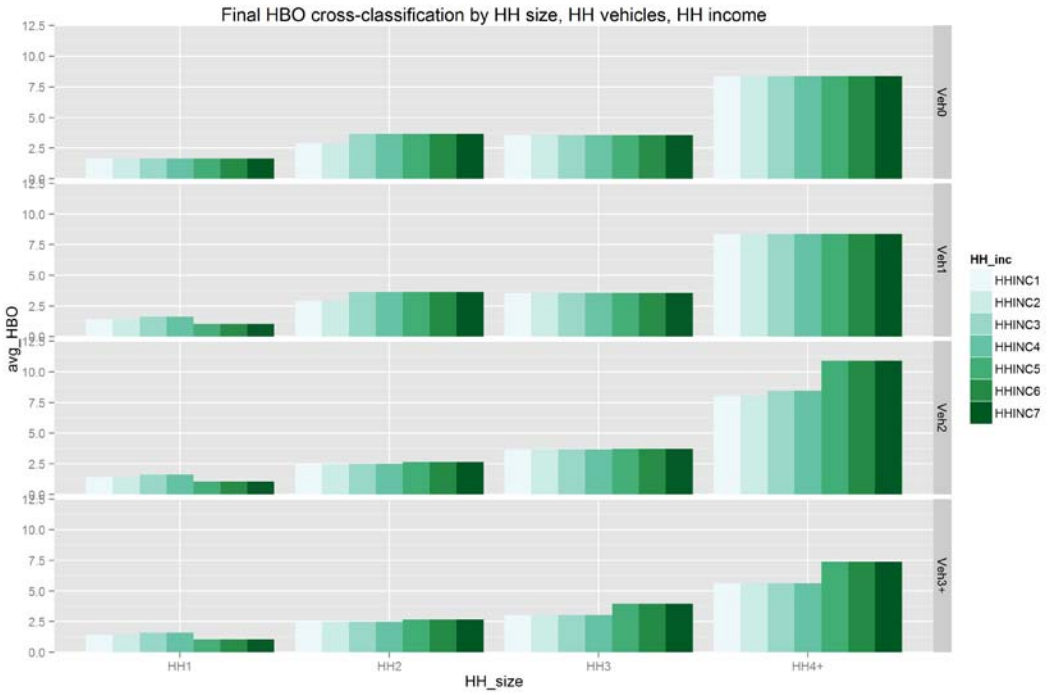
HBO Household Trip Production rates (Per household)				
	1-person HH	**2-person HH**	**3-person HH**	**4+-person HH**
0 vehicles	1.64	Same as 1-vehicle	Same as 1-vehicle	Same as 1-vehicle
1 vehicle	Low income: 1.41 Med income: 1.61 High income: 1.04	Low income: 4.38 Med income: 5.48 High income: 5.48	5.34	12.56
2 vehicles	Same as 1-vehicle	Low income: 3.72 Med income: 3.72 High income: 3.99	Low income: 5.46 Med income: 5.46 High income: 5.58	Low income: 12.06 Med income: 12.68 High income: 16.35
3+ vehicles	Same as 1-vehicle	Same as 2-vehicle	Low income: 4.56 Med income: 4.56 High income: 5.93	Low income: 8.43 Med income: 8.43 High income: 11.07

Note that for HBO trips in particular, the difference in trip rates between 4-or-more-person households and smaller households is quite large. The cross-classification groups used for these estimates are all reasonably large (consisting of at least 50 households per group) so there is indeed reason to believe this effect is real rather than being an artifact of small sample sizes. The average household size of the 4+-person households is about 4.75 persons, so this category includes a significant number of very large households. In addition, the fact that large households with 3 or more vehicles actually generate fewer person-trips than large households with 1 or 2 vehicles can be explained by a larger amount of "escorted" trips where one household member makes a trip for the sole purpose of escorting another.

Graphs of the cross-classified trip production rates are shown below.


Final HBW cross-classification by HH workers, Autos per worker, HH income
avg_HBW
AutoperWorker0
AutoperWorker1
AutoperWorker2
Workers1
Workers2
Workers3+
HH_work
HH_inc
HHINC1
HHINC2
HHINC3
HHINC4
HHINC5
HHINC6
HHINC7


Final HBS cross-classification by HH size, HH vehicles, HH income
avg_HBS
Veh0
Veh1
Veh2
Veh3+
HH1
HH2
HH3
HH4+
HH_size
HH_inc
HHINC1
HHINC2
HHINC3
HHINC4
HHINC5
HHINC6
HHINC7



HBK and HBC Trip Rates (per person)

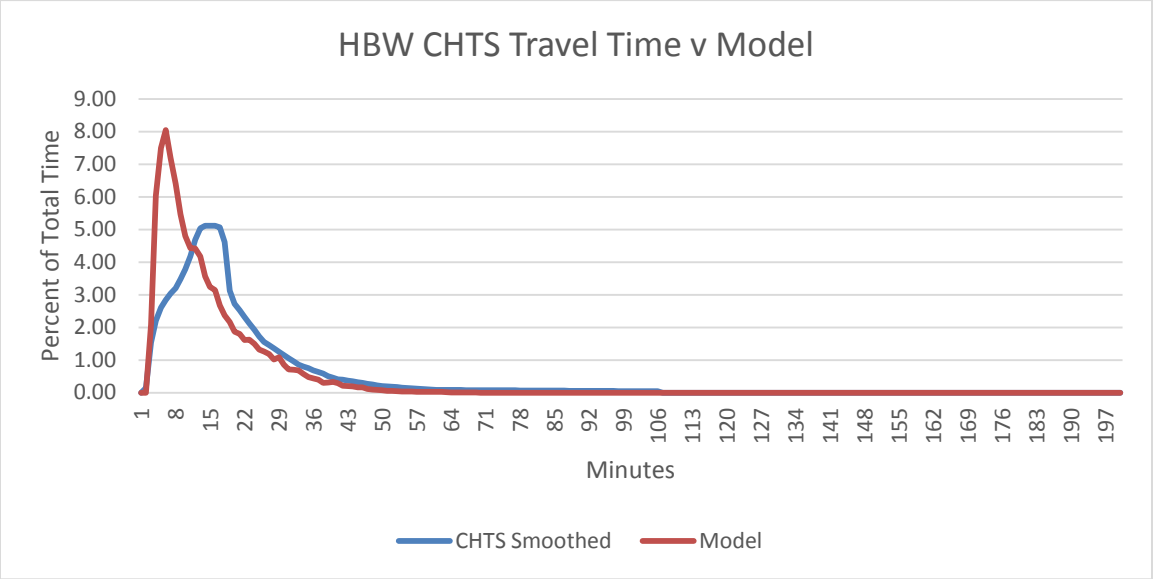
	HBK (Area Types 1 and 2)	HBK (Area Types 3 and 4)	HBC (Area Types 1 and 2)	HBC (Area Types 3 and 4)
Age 3-14	0.91	0.83		
Age 15-17	1.17	1.26	0.03	0.06
Age 18-24			0.12	0.24
Age 25-34			0.04	0.11

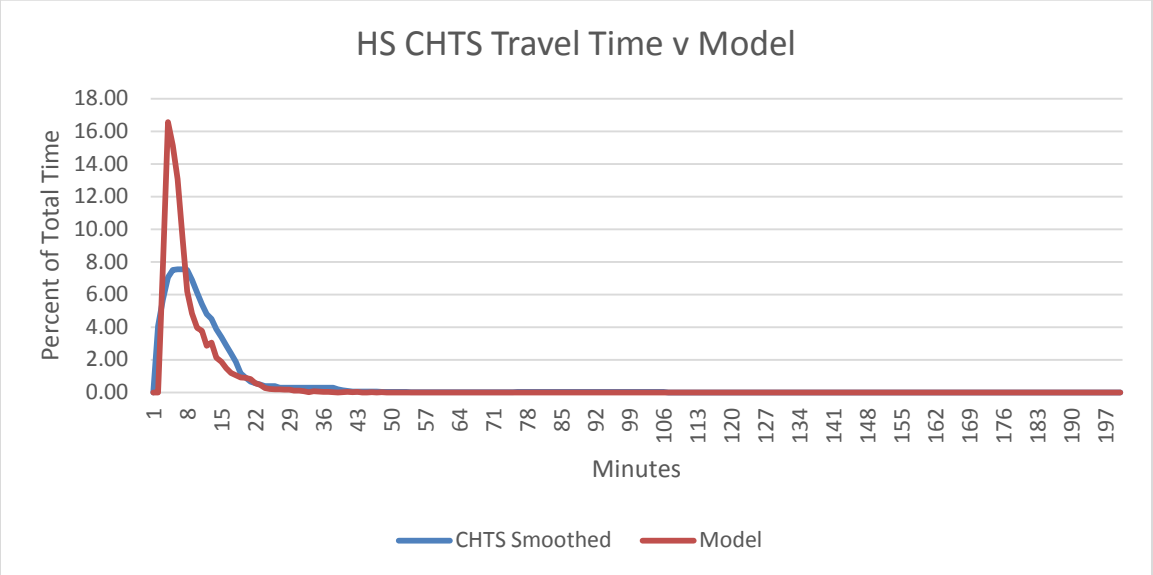
Daily Trip Attractions and Non-Home Based Productions per Job, Enrolled Student, or Household

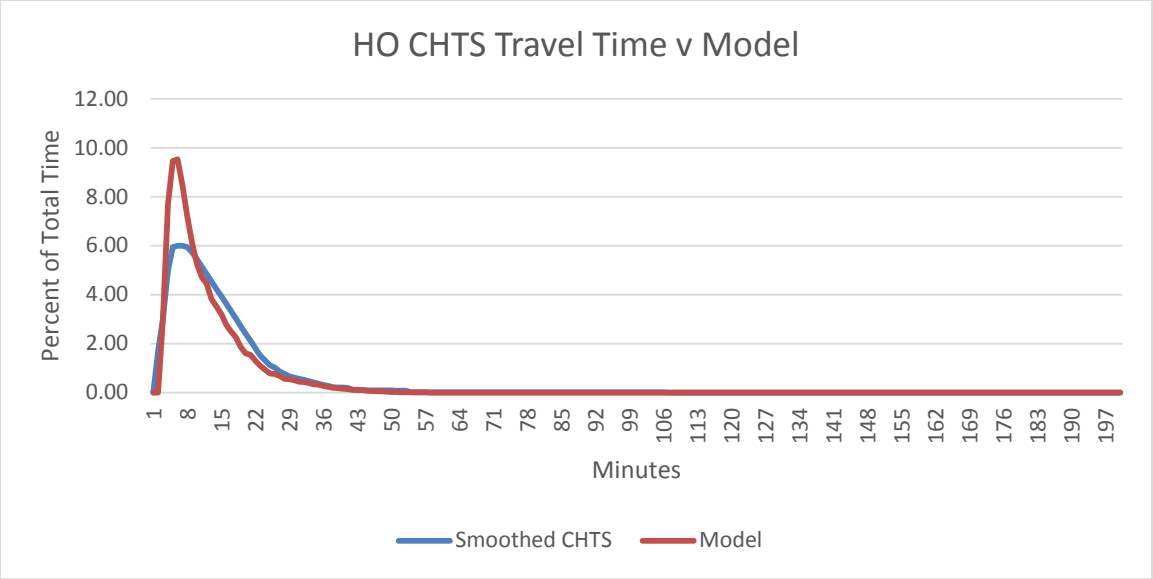
	HBW-A	HBS-A	HBK-A	HBC-A	HBO-A	WBO-P	WBO-A	OBO-P	OBO-A
AGR employment	1.59								
CON employment	1.59								
IND employment	1.59								

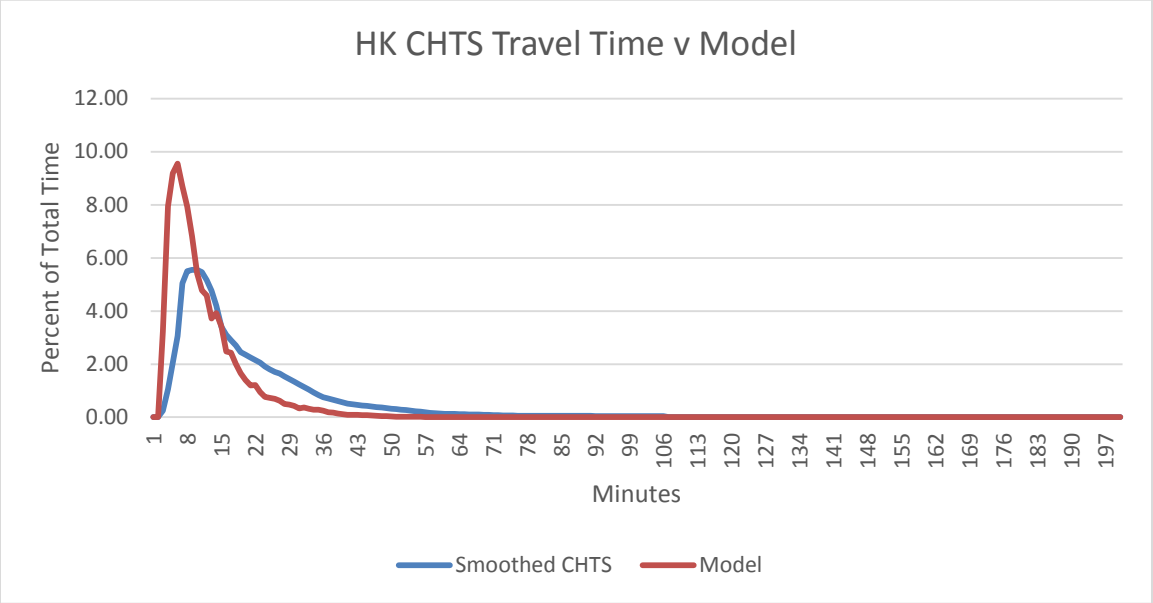
RET employment	1.86	7.98		2.06	2.18	1.68	6.52	7.44
SER employment	1.07			2.06	0.63	0.72	1.30	1.49
PUB employment	1.07			2.06	0.63	0.72	1.30	1.49
K-12 enrollment			1.19	1.54			1.30	1.16
University enrollment			0.24					
Total households				1.13				

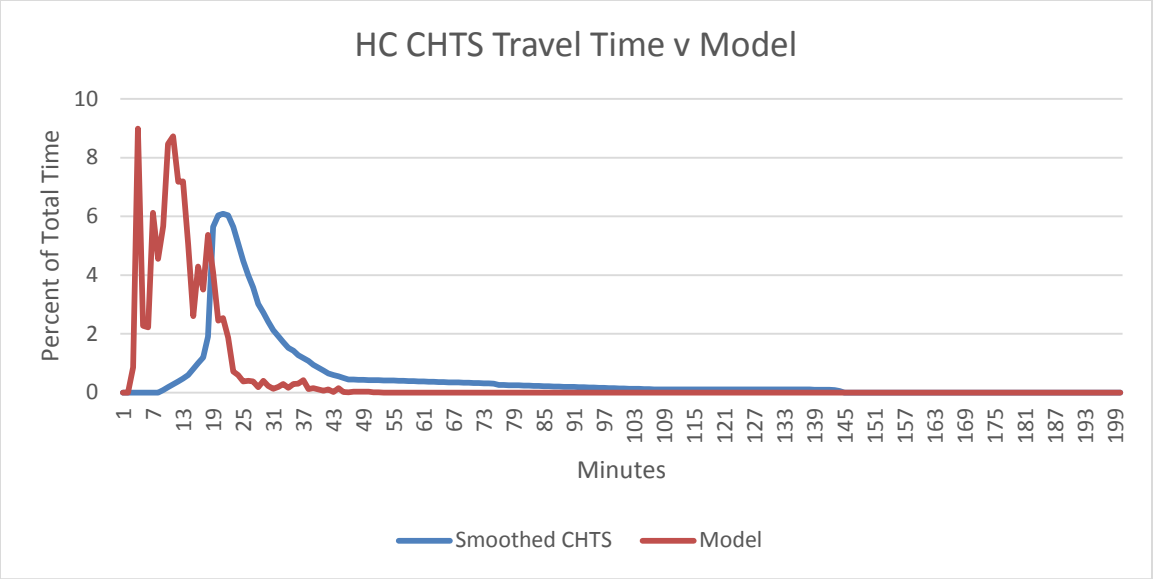
Appendix B2:
Trip Time Frequency

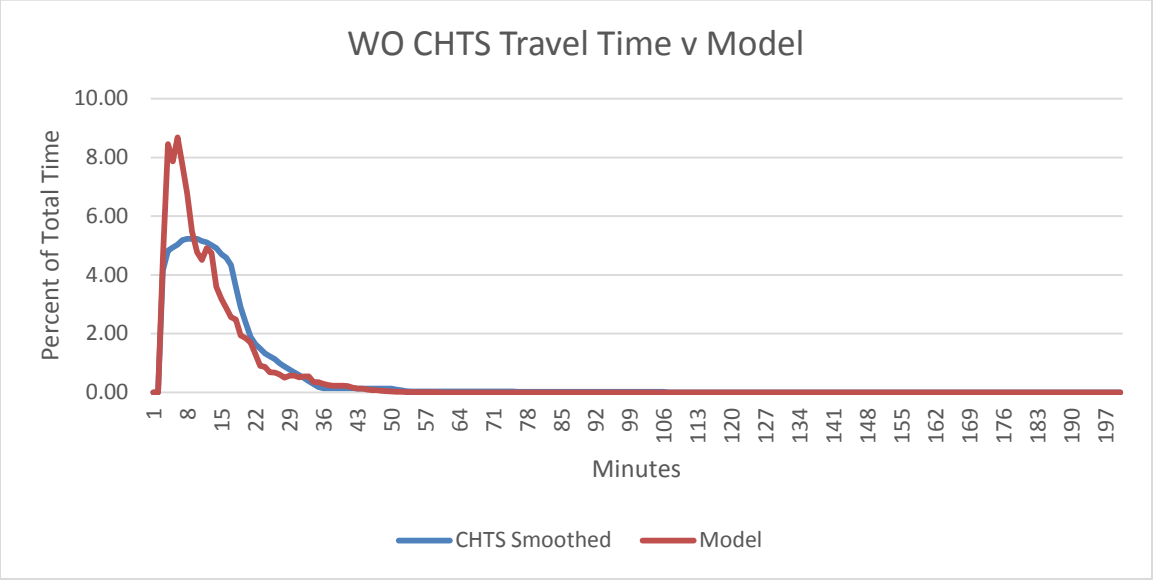


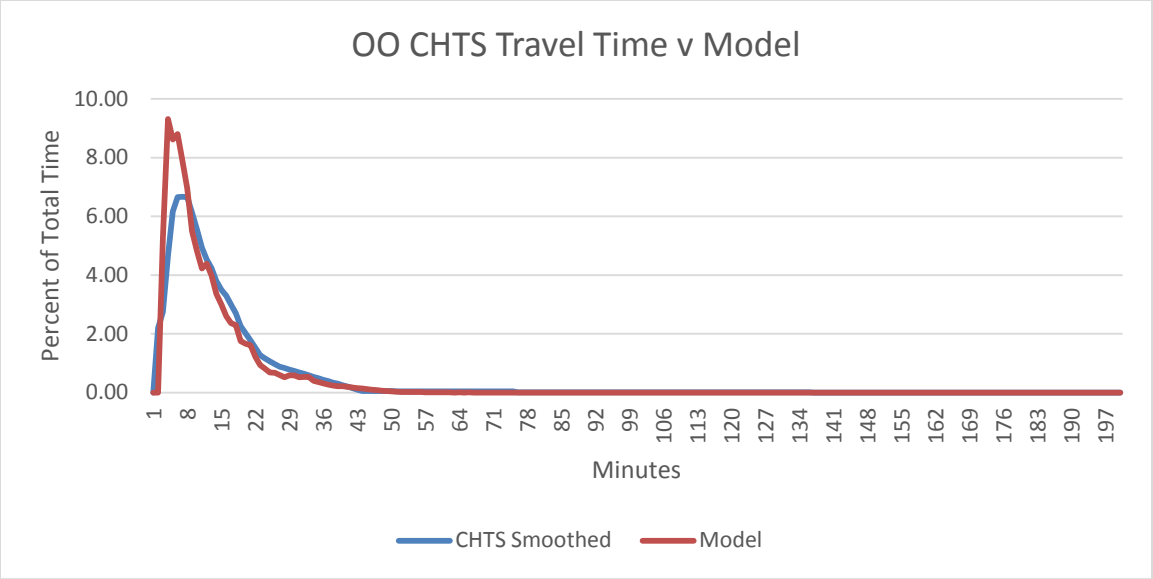



HO CHTS Travel Time v Model
Percent of Total Time
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1 8 15 22 29 36 43 50 57 64 71 78 85 92 99 106 113 120 127 134 141 148 155 162 169 176 183 190 197
Minutes
Smoothed CHTS
Model


HK CHTS Travel Time v Model
Percent of Total Time
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1 8 15 22 29 36 43 50 57 64 71 78 85 92 99 106 113 120 127 134 141 148 155 162 169 176 183 190 197
Minutes
Smoothed CHTS
Model


HC CHTS Travel Time v Model
Percent of Total Time
10
8
6
4
2
0
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97 103 109 115 121 127 133 139 145 151 157 163 169 175 181 187 193 199
Minutes
Smoothed CHTS
Model


WO CHTS Travel Time v Model
Percent of Total Time
10.00
8.00
6.00
4.00
2.00
0.00
1 8 15 22 29 36 43 50 57 64 71 78 85 92 99 106 113 120 127 134 141 148 155 162 169 176 183 190 197
Minutes
CHTS Smoothed
Model


OO CHTS Travel Time v Model
Percent of Total Time
10.00
8.00
6.00
4.00
2.00
0.00
1
8
15
22
29
36
43
50
57
64
71
78
85
92
99
106
113
120
127
134
141
148
155
162
169
176
183
190
197
Minutes
CHTS Smoothed
Model

Appendix B3:
Mode Choice Estimation Results

Home-Based Work

The variables used in the HBW mode choice model are:

Variables in HBW Mode Choice Model

Variable	Description
HHSize	Household size (production)
WkrHH	Number of workers per household (production)
MwkrHH	Number of workers in multi-worker households (production)
VehHH	Number of vehicles per household (production)
0Veh	Number of households with 0 vehicle (production)
1Veh	Number of households with 1 vehicle (production)
LnEmpD	Natural log of employment density (total employment / acres) (production)
Core	Dummy variable: -2 if area type=1,2,3; -1 if area type=4 and servpop<300,000; 0 if area type=4 and servpop >300,000; 1 if area type=5 and servpop <1,000,000; 2 if area type=5 and servpop >1,000,000 (attraction) note: servpop = jobs + workers within 30 minute auto travel time
ifinSCC	Dummy variable: 1 if in city of Santa Cruz (attraction)
LnWlkTime	Log of walking time
IVT	In-vehicle time
iwait, xwait	Times for initial wait and transfer wait
accwalk, xwalk, egrwalk	Times for walk access, transfer, and egress
Accdrv,egrdrv	Times for drive access and egress

Coefficients for the HBW mode choice model are listed in the table below. Note that the TransitW and TransitD columns represent the coefficients for all eight transit sub-modes, which differ only in the constants used. Constants for these sub-modes are listed in the following table.

HBW Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Constant (Peak)	0	-0.9381	2.9507	2.3535	2.3336	**	**
Constant (Off-Peak)	0	-1.6281	2.9807	1.6535	2.6836	**	**
Theta (Motorized)			0.9208	0.9208	0.9208	0.9208	0.9208
Theta (Transit)						0.7194	0.7194
Theta (Drive Access)							0.7
Theta (Walk Access)						0.7	
HHsize			-0.0799				
WkrHH			-0.0254				
MwkrHH				-1.1297			
VehHH			1.424	0.4023	0.7357		0.3697
0Veh						0.5501	
1Veh				0.0388			
LnEmpDen	1.4218	0.7243				0.5461	0.5461
Core			-0.586				0.247
ifinSCC		2.09					
LnWlkTime	-2.137						
IVT		-0.0632	-0.0632	-0.0632	-0.0632	-0.0632	-0.0632
iwait, xwait						-0.0993	-0.0993
Accwalk, xwalk, egrwalk						-0.1771	-0.1771
Accdrv, egrdrv						-0.1771	-0.1771

HBW Constants, Transit Modes

	Drive Access Submodes, Peak	Drive Access Submodes, Off-Peak	Walk Access Submodes, Peak	Walk Access Submodes, Off-Peak
LOC	-6.8751	-9.5000	-6.5000	-8.5000
EXP	-6.8751	-9.5000	-8.5000	-9.5000

LRT	-1.2350	-1.2350	-1.2350	-1.2350
CRT	1.2350	1.2350	1.2350	1.2350

Home-Based School (k-12)

The variables used in the HBK mode choice model are:

Variables in HBK Mode Choice Model

Variable	Description
PHHCube	Number of persons per household, cubed (production)
IncX1000	Household income (in $1000; production)
Rural	Dummy variable: 1 if area type is 1 or 2 (production)
Bktime	Bike time
IVT	In-vehicle time
iwait, xwait	Times for initial wait and transfer wait
accwalk, xwalk, egrwalk	Times for walk access, transfer, and egress
Accdrv,egrdrv	Times for drive access and egress

Coefficients for the HBK mode choice model are listed in the table below. Note that as before, the TransitW and TransitD columns represent the coefficients for all eight transit sub-modes, which differ only in the constants used. Constants for these sub-modes are listed in the following table.

HBK Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Constant (Peak)	0	-0.4856	-1.0773	0.0015	0.2255	**	**
Constant (Off-peak)	0	-0.0856	-0.8773	0.0253	0.2155	**	**
Theta (Motorized)			0.4847	0.4847	0.4847	0.4847	0.4847
Theta (Transit)						0.3000	0.3000
PHHCube	0.11744					0.07024	0.07024
IncX1000			0.000857	0.000201	0.000457		
Rural						1.244	1.244
Bktime		-0.3586					
IVT			-0.2678	-0.2678	-0.2678	-0.2678	-0.2678
iwait, xwait						-0.2919	-0.2919

Accwalk, xwalk, egrwalk	-0.2919			-0.2919	-0.2919
Accdrv, egrdrv				-0.2919	-0.2919

HBK Constants, Transit Modes

	Drive Access Submodes, Peak	Drive Access Submodes, Off-Peak	Walk Access Submodes, Peak	Walk Access Submodes, Off-Peak
LOC	-2.5418	-1.5418	0	0
EXP	-2.5418	-1.5418	-2.5418	-1.5418
LRT	0.5418	0.5418	0.5418	0.5418
CRT	0.5418	0.5418	0.5418	0.5418

Home-Based College

The variables used in the HBC mode choice model are:

Variables in HBC Mode Choice Model

Variable	Description
HHSize	Household size (production)
VehHH	Number of vehicles per household (production)
AreaDen	(Production) area density; estimated from servpop = jobs + workers within 30 minute auto travel time as 0.00005*servpop if servpop<75,000 or as 0.00025*servpop-15 if servpop>=75,000
Bktime	Bike time
IVT	In-vehicle time
iwait, xwait	Times for initial wait and transfer wait
accwalk, xwalk, egrwalk	Times for walk access, transfer, and egress
Accdrv,egrdrv	Times for drive access and egress

Coefficients for the HBC mode choice model are listed in the table below. Note that as before, the TransitW and TransitD columns represent the coefficients for all eight transit sub-modes, which differ only in the constants used. Constants for these sub-modes are listed in the following table.

HBC Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD

HBC Mode Choice Model Coefficients							
	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Constant (Peak)	0	-0.255	2.125	-0.255	-0.325	**	**
Constant (Off-Peak)	0	1.055	1.025	0.255	-0.325	**	**
Theta (Motorized)			0.4847	0.4847	0.4847	0.4847	0.4847
Theta (Transit)						0.2583	0.2583
Theta (Drive Access)							0.7
Theta (Walk Access)						0.7	
HHSize			-1.5000				
VehHH			3.1756	0.1994	0.1994		
AreaDen						0.8442	0.8442
Bktime		-0.0255					
IVT			-0.02731	-0.02731	-0.02731	-0.02731	-0.02731
iwait, xwait						-0.03923	-0.03923
Accwalk, xwalk, egrwalk	-0.03923					-0.03923	-0.03923
Accdrv, egrdrv						-0.03923	-0.03923

HBC Constants, Transit Modes				
	Drive Access Submodes, Peak	Drive Access Submodes, Off-Peak	Walk Access Submodes, Peak	Walk Access Submodes, Off-Peak
LOC	-2.3003	-2.3003	0	0
EXP	-4.3003	-4.3003	-0.6003	-0.8003
LRT	0	0	1.3003	1.3003
CRT	2.3003	2.3003	2.3003	2.3003

Home-Based Shop

The variables used in the HBS mode choice model are:

Variables in HBS mode choice model

Variable	Description
LnPhh	Log of persons per household (production)
VehHH	Number of vehicles per household (production)
LnInc	Log of household income (production)
0Wrk	0-worker households (production)
0Veh	0-vehicle households (production)
LnAreaDen	Log of (production) area density; estimated from servpop = jobs + workers within 30 minute auto travel time as log(0.00005*servpop) if servpop <75,000 or as log(0.00025* servpop -15) if servpop >=75,000
Core	Dummy variable: -2 if area type=1,2,3; -1 if area type=4 and servpop<300,000; 0 if area type=4 and servpop >300,000; 1 if area type=5 and servpop <1,000,000; 2 if area type=5 and servpop >1,000,000 (attraction) note: servpop = jobs + workers within 30 minute auto travel time
ifinSCC	Dummy variable: 1 if in city of Santa Cruz (attraction)
IVT	In-vehicle time
iwait, xwait	Times for initial wait and transfer wait
accwalk, xwalk, egrwalk	Times for walk access, transfer, and egress
Accdrv,egrdrv	Times for drive access and egress

Coefficients for the HBS mode choice model are listed in the table below. Note that as before, the TransitW and TransitD columns represent the coefficients for all eight transit sub-modes, which differ only in the constants used. Constants for these sub-modes appear in the following table.

HBS Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Constant (Peak)	0	0.0235	3.4707	2.5422	1.6709	**	**
Constant (Off-Peak)	0	-1.5235	1.5707	0.8822	0.3709	**	**
Theta (Motorized)			0.4847	0.4847	0.4847	0.4847	0.4847
Theta (Transit)						0.3174	0.3174

HBS Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Theta (Drive Access)							0.7000
Theta (Walk Access)						0.7000	
LnPhh				0.5835	1.856		
VehHH						-1.5952	-1.5952
LnInc			0.3552	0.1318			
0Wrk			-0.0630				
0Veh	0.185					0.191	0.191
LnAreaDen			-0.3201	-0.3201	-0.3201		
Core						0.0150	0.0150
ifinSCC		2.4880					
IVT		-0.2582	-0.2582	-0.2582	-0.2582	-0.2582	-0.2582
iwait, xwait						-0.2582	-0.2582
Accwalk, xwalk, egrwalk	-0.2582					-0.2582	-0.2582
Accdrv, egrdrv						-0.2582	-0.2582

HBS Transit Submode Constants

	Drive Access Submodes (Peak)	Drive Access Submodes (Off-Peak)	Walk Access Submodes (Peak)	Walk Access Submodes (Off-Peak)
LOC	-3.6925	-5.6925	0	0
EXP	-3.6925	-5.6925	-3.6925	-5.6925
LRT	0	0	2.1	2.1
CRT	2.1	2.1	2.1	2.1

Home-Based Other

The variables used in the HBO mode choice model are:

Variables in HBO mode choice model

Variable	Description
LnPhh	Log of persons per household (production)
VehHH	Number of vehicles per household (production)
LnInc	Log of household income (production)
0Wrk	0-worker households (production)
0Veh	0-vehicle households (production)
LnAreaDen	Log of (production) area density; estimated from servpop = jobs + workers within 30 minute auto travel time as log(0.00005*servpop) if servpop <75,000 or as log(0.00025* servpop -15) if servpop >=75,000
Core	Dummy variable: -2 if area type=1,2,3; -1 if area type=4 and servpop<300,000; 0 if area type=4 and servpop >300,000; 1 if area type=5 and servpop <1,000,000; 2 if area type=5 and servpop >1,000,000 (attraction) note: servpop = jobs + workers within 30 minute auto travel time
ifinSCC	Dummy variable: 1 if in city of Santa Cruz (attraction)
IVT	In-vehicle time
iwait, xwait	Times for initial wait and transfer wait
accwalk, xwalk, egrwalk	Times for walk access, transfer, and egress
Accdrv,egrdrv	Times for drive access and egress

Coefficients for the HBO mode choice model are listed in the table below. Note that as before, the TransitW and TransitD columns represent the coefficients for all eight transit sub-modes, which differ only in the constants used. Constants for these sub-modes appear in the following table.

HBO Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Constant (Peak)	0	-2.0435	1.7257	0.03221	0.20093	**	**
Constant (Off-Peak)	0	-2.1435	1.7257	0.00221	0.20093	**	**
Theta (Motorized)			0.4847	0.4847	0.4847	0.4847	0.4847

HBO Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Theta (Transit)						0.3174	0.3174
Theta (Drive Access)							0.7000
Theta (Walk Access)						0.7000	
LnPhh				0.5636	1.0360		
VehHH						-1.8952	-1.8952
LnInc			0.1852	0.0618			
0Wrk			-0.0830				
0Veh	0.3950					0.2210	0.2210
LnAreaDen			-0.6701	-0.6701	-0.6701		
Core						0.0250	0.0250
ifinSCC		2.4880					
IVT		-0.6082	-0.6082	-0.6082	-0.6082	-0.6082	-0.6082
iwait, xwait						-0.6082	-0.6082
Accwalk, xwalk, egrwalk	-0.6082					-0.6082	-0.6082
Accdrv, egrdrv						-0.6082	-0.6082

HBO Transit Submode Constants

	Drive Access Submodes (Peak)	Drive Access Submodes (Off-Peak)	Walk Access Submodes (Peak)	Walk Access Submodes (Off-Peak)
LOC	-3.6925	-5.6925	0	0
EXP	-3.6925	-5.6925	-3.6925	-3.6925
LRT	2.1	0	2.1	2.1
CRT	2.1	2.1	2.1	2.1

Work-Based Other

The variables used in the WBO mode choice model are:

Variables in WBO Mode Choice Model

Variable	Description
AreaDen	(Production) area density; estimated from servpop = jobs + workers within 30 minute auto travel time as 0.00005*servpop if servpop<75,000 or as 0.00025*servpop-15 if servpop>=75,000
LnWlkTime	Log of walk time
BkTime	Bike time
IVT	In-vehicle time
iwait, xwait	Times for initial wait and transfer wait
accwalk, xwalk, egrwalk	Times for walk access, transfer, and egress
Accdrv,egrdrv	Times for drive access and egress

Coefficients for the WBO mode choice model are listed in the table below. Note that as before, the TransitW and TransitD columns represent the coefficients for all eight transit sub-modes, which differ only in the constants used. Constants for these sub-modes appear in the following table. Unlike all other trip purposes, some model coefficients beyond the model constants differ by peak versus off-peak.

WBO Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Constant (Peak)	0	-2.3037	1.0582	0.7569	0.7369	**	**
Constant (Off-Peak)	0	-8.5037	0.6625	0.1691	0.0469	**	**
Theta (Motorized)			0.6806	0.6806	0.6806	0.6806	0.6806
Theta (Transit)						0.7000	0.7000
Theta (Drive Access)							0.7000
Theta (Walk Access)						0.7000	

WBO Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
AreaDen (peak)	0.134		-0.269	-0.7745	-0.7745		
AreaDen (off-peak)	0.134		-1.5635	-1.7875	-1.9025		
LnWlkTime (peak)	-2.037						
LnWlkTime (off-peak)	-4.257						
BkTime (peak)		-0.3475					
BkTime (off-peak)		-0.6875					
IVT (peak)			-0.0775	-0.0775	-0.0775	-0.0775	-0.0775
IVT (off-peak)			-0.1475	-0.1475	-0.1475	-0.1475	-0.1475
iwait, xwait (peak)						-0.1876	-0.1876
iwait, xwait (off-peak)						-0.3570	-0.3570
Accwalk, xwalk, egrwalk (peak)						-0.1821	-0.1821
Accwalk, xwalk, egrwalk (peak)						-0.3466	-0.3466
Accdrv, egrdrv (peak)						-0.1821	-0.1821
Accdrv, egrdrv (off-peak)						-0.3466	-0.3466

WBO Transit Submode Constants

	Drive Access Submodes (Peak)	Drive Access Submodes (Off-Peak)	Walk Access Submodes (Peak)	Walk Access Submodes (Off-Peak)
LOC	-2.315	-5.315	0	0
EXP	-2.315	-5.315	-2.015	-5.315
LRT	1.24	0	1.24	0
CRT	1.24	1.24	1.24	1.24

Other-Based Other

The variables used in the OBO mode choice model are:

Variables in OBO mode choice model

Variable	Description
AreaDen	(Production) area density; estimated from servpop = jobs + workers within 30 minute auto travel time as 0.00005*servpop if servpop<75,000 or as 0.00025*servpop-15 if servpop>=75,000
LnWlkTime	Log of walk time
BkTime	Bike time
IVT	In-vehicle time
iwait, xwait	Times for initial wait and transfer wait
accwalk, xwalk, egrwalk	Times for walk access, transfer, and egress
Accdrv,egrdrv	Times for drive access and egress

Coefficients for the OBO mode choice model are listed in the table below. Note that as before, the TransitW and TransitD columns represent the coefficients for all eight transit sub-modes, which differ only in the constants used. Constants for these sub-modes appear in the following table.

OBO Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Constant (Peak)	0	-2.936	0.6593	0.6878	0.0019	**	**
Constant (Off-Peak)	0	-3.636	0.2593	-0.0108	-0.3119	**	**
Theta (Motorized)			0.6806	0.6806	0.6806	0.6806	0.6806
Theta (Transit)						0.7000	0.7000
Theta (Drive Access)							0.7000
Theta (Walk Access)						0.7000	
AreaDen	2.804		-1.099	-1.089	-1.069		
LnWlkTime	-8.9370						
BkTime		-0.565					
IVT			-0.1075	-0.1075	-0.1075	-0.1075	-0.1075
iwait, xwait						-0.2602	-0.2602

OBO Mode Choice Model Coefficients

	Walk	Bike	DA	SR2	SR3	TransitW	TransitD
Accwalk, xwalk, egrwalk						-0.2527	-0.2527
Accdrv, egrdrv						-0.2527	-0.2527

OBO Transit Submode Constants

	Drive Access Submodes (Peak)	Drive Access Submodes (Off-Peak)	Walk Access Submodes (Peak)	Walk Access Submodes (Off-Peak)
LOC	-2.315	-3.315	0	0
EXP	-2.315	-3.315	-2.015	-3.315
LRT	1.24	1.24	1.24	1.24
CRT	1.24	1.24	1.24	1.24

Appendix C:
Recommended Data Collection

Non-Resident Travel

Travel associated with university, visitor, and non-residents including type of activities and locations, trip generation, mode used while within Santa Cruz County. This might involve surveys and Big Data to identify travel patterns of visitors separate from typical resident travel patterns found in the household travel survey.

Traffic Counts, Bottlenecks, and Speeds

Collect traffic counts (by vehicle class), bottleneck locations and duration, and congested travel speeds on state routes and local roads for multiple days. The data should be of the same season and year as the land use data.

The following process has been used for other jurisdictions when developing a data collection program.

Land Use Statistics Review

The distributions of number of households and employment by TAZ were reviewed in ArcGIS prior to grouping the zones into categories to determine high growth and high activity zones (described in Step 2).

Land Use Categorization

Zones were categories according to the distributions of single family and employment values in base year, as well as the change in these variables between base and future.

- Housing Thresholds: 0, 50,100,500,1000,1000+
- Total Employment Thresholds: 0,50,100,500,1000,1000+

High growth and high activity zones were identified according to the below criteria:

- High growth TAZs were selected it the combined growth score for difference in employment and single family units between 2008 and 2040 was in the top two categories (50 zones selected).
- High activity TAZs were selected if the combined score for employment and single family units in 2008 was in the top two categories.

Screenline Selection and Count Identification

Counts locations were selected according to the steps outlined below:

Step 1. Identify roadway segments for which facility type, lanes, or capacity is expected to change between 2008 and 2040

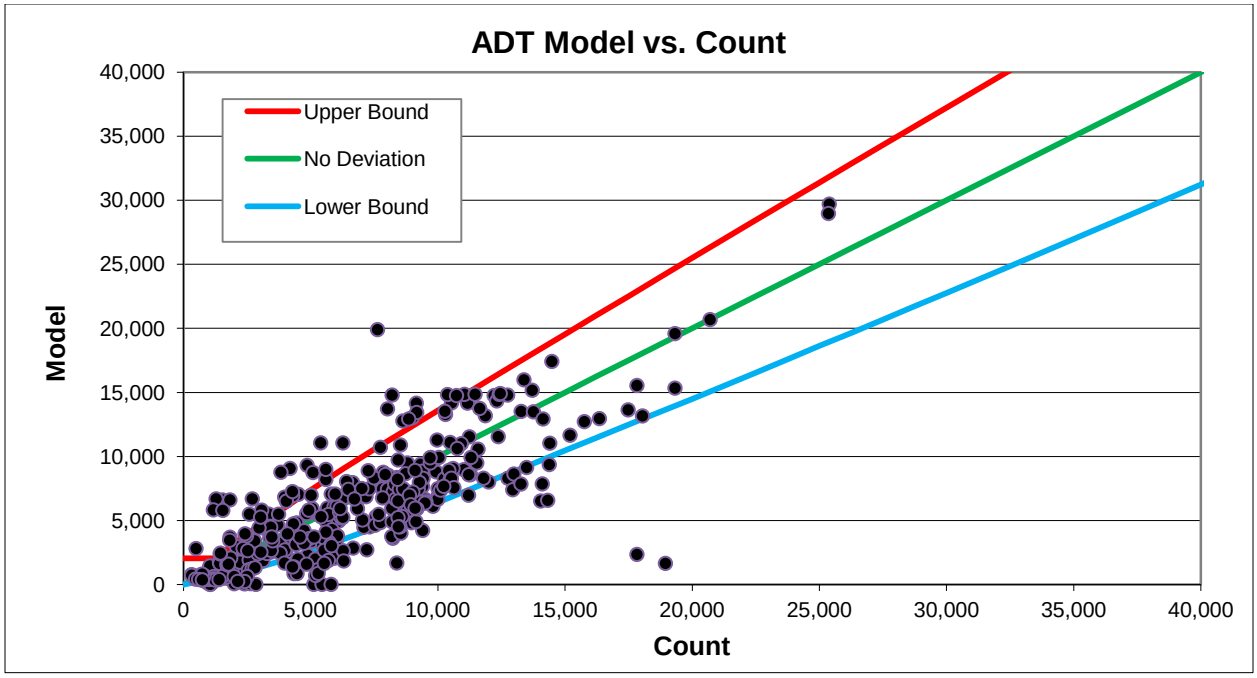
Step 2. Identify high growth or high activity TAZs

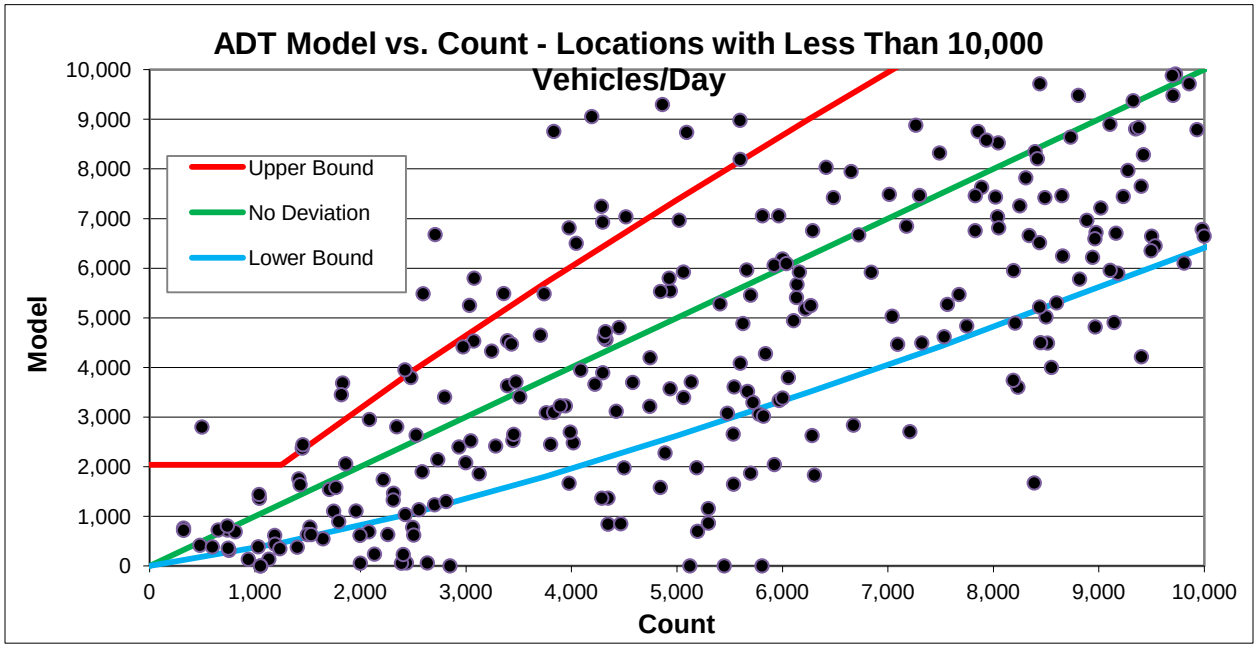
Step 3. Delineate screenlines near features identified in Steps 1 and 2, as well as near a major entry/exit point to/from Fresno County

Identify potential screenline locations according to the methodology described above. These count locations will be assessed within the extents of the proposed screenlines to identify key count locations and potential new locations. Once count locations are confirmed, perform the following tasks:

1. Prioritize Count Locations
2. Coordinate with Count Firm
3. Integrate Count Data into Traffic Counts Database
4. Link Counts to Model for Validation

Appendix D:
Model Assignment Validation





Screenline Locations

Roadway Information				Model Volume			Observed Data			Model/Count Ratio			Allowable Deviation			Within Deviation			Model - Count			Difference Squared			Loaded Network
				Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		
Location	Link ID	Direction			AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM	Facility Type
Hwy 17	23944	Regular_AB	0	23,177	1259.60872	1976.57212	22964.07	2091.51	1301.14	1.01	0.60	1.52	0.27	0.28	0.32	Yes	No	No	212	-832	675	45131	692060	456209	Other Freeways or Expressways
Hwy 17	35254	Reverse_BA	0	23,502	1842.52027	1467.30724	21053.46	850.73	1667.49	1.12	2.17	0.88	0.27	0.39	0.3	Yes	No	Yes	2449	992	-200	5995536	983648	40073	Other Freeways or Expressways
Hwy 17	35291	Reverse_BA	0	18,778	911.475209	1517.14926	18703.53	1034.94	1460.25	1.00	0.88	1.04	0.29	0.37	0.31	Yes	Yes	Yes	75	-123	57	5572	15244	3238	Other Freeways or Expressways
Hwy 17	30581	Reverse_BA	0	18,824	1207.48573	1170.78043	19606.15	887.81	1598.94	0.96	1.36	0.73	0.28	0.39	0.31	Yes	Yes	Yes	-782	320	-428	612270	102193	183321	Other Freeways or Expressways
Hwy 1	22775	Reverse_BA	0	23,319	1680.73353	1949.7055	22747.66	1521.71	1516.56	1.03	1.10	1.29	0.27	0.31	0.31	Yes	Yes	Yes	571	159	433	326056	25288	187615	Ramp
Hwy 1	30583	Regular_AB	0	23,406	1979.24166	1769.20577	21014.68	1206.69	1266.35	1.11	1.64	1.40	0.27	0.33	0.33	Yes	No	No	2392	773	503	5720672	596836	252864	Ramp
Hwy 1	35299	Reverse_BA	0	49,513	3034.63988	4328.08574	37027.41	1110.28	2795.52	1.34	2.73	1.55	0.24	0.35	0.26	No	No	No	12485	1924	1533	155878930	3703161	2348758	Other Freeways or Expressways
Hwy 1	32443	Regular_AB	0	50,096	3608.96262	4038.42555	38824.48	1061.6	2298.73	1.29	3.40	1.76	0.23	0.36	0.27	No	No	No	11271	2547	1740	127043945	6489056	3026541	Other Freeways or Expressways
Hwy 1	32663	Reverse_BA	0	55,447	3260.04228	4746.09653	45088.8	3172.51	2942.04	1.23	1.03	1.61	0.22	0.25	0.26	No	Yes	No	10358	88	1804	107289827	7662	3254620	Other Freeways or Expressways
Hwy 1	35321	Regular_AB	0	55,216	3955.58276	4514.94892	35122.65	2182.27	2180.1	1.57	1.81	2.07	0.24	0.27	0.27	No	No	No	20094	1773	2335	403755725	3144638	5451519	Other Freeways or Expressways
Hwy 1	35348	Reverse_BA	0	50,262	3446.11552	4357.13825	29074.14	2134.33	1767.06	1.73	1.61	2.47	0.26	0.27	0.3	No	No	No	21188	1312	2590	448933722	1720781	6708505	Other Freeways or Expressways
Hwy 1	35344	Regular_AB	0	50,378	3664.333	4261.67045	44174.15	2511.67	2548.02	1.14	1.46	1.67	0.22	0.26	0.26	Yes	No	No	6204	1153	1714	38491476	1328632	2936598	Other Freeways or Expressways
Hwy 1	30971	Regular_AB	0	45,671	3356.6555	4213.86011	37085.96	2863.8	2277.33	1.23	1.17	1.85	0.24	0.26	0.27	Yes	Yes	No	8585	493	1937	73704367	242907	3750149	Other Freeways or Expressways
Hwy 1	35346	Regular_AB	0	44,799	3067.87111	3843.70119	35856.17	2129.83	2361.21	1.25	1.44	1.63	0.24	0.27	0.27	No	No	No	8943	938	1482	79979238	879921	2197780	Other Freeways or Expressways
Hwy 1	19414	Reverse_BA	0	56,963	3722.75039	4877.66584	41782.64	3227.52	2675.67	1.36	1.15	1.82	0.23	0.24	0.26	No	Yes	No	15180	495	2202	230442170	245253	4848786	Other Freeways or Expressways
Hwy 1	35347	Regular_AB	0	57,331	3859.81147	4957.50659	30047.51	1607.65	2089.54	1.91	2.40	2.37	0.25	0.3	0.28	No	No	No	27283	2252	2868	744373991	5072231	8225232	Other Freeways or Expressways
Hwy 1	35354	Regular_AB	0	50,336	3250.45231	4174.0944	43428.7	3345.81	3029.19	1.16	0.97	1.38	0.22	0.24	0.25	Yes	Yes	No	6907	-95	1145	47705080	9093	1310806	Other Freeways or Expressways
Hwy 1	35355	Reverse_BA	0	50,993	3050.24825	4219.92639	28711.87	1413.54	2349.17	1.78	2.16	1.80	0.26	0.31	0.27	No	No	No	22281	1637	1871	496464222	2678814	3499729	Other Freeways or Expressways
Hwy 1	35354	Regular_AB	0	50,336	3250.45231	4174.0944	39184.39	3161.23	2664.35	1.28	1.03	1.57	0.23	0.25	0.26	No	Yes	No	11151	89	1510	124349181	7961	2279328	Other Freeways or Expressways
Hwy 1	35355	Reverse_BA	0	50,993	3050.24825	4219.92639	43404.44	2451.44	3386.1	1.17	1.24	1.25	0.22	0.26	0.24	Yes	Yes	No	7589	599	834	57591511	358571	695266	Other Freeways or Expressways
Hwy 1	35353	Regular_AB	0	49,572	3222.52783	3980.56136	39776.17	3377.6	2887.81	1.25	0.95	1.38	0.23	0.24	0.26	No	Yes	No	9796	-155	1093	95955779	24047	1194106	Other Freeways or Expressways
Hwy 1	21450	Reverse_BA	0	50,797	2912.88361	4001.13355	41424.88	2438.17	3389.98	1.23	1.19	1.18	0.23	0.26	0.24	Yes	Yes	Yes	9372	475	611	87839749	225353	373509	Other Freeways or Expressways
Hwy 1	35364	Reverse_BA	0	47,824	3279.17248	3996.38858	30278.09	2307.21	2142.38	1.58	1.42	1.87	0.25	0.27	0.27	No	No	No	17545	972	1854	307844493	944711	3437348	Other Freeways or Expressways
Hwy 1	35365	Regular_AB	0	49,259	2997.18545	3988.25891	39146	2513.33	3203.52	1.26	1.19	1.24	0.23	0.26	0.24	No	Yes	No	10113	484	785	102272309	234116	615815	Other Freeways or Expressways
E CLIFF DR	24173	Regular_AB	EB	4,493	124.868908	267.354361	7321	194	790	0.61	0.64	0.34	0.42	0.6	0.41	Yes	Yes	No	-2828	-69	-523	7998591	4779	273158	Minor Arterial
E CLIFF DR	24173	Reverse_BA	WB	4,466	164.215802	258.57525	7092	445	534	0.63	0.37	0.48	0.42	0.6	0.46	Yes	No	No	-2626	-281	-275	6895684	78840	75859	Minor Arterial
COAST RD	33004	Regular_AB	EBNB	5,544	281.222964	383.631093	4937	196	402	1.12	1.43	0.95	0.6	0.6	0.6	Yes	Yes	Yes	607	85	-18	368408	7263	337	Principal Arterial
COAST RD	33004	Reverse_BA	WBSB	5,531	253.454757	410.461294	4844	277	351	1.14	0.91	1.17	0.6	0.6	0.6	Yes	Yes	Yes	687	-24	59	471298	554	3536	Principal Arterial
E CLIFF DR	36295	Regular_AB	EB	777	20.127951	63.865394	2494	61	266	0.31	0.33	0.24	0.6	0.6	0.6	No	No	No	-1717	-41	-202	2949430	1671	40858	Local
E CLIFF DR	36295	Reverse_BA	WB	781	47.902604	41.706493	1520	104	125	0.51	0.46	0.33	0.6	0.6	0.6	Yes	Yes	No	-739	-56	-83	545729	3147	6938	Local
E CLIFF DR	31431	Reverse_BA	WBSB	2,042	55.332951	112.401044	5923	147	399	0.34	0.38	0.28	0.45	0.6	0.6	No	No	No	-3881	-92	-287	15059970	8403	82139	Minor Arterial
E CLIFF DR	31431	Regular_AB	EBNB	2,277	61.858984	98.661987	4887	89	382	0.47	0.70	0.26	0.6	0.6	0.6	Yes	Yes	No	-2610	-27	-283	6813915	737	80280	Minor Arterial
FELTON EMPIRE RD	46068	Regular_AB	EB	1,363	92.8166	90.774639	1041	78	65	1.31	1.19	1.40	0.6	0.6	0.6	Yes	Yes	Yes	322	15	26	103475	220	664	Minor Collector
FELTON EMPIRE RD	46068	Reverse_BA	WB	1,439	68.603673	101.957212	1038	32	96	1.39	2.14	1.06	0.6	0.6	0.6	Yes	No	Yes	401	37	6	160869	1340	35	Minor Collector
MCLAUGHLIN DR	33436	Regular_AB	EB	54	2.518793	3.787905	1998	44	156	0.03	0.06	0.02	0.6	0.6	0.6	No	No	No	-1944	-41	-152	3778160	1721	23169	Minor Arterial
MCLAUGHLIN DR	33436	Reverse_BA	WB	59	3.306275	2.484448	2435	90	161	0.02	0.04	0.02	0.6	0.6	0.6	No	No	No	-2376	-87	-159	5643626	7516	25127	Minor Arterial
HELLER DR	33442	Regular_AB	NB	54	2.518793	3.787905	2388	87	140	0.02	0.03	0.03	0.6	0.6	0.6	No	No	No	-2334	-84	-136	5446384	7137	18554	Minor Arterial
HELLER DR	33442	Reverse_BA	SB	59	3.306275	2.484448	2633	32	284	0.02	0.10	0.01	0.6	0.6	0.6	No	No	No	-2574	-29	-282	6623580	823	79251	Minor Arterial
GLENN COOLIDGE DR	45671	Regular_AB	NB	6,598	195.969283	441.834073	1535	157	87	4.30	1.25	5.08	0.6	0.6	0.6	No	Yes	No	5063	39	355	25632741	1519	125907	Minor Arterial
GLENN COOLIDGE DR	45671	Reverse_BA	SB	6,677	283.429032	377.523788	1284	32	145	5.20	8.86	2.60	0.6	0.6	0.6	No	No	No	5393	251	233	29087692	63217	54067	Minor Arterial
HELLER DR	33332	Regular_AB	NB	6,813	600.920549	499.912003	3977	256	233	1.71	2.35	2.15	0.6	0.6	0.6	No	No	No	2836	345	267	8044774	118970	71242	Minor Arterial
HELLER DR	33332	Reverse_BA	SB	7,035	523.664849	569.688285	4516	69	473	1.56	7.59	1.20	0.6	0.6	0.6	Yes	No	Yes	2519	455	97	6344242	206720	9349	Minor Arterial
GLENN COOLIDGE DR	41076	Reverse_BA	NB	7,948	268.161723	533.289915	6651	630	427	1.20	0.43	1.25	0.43	0.44	0.6	Yes	No	Yes	1297	-362	106	1682078	130927	11298	Minor Arterial
GLENN COOLIDGE DR	41076	Regular_AB	SB	8,033	326.511932	493.584069	6414	156	667	1.25	2.09	0.74	0.44	0.6	0.43	Yes	No	Yes	1619	171	-173	2620923	29074	30073	Minor Arterial
BAY ST	28439	Reverse_BA	NB	4,885	184.976711	288.541994	5625	399	398	0.87	0.46	0.72	0.45	0.6	0.6	Yes	Yes	Yes	-740	-214	-109	548090	45806	11981	Principal Arterial
BAY ST	28435	Regular_AB	SB	4,943	152.029232	254.283162	6105	169	728	0.81	0.90	0.35	0.44	0.6	0.42	Yes	Yes	No	-1162	-17	-474	1351098	288	224408	Principal Arterial
ALTA VISTA DR	28404	Reverse_BA	NB	723	59.923996	38.598046	739	25	63	0.98	2.40	0.61	0.6	0.6	0.6	Yes	No	Yes	-16	35	-24	257	1220	595	Major Collector
ALTA VISTA DR	28404	Regular_AB	SB	724	20.49676	66.290314	650	22	54	1.11	0.93	1.23	0.6	0.6	0.6	Yes	Yes	Yes	74	-2	12	5451	2	151	Major Collector
BAY ST	27451	Regular_AB	EB	-	0	0	5122	132	573	-	-	-	0.47	0.6	0.45	No	No	No	-5122	-132	-573	26234884	17424	328329	Principal Arterial
BAY ST	27451	Reverse_BA	WB	4,804	161.274343	277.110566	4451	331	272	1.08	0.49	1.02	0.6	0.6	0.6	Yes	Yes	Yes	353	-170	5	124269	28807	26	Principal Arterial
HIGH ST	27781	Reverse_BA	EB	11,054	641.098708	951.259619	5396	228	489	2.05	2.81	1.95	0.46	0.6	0.6	No	No	No	5658	413	462	32010483	170651	213684	Minor Arterial
HIGH ST	27781	Regular_AB	WB	11,048	872.500319	795.198881	6268	463	469	1.76	1.88	1.70	0.44	0.6	0.6	No	No	No	4780	410	326	22850843	167691	106406	Minor Arterial
GLENN COOLIDGE DR	27677	Reverse_BA	EB	6,598	195.969283	441.834073	1828	104	101	3.61	1.88	4.37	0.6	0.6	0.6	No	No	No	4770	92	341	22751743	8458	116168	Minor Arterial
GLENN COOLIDGE DR	27677	Regular_AB	WB	6,677	283.429032	377.523788	2707	128	248	2.47	2.21	1.52	0.6	0.6	0.6	No	No	Yes	3970	155	130	15763287	24158	16776	Minor Arterial
HIGH ST	28534	Regular_AB	SB	9,055	706.867103	634.277397	4192	157	367	2.16	4.50	1.73	0.6	0.6	0.6	No	No	No	4863	550	267	23652209	302354	71437	Major Collector
HIGH ST	28534	Reverse_BA	NB	8,756	587.671268	744.275777	3832	176	236	2.29	3.34	3.15	0.6	0.6	0.6	No	No	No	4924	412	508	24249218	169473	258344	Major Collector
MISSION ST	28218	Reverse_BA	EBNB	13,155	579.223079	999.171558	18045	930	1141	0.73	0.62	0.88	0.29	0.38	0.35	Yes	Yes	Yes	-4890	-351	-142	23908045	123044	20115	Principal Arterial
MISSION ST	28218	Regular_AB	WBSB	12,947	606.48678	951.685701	16352	844	1107	0.79	0.72	0.86	0.3	0.4	0.35	Yes	Yes	Yes	-3405	-238	-155	11590854	56413	24123	Principal Arterial
BAY ST	28185	Regular_AB	EB	1,978	72.604965	126.974227	5187	190	453	0.38	0.38	0.28	0.47	0.6	0.6	No	No	No	-3209	-117	-326	10297444	13782	106293	Principal Arterial
BAY ST	28185	Reverse_BA	WB	1,976	66.902443	142.735934	4498	270	260	0.44	0.25	0.55	0.6	0.6	0.6	Yes	No	Yes	-2522	-203	-117	6358487	41249	13751	Principal Arterial
MISSION ST	32180	Regular_AB	EBNB	29,695	1967.89088	2109.16537	25388	1593	1886	1.17	1.24	1.12	0.26	0.31	0.29	Yes	Yes	Yes	4307	375	223	18547174	140543	49803	Principal Arterial
MISSION ST	32180	Reverse_BA	WBSB	28,964	1491.11744	2460.85817	25356	1427	1733	1.14	1.04	1.42	0.26	0.31	0.3	Yes	Yes	No	3608	64	728	13017039	4111	529778	Principal Arterial
MISSION ST	32183	Reverse_BA	WBSB	7,056	276.031822	673.206597	5810	78	394	1.21	3.54	1.71	0.45	0.6	0.6	Yes	No	No	1246	198	279	1551992	39217	77956	Principal Arterial
MISSION ST	32183	Regular_AB	EBNB	5,922	314.698115	427.103585	5061	91	322	1.17	3.46	1.33	0.47	0.6	0.6	Yes	No	Yes	861	224	105	741843	50041	11047	Principal Arterial
QUAIL HOLLOW RD	25536	Reverse_BA	NB	133	5.668909	9.868569	936	18	91	0.14	0.31	0.11	0.6	0.6	0.6	No	No	No	-803	-12	-81	644909	152	6582	Major Collector
QUAIL HOLLOW RD	25536	Regular_AB	SB	135	9.776288	8.441078	1131	71	58	0.12	0.14	0.15	0.6	0.6	0.6	No	No	No	-996	-61	-50	991580	3748	2456	Major Collector
GLEN ARBOR RD	29319	Reverse_BA	NB	632	25.617971	48.616658	2258	59	183	0.28	0.43	0.27	0.6	0.6	0.6	No	Yes	No	-1626	-33	-134	2643712	1114	18059	Major Collector
GLEN ARBOR RD	29319	Regular_AB	SB	688	60.897415	50.142757	2079	194	120	0.33	0.31	0.42	0.6	0.6	0.6	No	No	Yes	-1391	-133	-70	1934946	17716	4880	Major Collector
GLEN ARBOR RD	29258	Reverse_BA	NB	1,755	44.679211	116.401629	1415	67	104	1.24	0.67	1.12	0.6	0.6	0.6	Yes	Yes	Yes	340	-22	12	115262	498	154	Local
GLEN ARBOR RD	29258	Regular_AB	SB	1,636	97.326185	72.547924	1427	71	96	1.15	1.37	0.76	0.6	0.6	0.6	Yes	Yes	Yes	209	26	-23	43615	693	550	Local
GRAHAM HILL RD	45772	Regular_AB	NB	5,489	469.318784	376.583121	3357	127	274	1.64	3.70	1.37	0.6	0.6	0.6	No	No	Yes	2132	342	103	4544374	117182	10523	Local
GRAHAM HILL RD	45772	Reverse_BA	SB	4,538	57.041759	528.132457	3393	308	261	1.34	0.19	2.02	0.6	0.6	0.6	Yes	No	No	1145	-251	267	1310394	62980	71360	Local
LOCKEWOOD LN	30485	Reverse_BA	NB	1,463	18.863267	50.094994	2313	75	146	0.63	0.25	0.34	0.6	0.6	0.6	Yes	No	No	-850	-56	-96	722005	3151	9198	Major Collector
LOCKEWOOD LN	30485	Regular_AB	SB	1,103	35.728043	30.625773	1745	52	140	0.63	0.69	0.22	0.6	0.6	0.6	Yes	Yes	No	-642	-16	-109	412431	265	11963	Major Collector
MOUNT HERMON RD	26032	Regular_AB	WBSB	14,748	825.858923	1247.87572	12214	243	890	1.21	3.40	1.40	0.33	0.6	0.39	Yes	No	No	2534	583	358	6421109	339725	128075	Principal Arterial
MOUNT HERMON RD	26032	Reverse_BA	EBNB	14,152	1095.37814	987.631586	11168	327	656	1.27	3.35	1.51	0.35	0.6	0.43	Yes	No	No	2984	768	332	8904874	590405	109980	Principal Arterial
SOQUEL DR	31307	Regular_AB	EB	13,025	64.799197	578.267576	9000	304	1082	1.45	0.21	0.53	0.38	0.6	0.36	No	No	No	4025	-239	-504	16200331	57217	253746	Minor Arterial
SOQUEL DR	31307	Reverse_BA	WB	12,760	151.110788	572.589911	8626	538	577	1.48	0.28	0.99	0.39	0.46	0.45	No	No	Yes	4134	-387	-4	17093653	149683	19	Minor Arterial
CAPITOLA RD	31562	Regular_AB	EB	6,719	111.913329	418.615083	8973	175	983	0.75	0.64	0.43	0.39	0.6	0.38	Yes	Yes	No	-2254	-63	-564	5081824	3980	318530	Principal Arterial
CAPITOLA RD	31562	Reverse_BA	WB	7,630	228.481826	594.148138	7888	351	613	0.97	0.65	0.97	0.41	0.6	0.44	Yes	Yes	Yes	-258	-123	-19	66472	15011	355	Principal Arterial
BROMMER ST	31598	Reverse_BA	WB	3,225	91.331902	214.343655	3942	250	312	0.82	0.37	0.69	0.6	0.6	0.6	Yes	No	Yes	-717	-159	-98	514784	25176	9537	Minor Arterial
BROMMER ST	31598	Regular_AB	EB	3,087	83.80593	177.556796	3761	150	403	0.82	0.56	0.44	0.6	0.6	0.6	Yes	Yes	Yes	-674	-66	-225	454068	4382	50825	Minor Arterial

Roadway Information				Model Volume			Observed Data			Model/Count Ratio			Allowable Deviation			Within Deviation			Model - Count			Difference Squared			Loaded Network
				Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		
Location	Link ID	Direction			AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM	Facility Type
BRANCIFORTE DR	32447	Regular_AB	NB	2,141	55.238298	173.97829	2732	66	226	0.78	0.84	0.77	0.6	0.6	0.6	Yes	Yes	Yes	-591	-11	-52	348756	116	2706	Minor Arterial
BRANCIFORTE DR	32447	Reverse_BA	SB	2,080	157.249762	106.168136	2997	123	253	0.69	1.28	0.42	0.6	0.6	0.6	Yes	Yes	Yes	-917	34	-147	841568	1173	21560	Minor Arterial
OCEAN ST	25856	Regular_AB	NB	1,672	131.019332	251.936259	8387	266	602	0.20	0.49	0.42	0.4	0.6	0.44	No	Yes	No	-6715	-135	-350	45095710	18220	122545	Principal Arterial
OCEAN ST	25856	Reverse_BA	SB	1,156	118.542857	194.334775	5297	62	458	0.22	1.91	0.42	0.46	0.6	0.6	No	No	Yes	-4141	57	-264	17147221	3197	69519	Principal Arterial
FRONT ST	47055	Reverse_BA	NB	1,642	11.497407	24.448629	18947	774	1696	0.09	0.01	0.01	0.29	0.41	0.3	No	No	No	-17305	-763	-1672	299476453	581410	2794084	Minor Arterial
FRONT ST	47055	Regular_AB	SB	2,343	42.541186	71.111179	17827	1211	1207	0.13	0.04	0.06	0.3	0.33	0.33	No	No	No	-15484	-1168	-1136	239758120	1365296	1290243	Minor Arterial
LAUREL ST	26412	Regular_AB	EB	14,175	556.540086	1145.62135	10539	336	1035	1.35	1.66	1.11	0.36	0.6	0.37	Yes	No	Yes	3636	221	111	13223457	48638	12237	Minor Arterial
LAUREL ST	26412	Reverse_BA	WB	14,825	710.361283	1197.63992	10381	584	742	1.43	1.22	1.61	0.37	0.45	0.42	No	Yes	No	4444	126	456	19748184	15967	207608	Minor Arterial
CEDAR ST	32242	Regular_AB	WBSB	1,365	17.836338	99.456283	4346	72	302	0.31	0.25	0.33	0.6	0.6	0.6	No	No	No	-2981	-54	-203	8884087	2934	41024	Major Collector
CEDAR ST	32242	Reverse_BA	EBNB	1,327	22.240479	47.127986	2310	42	173	0.57	0.53	0.27	0.6	0.6	0.6	Yes	Yes	No	-983	-20	-126	965573	390	15844	Major Collector
OCEAN ST	32303	Regular_AB	NB	11,538	460.316662	822.25292	12375	447	784	0.93	1.03	1.05	0.33	0.6	0.41	Yes	Yes	Yes	-837	13	38	701164	177	1463	Principal Arterial
OCEAN ST	32303	Reverse_BA	SB	10,561	284.876472	891.396557	11582	247	879	0.91	1.15	1.01	0.34	0.6	0.39	Yes	Yes	Yes	-1021	38	12	1042764	1435	154	Principal Arterial
GRAHAM HILL RD	24182	Regular_AB	NB	6,928	114.200791	633.359139	4295	168	341	1.61	0.68	1.86	0.6	0.6	0.6	No	Yes	No	2633	-54	292	6934633	2894	85474	Principal Arterial
GRAHAM HILL RD	24182	Reverse_BA	SB	6,501	372.752587	372.949165	4045	313	335	1.61	1.19	1.11	0.6	0.6	0.6	No	Yes	Yes	2456	60	38	6033732	3570	1440	Principal Arterial
WATER ST	31816	Reverse_BA	EB	8,792	222.178359	482.623613	9930	226	888	0.89	0.98	0.54	0.38	0.6	0.39	Yes	Yes	No	-1138	-4	-405	1294654	15	164330	Principal Arterial
WATER ST	31816	Regular_AB	WB	11,524	316.195753	768.535014	11241	548	852	1.03	0.58	0.90	0.35	0.46	0.39	Yes	Yes	Yes	283	-232	-83	80120	53733	6966	Principal Arterial
MURRAY ST	31924	Regular_AB	EB	6,780	295.235178	548.961545	9979	239	1129	0.68	1.24	0.49	0.38	0.6	0.35	Yes	Yes	No	-3199	56	-580	10233292	3162	336445	Minor Arterial
MURRAY ST	31924	Reverse_BA	WBSB	6,847	304.755275	629.539655	7176	182	457	0.95	1.67	1.38	0.42	0.6	0.6	Yes	No	Yes	-329	123	173	108277	15069	29770	Minor Arterial
SEABRIGHT AVE	31801	Reverse_BA	NB	841	67.901776	63.557824	4346	140	329	0.19	0.49	0.19	0.6	0.6	0.6	No	Yes	No	-3505	-72	-265	12284663	5198	70460	Minor Arterial
SEABRIGHT AVE	31801	Regular_AB	SB	849	47.001901	57.360259	4467	95	480	0.19	0.49	0.12	0.6	0.6	0.6	No	Yes	No	-3618	-48	-423	13091628	2304	178624	Minor Arterial
EATON ST	31475	Regular_AB	EB	5,270	101.780295	201.940569	7564	254	805	0.70	0.40	0.25	0.41	0.6	0.4	Yes	Yes	No	-2294	-152	-603	5262190	23171	363681	Minor Arterial
EATON ST	31475	Reverse_BA	WB	10,808	364.253459	810.757609	10757	646	755	1.00	0.56	1.07	0.36	0.44	0.41	Yes	Yes	Yes	51	-282	56	2578	79381	3109	Minor Arterial
7TH AVE	31573	Regular_AB	EB	5,964	200.662007	424.982377	5661	239	504	1.05	0.84	0.84	0.45	0.6	0.47	Yes	Yes	Yes	303	-38	-79	91888	1470	6244	Major Collector
7TH AVE	31573	Reverse_BA	WB	6,186	220.885838	502.74523	6000	308	485	1.03	0.72	1.04	0.44	0.6	0.6	Yes	Yes	Yes	186	-87	18	34546	7589	315	Major Collector
RAMP	22784	Regular_AB	EB	6,966	435.539417	611.625269	5021	315	287	1.39	1.38	2.13	0.47	0.6	0.6	Yes	Yes	No	1945	121	325	3783696	14530	105382	Ramp
RAMP	35328	Regular_AB	WB	3,394	113.214209	299.414239	5063	251	431	0.67	0.45	0.69	0.47	0.6	0.6	Yes	Yes	Yes	-1669	-138	-132	2785694	18985	17315	Ramp
WATER ST	30717	Regular_AB	EB	4,278	105.820914	316.426117	5839	150	553	0.73	0.71	0.57	0.45	0.6	0.45	Yes	Yes	Yes	-1561	-44	-237	2437407	1952	55967	Principal Arterial
WATER ST	30717	Reverse_BA	WB	6,593	287.503425	555.307198	8962	420	728	0.74	0.68	0.76	0.39	0.6	0.42	Yes	Yes	Yes	-2369	-132	-173	5610568	17555	29823	Principal Arterial
SOQUEL AVE	31713	Regular_AB	EB	13,272	401.129209	862.978962	10304	283	896	1.29	1.42	0.96	0.37	0.6	0.39	Yes	Yes	Yes	2968	118	-33	8807739	13955	1090	Principal Arterial
SOQUEL AVE	31713	Reverse_BA	WB	8,754	225.541964	757.523226	7855	301	540	1.11	0.75	1.40	0.41	0.6	0.46	Yes	Yes	Yes	899	-75	218	808899	5694	47316	Principal Arterial
ROONEY ST	45420	Regular_AB	WB	1,106	63.868008	66.778971	1957	65	200	0.57	0.98	0.33	0.6	0.6	0.6	Yes	Yes	No	-851	-1	-133	723500	1	17748	Minor Arterial
SOQUEL AVE	31701	Regular_AB	EB	13,707	255.598468	770.582913	8023	216	904	1.71	1.18	0.85	0.4	0.6	0.38	No	Yes	Yes	5684	40	-133	32304918	1568	17800	Principal Arterial
SOQUEL AVE	31701	Reverse_BA	WB	15,162	329.600001	1076.25235	13711	539	1124	1.11	0.61	0.96	0.32	0.46	0.35	Yes	Yes	Yes	1451	-209	-48	2105003	43848	2280	Principal Arterial
CAPITOLA RD	23295	Reverse_BA	EB	8,349	265.946114	644.712443	8395	191	980	0.99	1.39	0.66	0.4	0.6	0.38	Yes	Yes	Yes	-46	75	-335	2147	5617	112418	Principal Arterial
CAPITOLA RD	23295	Regular_AB	WB	7,461	146.552058	477.424569	7828	460	597	0.95	0.32	0.80	0.41	0.6	0.45	Yes	No	Yes	-367	-313	-120	134406	98250	14298	Principal Arterial
RAMP	22778	Regular_AB	WB	9,375	350.911984	703.260649	9325	441	683	1.01	0.80	1.03	0.38	0.6	0.43	Yes	Yes	Yes	50	-90	20	2481	8116	410	Ramp
CAPITOLA RD	24348	Reverse_BA	EB	6,246	112.101067	410.947741	8656	168	845	0.72	0.67	0.49	0.39	0.6	0.4	Yes	Yes	No	-2410	-56	-434	5806840	3125	188401	Principal Arterial
CAPITOLA RD	24348	Regular_AB	WB	7,036	243.402531	462.622814	8039	301	654	0.88	0.81	0.71	0.4	0.6	0.43	Yes	Yes	Yes	-1003	-58	-191	1005973	3317	36625	Principal Arterial
41ST AVE	30932	Regular_AB	NB	20,677	1253.70732	1760.47193	20704	973	1494	1.00	1.29	1.18	0.28	0.38	0.31	Yes	Yes	Yes	-27	281	266	733	78797	71007	Principal Arterial
41ST AVE	30932	Reverse_BA	SB	19,583	1149.94728	1761.22406	19323	620	1311	1.01	1.85	1.34	0.28	0.44	0.32	Yes	No	No	260	530	450	67548	280844	202702	Principal Arterial
PORTOLA DR	31363	Regular_AB	WBSB	2,836	83.343357	165.751722	6673	147	461	0.43	0.57	0.36	0.43	0.6	0.6	No	Yes	No	-3837	-64	-295	14722280	4052	87172	Minor Arterial
PORTOLA DR	31363	Reverse_BA	EBNB	3,076	99.069736	136.091728	5478	129	429	0.56	0.77	0.32	0.46	0.6	0.6	Yes	Yes	No	-2402	-30	-293	5767364	896	85795	Minor Arterial
CAPITOLA RD	31565	Regular_AB	EB	6,813	121.884404	440.199631	8050	168	837	0.85	0.73	0.53	0.4	0.6	0.4	Yes	Yes	No	-1237	-46	-397	1529847	2127	157451	Principal Arterial
CAPITOLA RD	31565	Reverse_BA	WB	7,466	265.66682	587.247853	7299	329	581	1.02	0.81	1.01	0.42	0.6	0.45	Yes	Yes	Yes	167	-63	6	27793	4011	39	Principal Arterial
CHANTICLEER AVE	31329	Reverse_BA	EBNB	1,035	69.208339	123.517677	2424	175	158	0.43	0.40	0.78	0.6	0.6	0.6	Yes	No	Yes	-1389	-106	-34	1929389	11192	1189	Local
CHANTICLEER AVE	31329	Regular_AB	WBSB	1,859	108.810587	200.337143	3125	118	405	0.59	0.92	0.49	0.6	0.6	0.6	Yes	Yes	Yes	-1266	-9	-205	1603689	84	41887	Local
7TH AVE	22975	Regular_AB	EB	3,334	125.061552	263.325194	5969	211	540	0.56	0.59	0.49	0.45	0.6	0.46	Yes	Yes	No	-2635	-86	-277	6943409	7385	76549	Major Collector
7TH AVE	22975	Reverse_BA	WB	3,517	135.053559	293.346989	5669	405	368	0.62	0.33	0.80	0.45	0.6	0.6	Yes	No	Yes	-2152	-270	-75	4633061	72871	5573	Major Collector
CAPITOLA RD	31567	Regular_AB	EB	7,434	169.560691	527.532635	8020	223	896	0.93	0.76	0.59	0.4	0.6	0.39	Yes	Yes	No	-586	-53	-368	343624	2856	135768	Principal Arterial
CAPITOLA RD	31567	Reverse_BA	WB	8,525	422.177292	646.129272	8046	491	612	1.06	0.86	1.06	0.4	0.6	0.44	Yes	Yes	Yes	479	-69	34	229900	4737	1165	Principal Arterial
17TH AVE	24179	Reverse_BA	NB	5,176	254.49474	394.778497	6218	257	564	0.83	0.99	0.70	0.44	0.6	0.45	Yes	Yes	Yes	-1042	-3	-169	1085931	6	28636	Minor Arterial
17TH AVE	24179	Regular_AB	SB	5,409	304.855091	406.527597	6133	398	418	0.88	0.77	0.97	0.44	0.6	0.6	Yes	Yes	Yes	-724	-93	-11	524523	8676	132	Minor Arterial
17TH AVE	31547	Reverse_BA	NB	3,383	188.153228	248.227057	6001	420	412	0.56	0.45	0.60	0.44	0.6	0.6	Yes	Yes	Yes	-2618	-232	-164	6852463	53753	26822	Minor Arterial
17TH AVE	31547	Regular_AB	SB	3,796	201.17805	283.816327	6056	247	527	0.63	0.81	0.54	0.44	0.6	0.46	Yes	Yes	No	-2260	-46	-243	5107854	2100	59138	Minor Arterial
BROMMER ST	24105	Regular_AB	EB	3,095	90.297185	197.573438	3831	121	446	0.81	0.75	0.44	0.6	0.6	0.6	Yes	Yes	Yes	-736	-31	-248	541415	943	61716	Minor Arterial
BROMMER ST	24105	Reverse_BA	WB	3,226	126.915771	211.360109	3893	165	330	0.83	0.77	0.64	0.6	0.6	0.6	Yes	Yes	Yes	-667	-38	-119	444590	1450	14075	Minor Arterial
17TH AVE	31549	Reverse_BA	NB	3,295	186.496418	244.723909	5720	384	414	0.58	0.49	0.59	0.45	0.6	0.6	Yes	Yes	Yes	-2425	-198	-169	5881438	39008	28654	Minor Arterial
17TH AVE	31549	Regular_AB	SB	3,608	197.713442	279.733123	5542	223	478	0.65	0.89	0.59	0.45	0.6	0.6	Yes	Yes	Yes	-1934	-25	-198	3741818	639	39310	Minor Arterial
RODRIGUEZ ST	31532	Regular_AB	EB	546	11.216177	27.855267	1644	82	204	0.33	0.14	0.14	0.6	0.6	0.6	No	No	No	-1098	-71	-176	1206485	5010	31027	Local
RODRIGUEZ ST	31532	Reverse_BA	WB	892	21.474196	59.40496	1793	161	136	0.50	0.13	0.44	0.6	0.6	0.6	Yes	No	Yes	-901	-140	-77	812169	19467	5867	Local
17TH AVE	24014	Regular_AB	SB	-	0	0	5448	235	454	-	-	-	0.46	0.6	0.6	No	No	No	-5448	-235	-454	29680704	55225	206116	Local
17TH AVE	24014	Reverse_BA	NB	-	0	0	5806	405	362	-	-	-	0.45	0.6	0.6	No	No	No	-5806	-405	-362	33709636	164025	131044	Local
SOQUEL AVE	31557	Regular_AB	EB	10,989	199.31436	544.698681	10923	402	1099	1.01	0.50	0.50	0.36	0.6	0.36	Yes	Yes	No	66	-203	-554	4391	41081	307250	Principal Arterial
SOQUEL AVE	31557	Reverse_BA	WB	11,087	269.024184	641.076419	10485	560	796	1.06	0.48	0.81	0.37	0.45	0.41	Yes	No	Yes	602	-291	-155	362771	84667	24001	Principal Arterial
7TH AVE	24078	Regular_AB	EB	4,084	303.505084	278.229406	5600	437	311	0.73	0.69	0.89	0.45	0.6	0.6	Yes	Yes	Yes	-1516	-133	-33	2297303	17821	1074	Major Collector
7TH AVE	24078	Reverse_BA	WB	3,661	176.3072	346.994074	4222	190	342	0.87	0.93	1.01	0.6	0.6	0.6	Yes	Yes	Yes	-561	-14	5	314708	187	25	Major Collector
SOQUEL DR	23970	Reverse_BA	EB	13,172	252.381757	634.345947	11867	495	1086	1.11	0.51	0.58	0.34	0.6	0.36	Yes	Yes	No	1305	-243	-452	1702878	58864	203991	Minor Arterial
SOQUEL DR	23970	Regular_AB	WB	14,329	234.358803	898.743195	12320	735	993	1.16	0.32	0.91	0.33	0.42	0.38	Yes	No	Yes	2009	-501	-94	4034184	250642	8884	Minor Arterial
BROMMER ST	24407	Regular_AB	EB	4,562	175.280451	323.973411	4327	180	435	1.05	0.97	0.74	0.6	0.6	0.6	Yes	Yes	Yes	235	-5	-111	55361	22	12327	Minor Arterial
BROMMER ST	24407	Reverse_BA	WB	4,603	209.055935	332.956065	4310	216	387	1.07	0.97	0.86	0.6	0.6	0.6	Yes	Yes	Yes	293	-7	-54	85558	48	2921	Minor Arterial
30TH AVE	24426	Reverse_BA	NB	1,738	95.462139	112.025168	2215	175	158	0.78	0.55	0.71	0.6	0.6	0.6	Yes	Yes	Yes	-477	-80	-46	227862	6326	2114	Major Collector
30TH AVE	24426	Regular_AB	SB	1,897	46.690615	176.924621	2584	81	253	0.73	0.58	0.70	0.6	0.6	0.6	Yes	Yes	Yes	-687	-34	-76	471541	1177	5787	Major Collector
CAPITOLA RD	31224	Reverse_BA	WB	7,652	219.681722	547.696691	9401	416	763	0.81	0.53	0.72	0.38	0.6	0.41	Yes	Yes	Yes	-1749	-196	-215	3059366	38541	46356	Principal Arterial
CAPITOLA RD	31224	Regular_AB	EB	7,257	195.774459	480.811954	8250	208	912	0.88	0.94	0.53	0.4	0.6	0.38	Yes	Yes	No	-993	-12	-431	987008	149	185923	Principal Arterial
CAPITOLA RD	24436	Regular_AB	EB	6,102	181.812086	347.162912	9808	279	944	0.62	0.65	0.37	0.38	0.6	0.38	Yes	Yes	No	-3706	-97	-597	13732200	9445	356215	Principal Arterial
CAPITOLA RD	24436	Reverse_BA	SB	6,645	125.215978	495.354977	9500	213	795	0.70	0.59	0.62	0.38	0.6	0.41	Yes	Yes	Yes	-2855	-88	-300	8150976	7706	89787	Principal Arterial
PORTOLA DR	19097	Regular_AB	EB	4,618	275.962831	216.306054	7533	320	638	0.61	0.86	0.34	0.41	0.6	0.44	Yes	Yes	No	-2915	-44	-422	8495490	1939	177826	Minor Arterial
PORTOLA DR	19097	Reverse_BA	WB	4,835	144.369208	369.441842	7747	245	664	0.62	0.59	0.56	0.41	0.6	0.43	Yes	Yes	No	-2912	-101	-295	8476961	10127	86765	Minor Arterial
41ST AVE	19101	Reverse_BA	NB	3,057	329.282819	218.085659	5780	354	400	0.53	0.93	0.55	0.45	0.6	0.6	No	Yes	Yes	-2723	-25	-182	7414685	611	33093	Principal Arterial
41ST AVE	19101	Regular_AB	SB	2,657	139.333454	339.419739	5533	183	457	0.48	0.76	0.74	0.45	0.6	0.6	No	Yes	Yes	-2876	-44	-118	8273874	1907	13825	Principal Arterial
41ST AVE	36288	Reverse_BA	NB	5,470	462.545425	417.315104	7674	304	538	0.71	1.52	0.78	0.41	0.6	0.46	Yes	Yes	Yes	-2204	159	-121	4858462	25137	14565	Principal Arterial
41ST AVE	36288	Regular_AB	SB	5,032	266.406065	530.584105	7040	189	519	0.71	1.41	1.02	0.42	0.6	0.47	Yes	Yes	Yes	-2008	77	12	4032272	5992	134	Principal Arterial

Roadway Information				Model Volume			Observed Data			Model/Count Ratio			Allowable Deviation			Within Deviation			Model - Count			Difference Squared			Loaded Network
				Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		
Location	Link ID	Direction			AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM	Facility Type
CAPITOLA RD	19135	Regular_AB	NB	2,705	103.6813	203.723767	7208	137	684	0.38	0.76	0.30	0.42	0.6	0.43	No	Yes	No	-4503	-33	-480	20272999	1110	230665	Principal Arterial
CAPITOLA RD	19135	Reverse_BA	SB	2,627	133.99744	182.393796	6281	204	474	0.42	0.66	0.38	0.44	0.6	0.6	No	Yes	No	-3654	-70	-292	13351623	4900	85034	Principal Arterial
41ST AVE	37968	Reverse_BA	NB	9,484	717.911357	756.650397	11532	482	848	0.82	1.49	0.89	0.34	0.6	0.4	Yes	Yes	Yes	-2048	236	-91	4193530	55654	8345	Principal Arterial
41ST AVE	37968	Regular_AB	SB	8,958	503.33243	866.259487	11019	336	765	0.81	1.50	1.13	0.35	0.6	0.41	Yes	Yes	Yes	-2061	167	101	4246357	28000	10253	Principal Arterial
SOQUEL AVE	24330	Regular_AB	EB	4,195	81.032107	251.199848	4745	193	535	0.88	0.42	0.47	0.6	0.6	0.46	Yes	Yes	No	-550	-112	-284	301981	12537	80543	Local
SOQUEL AVE	24330	Reverse_BA	WB	3,893	103.860273	317.044676	4296	280	350	0.91	0.37	0.91	0.6	0.6	0.6	Yes	No	Yes	-403	-176	-33	162461	31025	1086	Local
SOQUEL DR	31301	Regular_AB	EB	14,841	161.592474	747.795303	12414	457	1655	1.20	0.35	0.45	0.33	0.6	0.3	Yes	No	No	2427	-295	-907	5889109	87266	823020	Minor Arterial
SOQUEL DR	31301	Reverse_BA	WB	14,785	143.267713	794.546685	12746	760	917	1.16	0.19	0.87	0.33	0.41	0.38	Yes	No	Yes	2039	-617	-122	4159070	380359	14995	Minor Arterial
SOQUEL DR	31679	Regular_AB	EB	14,841	161.592474	747.795303	11047	295	1130	1.34	0.55	0.66	0.35	0.6	0.35	Yes	Yes	Yes	3794	-133	-382	14392529	17798	146080	Minor Arterial
SOQUEL DR	31679	Reverse_BA	WB	14,785	143.267713	794.546685	8204	429	618	1.80	0.33	1.29	0.4	0.6	0.44	No	No	Yes	6581	-286	177	43314560	81643	31169	Minor Arterial
41ST AVE	45425	Regular_AB	NB	9,358	480.817217	734.188995	14382	798	947	0.65	0.60	0.78	0.31	0.41	0.38	No	Yes	Yes	-5024	-317	-213	25236300	100605	45289	Minor Arterial
41ST AVE	45425	Reverse_BA	SB	9,128	365.46873	904.572156	13491	516	980	0.68	0.71	0.92	0.32	0.47	0.38	No	Yes	Yes	-4363	-151	-75	19038604	22660	5689	Minor Arterial
N RODEO GULCH RD	22508	Regular_AB	NB	631	29.140583	51.387043	1496	31	138	0.42	0.94	0.37	0.6	0.6	0.6	Yes	Yes	No	-865	-2	-87	748090	3	7502	Local
N RODEO GULCH RD	22508	Reverse_BA	SB	631	39.597083	40.040414	1531	115	97	0.41	0.34	0.41	0.6	0.6	0.6	Yes	No	Yes	-900	-75	-57	810170	5686	3244	Local
SOQUEL DR	31306	Reverse_BA	WB	13,508	137.706928	634.737713	13275	867	971	1.02	0.16	0.65	0.32	0.39	0.38	Yes	No	Yes	233	-729	-336	54319	531868	113072	Minor Arterial
SOQUEL DR	31306	Regular_AB	EB	13,741	151.30212	644.050926	11647	343	1086	1.18	0.44	0.59	0.34	0.6	0.36	Yes	Yes	No	2094	-192	-442	4385739	36748	195319	Minor Arterial
MOUNT HERMON RD	30623	Regular_AB	EB	15,533	951.452608	1347.58527	17827	1211	1207	0.87	0.79	1.12	0.3	0.33	0.33	Yes	Yes	Yes	-2294	-260	141	5261420	67365	19764	Principal Arterial
MOUNT HERMON RD	30623	Reverse_BA	WB	15,327	1253.92696	1211.83746	19323	651	1733	0.79	1.93	0.70	0.28	0.43	0.3	Yes	No	No	-3996	603	-521	15971825	363521	271610	Principal Arterial
SCOTTS VALLEY DR	27655	Regular_AB	NB	9,051	692.556539	738.237126	10599	716	770	0.85	0.97	0.96	0.36	0.42	0.41	Yes	Yes	Yes	-1548	-23	-32	2395009	550	1009	Minor Arterial
SCOTTS VALLEY DR	27655	Reverse_BA	SB	7,997	290.70778	868.249401	11998	539	1152	0.67	0.54	0.75	0.34	0.46	0.34	Yes	No	Yes	-4001	-248	-284	16008870	61649	80514	Minor Arterial
WHARF RD	24545	Regular_AB	NB	697	27.053168	40.847156	5195	235	637	0.13	0.12	0.06	0.47	0.6	0.44	No	No	No	-4498	-208	-596	20230558	43242	355398	Minor Arterial
WHARF RD	24545	Reverse_BA	SB	862	26.557483	61.563974	5298	174	460	0.16	0.15	0.13	0.46	0.6	0.6	No	No	No	-4436	-147	-398	19676820	21739	158751	Minor Arterial
PARK AVE	30831	Regular_BA	EB	5,798	58.300653	229.07138	3077	109	222	1.88	0.53	1.03	0.6	0.6	0.6	No	Yes	Yes	2721	-51	7	7405581	2570	50	Principal Arterial
PARK AVE	30831	Regular_AB	WB	5,485	70.542269	170.320612	2593	63	235	2.12	1.12	0.72	0.6	0.6	0.6	No	Yes	Yes	2892	8	-65	8361646	57	4183	Principal Arterial
WHARF RD	30976	Regular_AB	EB	2,529	38.056022	127.688824	3444	68	338	0.73	0.56	0.38	0.6	0.6	0.6	Yes	Yes	No	-915	-30	-210	837673	897	44231	Principal Arterial
WHARF RD	30976	Reverse_BA	WB	2,397	60.442336	95.685411	2933	103	191	0.82	0.59	0.50	0.6	0.6	0.6	Yes	Yes	Yes	-536	-43	-95	287460	1811	9085	Principal Arterial
PORTOLA DR	31129	Reverse_BA	EB	2,481	30.154233	69.982161	4017	219	376	0.62	0.14	0.19	0.6	0.6	0.6	Yes	No	No	-1536	-189	-306	2360028	35663	93647	Minor Arterial
PORTOLA DR	31129	Regular_AB	WB	2,697	23.474966	79.356014	3988	197	355	0.68	0.12	0.22	0.6	0.6	0.6	Yes	No	No	-1291	-174	-276	1667497	30111	75980	Minor Arterial
CAPITOLA RD	30954	Regular_AB	EB	1,869	38.357085	97.309974	5698	184	611	0.33	0.21	0.16	0.45	0.6	0.44	No	No	No	-3829	-146	-514	14661529	21212	263877	Principal Arterial
CAPITOLA RD	30954	Reverse_BA	WB	1,831	53.740729	83.162341	6303	272	554	0.29	0.20	0.15	0.44	0.6	0.45	No	No	No	-4472	-218	-471	20000903	47637	221688	Principal Arterial
CAPITOLA RD	30958	Regular_AB	EB	1,646	33.935334	74.649319	5536	100	576	0.30	0.34	0.13	0.45	0.6	0.45	No	No	No	-3890	-66	-501	15134736	4365	251353	Principal Arterial
CAPITOLA RD	30958	Reverse_BA	WB	1,581	28.468282	72.050041	4842	144	365	0.33	0.20	0.20	0.6	0.6	0.6	No	No	No	-3261	-116	-293	10636845	13348	85820	Principal Arterial
STOCKTON AVE	30892	Reverse_BA	WBSB	6,058	69.428503	239.597375	5921	168	350	1.02	0.41	0.68	0.45	0.6	0.6	Yes	Yes	Yes	137	-99	-110	18703	9716	12189	Principal Arterial
STOCKTON AVE	30892	Regular_AB	EBNB	5,918	107.315442	198.924168	6842	161	547	0.86	0.67	0.36	0.43	0.6	0.46	Yes	Yes	No	-924	-54	-348	853577	2882	121157	Principal Arterial
PORTER ST	24391	Regular_AB	NB	3,570	467.834615	403.709453	4935	228	363	0.72	2.05	1.11	0.6	0.6	0.6	Yes	No	Yes	-1365	240	41	1862999	57521	1657	Minor Arterial
PORTER ST	24391	Reverse_BA	SB	3,017	372.369881	221.690896	5820	252	513	0.52	1.48	0.43	0.45	0.6	0.47	No	Yes	No	-2803	120	-291	7854707	14489	84861	Minor Arterial
PORTER ST	31266	Regular_AB	NB	8,193	691.330355	701.242919	5599	235	419	1.46	2.94	1.67	0.45	0.6	0.6	No	No	No	2594	456	282	6728477	208237	79661	Minor Arterial
PORTER ST	31266	Reverse_BA	SB	7,488	523.493922	582.616199	7013	259	611	1.07	2.02	0.95	0.42	0.6	0.44	Yes	No	Yes	475	264	-28	225424	69957	806	Minor Arterial
PORTER ST	31265	Regular_AB	NB	9,913	776.371466	851.42833	11304	607	896	0.88	1.28	0.95	0.35	0.44	0.39	Yes	Yes	Yes	-1391	169	-45	1933790	28687	1987	Minor Arterial
PORTER ST	31265	Reverse_BA	SB	8,291	682.895936	674.948061	12756	781	1036	0.65	0.87	0.65	0.33	0.41	0.37	No	Yes	Yes	-4465	-98	-361	19937492	9624	130359	Minor Arterial
PORTER ST	24353	Reverse_BA	NB	8,322	505.765875	717.565242	7489	595	713	1.11	0.85	1.01	0.42	0.45	0.42	Yes	Yes	Yes	833	-89	5	693296	7963	21	Minor Arterial
PORTER ST	24353	Regular_AB	SB	7,821	494.556619	645.083637	8307	571	887	0.94	0.87	0.73	0.4	0.45	0.39	Yes	Yes	Yes	-486	-76	-242	236078	5844	58524	Minor Arterial
SOQUEL DR	24354	Regular_AB	EB	9,717	54.606668	458.362134	9856	391	1080	0.99	0.14	0.42	0.38	0.6	0.36	Yes	No	No	-139	-336	-622	19442	113160	386434	Minor Arterial
SOQUEL DR	24354	Reverse_BA	WB	9,483	142.614883	495.508188	8806	553	627	1.08	0.26	0.79	0.39	0.45	0.44	Yes	No	Yes	677	-410	-131	458049	168416	17290	Minor Arterial
CAPITOLA AVE	40949	Regular_AB	EB	1,133	32.094473	84.935626	2554	181	181	0.44	0.18	0.47	0.6	0.6	0.6	Yes	No	Yes	-1421	-149	-96	2018372	22173	9228	Minor Arterial
CAPITOLA AVE	40949	Reverse_BA	WB	1,232	59.869091	61.899257	2702	143	237	0.46	0.42	0.26	0.6	0.6	0.6	Yes	Yes	No	-1470	-83	-175	2161532	6911	30660	Minor Arterial
SOQUEL DR	24700	Reverse_BA	EB	8,241	83.061246	265.9003	10254	302	1251	0.80	0.28	0.21	0.37	0.6	0.33	Yes	No	No	-2013	-219	-985	4053533	47934	970421	Minor Arterial
SOQUEL DR	24700	Regular_AB	WB	6,647	148.221367	147.208399	9998	663	688	0.66	0.22	0.21	0.38	0.43	0.43	Yes	No	No	-3351	-515	-541	11231934	264997	292456	Minor Arterial
SOQUEL DR	31290	Reverse_BA	EB	5,951	43.253315	84.604307	8191	252	1025	0.73	0.17	0.08	0.4	0.6	0.37	Yes	No	No	-2240	-209	-940	5015527	43575	884344	Minor Arterial
SOQUEL DR	31290	Regular_AB	WB	6,659	38.253312	168.170986	8339	547	556	0.80	0.07	0.30	0.4	0.46	0.45	Yes	No	No	-1680	-509	-388	2823020	258823	150411	Minor Arterial
PARK AVE	19425	Regular_AB	WB	8,567	445.999294	715.006554	11288	586	880	0.76	0.76	0.81	0.35	0.45	0.39	Yes	Yes	Yes	-2721	-140	-165	7404277	19600	27223	Minor Arterial
PARK AVE	19425	Reverse_BA	EB	6,965	561.27755	645.548743	11209	787	868	0.62	0.71	0.74	0.35	0.41	0.39	No	Yes	Yes	-4244	-226	-222	18011260	50951	49485	Minor Arterial
CABRILLO COLLEGE DR	19437	Reverse_BA	EB	2,950	260.197653	213.981157	2084	93	157	1.42	2.80	1.36	0.6	0.6	0.6	Yes	No	Yes	866	167	57	750739	27955	3247	Major Collector
CABRILLO COLLEGE DR	19437	Regular_AB	WB	3,686	136.538551	288.967036	1830	94	124	2.01	1.45	2.33	0.6	0.6	0.6	No	Yes	No	1856	43	165	3443477	1810	27214	Major Collector
SOQUEL DR	24793	Reverse_BA	EB	8,807	163.675714	417.472454	9348	208	982	0.94	0.79	0.43	0.38	0.6	0.38	Yes	Yes	No	-541	-44	-565	292405	1965	318691	Minor Arterial
SOQUEL DR	24793	Regular_AB	WB	8,641	313.134473	348.853296	8732	741	627	0.99	0.42	0.56	0.39	0.42	0.44	Yes	No	No	-91	-428	-278	8199	183069	77366	Minor Arterial
VIENNA DR	24808	Reverse_BA	EB	-	0	0	1053	20	122	-	-	-	0.6	0.6	0.6	No	No	No	-1053	-20	-122	1108809	400	14884	Local
VIENNA DR	24808	Regular_AB	WB	-	0	0	1051	123	76	-	-	-	0.6	0.6	0.6	No	No	No	-1051	-123	-76	1104601	15129	5776	Local
MCGREGOR DR	32811	Reverse_BA	EB	3,403	40.088849	119.002762	2797	52	274	1.22	0.77	0.43	0.6	0.6	0.6	Yes	Yes	Yes	606	-12	-155	366953	142	24024	Local
MCGREGOR DR	32811	Regular_AB	WB	3,796	68.726064	136.26732	2477	261	171	1.53	0.26	0.80	0.6	0.6	0.6	Yes	No	Yes	1319	-192	-35	1739702	36969	1206	Local
SOQUEL DR	19132	Regular_AB	WBSB	6,756	104.664158	245.649802	6286	162	329	1.07	0.65	0.75	0.44	0.6	0.6	Yes	Yes	Yes	470	-57	-83	221285	3287	6947	Minor Arterial
SOQUEL DR	19132	Reverse_BA	EBNB	7,423	163.643492	265.770439	6483	111	416	1.14	1.47	0.64	0.44	0.6	0.6	Yes	Yes	Yes	940	53	-150	883217	2771	22569	Minor Arterial
SOQUEL DR	45475	Regular_AB	WB	6,756	104.664158	245.649802	7827	483	593	0.86	0.22	0.41	0.41	0.6	0.45	Yes	No	No	-1071	-378	-347	1146165	143138	120652	Minor Arterial
SOQUEL DR	45475	Reverse_BA	EB	7,423	163.643492	265.770439	8488	290	904	0.87	0.56	0.29	0.4	0.6	0.38	Yes	Yes	No	-1065	-126	-638	1134659	15966	407337	Minor Arterial
SOQUEL DR	24814	Regular_AB	WB	6,515	241.80295	178.718082	8437	759	617	0.77	0.32	0.29	0.4	0.41	0.44	Yes	No	No	-1922	-517	-438	3694416	267493	192091	Minor Arterial
SOQUEL DR	24814	Reverse_BA	EB	6,705	51.567196	269.413589	9162	297	934	0.73	0.17	0.29	0.38	0.6	0.38	Yes	No	No	-2457	-245	-665	6035758	60237	441675	Minor Arterial
SOQUEL DR	21440	Reverse_BA	EB	7,445	240.001955	446.787031	9231	246	821	0.81	0.98	0.54	0.38	0.6	0.4	Yes	Yes	No	-1786	-6	-374	3188279	36	140035	Minor Arterial
SOQUEL DR	21440	Regular_AB	WB	8,834	367.583059	493.299717	9377	762	636	0.94	0.48	0.78	0.38	0.41	0.44	Yes	No	Yes	-543	-394	-143	295009	155565	20363	Minor Arterial
STATE PARK DR	33899	Regular_AB	WBSB	6,093	199.311045	485.407087	6037	152	406	1.01	1.31	1.20	0.44	0.6	0.6	Yes	Yes	Yes	56	47	79	3118	2238	6305	Minor Arterial
STATE PARK DR	33899	Reverse_BA	EBNB	5,455	169.979946	336.840499	5698	145	462	0.96	1.17	0.73	0.45	0.6	0.6	Yes	Yes	Yes	-243	25	-125	58860	624	15665	Minor Arterial
STATE PARK DR	25071	Reverse_BA	NB	5,672	328.054883	446.270701	6138	437	418	0.92	0.75	1.07	0.44	0.6	0.6	Yes	Yes	Yes	-466	-109	28	217524	11869	799	Minor Arterial
STATE PARK DR	25071	Regular_AB	SB	6,672	271.250717	697.874924	6723	230	523	0.99	1.18	1.33	0.43	0.6	0.47	Yes	Yes	Yes	-51	41	175	2639	1702	30581	Minor Arterial
PARK DR	20974	Regular_AB	EB	7,393	525.273338	563.116241	12945	752	952	0.57	0.70	0.59	0.33	0.41	0.38	No	Yes	No	-5552	-227	-389	30824722	51405	151231	Minor Arterial
PARK DR	20974	Reverse_BA	WB	8,621	434.275848	727.789215	12990	657	1003	0.66	0.66	0.73	0.33	0.43	0.37	No	Yes	Yes	-4369	-223	-275	19085180	49606	75741	Minor Arterial
FREEDOM BLVD	19991	Reverse_BA	NB	6,513	328.344065	495.637924	14045	578	1101	0.46	0.57	0.45	0.31	0.45	0.35	No	Yes	No	-7532	-250	-605	56734962	62328	366463	Principal Arterial
FREEDOM BLVD	19991	Regular_AB	SB	6,567	373.698584	449.447843	14320	467	1204	0.46	0.80	0.37	0.31	0.6	0.33	No	Yes	No	-7753	-93	-755	60108886	8705	569349	Principal Arterial
W BEACH ST	23603	Reverse_BA	EB	2,449	127.746838	155.309266	3802	174	395	0.64	0.73	0.39	0.6	0.6	0.6	Yes	Yes	No	-1353	-46	-240	1831201	2139	57452	Principal Arterial
W BEACH ST	23603	Regular_AB	WB	4,329	149.331304	399.044128	3243	198	199	1.33	0.75	2.01	0.6	0.6	0.6	Yes	Yes	No	1086	-49	200	1178371	2369	40018	Principal Arterial
LEE RD	27702	Regular_AB	NB	1,666	100.740304	121.630152	3977	277	243	0.42	0.36	0.50	0.6	0.6	0.6	Yes	No	Yes	-2311	-176	-121	5339912	31067	14731	Minor Arterial
LEE RD	27702	Reverse_BA	SB	4,650	227.24626	403.598329	3705	193	331	1.26	1.18	1.22	0.6	0.6	0.6	Yes	Yes	Yes	945	34	73	892754	1173	5271	Minor Arterial
RIVERSIDE DR	35576	Reverse_BA	EB	10,705	637.10547	753.275208	7743	456	638	1.38	1.40	1.18	0.41	0.6	0.44	Yes	Yes	Yes	2962	181	115	8770773	32799	13288	Principal Arterial
RIVERSIDE DR	35576	Regular_AB	WB	3,951	244.047668	359.05985	2421	149	142	1.63	1.64	2.53	0.6	0.6	0.6	No	No	No	1530	95	217	2341113	9034	47115	Principal Arterial

Roadway Information				Model Volume			Observed Data			Model/Count Ratio			Allowable Deviation			Within Deviation			Model - Count			Difference Squared			Loaded Network
				Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		
Location	Link ID	Direction			AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM	Facility Type
AIRPORT BLVD	38292	Regular_AB	EB	7,461	356.11885	587.1381	8649	476	742	0.86	0.75	0.79	0.39	0.6	0.42	Yes	Yes	Yes	-1188	-120	-155	1410605	14371	23982	Principal Arterial
AIRPORT BLVD	38292	Reverse_BA	WB	8,287	514.228694	619.361876	9422	781	642	0.88	0.66	0.96	0.38	0.41	0.44	Yes	Yes	Yes	-1135	-267	-23	1287714	71167	512	Principal Arterial
HARKINS SLOUGH RD	20227	Regular_AB	EB	2,799	84.80965	194.245035	496	13	31	5.64	6.52	6.27	0.6	0.6	0.6	No	No	No	2303	72	163	5302726	5157	26649	Local
HARKINS SLOUGH RD	20227	Reverse_BA	WB	9,299	575.867013	795.027907	4862	228	323	1.91	2.53	2.46	0.6	0.6	0.6	No	No	No	4437	348	472	19682853	121011	222810	Local
S GREEN VALLEY RD	23606	Reverse_BA	NB	8,881	502.679873	758.345486	7264	292	662	1.22	1.72	1.15	0.42	0.6	0.43	Yes	No	Yes	1617	211	96	2615914	44386	9282	Local
S GREEN VALLEY RD	23606	Regular_AB	SB	8,581	624.293603	661.509741	7934	483	553	1.08	1.29	1.20	0.41	0.6	0.45	Yes	Yes	Yes	647	141	109	418737	19964	11774	Local
INDUSTRIAL RD	20238	Regular_AB	NB	614	47.591721	50.494084	1186	67	110	0.52	0.71	0.46	0.6	0.6	0.6	Yes	Yes	Yes	-572	-19	-60	326676	377	3541	Principal Arterial
INDUSTRIAL RD	20238	Reverse_BA	SB	385	6.854042	49.132364	1030	63	73	0.37	0.11	0.67	0.6	0.6	0.6	No	No	Yes	-645	-56	-24	415890	3152	570	Principal Arterial
W BEACH ST	33536	Reverse_BA	WBSB	4,532	139.60079	438.174001	3073	99	144	1.47	1.41	3.04	0.6	0.6	0.6	Yes	Yes	No	1459	41	294	2129709	1648	86538	Principal Arterial
W BEACH ST	33536	Regular_AB	EBNB	2,416	139.459369	141.265354	3281	93	341	0.74	1.50	0.41	0.6	0.6	0.6	Yes	Yes	Yes	-865	46	-200	748134	2158	39894	Principal Arterial
S GREEN VALLEY RD	34723	Regular_AB	NB	7,970	422.52536	644.416753	9275	324	779	0.86	1.30	0.83	0.38	0.6	0.41	Yes	Yes	Yes	-1305	99	-135	1702634	9707	18113	Principal Arterial
S GREEN VALLEY RD	34723	Reverse_BA	SB	7,214	459.137097	558.358757	9018	339	684	0.80	1.35	0.82	0.38	0.6	0.43	Yes	Yes	Yes	-1804	120	-126	3254773	14433	15786	Principal Arterial
S GREEN VALLEY RD	34719	Regular_AB	NB	8,900	471.634096	739.234885	9105	277	756	0.98	1.70	0.98	0.38	0.6	0.41	Yes	No	Yes	-205	195	-17	42069	37882	281	Principal Arterial
S GREEN VALLEY RD	34719	Reverse_BA	SB	8,206	519.932559	647.289824	8417	408	581	0.97	1.27	1.11	0.4	0.6	0.45	Yes	Yes	Yes	-211	112	66	44460	12529	4394	Principal Arterial
AIRPORT BLVD	45055	Regular_AB	EB	6,450	312.741603	504.914059	9533	386	780	0.68	0.81	0.65	0.38	0.6	0.41	Yes	Yes	Yes	-3083	-73	-275	9506864	5367	75672	Principal Arterial
AIRPORT BLVD	45055	Reverse_BA	WB	7,485	461.721663	520.221511	10009	823	664	0.75	0.56	0.78	0.37	0.4	0.43	Yes	No	Yes	-2524	-361	-144	6372658	130522	20672	Principal Arterial
AIRPORT BLVD	25328	Reverse_BA	EB	6,352	314.60631	492.843428	9495	404	767	0.67	0.78	0.64	0.38	0.6	0.41	Yes	Yes	Yes	-3143	-89	-274	9880894	7991	75162	Principal Arterial
AIRPORT BLVD	25328	Regular_AB	WB	7,364	447.607563	516.878616	10112	809	685	0.73	0.55	0.75	0.37	0.4	0.43	Yes	No	Yes	-2748	-361	-168	7553123	130604	28265	Principal Arterial
GREEN VALLEY EXD	34725	Regular_AB	NB	8,898	461.70236	702.407409	10434	524	887	0.85	0.88	0.79	0.37	0.47	0.39	Yes	Yes	Yes	-1536	-62	-185	2358374	3881	34074	Principal Arterial
GREEN VALLEY EXD	34725	Reverse_BA	SB	8,188	483.959595	595.808893	10485	699	790	0.78	0.69	0.75	0.37	0.43	0.41	Yes	Yes	Yes	-2297	-215	-194	5275256	46242	37710	Principal Arterial
FREEDOM BLVD	34859	Reverse_BA	EB	4,816	278.871078	331.603227	8965	335	718	0.54	0.83	0.46	0.39	0.6	0.42	No	Yes	No	-4149	-56	-386	17215002	3150	149302	Principal Arterial
FREEDOM BLVD	34859	Regular_AB	WB	4,215	214.504964	265.505426	9403	446	685	0.45	0.48	0.39	0.38	0.6	0.43	No	Yes	No	-5188	-231	-419	26919329	53590	175976	Principal Arterial
FREEDOM BLVD	23433	Regular_AB	EB	7,839	415.978541	603.447193	13268	678	1173	0.59	0.61	0.51	0.32	0.43	0.34	No	Yes	No	-5429	-262	-570	29469227	68655	324390	Principal Arterial
FREEDOM BLVD	23433	Reverse_BA	WB	7,848	420.929262	546.908746	14106	914	1089	0.56	0.46	0.50	0.31	0.38	0.36	No	No	No	-6258	-493	-542	39165993	243119	293863	Principal Arterial
CARLTON RD	22701	Regular_AB	SB	438	21.014568	20.242704	1189	58	99	0.37	0.36	0.20	0.6	0.6	0.6	No	No	No	-751	-37	-79	564476	1368	6203	Major Collector
CARLTON RD	22701	Reverse_BA	NB	346	17.993313	20.025331	1235	79	101	0.28	0.23	0.20	0.6	0.6	0.6	No	No	No	-889	-61	-81	789968	3722	6557	Major Collector
W BEACH ST	38530	Regular_AB	EB	3,631	146.870616	312.188445	3393	148	332	1.07	0.99	0.94	0.6	0.6	0.6	Yes	Yes	Yes	238	-1	-20	56700	1	392	Principal Arterial
W BEACH ST	38530	Reverse_BA	WB	2,057	90.591586	145.949906	1859	113	137	1.11	0.80	1.07	0.6	0.6	0.6	Yes	Yes	Yes	198	-22	9	39180	502	80	Principal Arterial
RODRIGUEZ ST	33310	Regular_AB	NB	4,471	187.380304	366.453752	3431	142	296	1.30	1.32	1.24	0.6	0.6	0.6	Yes	Yes	Yes	1040	45	70	1082236	2059	4964	Minor Arterial
RODRIGUEZ ST	33310	Reverse_BA	SB	4,414	184.408061	363.384911	2972	148	254	1.49	1.25	1.43	0.6	0.6	0.6	Yes	Yes	Yes	1442	36	109	2080469	1326	11965	Minor Arterial
RODRIGUEZ ST	33309	Reverse_BA	NB	1,364	55.483897	121.690937	4287	108	403	0.32	0.51	0.30	0.6	0.6	0.6	No	Yes	No	-2923	-53	-281	8542635	2758	79135	Minor Arterial
RODRIGUEZ ST	33309	Regular_AB	SB	1,297	54.904611	99.879512	2811	119	218	0.46	0.46	0.46	0.6	0.6	0.6	Yes	Yes	Yes	-1514	-64	-118	2290985	4108	13952	Minor Arterial
MAIN ST	23496	Regular_AB	NB	4,905	321.298124	342.298612	9144	457	738	0.54	0.70	0.46	0.38	0.6	0.42	No	Yes	No	-4239	-136	-396	17968550	18415	156580	Principal Arterial
MAIN ST	23496	Reverse_BA	SB	3,602	136.224266	363.52235	8232	331	560	0.44	0.41	0.65	0.4	0.6	0.45	No	Yes	Yes	-4630	-195	-196	21437895	37938	38603	Principal Arterial
UNION ST	23444	Regular_AB	NB	-	0	0	2848	122	287	-	-	-	0.6	0.6	0.6	No	No	No	-2848	-122	-287	8111104	14884	82369	Minor Arterial
UNION ST	23444	Reverse_BA	SB	7,247	575.390419	496.092589	4284	177	395	1.69	3.25	1.26	0.6	0.6	0.6	No	No	Yes	2963	398	101	8780448	158715	10220	Minor Arterial
MAPLE AVE	33401	Reverse_BA	EB	377	19.51016	27.251702	1400	82	157	0.27	0.24	0.17	0.6	0.6	0.6	No	No	No	-1023	-62	-130	1047000	3905	16835	Major Collector
MAPLE AVE	33401	Regular_AB	WB	3,450	200.91371	243.603776	1818	81	136	1.90	2.48	1.79	0.6	0.6	0.6	No	No	No	1632	120	108	2663534	14379	11579	Major Collector
FREEDOM BLVD	20221	Reverse_BA	NB	3,740	160.510374	309.819008	8188	238	684	0.46	0.67	0.45	0.4	0.6	0.43	No	Yes	No	-4448	-77	-374	19788894	6005	140011	Principal Arterial
FREEDOM BLVD	20221	Regular_AB	SB	4,000	219.807258	288.267804	8550	312	667	0.47	0.70	0.43	0.39	0.6	0.43	No	Yes	No	-4550	-92	-379	20703082	8500	143438	Principal Arterial
MAIN ST	33287	Reverse_BA	EB	17,410	968.498656	1332.45623	14482	636	1241	1.20	1.52	1.07	0.31	0.44	0.33	Yes	No	Yes	2928	332	91	8572548	110555	8364	Principal Arterial
MAIN ST	33287	Regular_AB	WB	15,974	793.831358	1256.61012	13386	769	1055	1.19	1.03	1.19	0.32	0.41	0.36	Yes	Yes	Yes	2588	25	202	6699984	617	40647	Principal Arterial
BRENNAN ST	33298	Reverse_BA	NB	2,651	147.168556	274.794677	3452	70	327	0.77	2.10	0.84	0.6	0.6	0.6	Yes	No	Yes	-801	77	-52	641424	5955	2725	Major Collector
BRENNAN ST	33298	Regular_AB	SB	2,520	168.966283	207.756645	3045	93	233	0.83	1.82	0.89	0.6	0.6	0.6	Yes	No	Yes	-525	76	-25	275160	5771	637	Major Collector
BLACKBURN ST	33395	Reverse_BA	NB	621	19.368972	53.578333	2504	112	227	0.25	0.17	0.24	0.6	0.6	0.6	No	No	No	-1883	-93	-173	3546914	8581	30075	Major Collector
BLACKBURN ST	33395	Regular_AB	SB	614	53.971902	36.146085	1995	127	156	0.31	0.42	0.23	0.6	0.6	0.6	No	Yes	No	-1381	-73	-120	1905848	5333	14365	Major Collector
BLACKBURN ST	33397	Reverse_BA	NB	229	10.433949	22.043174	2405	90	240	0.10	0.12	0.09	0.6	0.6	0.6	No	No	No	-2176	-80	-218	4733639	6331	47505	Major Collector
BLACKBURN ST	33397	Regular_AB	SB	237	17.774941	15.760799	2132	128	144	0.11	0.14	0.11	0.6	0.6	0.6	No	No	No	-1895	-110	-128	3592467	12150	16445	Major Collector
HOLOHAN RD	34339	Regular_AB	WB	4,894	307.355044	360.202875	8206	456	660	0.60	0.67	0.55	0.4	0.6	0.43	No	Yes	No	-3312	-149	-300	10970569	22095	89878	Major Collector
HOLOHAN RD	34339	Reverse_BA	EB	5,017	307.41791	370.379831	8499	366	662	0.59	0.84	0.56	0.4	0.6	0.43	No	Yes	No	-3482	-59	-292	12122253	3432	85042	Major Collector
RAMP	21562	Reverse_BA	WB	4,721	313.716106	377.956052	4322	384	311	1.09	0.82	1.22	0.6	0.6	0.6	Yes	Yes	Yes	399	-70	67	159121	4940	4483	Ramp
FREEDOM BLVD	33974	Regular_AB	WBSB	5,899	400.632513	326.993108	9179	1212	552	0.64	0.33	0.59	0.38	0.33	0.45	Yes	No	Yes	-3280	-811	-225	10761180	658317	50628	Minor Arterial
FREEDOM BLVD	33974	Reverse_BA	EBNB	5,780	206.975403	485.518445	8817	711	836	0.66	0.29	0.58	0.39	0.42	0.4	Yes	No	No	-3037	-504	-350	9225967	254041	122837	Minor Arterial
RIO DEL MAR BLVD	33790	Regular_AB	EBNB	3,116	140.077848	232.945528	4424	319	333	0.70	0.44	0.70	0.6	0.6	0.6	Yes	Yes	Yes	-1308	-179	-100	1709803	32013	10011	Minor Arterial
RIO DEL MAR BLVD	33790	Reverse_BA	WBSB	3,215	134.704241	223.157553	4742	248	394	0.68	0.54	0.57	0.6	0.6	0.6	Yes	Yes	Yes	-1527	-113	-171	2330503	12836	29187	Minor Arterial
POLO DR	33998	Regular_AB	NB	761	88.1933	76.556811	322	10	33	2.36	8.82	2.32	0.6	0.6	0.6	No	No	No	439	78	44	193139	6114	1897	Minor Arterial
POLO DR	33998	Reverse_BA	SB	717	44.842434	83.960775	322	21	20	2.23	2.14	4.20	0.6	0.6	0.6	No	No	No	395	24	64	156161	568	4091	Minor Arterial
VALENCIA RD	45902	Reverse_BA	EB	688	12.187622	23.096736	812	9	78	0.85	1.35	0.30	0.6	0.6	0.6	Yes	Yes	No	-124	3	-55	15279	10	3014	Minor Arterial
VALENCIA RD	45902	Regular_AB	WB	804	10.0208	14.518243	737	49	49	1.09	0.20	0.30	0.6	0.6	0.6	Yes	No	No	67	-39	-34	4465	1519	1189	Minor Arterial
BONITA DR	21532	Regular_AB	NB	415	11.048214	14.846295	477	29	34	0.87	0.38	0.44	0.6	0.6	0.6	Yes	No	Yes	-62	-18	-19	3885	322	367	Minor Arterial
BONITA DR	21532	Reverse_BA	SB	383	12.671056	12.993992	595	16	51	0.64	0.79	0.25	0.6	0.6	0.6	Yes	Yes	No	-212	-3	-38	44866	11	1444	Minor Arterial
STATE HWY 1	35368	Reverse_BA	NB	46,719	2930.86017	3774.07345	34998	2246	2007	1.33	1.30	1.88	0.24	0.27	0.28	No	No	No	11721	685	1767	137383414	469033	3122549	Other Freeways or Expressways
STATE HWY 1	35367	Regular_AB	SB	48,177	2873.363	3639.77959	35545	2487	2357	1.36	1.16	1.54	0.24	0.26	0.27	No	Yes	No	12632	386	1283	159576430	149276	1645523	Other Freeways or Expressways
GREEN VALLEY RD	19768	Reverse_BA	WB	1,541	70.339054	98.47549	1705	99	127	0.90	0.71	0.78	0.6	0.6	0.6	Yes	Yes	Yes	-164	-29	-29	26869	821	814	Major Collector
GREEN VALLEY RD	19768	Regular_AB	EB	1,581	79.466113	90.949065	1766	81	128	0.90	0.98	0.71	0.6	0.6	0.6	Yes	Yes	Yes	-185	-2	-37	34323	2	1373	Major Collector
HECKER PASS RD	45862	Reverse_BA	EBNB	2,804	187.24518	208.178906	2343	181	152	1.20	1.03	1.37	0.6	0.6	0.6	Yes	Yes	Yes	461	6	56	212163	39	3156	Major Collector
HECKER PASS RD	45862	Regular_AB	WBSB	2,635	157.908752	198.056208	2527	91	259	1.04	1.74	0.76	0.6	0.6	0.6	Yes	No	Yes	108	67	-61	11700	4477	3714	Major Collector
SKYLINE BLVD	22512	Regular_AB	EBNB	313	15.08403	29.542984	753	108	36	0.42	0.14	0.82	0.6	0.6	0.6	Yes	No	Yes	-440	-93	-6	193990	8633	42	Major Collector
SKYLINE BLVD	22512	Reverse_BA	WBSB	357	31.707124	26.353529	745	12	164	0.48	2.64	0.16	0.6	0.6	0.6	Yes	No	No	-388	20	-138	150726	388	18947	Major Collector
RIVERSIDE DR	40702	Reverse_BA	EBNB	5,281	298.715922	452.213957	5408	204	379	0.98	1.46	1.19	0.46	0.6	0.6	Yes	Yes	Yes	-127	95	73	16060	8971	5360	External Connector
RIVERSIDE DR	40702	Regular_AB	WBSB	5,247	369.750866	343.736864	6268	166	366	0.84	2.23	0.94	0.44	0.6	0.6	Yes	No	Yes	-1021	204	-22	1042978	41514	496	External Connector
SR-1 NB West of Freedom	35364	Reverse_BA	NB	47,824	3279.17248	3996.38858	33812	2815.35	2347.94	1.41	1.16	1.70	0.24	0.26	0.27	No	Yes	No	14012	464	1648	196324592	215131	2717383	Other Freeways or Expressways
SR-1 NB West of Park	24665	Reverse_BA	NB	53,462	3417.99818	4555.06628	42712.12	3325.81	2786.61	1.25	1.03	1.63	0.23	0.24	0.26	No	Yes	No	10750	92	1768	115570069	8499	3127438	Other Freeways or Expressways
SR-1 NB West of Bay	19414	Reverse_BA	NB	56,963	3722.75039	4877.66584	40707.25	2677.18	2539.27	1.40	1.39	1.92	0.23	0.26	0.26	No	No	No	16256	1046	2338	264248166	1093217	5468095	Other Freeways or Expressways
MT HERMON RD	30621	Regular_AB	0	12,710	964.126966	1047.93913	15760	1252	1136.5	0.81	0.77	0.92	0.31	0.33	0.35	Yes	Yes	Yes	-3050	-288	-89	9300476	82871	7843	Principal Arterial
MT HERMON RD	30621	Reverse_BA	0	13,628	1016.66897	1105.40497	17482	928	1604.5	0.78	1.10	0.69	0.3	0.38	0.3	Yes	Yes	No	-3854	89	-499	14852339	7862	249096	Principal Arterial
MT HERMON RD	26032	Reverse_BA	0	14,152	1095.37814	987.631586	9156	844	497	1.55	1.30	1.99	0.38	0.4	0.6	No	Yes	No	4996	251	491	24961050	63191	240719	Principal Arterial
MT HERMON RD	26032	Regular_AB	0	14,748	825.858923	1247.87572	10734.5	272	1196.5	1.37	3.04	1.04	0.36	0.6	0.34	No	No	Yes	4013	554	51	16108107	306760	2639	Principal Arterial
WEST BEACH ST	33552	Reverse_BA	0	3,407	154.214501	241.09258	3509.5	229.5	240	0.97	0.67	1.00	0.6	0.6	0.6	Yes	Yes	Yes	-103	-75	1	10517	5668	1	Principal Arterial
WEST BEACH ST	33552	Regular_AB	0	5,251	189.481648	458.455442	3033	299.5	161.5	1.73	0.63	2.84	0.6	0.6	0.6	No	Yes	No	2218	-110	297	4917813	12104	88183	Principal Arterial
MISSION ST	32183	Regular_AB	0	5,922	314.698115	427.103585	6160	294	473.5	0.96	1.07	0.90	0.44	0.6	0.6	Yes	Yes	Yes	-238	21	-46	56500	428	2153	Principal Arterial
MISSION ST	32183	Reverse_BA	0	7,056	276.031822	673.206597	5964.5	286.5	477.5	1.18	0.96	1.41	0.45	0.6	0.6	Yes	Yes	Yes	1091	-10	196	1190913	110	38301	Principal Arterial

Roadway Information				Model Volume			Observed Data			Model/Count Ratio			Allowable Deviation			Within Deviation			Model - Count			Difference Squared			Loaded Network
				Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		Daily	Peak Hour		
Location	Link ID	Direction			AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM		AM	PM	Facility Type
PARK AVE	30829	Regular_AB	0	5,798	58.300653	229.07138	4926	271.5	611.5	1.18	0.21	0.37	0.6	0.6	0.44	Yes	No	No	872	-213	-382	760942	45454	146252	Principal Arterial
PARK AVE	30829	Reverse_BA	0	5,485	70.542269	170.320612	3740.5	212	361	1.47	0.33	0.47	0.6	0.6	0.6	Yes	No	Yes	1744	-141	-191	3042063	20010	36359	Principal Arterial
41ST AVE	36283	Reverse_BA	0	19,896	984.337988	1771.51217	7630	317.5	695	2.61	3.10	2.55	0.41	0.6	0.43	No	No	No	12266	667	1077	150445527	444673	1158878	Minor Arterial
41ST AVE	36283	Regular_AB	0	13,426	823.051603	1080.60142	9169	554	702	1.46	1.49	1.54	0.38	0.45	0.42	No	No	No	4257	269	379	18118716	72389	143339	Minor Arterial
MT HERMON RD	45744	Regular_AB	0	12,917	985.188179	922.759614	8855.5	810	480.5	1.46	1.22	1.92	0.39	0.4	0.6	No	Yes	No	4062	175	442	16498699	30691	195594	Principal Arterial
MT HERMON RD	45744	Reverse_BA	0	13,522	796.64195	1123.49276	10277.5	285	1142	1.32	2.80	0.98	0.37	0.6	0.35	Yes	No	Yes	3245	512	-19	10526888	261777	343	Principal Arterial
MT HERMON RD	22548	Regular_AB	0	10,883	825.055436	847.681774	8530.5	799.5	440.5	1.28	1.03	1.92	0.39	0.41	0.6	Yes	Yes	No	2353	26	407	5536365	653	165797	Principal Arterial
MT HERMON RD	22548	Reverse_BA	0	11,274	750.097924	954.190476	9973	269	1109.5	1.13	2.79	0.86	0.38	0.6	0.35	Yes	No	Yes	1301	481	-155	1691696	231455	24121	Principal Arterial
GRAHAM HILL RD	29526	Reverse_BA	0	13,476	1063.08947	1011.44876	13758	1169	864.5	0.98	0.91	1.17	0.32	0.34	0.39	Yes	Yes	Yes	-282	-106	147	79616	11217	21594	Minor Arterial
GRAHAM HILL RD	29526	Regular_AB	0	12,919	671.714036	1189.06897	14137.5	553.5	1423	0.91	1.21	0.84	0.31	0.45	0.31	Yes	Yes	Yes	-1219	118	-234	1485033	13975	54724	Minor Arterial
Porter St	31265	Regular_AB	0	9,913	776.371466	851.42833	9726.33333	613.333333	370.666667	1.02	1.27	2.30	0.38	0.44	0.6	Yes	Yes	No	187	163	481	34991	26581	231132	Minor Arterial
Porter St	31265	Reverse_BA	0	8,291	682.895936	674.948061	10535	482.666667	439.333333	0.79	1.41	1.54	0.36	0.6	0.6	Yes	Yes	Yes	-2244	200	236	5036173	40092	55514	Minor Arterial
Green Valley Rd	25499	Regular_AB	0	7,553	362.699058	654.498656	10632.3333	547.333333	662.666667	0.71	0.66	0.99	0.36	0.46	0.43	Yes	Yes	Yes	-3079	-185	-8	9480238	34090	67	Major Collector
Green Valley Rd	25499	Reverse_BA	0	7,657	543.299618	460.938942	10234.3333	879	537.666667	0.75	0.62	0.86	0.37	0.39	0.46	Yes	Yes	Yes	-2577	-336	-77	6641644	112695	5887	Major Collector
Soquel Dr	24354	Regular_AB	0	9,717	54.606668	458.362134	8440	505	330.666667	1.15	0.11	1.39	0.4	0.47	0.6	Yes	No	Yes	1277	-450	128	1629616	202854	16306	Minor Arterial
Soquel Dr	24354	Reverse_BA	0	9,483	142.614883	495.508188	9702.66667	419	402.333333	0.98	0.34	1.23	0.38	0.6	0.6	Yes	No	Yes	-220	-276	93	48344	76389	8682	Minor Arterial
Amesti Rd	19780	Reverse_BA	0	2,373	116.601082	215.695648	1447.33333	100	89	1.64	1.17	2.42	0.6	0.6	0.6	No	Yes	No	926	17	127	857729	276	16052	Major Collector
Amesti Rd	19780	Regular_AB	0	2,442	187.450822	141.344016	1453	125.666667	71.6666667	1.68	1.49	1.97	0.6	0.6	0.6	No	Yes	No	989	62	70	977367	3817	4855	Major Collector
Bear Creek Rd	29639	Regular_AB	0	5,819	258.281942	504.893698	1175.66667	230	6.66666667	4.95	1.12	75.73	0.6	0.6	0.6	No	Yes	No	4643	28	498	21556576	800	248230	Minor Arterial
Bear Creek Rd	29639	Reverse_BA	0	5,782	423.380782	389.326393	1548.33333	35	129.333333	3.73	12.10	3.01	0.6	0.6	0.6	No	No	No	4234	388	260	17927235	150840	67596	Minor Arterial
Empire Grade	33458	Reverse_BA	0	8,737	589.418026	722.666012	5091.33333	264.666667	287	1.72	2.23	2.52	0.47	0.6	0.6	No	No	No	3646	325	436	13291588	105463	189805	Major Collector
Empire Grade	33458	Regular_AB	0	8,980	683.175994	628.795604	5597.33333	161.333333	301.333333	1.60	4.23	2.09	0.45	0.6	0.6	No	No	No	3383	522	327	11442746	272320	107232	Major Collector
Freedom Blvd	45853	Regular_AB	0	3,707	166.809103	239.596947	5135	629.333333	196	0.72	0.27	1.22	0.47	0.44	0.6	Yes	No	Yes	-1428	-463	44	2039701	213929	1901	Major Collector
Freedom Blvd	45853	Reverse_BA	0	3,698	177.606533	210.299394	4579.66667	334	153.666667	0.81	0.53	1.37	0.6	0.6	0.6	Yes	Yes	Yes	-882	-156	57	777386	24459	3207	Major Collector
Park Ave	19425	Reverse_BA	0	6,965	561.27755	645.548743	8885.66667	432.666667	330	0.78	1.30	1.96	0.39	0.6	0.6	Yes	Yes	No	-1921	129	316	3688835	16541	99571	Minor Arterial
Park Ave	19425	Regular_AB	0	8,567	445.999294	715.006554	11214	563.333333	484	0.76	0.79	1.48	0.35	0.45	0.6	Yes	Yes	Yes	-2647	-117	231	7007033	13767	53364	Minor Arterial
Porter St	31265	Regular_AB	0	9,913	776.371466	851.42833	10041.6667	484.333333	477.666667	0.99	1.60	1.78	0.37	0.6	0.6	Yes	No	No	-128	292	374	16454	85286	139698	Minor Arterial
Porter St	31265	Reverse_BA	0	8,291	682.895936	674.948061	11797.6667	591.666667	467	0.70	1.15	1.45	0.34	0.45	0.6	Yes	Yes	Yes	-3507	91	208	12297706	8323	43242	Minor Arterial
Soquel Ave	24406	Regular_AB	0	3,945	71.775898	218.826602	4087.33333	121.333333	160.333333	0.97	0.59	1.36	0.6	0.6	0.6	Yes	Yes	Yes	-143	-50	58	20374	2456	3421	Local
Soquel Ave	24406	Reverse_BA	0	3,706	97.765995	301.846756	3473	208	136	1.07	0.47	2.22	0.6	0.6	0.6	Yes	Yes	No	233	-110	166	54489	12152	27505	Local
Soquel Dr	31304	Regular_AB	0	14,904	168.776221	745.610019	12455	463.666667	366.666667	1.20	0.36	2.03	0.33	0.6	0.6	Yes	No	No	2449	-295	379	5996355	86960	143598	Minor Arterial
Soquel Dr	31304	Reverse_BA	0	14,849	139.994961	803.708031	11464.3333	771	385.333333	1.30	0.18	2.09	0.35	0.41	0.6	Yes	No	No	3384	-631	418	11452918	398167	175037	Minor Arterial
Soquel Ave	23294	Regular_AB	0	11,647	224.723034	659.124269	15198	493.333333	612.666667	0.77	0.46	1.08	0.31	0.6	0.44	Yes	Yes	Yes	-3551	-269	46	12608703	72151	2158	Principal Arterial
Soquel Ave	23294	Reverse_BA	0	11,025	294.703757	914.426892	14401.6667	662.666667	724	0.77	0.44	1.26	0.31	0.43	0.42	Yes	No	Yes	-3376	-368	190	11398643	135397	36262	Principal Arterial
Freedom Boulevard	19878	Regular_AB	0	6,219	339.027829	376.676394	8940	675	669.333333	0.70	0.50	0.56	0.39	0.43	0.43	Yes	No	No	-2721	-336	-293	7404069	112877	85648	Minor Arterial
Freedom Boulevard	19878	Reverse_BA	0	5,957	342.799273	413.611885	9107	665.333333	765	0.65	0.52	0.54	0.38	0.43	0.41	Yes	No	No	-3150	-323	-351	9925435	104028	123474	Minor Arterial
Green Valley Road	34717	Regular_AB	0	10,612	509.391044	894.966675	10765	522	906	0.99	0.98	0.99	0.36	0.47	0.38	Yes	Yes	Yes	-153	-13	-11	23280	159	122	Principal Arterial
Green Valley Road	34717	Reverse_BA	0	9,884	627.366527	760.406627	9696	687.333333	668.666667	1.02	0.91	1.14	0.38	0.43	0.43	Yes	Yes	Yes	188	-60	92	35448	3596	8416	Principal Arterial
Holohan Road	19951	Reverse_BA	0	5,301	325.448707	391.168609	8598.66667	611	633.333333	0.62	0.53	0.62	0.39	0.44	0.44	Yes	No	Yes	-3298	-286	-242	10877400	81540	58644	Major Collector
Holohan Road	19951	Regular_AB	0	5,217	324.565847	387.842716	8437.66667	389	656	0.62	0.83	0.59	0.4	0.6	0.43	Yes	Yes	Yes	-3221	-64	-268	10372343	4152	71908	Major Collector
Lake Avenue/Highway 152	19236	Regular_AB	0	4,491	239.730984	349.66097	8512.66667	730.666667	592.333333	0.53	0.33	0.59	0.39	0.42	0.45	No	No	Yes	-4021	-491	-243	16170943	241018	58890	Major Collector
Lake Avenue/Highway 152	19236	Reverse_BA	0	4,499	272.805848	307.58037	8447.33333	558.333333	777	0.53	0.49	0.40	0.4	0.45	0.41	No	No	No	-3949	-286	-469	15591264	81526	220355	Major Collector
Subtotal				**2,337,241**	**110,642**	**168,510**	**2,519,152**	**125,956**	**195,251**									**Model/Count Ratio =**	**1.018**	**1.017**	**1.017**				
																		Percent Within Caltrans Maximum Deviation =	**66%**	**58%**	**51%**				
																		Percent Root Mean Square Error =	**50%**	**77%**	**79%**				
																		Correlation Coefficient =	**0.946**	**0.895**	**0.887**				

Model Volume and Count Comparison by Screenline

Screenline Number	Roadway Information			Model Data			Observed Data			Model/Count Ratio			Allowable Deviation			Within Deviation			Model - Count			Difference Squared		
					Peak Hour			Peak Hour			Peak Hour			Peak Hour			Peak Hour			Peak Hour			Peak Hour		
	Screenline Location	Link ID	Direction	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM
	1-High Street	28534	SB	9,055	707	634	4193	157	367	2.16	4.50	1.73	0.6	0.6	0.6	No	No	No	4862	550	267	23642483	302354	71437
		28534	NB	8,756	588	744	3833	176	236	2.284464	3.339041	3.153711	0.6	0.6	0.6	No	No	No	4923	412	508	24239371	169473	258344
1	1-Coolidge Drive	41076	SB	8,033	327	494	6413	156	667	1.2526	2.093025	0.740006	0.44	0.6	0.43	Yes	No	Yes	1620	171	-173	2624162	29074	30073
		41076	NB	7,948	268	533	6652	630	427	1.194821	0.425654	1.248923	0.43	0.44	0.6	Yes	No	Yes	1296	-362	106	1679485	130927	11298
	1-Moore Street	28477	WB	328	11	19	6268	463	469	0.052388	0.022828	0.039626	0.44	0.6	0.6	No	No	No	-5940	-452	-450	35279255	204693	202874
		28477	EB	339	21	22	5396	228	489	0.062895	0.09174	0.045043	0.46	0.6	0.6	No	No	No	-5057	-207	-467	25569379	42884	218065
	2-Soquel Drive	24700	WB	6,647	148	147	9793	663	688	0.678708	0.223562	0.213966	0.38	0.43	0.43	Yes	No	No	-3146	-515	-541	9899882	264997	292456
2		24700	EB	8,241	83	266	10181	302	1251	0.809416	0.275037	0.21255	0.37	0.6	0.33	Yes	No	No	-1940	-219	-985	3764915	47934	970421
	2-Park Avenue	30831	WB	5,485	71	170	2594	63	235	2.11436	1.119719	0.724769	0.6	0.6	0.6	No	Yes	Yes	2891	8	-65	8355863	57	4183
		30831	EB	5,798	58	229	3077	109	222	1.884407	0.534868	1.031853	0.6	0.6	0.6	No	Yes	Yes	2721	-51	7	7405581	2570	50
	3-Rodriguez Street	31532	EB	546	11	28	1644	82	204	0.331873	0.136783	0.136545	0.6	0.6	0.6	No	No	No	-1098	-71	-176	1206485	5010	31027
3		31532	WB	892	21	59	1793	161	136	0.497376	0.13338	0.436801	0.6	0.6	0.6	Yes	No	Yes	-901	-140	-77	812169	19467	5867
	3-Capitola Road	31567	EB	7,434	170	528	8020	223	896	0.926908	0.760362	0.588764	0.4	0.6	0.39	Yes	Yes	No	-586	-53	-368	343624	2856	135768
		31567	WB	8,525	422	646	8046	491	612	1.059592	0.859832	1.055767	0.4	0.6	0.44	Yes	Yes	Yes	479	-69	34	229900	4737	1165
	5-7th Avenue	24078	EB	4,084	304	278	5600	437	311	0.729342	0.69452	0.894628	0.45	0.6	0.6	Yes	Yes	Yes	-1516	-133	-33	2297303	17821	1074
		24078	WB	3,661	176	347	4222	190	342	0.867127	0.927933	1.014603	0.6	0.6	0.6	Yes	Yes	Yes	-561	-14	5	314708	187	25
5	5-41st Avenue	30932	NB	20,677	1,254	1,760	20704	973	1494	0.998692	1.288497	1.178361	0.28	0.38	0.31	Yes	Yes	Yes	-27	281	266	733	78797	71007
		30932	SB	19,583	1,150	1,761	19323	620	1311	1.01345	1.854754	1.34342	0.28	0.44	0.32	Yes	No	No	260	530	450	67548	280844	202702
	5-Wharf Road	24545	NB	697	27	41	5195	235	637	0.134198	0.11512	0.064124	0.47	0.6	0.44	No	No	No	-4498	-208	-596	20230558	43242	355398
		24545	SB	862	27	62	5298	174	460	0.16273	0.152629	0.133835	0.46	0.6	0.6	No	No	No	-4436	-147	-398	19676820	21739	158751
6	6-Water Street	30717	EB	4,278	106	316	5840	150	553	0.732497	0.705473	0.572199	0.45	0.6	0.45	Yes	Yes	Yes	-1562	-44	-237	2440530	1952	55967
6		30717	WB	6,593	288	555	8963	420	728	0.735617	0.684532	0.762785	0.39	0.6	0.42	Yes	Yes	Yes	-2370	-132	-173	5615306	17555	29823
6	6-Soquel Avenue	31713	EB	13,272	401	863	10304	283	896	1.288022	1.417418	0.963146	0.37	0.6	0.39	Yes	Yes	Yes	2968	118	-33	8807739	13955	1090
6		31713	WB	8,754	226	758	7856	301	540	1.114357	0.749309	1.402821	0.41	0.6	0.46	Yes	Yes	Yes	898	-75	218	807101	5694	47316
6	6-Murray Street	31924	EB	6,780	295	549	9979	239	1129	0.679432	1.235294	0.486237	0.38	0.6	0.35	Yes	Yes	No	-3199	56	-580	10233292	3162	336445
8	8-Soquel Drive	24793	WB	8,641	313	349	8732	741	627	0.98963	0.422584	0.556385	0.39	0.42	0.44	Yes	No	No	-91	-428	-278	8199	183069	77366
8		24793	EB	8,807	164	417	9348	208	982	0.942154	0.786902	0.425125	0.38	0.6	0.38	Yes	Yes	No	-541	-44	-565	292405	1965	318691
8	8-SR-1	35355	SB	-	-	-	43636	2749	3096	0	0	0	0.22	0.26	0.25	No	No	No	-43636	-2749	-3096	1904100496	7557001	9585216
8		35355	NB	50,993	3,050	4,220	43991	3115	2384	1.159177	0.979213	1.770103	0.22	0.25	0.27	Yes	Yes	No	7002	-65	1836	49032865	4193	3370626
8	8-McGregor Drive	32811	WB	3,796	69	136	2477	261	171	1.53249	0.263318	0.796885	0.6	0.6	0.6	Yes	No	Yes	1319	-192	-35	1739702	36969	1206
8		32811	EB	3,403	40	119	2797	52	274	1.216577	0.770939	0.434317	0.6	0.6	0.6	Yes	Yes	Yes	606	-12	-155	366953	142	24024
9	9-SR-1	31557	EB	10,989	199	545	10794	402	1099	1.01809	0.495807	0.495631	0.36	0.6	0.36	Yes	Yes	No	195	-203	-554	38127	41081	307250
9		31557	WB	11,087	269	641	10338	560	796	1.072481	0.4804	0.805372	0.37	0.45	0.41	Yes	No	Yes	749	-291	-155	561458	84667	24001
9	9-Capitola Road	31565	EB	6,813	122	440	8052	168	837	0.846141	0.725502	0.525925	0.4	0.6	0.4	Yes	Yes	No	-1239	-46	-397	1534798	2127	157451
9		31565	WB	7,466	266	587	7300	329	581	1.0227	0.807498	1.010754	0.42	0.6	0.45	Yes	Yes	Yes	166	-63	6	27461	4011	39
9	9-Brommer Street	31598	EB	3,087	84	178	3761	150	403	0.820833	0.558706	0.440588	0.6	0.6	0.6	Yes	Yes	Yes	-674	-66	-225	454068	4382	50825
9		31598	WB	3,225	91	214	3942	250	312	0.81799	0.365328	0.686999	0.6	0.6	0.6	Yes	No	Yes	-717	-159	-98	514784	25176	9537
9	9-Cliff Drive	24173	EB	4,493	125	267	7321	194	790	0.61369	0.643654	0.338423	0.42	0.6	0.41	Yes	Yes	No	-2828	-69	-523	7998591	4779	273158
9		24173	WB	4,466	164	259	7092	445	534	0.629729	0.369024	0.484223	0.42	0.6	0.46	Yes	No	No	-2626	-281	-275	6895684	78840	75859
10	10-Front Street	47055	SB	2,343	43	71	17827	1211	1207	0.131423	0.035129	0.058916	0.3	0.33	0.33	No	No	No	-15484	-1168	-1136	239758120	1365296	1290243
10		47055	NB	1,642	11	24	18947	774	1696	0.086642	0.014855	0.014415	0.29	0.41	0.3	No	No	No	-17305	-763	-1672	299476453	581410	2794084
10	10-Ocean Street	32303	NB	11,538	460	822	12375	447	784	0.932335	1.029791	1.048792	0.33	0.6	0.41	Yes	Yes	Yes	-837	13	38	701164	177	1463
10		32303	SB	10,561	285	891	11583	247	879	0.911754	1.153346	1.014103	0.34	0.6	0.39	Yes	Yes	Yes	-1022	38	12	1044808	1435	154
10	10-Seabright Avenue	31801	SB	849	47	57	4467	95	480	0.190008	0.494757	0.119501	0.6	0.6	0.6	No	Yes	No	-3618	-48	-423	13091628	2304	178624
10		31801	NB	841	68	64	4346	140	329	0.193523	0.485013	0.193185	0.6	0.6	0.6	No	Yes	No	-3505	-72	-265	12284663	5198	70460
10	10-7th Avenue	22975	EB	3,334	125	263	5970	211	540	0.558453	0.592709	0.487639	0.45	0.6	0.46	Yes	Yes	No	-2636	-86	-277	6948680	7385	76549
10		22975	WB	3,517	135	293	5668	405	368	0.620421	0.333466	0.797139	0.45	0.6	0.6	Yes	No	Yes	-2151	-270	-75	4628757	72871	5573
10	10-17th Avenue	31547	SB	3,796	201	284	6057	247	527	0.626704	0.814486	0.538551	0.44	0.6	0.46	Yes	Yes	No	-2261	-46	-243	5112375	2100	59138
10		31547	NB	3,383	188	248	6000	420	412	0.56388	0.447984	0.602493	0.44	0.6	0.6	Yes	Yes	Yes	-2617	-232	-164	6847229	53753	26822
10	10-41st Avenue	37968	SB	8,958	503	866	11019	336	765	0.812989	1.498013	1.132365	0.35	0.6	0.41	Yes	Yes	Yes	-2061	167	101	4246357	28000	10253
10		37968	NB	9,484	718	757	11533	482	848	0.822352	1.489443	0.892276	0.34	0.6	0.4	Yes	Yes	Yes	-2049	236	-91	4197626	55654	8345
10	10-Wharf Road	30976	EB	2,529	38	128	3445	68	338	0.734036	0.559647	0.377778	0.6	0.6	0.6	Yes	Yes	No	-916	-30	-210	839504	897	44231
10		30976	WB	2,397	60	96	2933	103	191	0.8172	0.586819	0.500971	0.6	0.6	0.6	Yes	Yes	Yes	-536	-43	-95	287460	1811	9085
	11-Soquel Drive	31301	EB	14,841	162	748	12269	457	1655	1.209614	0.353594	0.45184	0.33	0.6	0.3	Yes	No	No	2572	-295	-907	6613891	87266	823020
		31301	WB	14,785	143	795	12541	760	917	1.178963	0.18851	0.866463	0.33	0.41	0.38	Yes	No	Yes	2244	-617	-122	5037241	380359	14995
	11-Soquel Avenue	24330	EB	4,195	81	251	4744	193	535	0.884374	0.419855	0.469532	0.6	0.6	0.46	Yes	Yes	No	-549	-112	-284	300883	12537	80543
		24330	WB	3,893	104	317	4296	280	350	0.906177	0.37093	0.905842	0.6	0.6	0.6	Yes	No	Yes	-403	-176	-33	162461	31025	1086
	11-Capitola Road	31224	EB	7,257	196	481	8249	208	912	0.879685	0.941223	0.527206	0.4	0.6	0.38	Yes	Yes	No	-992	-12	-431	985022	149	185923
11		31224	WB	7,652	220	548	9401	416	763	0.813945	0.528081	0.71782	0.38	0.6	0.41	Yes	Yes	Yes	-1749	-196	-215	3059366	38541	46356
	11-Brommer Street	24407	EB	4,562	175	324	4326	180	435	1.054621	0.97378	0.744766	0.6	0.6	0.6	Yes	Yes	Yes	236	-5	-111	55832	22	12327
		24407	WB	4,603	209	333	4310	216	387	1.067866	0.967852	0.860352	0.6	0.6	0.6	Yes	Yes	Yes	293	-7	-54	85558	48	2921
	11-Portola Drive	31363	WBSB	2,836	83	166	6120	147	461	0.463405	0.566962	0.359548	0.44	0.6	0.6	No	Yes	No	-3284	-64	-295	10784409	4052	87172
		31363	EBNB	3,076	99	136	5276	129	429	0.583106	0.767982	0.31723	0.46	0.6	0.6	Yes	Yes	No	-2200	-30	-293	4837948	896	85795
	11-East Cliff Drive	36295	EB	777	20	64	2494	61	266	0.311391	0.329966	0.240095	0.6	0.6	0.6	No	No	No	-1717	-41	-202	2949430	1671	40858
		36295	WB	781	48	42	1519	104	125	0.514329	0.460602	0.333652	0.6	0.6	0.6	Yes	Yes	No	-738	-56	-83	544253	3147	6938
12	12-Graham Hill Road	45772	NB	5,489	469	377	3357	127	274	1.635017	3.695423	1.374391	0.6	0.6	0.6	No	No	Yes	2132	342	103	4544374	117182	10523
12		45772	SB	4,538	57	528	3393	308	261	1.337378	0.185201	2.023496	0.6	0.6	0.6	Yes	No	No	1145	-251	267	1310394	62980	71360
13	13-Blackburn	33397	SB	237	18	16	2133	128	144	0.110933	0.138867	0.10945	0.6	0.6	0.6	No	No	No	-1896	-110	-128	3596259	12150	16445
13		33397	NB	229	10	22	2406	90	240	0.095306	0.115933	0.091847	0.6	0.6	0.6	No	No	No	-2177	-80	-218	4737991	6331	47505
13	13-Main Street	23496	NB	4,905	321	342	9144	457	738	0.536425	0.703059	0.463819	0.38	0.6	0.42	No	Yes	No	-4239	-136	-396	17968550	18415	156580
13		23496	SB	3,602	136	364	8233	331	560	0.437495	0.411554	0.649147	0.4	0.6	0.45	No	Yes	Yes	-4631	-195	-196	21447156	37938	38603

13	13-Rodriguez Street	33309	SB	1,297	55	100	2812	119	218	0.46138	0.461383	0.458163	0.6	0.6	0.6	Yes	Yes	Yes	-1515	-64	-118	2294013	4108	13952
13		33309	NB	1,364	55	122	4288	108	403	0.318149	0.51374	0.301963	0.6	0.6	0.6	No	Yes	No	-2924	-53	-281	8548482	2758	79135
14	14-Airport Boulevard	45055	EB	6,450	313	505	9534	386	780	0.676493	0.810211	0.647326	0.38	0.6	0.41	Yes	Yes	Yes	-3084	-73	-275	9513032	5367	75672
14		45055	WB	7,485	462	520	10011	823	664	0.747636	0.561023	0.783466	0.37	0.4	0.43	Yes	No	Yes	-2526	-361	-144	6382759	130522	20672
14	14-S Green Valley Road	34723	NB	7,970	423	644	9275	324	779	0.859315	1.304091	0.827236	0.38	0.6	0.41	Yes	Yes	Yes	-1305	99	-135	1702634	9707	18113
14		34723	SB	7,214	459	558	9018	339	684	0.799945	1.354387	0.816314	0.38	0.6	0.43	Yes	Yes	Yes	-1804	120	-126	3254773	14433	15786
14	14-Main Street	33287	WB	15,974	794	1,257	13386	769	1055	1.193369	1.03229	1.1911	0.32	0.41	0.36	Yes	Yes	Yes	2588	25	202	6699984	617	40647
14		33287	EB	17,410	968	1,332	14482	636	1241	1.202175	1.522797	1.073696	0.31	0.44	0.33	Yes	No	Yes	2928	332	91	8572548	110555	8364
14	14-Beach Street	38530	EB	3,631	147	312	3393	148	332	1.070179	0.992369	0.940327	0.6	0.6	0.6	Yes	Yes	Yes	238	-1	-20	56700	1	392
14		38530	WB	2,057	91	146	1859	113	137	1.106476	0.801695	1.065328	0.6	0.6	0.6	Yes	Yes	Yes	198	-22	9	39180	502	80
15	15-Eaton Street	31475	EB	5,270	102	202	7564	254	805	0.696728	0.40071	0.250858	0.41	0.6	0.4	Yes	Yes	No	-2294	-152	-603	5262190	23171	363681
15		31475	WB	10,808	364	811	10757	646	755	1.00472	0.56386	1.073851	0.36	0.44	0.41	Yes	Yes	Yes	51	-282	56	2578	79381	3109
15	15-7th Avenue	31573	EB	5,964	201	425	5661	239	504	1.053547	0.83959	0.843219	0.45	0.6	0.47	Yes	Yes	Yes	303	-38	-79	91888	1470	6244
15		31573	WB	6,186	221	503	6000	308	485	1.030978	0.717162	1.036588	0.44	0.6	0.6	Yes	Yes	Yes	186	-87	18	34546	7589	315
15	15-17th Avenue	24179	SB	5,409	305	407	6133	398	418	0.881911	0.765968	0.972554	0.44	0.6	0.6	Yes	Yes	Yes	-724	-93	-11	524523	8676	132
15		24179	NB	5,176	254	395	6218	257	564	0.832409	0.990252	0.699962	0.44	0.6	0.45	Yes	Yes	Yes	-1042	-3	-169	1085931	6	28636
15	15-30th Avenue	24426	SB	1,897	47	177	2584	81	253	0.734254	0.576427	0.699307	0.6	0.6	0.6	Yes	Yes	Yes	-687	-34	-76	471541	1177	5787
15		24426	NB	1,738	95	112	2216	175	158	0.784138	0.545498	0.70902	0.6	0.6	0.6	Yes	Yes	Yes	-478	-80	-46	228818	6326	2114
15	15-41st Avenue	19101	SB	2,657	139	339	5533	183	457	0.480131	0.761385	0.742713	0.45	0.6	0.6	No	Yes	Yes	-2876	-44	-118	8273874	1907	13825
15		19101	NB	3,057	329	218	5780	354	400	0.528894	0.930177	0.545214	0.45	0.6	0.6	No	Yes	Yes	-2723	-25	-182	7414685	611	33093
15	15-Portola Drive	31129	WB	2,697	23	79	3988	197	355	0.6762	0.119162	0.223538	0.6	0.6	0.6	Yes	No	No	-1291	-174	-276	1667497	30111	75980
15		31129	EB	2,481	30	70	4017	219	376	0.617566	0.137691	0.186123	0.6	0.6	0.6	Yes	No	No	-1536	-189	-306	2360028	35663	93647
16	16-Holohan Road	34339	WB	4,894	307	360	8207	456	660	0.596298	0.674024	0.545762	0.4	0.6	0.43	No	Yes	No	-3313	-149	-300	10977195	22095	89878
16		34339	EB	5,017	307	370	8499	366	662	0.59034	0.83994	0.559486	0.4	0.6	0.43	No	Yes	No	-3482	-59	-292	12122253	3432	85042
16	16-Freedom Boulevard	19991	SB	6,567	374	449	14321	467	1204	0.458558	0.800211	0.373296	0.31	0.6	0.33	No	Yes	No	-7754	-93	-755	60124393	8705	569349
16		19991	NB	6,513	328	496	14046	578	1101	0.463672	0.568069	0.450171	0.31	0.45	0.35	No	Yes	No	-7533	-250	-605	56750027	62328	366463
17	17-Bonita Drive	21532	NB	415	11	15	477	29	34	0.869321	0.380973	0.436656	0.6	0.6	0.6	Yes	No	Yes	-62	-18	-19	3885	322	367
17		21532	SB	383	13	13	596	16	51	0.642925	0.791941	0.254784	0.6	0.6	0.6	Yes	Yes	No	-213	-3	-38	45291	11	1444
17	17-Cabrillo Highway	35367	SB	48,177	2,873	3,640	35547	2487	2357	1.355314	1.155353	1.544243	0.24	0.26	0.27	No	Yes	No	12630	386	1283	159525905	149276	1645523
17		35368	NB	46,719	2,931	3,774	34998	2246	2007	1.334907	1.304924	1.880455	0.24	0.27	0.28	No	No	No	11721	685	1767	137383414	469033	3122549
18	18-Airport Boulevard	38292	EB	7,461	356	587	8650	476	742	0.862579	0.748149	0.791291	0.39	0.6	0.42	Yes	Yes	Yes	-1189	-120	-155	1412981	14371	23982
18		38292	WB	8,287	514	619	9423	781	642	0.879468	0.658423	0.964738	0.38	0.41	0.44	Yes	Yes	Yes	-1136	-267	-23	1289984	71167	512
18	18-South Green Valley Road	34719	NB	8,900	472	739	9106	277	756	0.977366	1.70265	0.977824	0.38	0.6	0.41	Yes	No	Yes	-206	195	-17	42481	37882	281
18		34719	SB	8,206	520	647	8418	408	581	0.974833	1.274345	1.114096	0.4	0.6	0.45	Yes	Yes	Yes	-212	112	66	44882	12529	4394
19	19-Bay Drive	27451	EB	-	-	-	5123	132	573	0	0	0	0.47	0.6	0.45	No	No	No	-5123	-132	-573	26245129	17424	328329
19		27451	WB	4,804	161	277	4452	331	272	1.078957	0.487234	1.018789	0.6	0.6	0.6	Yes	Yes	Yes	352	-170	5	123565	28807	26
1	**Screenline #1 Subtotal**			**9,055**	**707**	**634**	**4,193**	**157**	**367**	**2.159636**	**4.502338**	**1.728276**	**0.62**	**0.64**	**0.64**	No	No	No						
4																			**Percent Within Caltrans Maximum Deviation =**			**0%**	**0%**	**0%**			
9																			**Percent Root Mean Square Error =**			**116%**	**350%**	**73%**			
																			Correlation Coefficient =			**-0.328**	**-0.477**	**-0.437**			
2	**Screenline #2 Subtotal**			**6,647**	**148**	**147**	**9,793**	**663**	**688**	**0.678708**	**0.223562**	**0.213966**	**0.57**	**0.64**	**0.64**	Yes	No	No						
10																			**Percent Within Caltrans Maximum Deviation =**			**100%**	**0%**	**0%**			
13																			**Percent Root Mean Square Error =**			**32%**	**78%**	**79%**			
																			Correlation Coefficient =			**0.867**	**0.969**	**0.483**			
3	**Screenline #3 Subtotal**			**546**	**11**	**28**	**1,644**	**82**	**204**	**0.331873**	**0.136783**	**0.136545**	**0.64**	**0.64**	**0.64**	No	No	No						
14																			**Percent Within Caltrans Maximum Deviation =**			**0%**	**0%**	**0%**			
17																			**Percent Root Mean Square Error =**			**67%**	**86%**	**86%**			
																			Correlation Coefficient =			**0.995**	**0.981**	**0.878**			
5	**Screenline #5 Subtotal**			**4,084**	**304**	**278**	**5,600**	**437**	**311**	**0.729342**	**0.69452**	**0.894628**	**0.61**	**0.64**	**0.64**	Yes	Yes	Yes						
18																			**Percent Within Caltrans Maximum Deviation =**			**100%**	**100%**	**100%**			
23																			**Percent Root Mean Square Error =**			**27%**	**31%**	**11%**			
																			Correlation Coefficient =			**0.985**	**0.933**	**0.931**			
6	**Screenline #6 Subtotal**			**39,677**	**1,315**	**3,041**	**42,942**	**1,393**	**3,846**	**0.923975**	**0.944171**	**0.790743**	**0.35**	**0.64**	**0.63**	Yes	Yes	Yes						
24																			**Percent Within Caltrans Maximum Deviation =**			**100%**	**100%**	**80%**			
28																			**Percent Root Mean Square Error =**			**28%**	**33%**	**40%**			
																			Correlation Coefficient =			**0.674**	**0.521**	**0.200**			
8	**Screenline #8 Subtotal**			**75,641**	**3,636**	**5,242**	**110,981**	**7,126**	**7,534**	**0.681565**	**0.510226**	**0.695716**	**0.23**	**0.59**	**0.59**	No	Yes	Yes						
29																			**Percent Within Caltrans Maximum Deviation =**			**83%**	**50%**	**33%**			
34																			**Percent Root Mean Square Error =**			**98%**	**96%**	**119%**			
																			Correlation Coefficient =			**0.539**	**0.661**	**0.419**			
9	**Screenline #9 Subtotal**			**51,626**	**1,320**	**3,131**	**58,600**	**2,498**	**5,352**	**0.880989**	**0.528468**	**0.585025**	**0.31**	**0.64**	**0.61**	Yes	Yes	Yes						
35																			**Percent Within Caltrans Maximum Deviation =**			**100%**	**63%**	**50%**			
42																			**Percent Root Mean Square Error =**			**20%**	**56%**	**50%**			
																			Correlation Coefficient =			**0.923**	**0.781**	**0.636**			
10	**Screenline #10 Subtotal**			**65,171**	**2,883**	**4,865**	**122,170**	**5,186**	**9,364**	**0.533442**	**0.555982**	**0.519556**	**0.23**	**0.61**	**0.57**	No	Yes	Yes						
43																			**Percent Within Caltrans Maximum Deviation =**			**71%**	**79%**	**50%**			
56																			**Percent Root Mean Square Error =**			**75%**	**106%**	**85%**			
																			Correlation Coefficient =			**0.330**	**0.019**	**0.124**			
11	**Screenline #11 Subtotal**			**14,841**	**162**	**748**	**12,269**	**457**	**1,655**	**1.209614**	**0.353594**	**0.45184**	**0.54**	**0.64**	**0.64**	Yes	No	Yes						
58																			**Percent Within Caltrans Maximum Deviation =**			**100%**	**0%**	**0%**			
69																			**Percent Root Mean Square Error =**			**21%**	**65%**	**55%**			
																			Correlation Coefficient =			**0.902**	**0.077**	**0.817**			
12	**Screenline #12 Subtotal**			**10,026**	**526**	**905**	**6,750**	**435**	**535**	**1.485404**	**1.210024**	**1.691057**	**0.6**	**0.64**	**0.64**	Yes	Yes	No						
69																			**Percent Within Caltrans Maximum Deviation =**			**50%**	**0%**	**50%**			

70																Percent Root Mean Square Error =	51%	138%	76%	
																Correlation Coefficient =	-1.000	-1.000	-1.000	
13	Screenline #13 Subtotal	11,635	596	965	29,016	1,233	2,303	0.400969	0.483471	0.419104	0.41	0.64	0.64	No	Yes	Yes				
75																Percent Within Caltrans Maximum Deviation =	17%	67%	33%	
76																Percent Root Mean Square Error =	65%	57%	63%	
																Correlation Coefficient =	1.000	-1.000	1.000	
14	Screenline #14 Subtotal	68,191	3,656	5,275	70,958	3,538	5,672	0.961001	1.033329	0.930027	0.28	0.63	0.61	Yes	Yes	Yes				
77																Percent Within Caltrans Maximum Deviation =	100%	75%	100%	
84																Percent Root Mean Square Error =	24%	42%	21%	
																Correlation Coefficient =	0.919	0.767	0.939	
15	Screenline #15 Subtotal	53,338	2,111	3,738	66,451	3,311	5,530	0.802674	0.637671	0.675864	0.29	0.63	0.61	Yes	Yes	Yes				
85																Percent Within Caltrans Maximum Deviation =	83%	83%	75%	
96																Percent Root Mean Square Error =	27%	46%	50%	
																Correlation Coefficient =	0.908	0.816	0.600	
16	Screenline #16 Subtotal	22,991	1,317	1,676	45,073	1,867	3,627	0.510081	0.705311	0.461998	0.34	0.64	0.63	No	Yes	Yes				
97																Percent Within Caltrans Maximum Deviation =	0%	100%	0%	
100																Percent Root Mean Square Error =	52%	33%	58%	
																Correlation Coefficient =	1.000	0.288	0.902	
17	Screenline #17 Subtotal	95,694	5,828	7,442	71,618	4,778	4,449	1.336176	1.219745	1.672667	0.28	0.62	0.62	No	Yes	No				
101																Percent Within Caltrans Maximum Deviation =	50%	50%	25%	
104																Percent Root Mean Square Error =	48%	33%	98%	
																Correlation Coefficient =	0.931	0.898	0.905	
18	Screenline #18 Subtotal	32,855	1,862	2,593	35,597	1,942	2,721	0.922959	0.958761	0.952968	0.38	0.64	0.64	Yes	Yes	Yes				
105																Percent Within Caltrans Maximum Deviation =	100%	75%	100%	
108																Percent Root Mean Square Error =	9%	38%	13%	
																Correlation Coefficient =	0.466	0.204	0.264	
19	Screenline #19 Subtotal	4,804	161	277	9,575	463	845	0.501673	0.348325	0.327941	0.57	0.64	0.64	Yes	No	No				
109																Percent Within Caltrans Maximum Deviation =	50%	50%	50%	
110																Percent Root Mean Square Error =	76%	66%	96%	
																Correlation Coefficient =	-1.000	1.000	-1.000	
All																Model/Count Ratio =	0.825	0.750	0.740	
																Percent Within Caltrans Maximum Deviation =	71%	64%	53%	
																Percent Root Mean Square Error =	68%	89%	82%	
																Correlation Coefficient =	0.761	0.757	0.646	