

Ventura County Transportation Model Update

Training Kick-Off

March 4, 2026



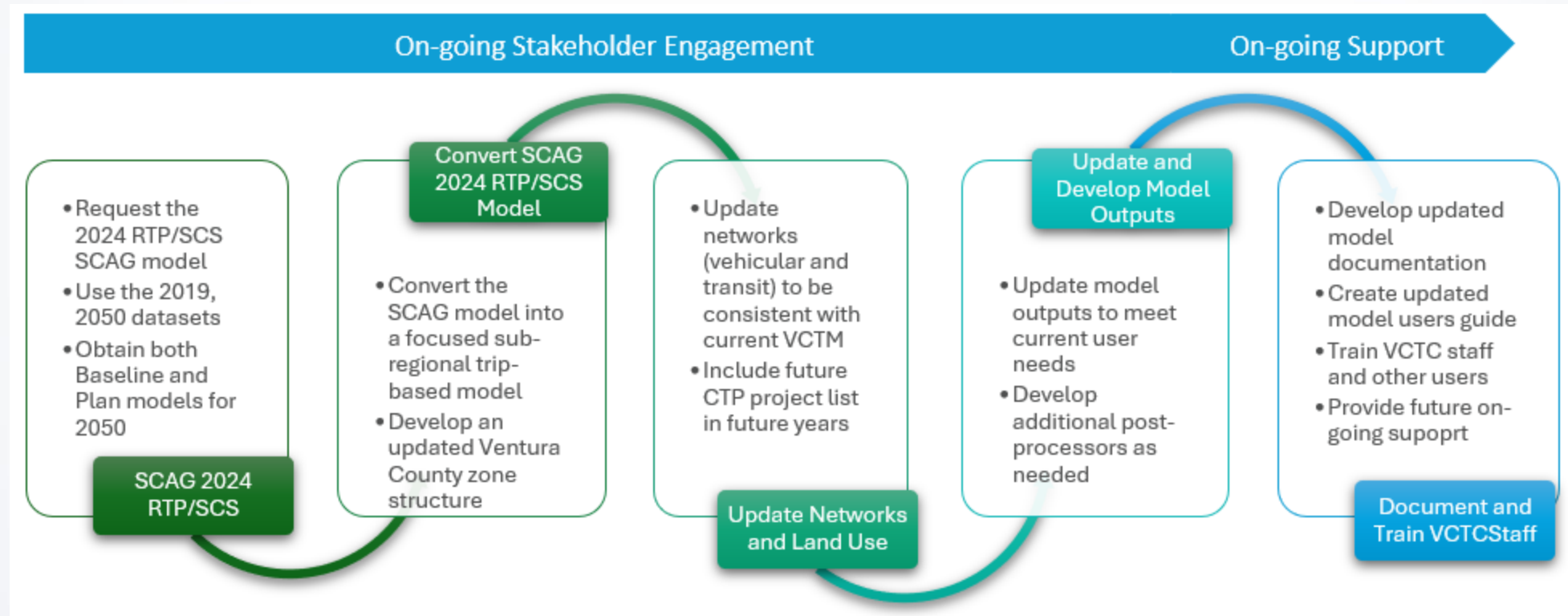


Agenda

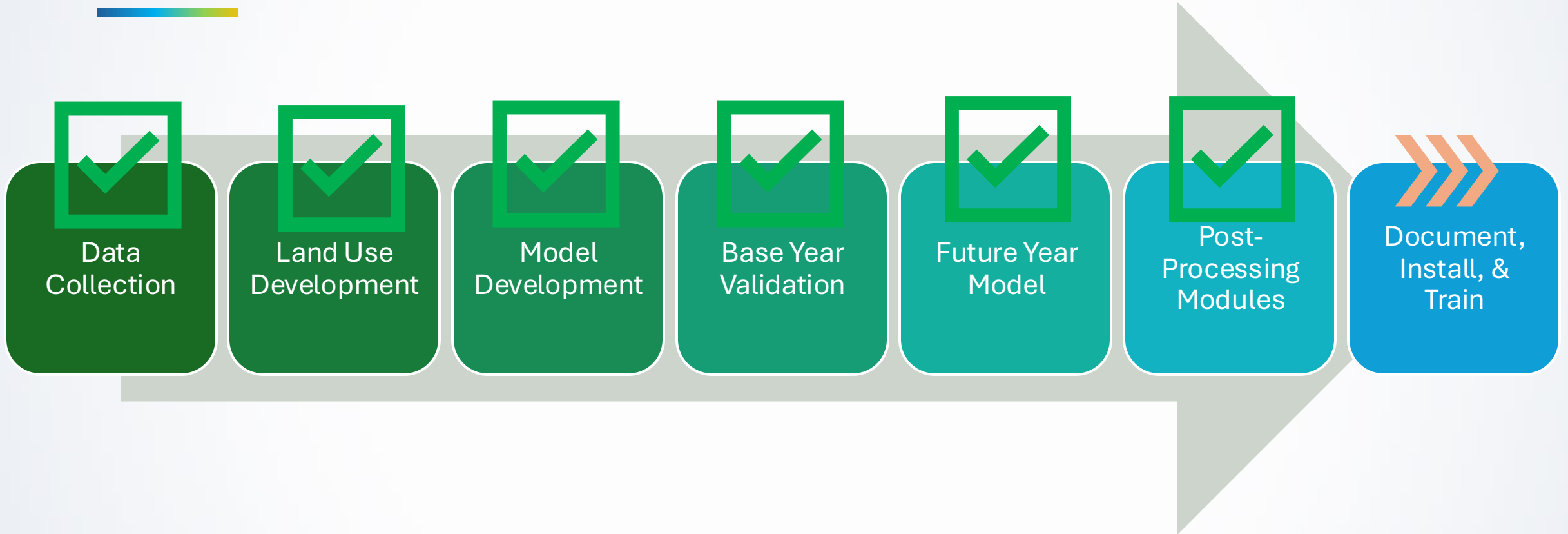
1. Project Approach & Status Update
2. Overview of Travel Demand Modeling
3. VCTM Overview
4. VCTM Demonstration
5. Model Inputs & Outputs
6. Continued Training Opportunities

Project Approach & Status Update

Project Approach



Project Tasks & Status – Future Tasks



Overview of Travel Demand Modeling

Overview of Travel Demand Modeling

Introduction

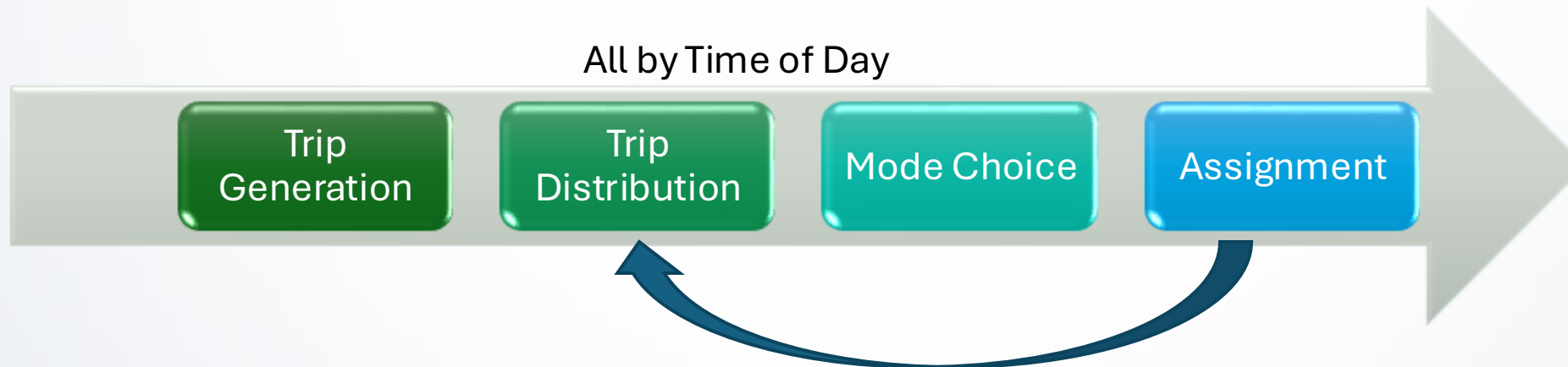
- What is travel demand?
 - Current and future predicted travel patterns, modes, and behaviors
 - Based on home and non-home-based trips
- Why model transportation demand?
 - Greater understanding of desired location of travel by purpose, mode, and location
 - Use in small and large-scale planning activities
 - Observe sensitivities related to improvements or developments
- How do you model transportation?
 - Multiple model inputs
 - Clean and clear summary of model outputs

Strengths & Weaknesses

- Strengths:
 - Macro-level modelling – Regional modelling
 - Can forecast regional interaction
 - Can integrate multiple modes into forecast
- Weaknesses:
 - Macro-level modelling – Regional modelling
 - Not validated at the turning movement level
 - Can take a long time to get results
 - Large file size and data management requirements

Four-Step Traditional Modeling

- Trip Generation (Do I make a trip?)
- Trip Distribution (Where do I go?)
- Mode Choice (What are my means of travel?)
- Time of Day (When do I go?)
- Assignment (What route do I choose?)



Model Calibration and Validation

The most important step in the development of a model!

Data Sources

- Household Travel Surveys
 - Who travels & when?
 - What mode to travellers use?
 - How long are average trip lengths by purpose?
- Origin-Destination Data (Big Data)
 - Where are some large regional patterns?
- Transit Ridership Data
 - Ridership by route
 - Ridership by mode
- FHWA & Caltrans Validation Criteria
 - Screenlines
 - Count/Volume Comparison Statistics

Criteria

- Count/Volume Comparison by Facility Type
 - Freeways +/- 7%
 - Major Arterials +/- 10%
 - Minor Arterials +/- 15%
- Coefficient of Determination (R^2)
 - >0.88
- Root Mean Squared Error (RMSE)
 - $<40\%$ (FHWA)
 - $<35\%$ (Caltrans)
- Screenlines
 - Maximum Desirable Deviation

Screenline: Maximum Desirable Deviation

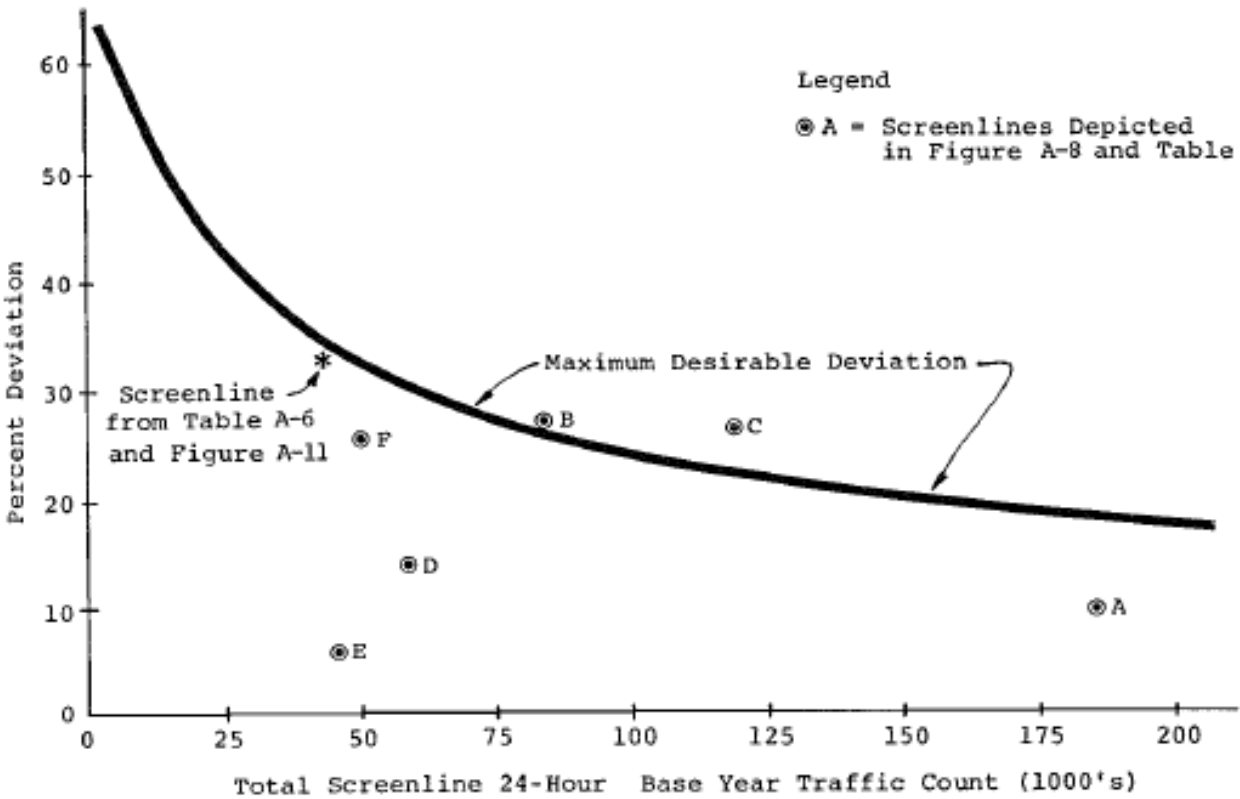
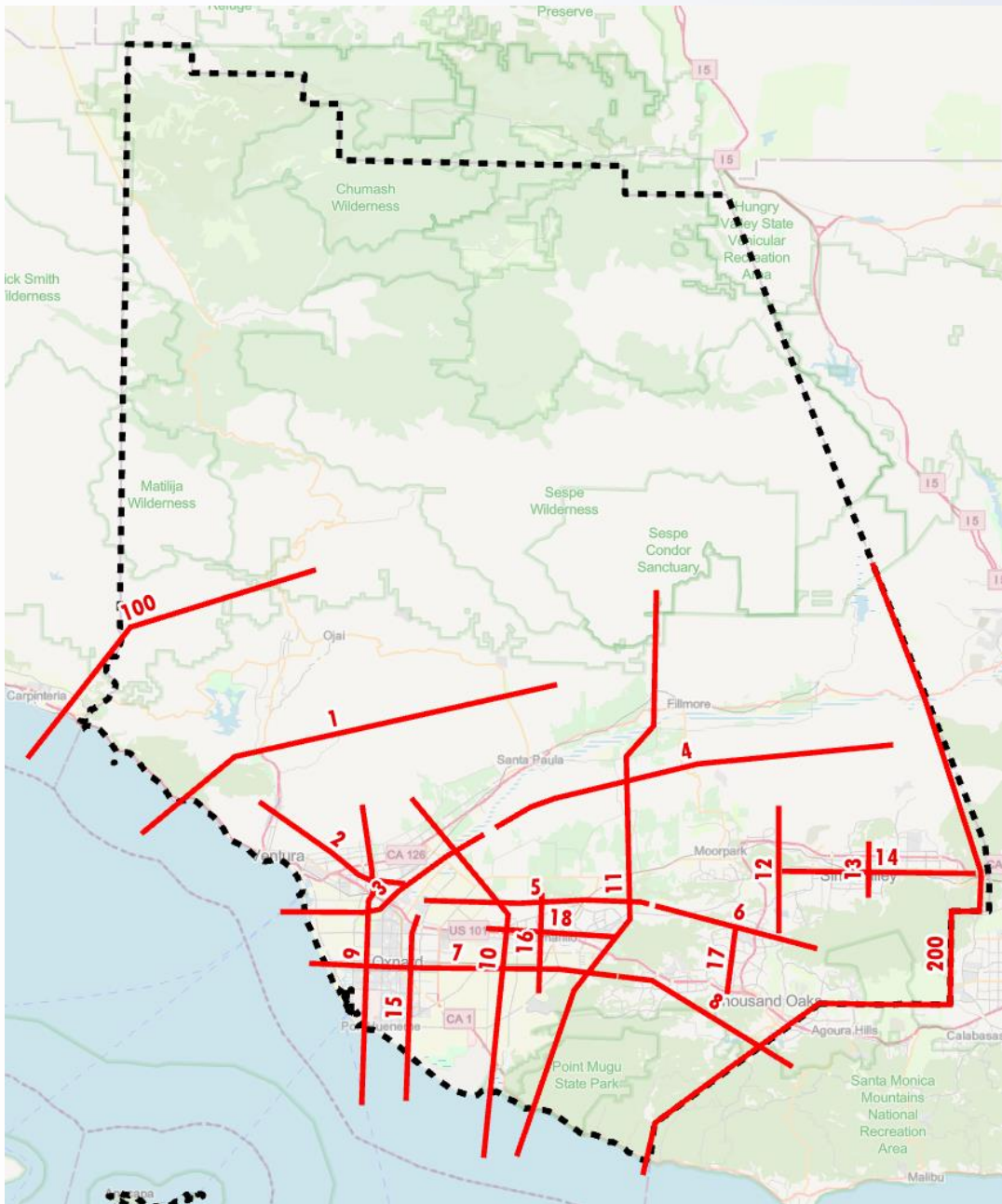


Figure A-9. Maximum desirable deviation in total screenline volumes.



How Well Validated is the VCTM?

Regional Considerations

- There have been recent (~10 year) changes in region!
 - Population/employment growth patterns
 - Travel patterns post-covid (Work from Home, etc.)
 - Increase in shared-ride & transit ridership
 - Continued interaction with Los Angeles and Santa Barbara Counties
 - Continued Port Hueneme development and activity

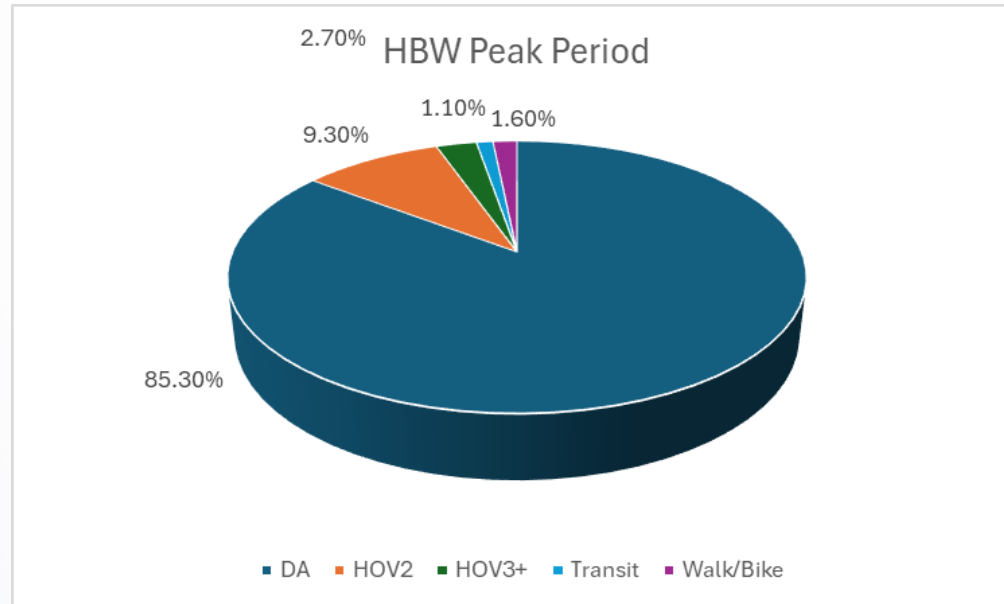
Criteria

- Count/Volume Comparison by Facility Type
 - Freeways +/- 7% : **3%**
 - Major Arterials +/- 10% : **-2%**
 - Minor Arterials +/- 15% : **-6%**
- Coefficient of Determination (R2)
 - >0.88 : **0.94**
- Root Mean Squared Error (RMSE)
 - <40% (FHWA) : **35%**
 - <35% (Caltrans) : **35%**
- Screenlines
 - Maximum Desirable Deviation : **All 20 Pass!**

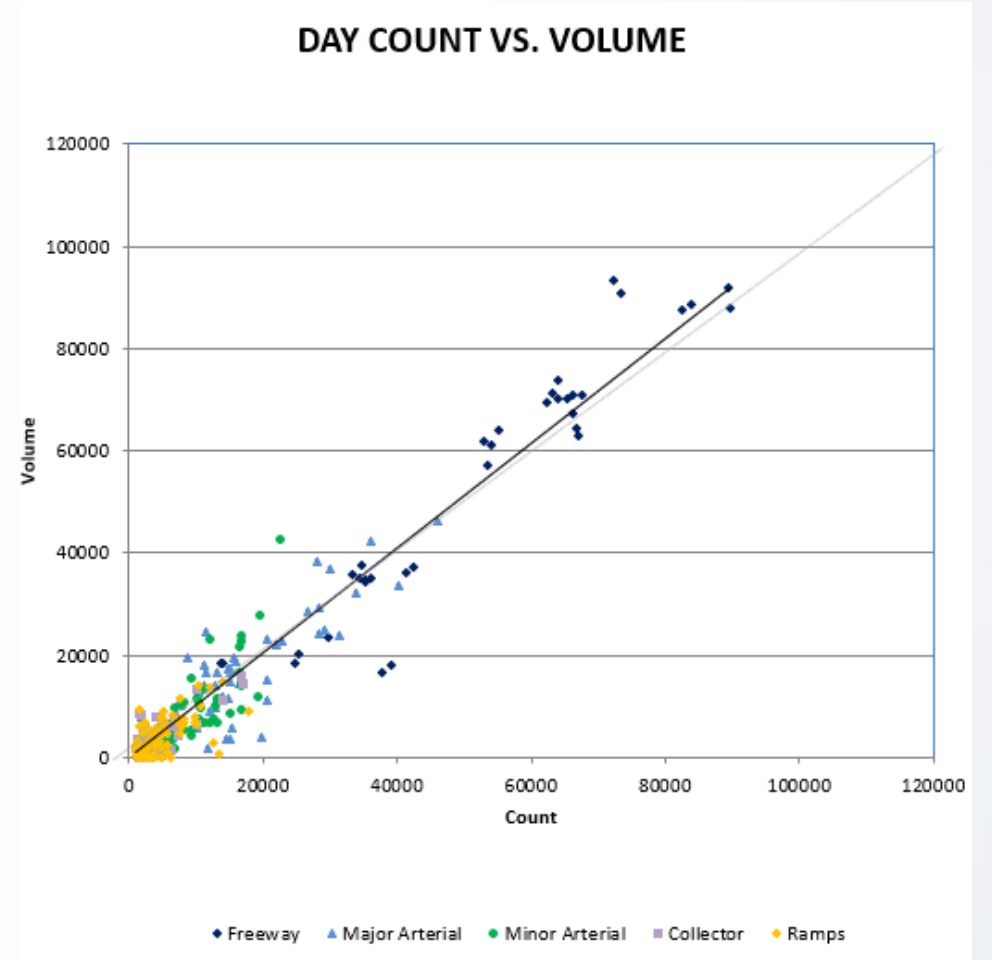
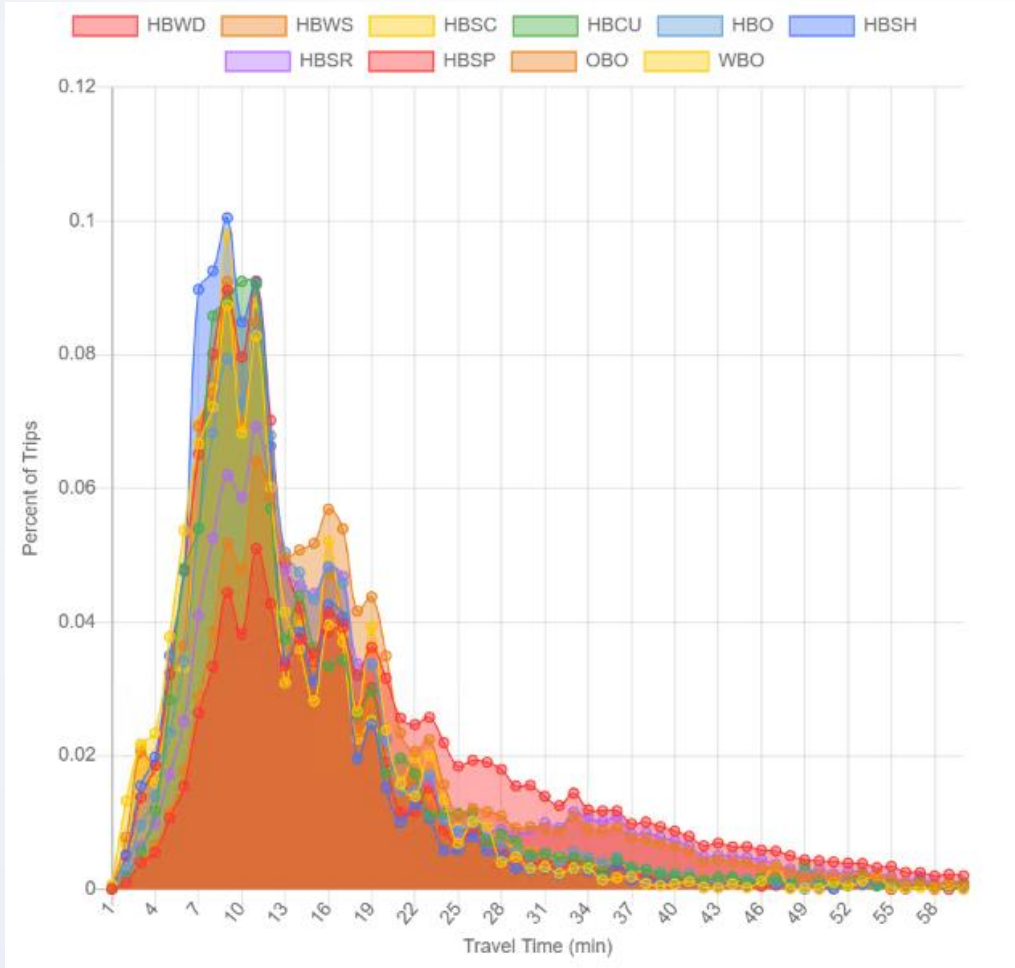
VCTM Validation Metrics

VCTM Model Update Count - Volume Comparison - (Base2025_DecTripProd_DecExternalTrips_v20) -

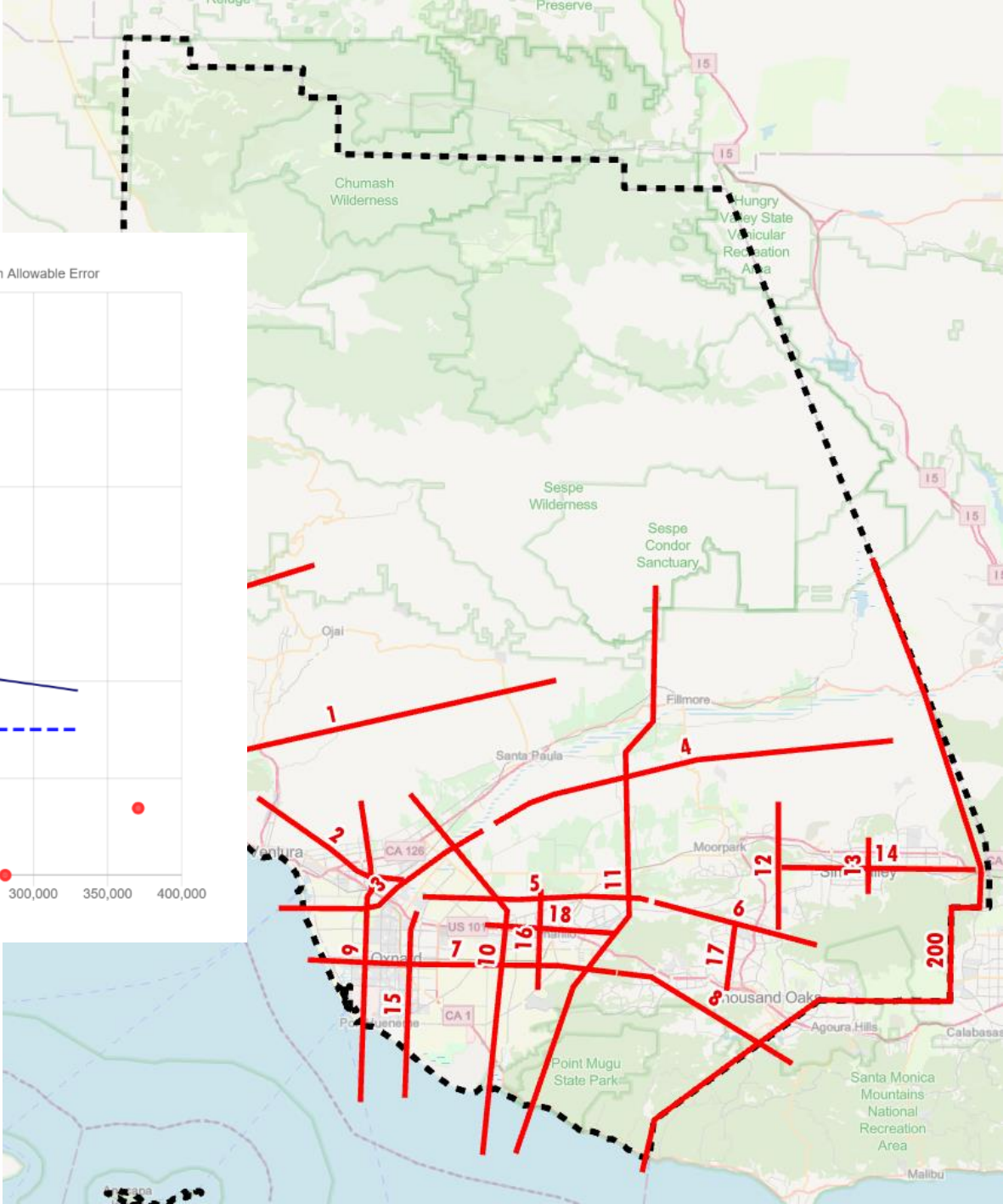
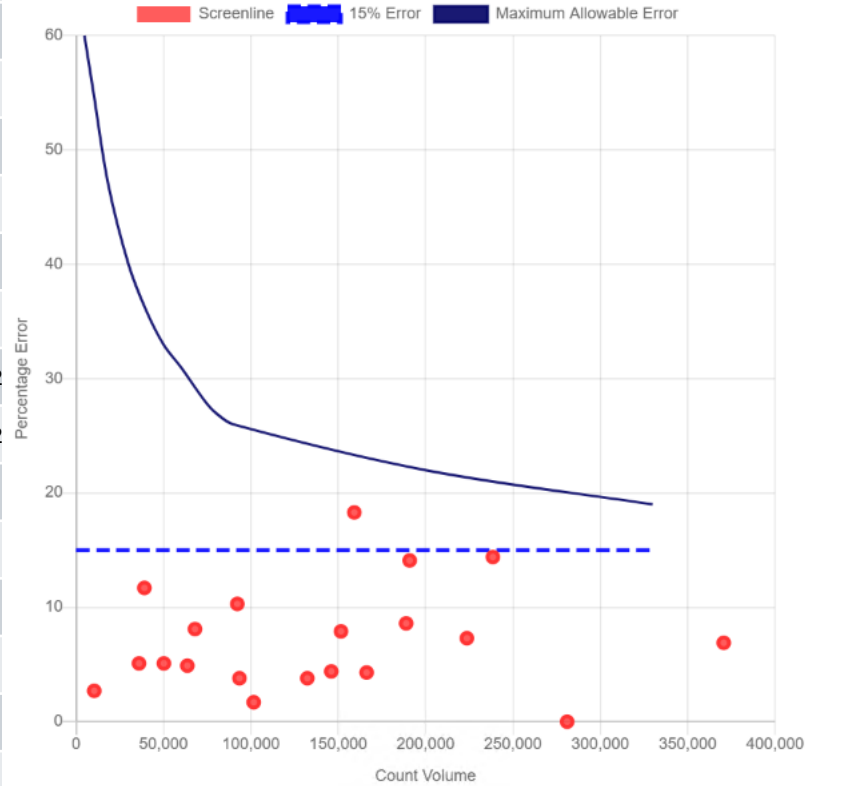
Functional Classification	ADT Counts	ADT Volumes	ADT % (Count / Volume)	ADT Counts VMT	ADT Volumes VMT	ADT % (Count VMT / Volume VMT)
Freeway	1847987	1900297	2.8%	1481697	1465921	-1.1%
Principal Arterial	838852	821138	-2.1%	409281	382363	-6.6%
Minor Arterial	551085	522261	-5.2%	438665	408813	-6.8%
Major Collector	148664	132799	-10.7%	175708	154327	-12.2%
Minor Collector	26255	27274	3.9%	7899	7002	-11.4%
Ramps	387412	324194	-16.3%	72834	54250	-25.5%
	3800255	3727964	-1.9%	2586085	2472676	-4.4%



VCTM Validation Metrics

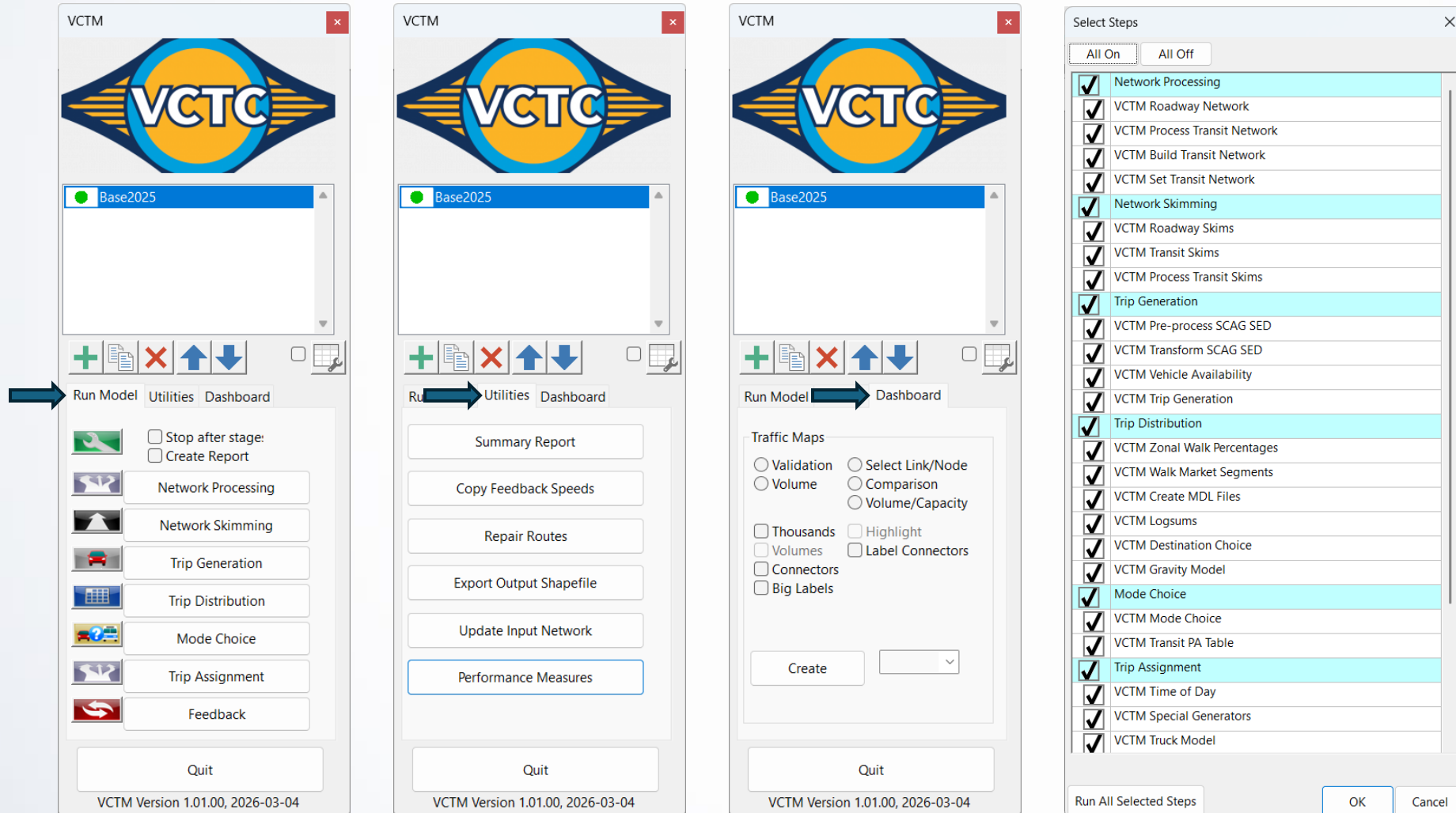


NUMBER	NAME	TOTAL SUM OF COUNTS	TOTAL VOLUME AT LOCATIONS WITH COUNTS	VOLUME/ COUNT RATIO	PASS/FAIL CRITERIA
1	South of SR 150 Crossing SR 101 and SR 33	101,670	103,371	1.7%	PASS
2	North of US-101	1			
3	In-between Ventura and Oxnard	1			
4	In-Between SR-126 and SR-118 East of Oxnard				
5	North of SR101 and Camarillo				
6	North of US-101 and Thousand Oaks				
7	South of US-101	1			
8	South of US-101 and Thousand Oaks				
9	From Port Hueneme through Foothill Rd	2			
10	From PCH to Foothill Rd (East of Wood Rd)	2			
11	From PCH to SR-126 (East of Camarillo)	1			
12	From Madera Rd (Simi Valley) to SR-126	1			
13	From North of SR-118 to Fitzgerald Rd				
14	From West End to East End of Simi Valley Borde				
15	From US-101 to Southern County Border	1			
16	From Las Posas Rd to Lewis Rd				
17	From Olsen Road to US-101	33,803	18,286	-45.9%	PASS
18	North of US-101	92,283	82,749	-10.3%	PASS
100	North of SR150	68,079	73,581	8.1%	PASS
200	Ventura County/Los Angeles County Line	370,654	396,566	7.0%	PASS
Combined Screenline Totals		2,498,823	2,414,202	-3.40	PASS



VCTM Overview

VCTM User Interface



VCTM User Interface

The screenshot displays four overlapping 'Scenario Editor' windows. The rightmost window is the active one, showing the 'Parameters' tab. It contains a table of parameters and their values, a 'Description' field, and buttons for 'Set To Defaults', 'OK', and 'Cancel'.

Scenario Editor (Active Window - Parameters Tab)

Scenario Name: Base2025
Scenario Dir: C:\VCTM\Scenarios\Base2025\

Input General Output Parameters

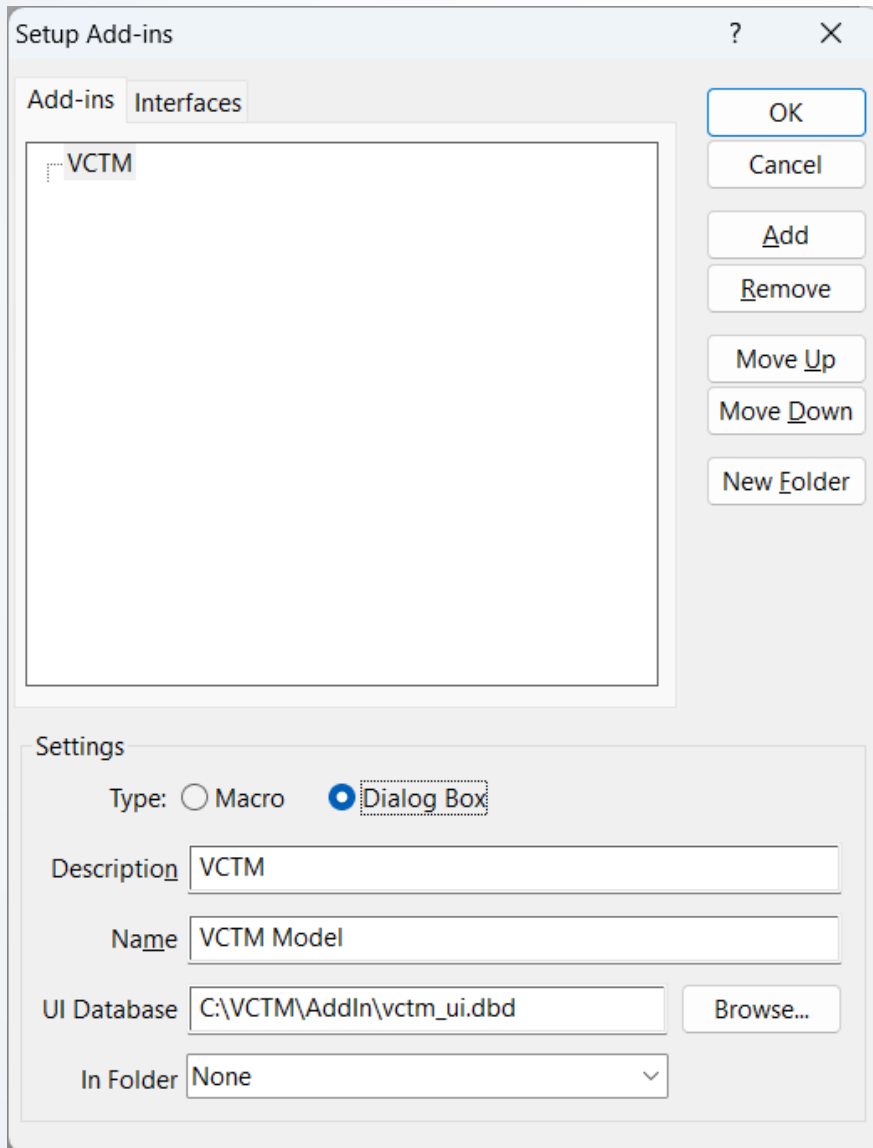
Stage: ☐ General ☒ Params ☐ Table

ID	Value
INI	
SKM	
GEN	
DST	
MOD	
ASN	
PST	
AOCTolIDiv	

InitSpd: 1
PeriodFacs: {{3, 4}, {6, 2, 8}}
RoadQry: Select * where (mode = 2 or mode = 4 or mode=26 or FT = 100)
TollQry: Select * where mode = 2 or mode = 4 or mode = 26
TruckTolls: 1
AutoOpCost: 26.78
AOCTolIDiv: {{26.78, 26.78}, {26.78, 26.78, 26.78}}

Description: Set to 1 (True) to initialize congested speeds using lookup table, 0 (False) to use saved speeds

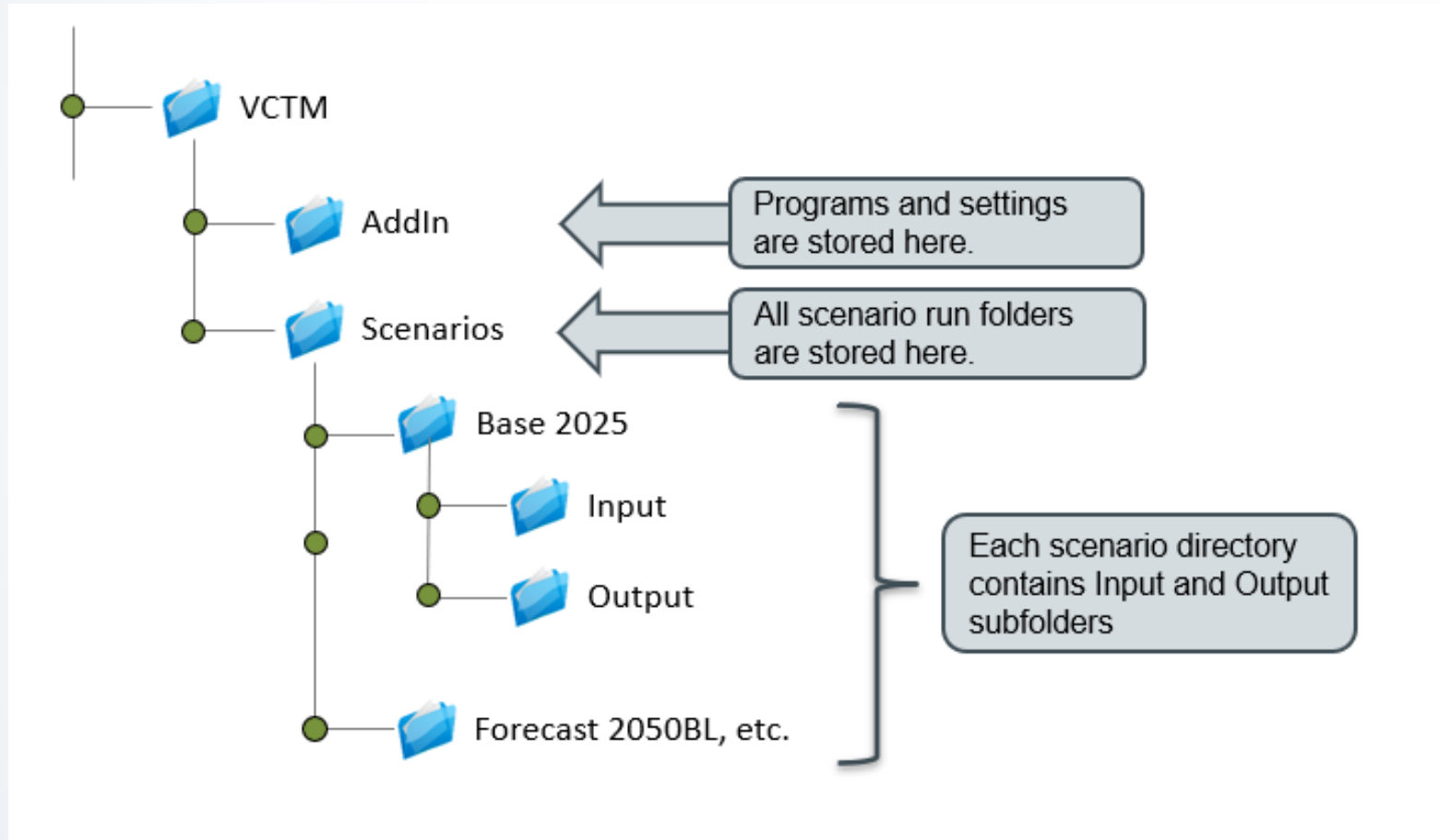
Set To Defaults
OK Cancel



VCTM Model Installation

- TransCAD 9 Build 32920
- ~1 GB space for model inputs and installation
- ~20 GB space for each model scenario run
- ~100 GB space for temp files during model run

VCTM Folder Structure



VCTM User's Guide



Ventura County Transportation Model

user's
guide

prepared for
Ventura County Transportation Commission & Iteris
prepared by
Cambridge Systematics, Inc.

March 4, 2026

www.camsys.com

Ventura County Transportation Model

1.0 Introduction

This User's Guide provides instructions on operation of the Ventura County Transportation Model (VCTM). Information is provided regarding installing the model, managing model scenario data, and running the model.

The model is run from the TransCAD software platform through a customized user interface. Scenario and file management is achieved through a scenario management system integrated into the user interface. A basic understanding of the TransCAD software program is recommended for model users. However, users unfamiliar with the software should be able to perform some modeling tasks with the assistance of this guide.

1.1 System Requirements

The model must be run on a computer running Windows and the TransCAD software program. Specific system requirements are shown in Table 1.1. The listed requirements are suggested minimums; a computer that does not meet these requirements may still succeed in running the model. Increased processor speeds and multiple processor cores will reduce the amount of time required to run the model. The disk space required for installation must be available on the drive where TransCAD has been installed. The disk space required for additional scenarios should be located on a local drive and must be available before attempting to run the model.

Table 1.1 System Requirements

Operating System	Windows 10 or later (1)
Processor	Recent Intel or AMD processor with 16 to 32 cores, 32 recommended (2)
Memory	32 GB
TransCAD Software	Version 9.0, build 32920
Storage	A High-speed, locally attached solid state drive is recommended
Disk Space (Installation and Input)	700-800 MB
Disk Space (Each scenario)	20 GB for each scenario, about 16 GB if some intermediate files are deleted (3)
Disk Space (Temp Files)	About 100 GB Free on the C:\ Drive, or if present, Z:\TEMP (4)

Notes: (1) VCTM has been tested on Windows 10 and on Windows Server 2022. It has not been tested with other versions of Windows.
(2) Multiple cores significantly improve model run times, but there are diminishing returns with more than 32 cores and testing has resulted in occasional model run crashes on computers with more than 32 cores.
(3) To reduce output space requirements, intermediate files defined in Section 3.5 can be deleted.
(4) If a Z:\TEMP folder is present and the UseZDrive parameter is set to 1, some temporary files will be written to this location. This can improve model run times if a very fast Z drive is available.

1.2 Microsoft Message Queuing Service (MSMQ)

VCTM makes use of TransCAD Compute Engines, which improve model run times by better taking advantage of multiple processor cores. Compute engines require the Microsoft Message Queuing Service (MSMQ) to communicate between parallel model processes. Prior to running VCTM, users must enable MSMQ using the process described in Appendix A.

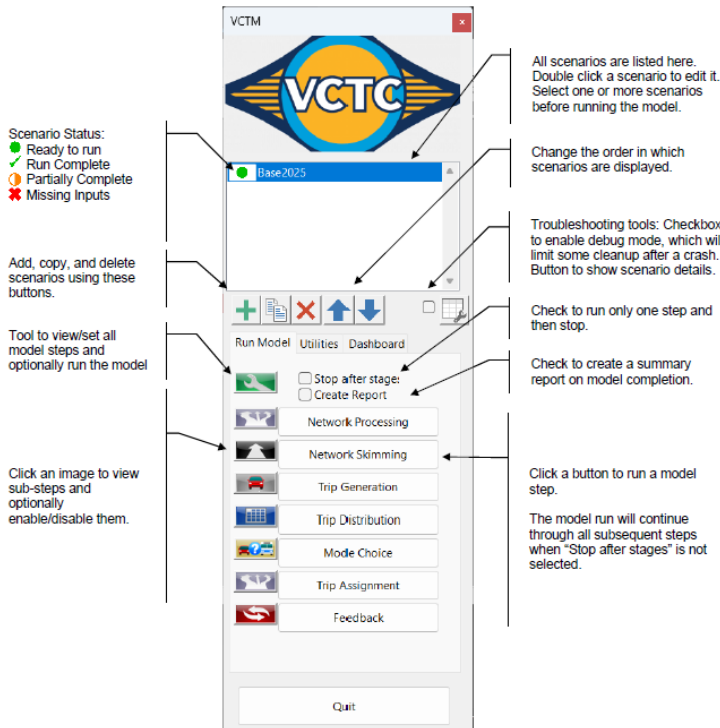
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1-0

Ventura County Transportation Model

Appendix B. Annotated Model Dialog Boxes

This appendix contains annotated screenshots of the VCTM dialog boxes.

Figure B.1 The Model Dialog Box – Run Model tab



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B-0

VCTM System Requirements

- It will run (slowly) on a laptop with enough RAM (32GB+)
- Built for a server/workstation
- Multi-threaded

Table 1.1 System Requirements

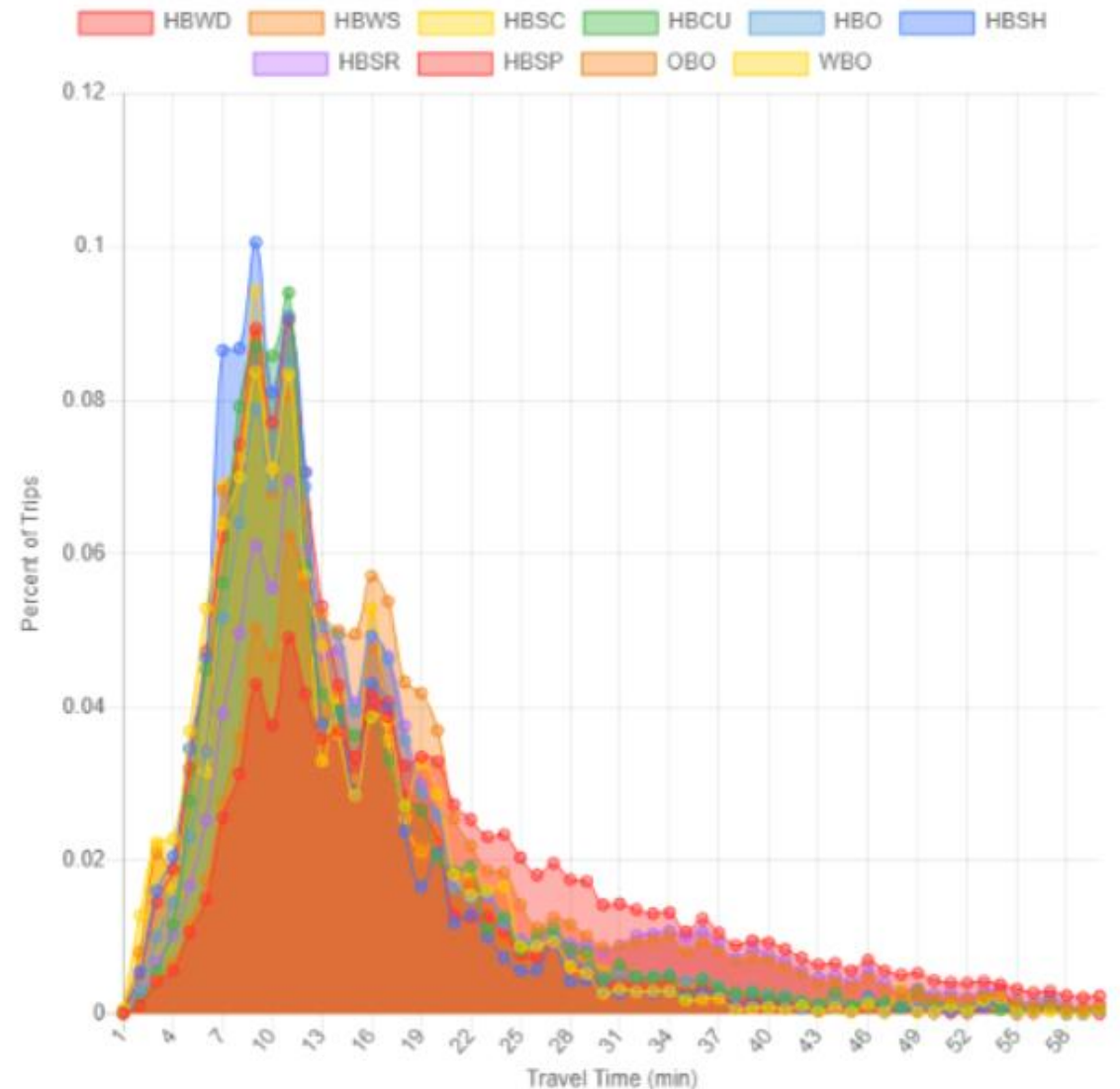
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Highlights of New Features and Functionalities

- More efficient implementation than before
 - Standalone model (no SMDT)
 - Small installation package
 - Faster run times
- Mapping dashboard
- Summary reporting tool

Trip Length Frequency Distribution (Daily)



VCTM Demonstration

Request the Model

- Email VCTC for forms
 - akent@goventura.org



Model Inputs & Outputs

Model Inputs & Outputs

Inputs

- Land use information – summarized as Socioeconomic Data (SED)
- Networks
- Transit
- Model Parameters
 - Capacity Assumptions
 - Volume Delay Curves
 - Etc.

Outputs

- Roadway segment vehicle volumes
- Origin-destination vehicle trip pairs
- Mode split
- Transit ridership by stop/route/mode

Comparison with 2016 Model

- Reduction in base year VMT (~14%)
 - Updated regional model – better validation over time
 - Changes in travel behavior
- Reduction in forecast year VMT (~11%)
 - Updated regional model – better validation over time
 - Changes in travel behavior
- Increase in estimated growth from base year to future year (from ~12% to ~16%)

Previous VCTM (2016)		Updated VCTM (2025)	
Total Vehicle Travel		Total Vehicle Travel	
Units	Average Daily	Units	Average Daily
VMT - Total	17,336,894	VMT - Total	14,889,455
VHT - Total	41,432	VHT - Total	31,866
VHD - Total	7,614	VHD - Total	1,672
Previous VCTM (2040)		Updated VCTM (2050)	
Total Vehicle Travel		Total Vehicle Travel	
Units	Average Daily	Units	Average Daily
VMT - Total	19,469,876	VMT - Total	17,306,609
VHT - Total	487,953	VHT - Total	362,135
VHD - Total	78,022	VHD - Total	18,794

Regional Trips & Regional VMT (Origin-Destination)

2025

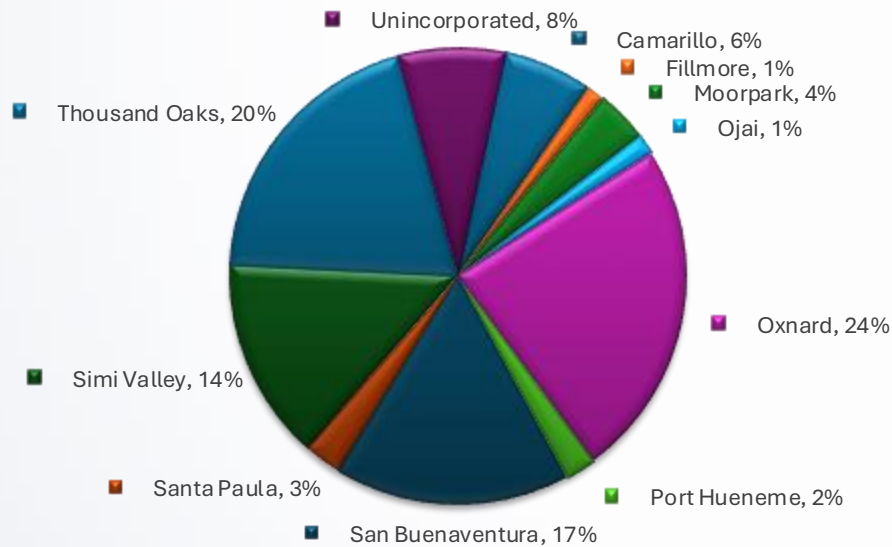
2025	Total Trips	VMT (SB 375)	Average Trip Length
	Average Daily	Average Daily	Average Daily
	COUNTY	COUNTY	COUNTY
Ventura County	1,844,269	13,841,440	7.5
Outside of Ventura County	189,363	5,259,832	
Total	2,033,631	19,101,271	
	CITIES	CITIES	CITIES
Camarillo	116,903	1,005,181	9
Fillmore	22,962	252,460	11
Moorpark	67,853	671,597	10
Ojai	26,118	160,030	6
Oxnard	441,133	2,537,678	6
Port Hueneme	40,179	247,800	6
San Buenaventura	307,152	2,037,569	7
Santa Paula	49,360	365,927	7
Simi Valley	263,968	2,031,641	8
Thousand Oaks	369,028	3,042,541	8
Unincorporated	139,613	1,489,017	11
Outside of Ventura County	189,363	5,259,832	28
Total	2,033,632	19,101,272	9

2050

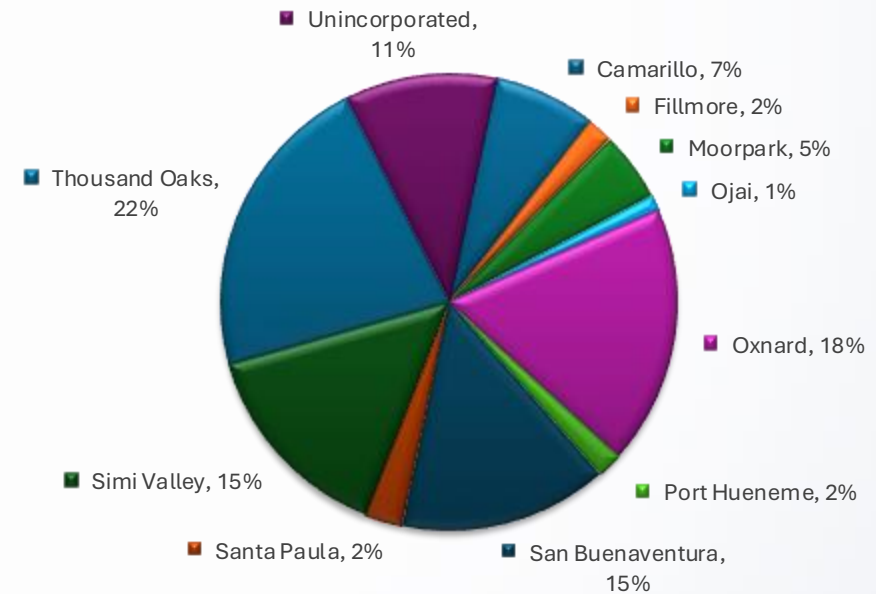
2050	Total Trips	VMT (SB 375)	Average Trip Length
	Average Daily	Average Daily	Average Daily
	COUNTY	COUNTY	COUNTY
Ventura County	1,996,683	15,492,653	7.5
Outside of Ventura County	206,950	5,980,860	
Total	2,203,634	21,473,512	
	CITIES	CITIES	CITIES
Camarillo	131,971	1,152,933	9
Fillmore	23,989	296,411	11
Moorpark	70,356	735,580	10
Ojai	24,379	170,133	6
Oxnard	508,036	2,941,980	6
Port Hueneme	40,562	260,264	6
San Buenaventura	328,437	2,218,603	7
Santa Paula	47,978	411,001	7
Simi Valley	277,574	2,286,602	8
Thousand Oaks	398,421	3,367,781	8
Unincorporated	144,979	1,651,366	11
Outside of Ventura County	206,950	5,980,860	28
Total	2,203,634	21,473,513	10

Regional Trips & Regional VMT (Origin-Destination)

2025 Daily Trips

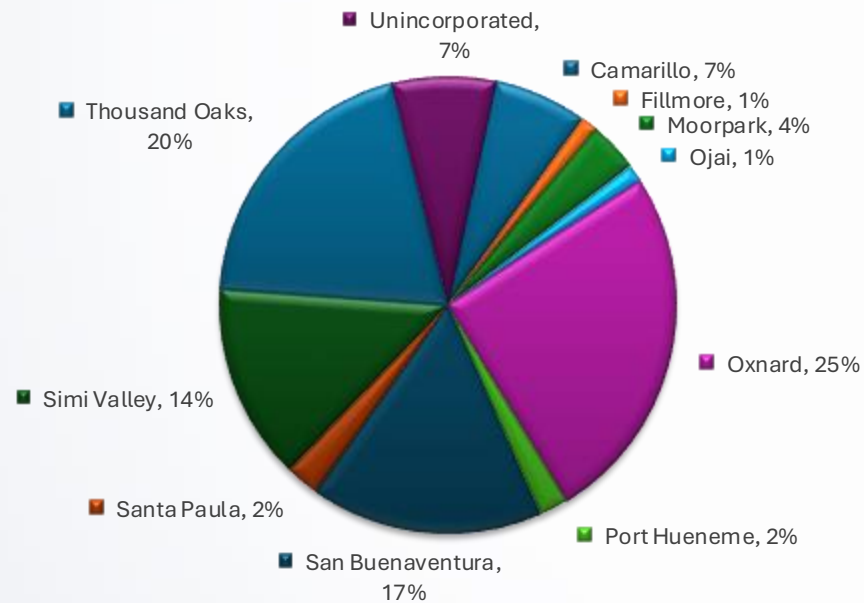


2025 Daily VMT

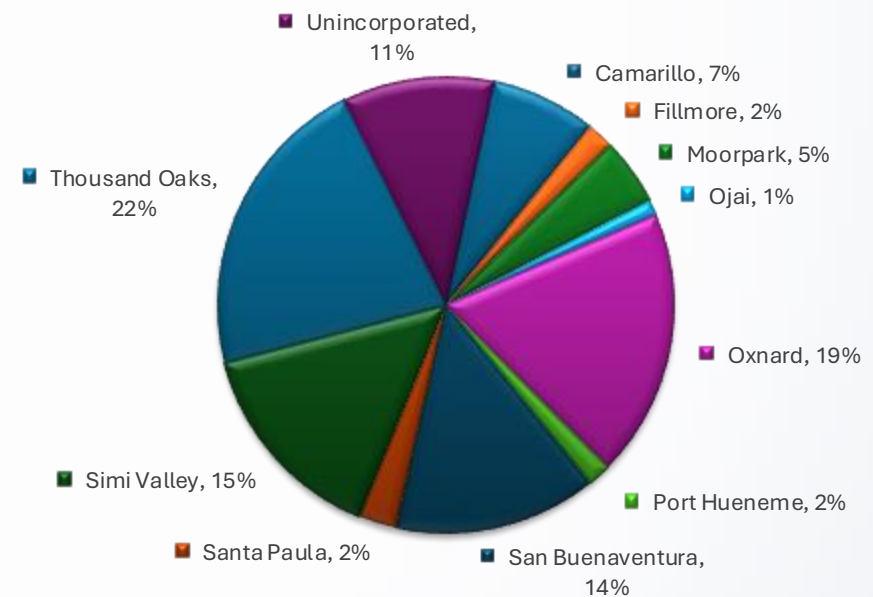


Regional Trips & Regional VMT (Origin-Destination)

2050 Daily Trips



2050 Daily VMT

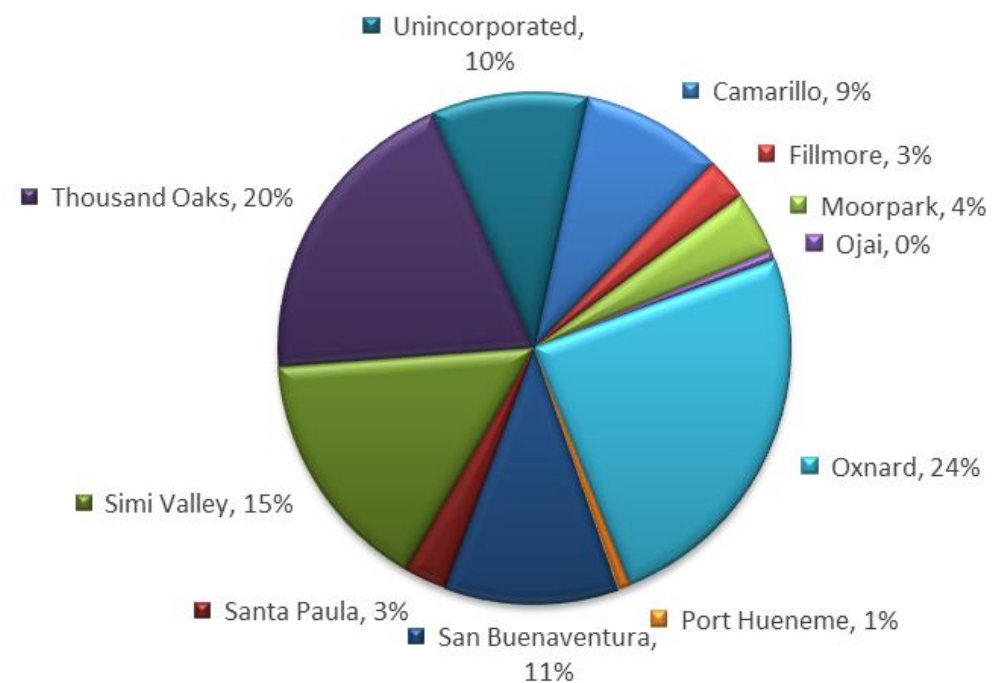


Regional Trips & Regional VMT (Origin-Destination)

2025 – 2050 Growth

2025-2050	Growth	VMT (SB 375)
	Average Daily	Average Daily
VENTURA COUNTY		
Ventura County	152,414	1,651,213
Outside of Ventura County	17,587	721,028
Total	170,003	2,372,241
	CITIES	CITIES
Camarillo	15,068	147,752
Fillmore	1,027	43,951
Moorpark	2,503	63,983
Ojai	-1,739	10,103
Oxnard	66,903	404,302
Port Hueneme	383	12,464
San Buenaventura	21,285	181,034
Santa Paula	-1,382	45,074
Simi Valley	13,606	254,961
Thousand Oaks	29,393	325,240
Unincorporated	5,366	162,349
Total	170,002	2,372,241

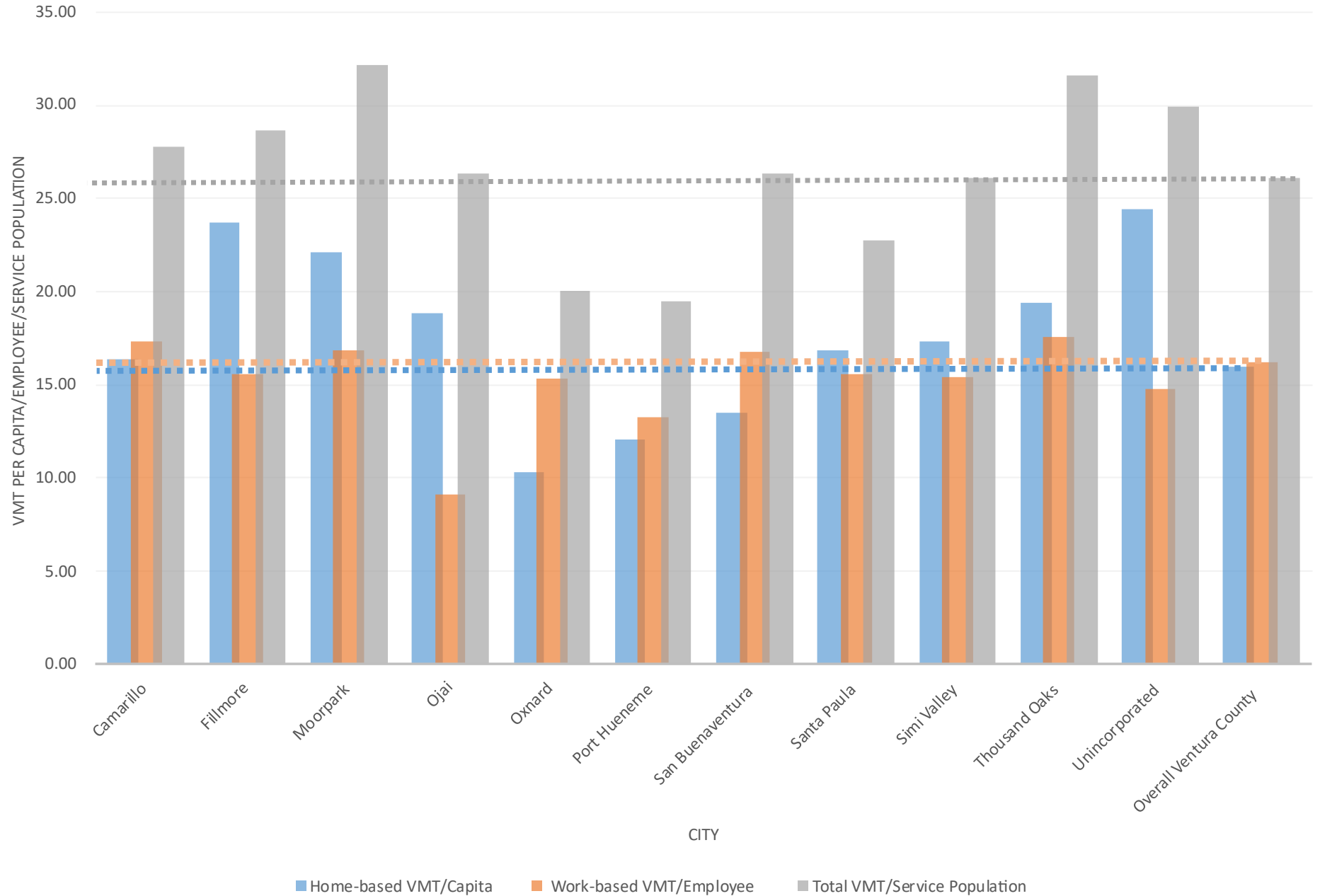
2025-2050 Growth in Daily VMT



SB743

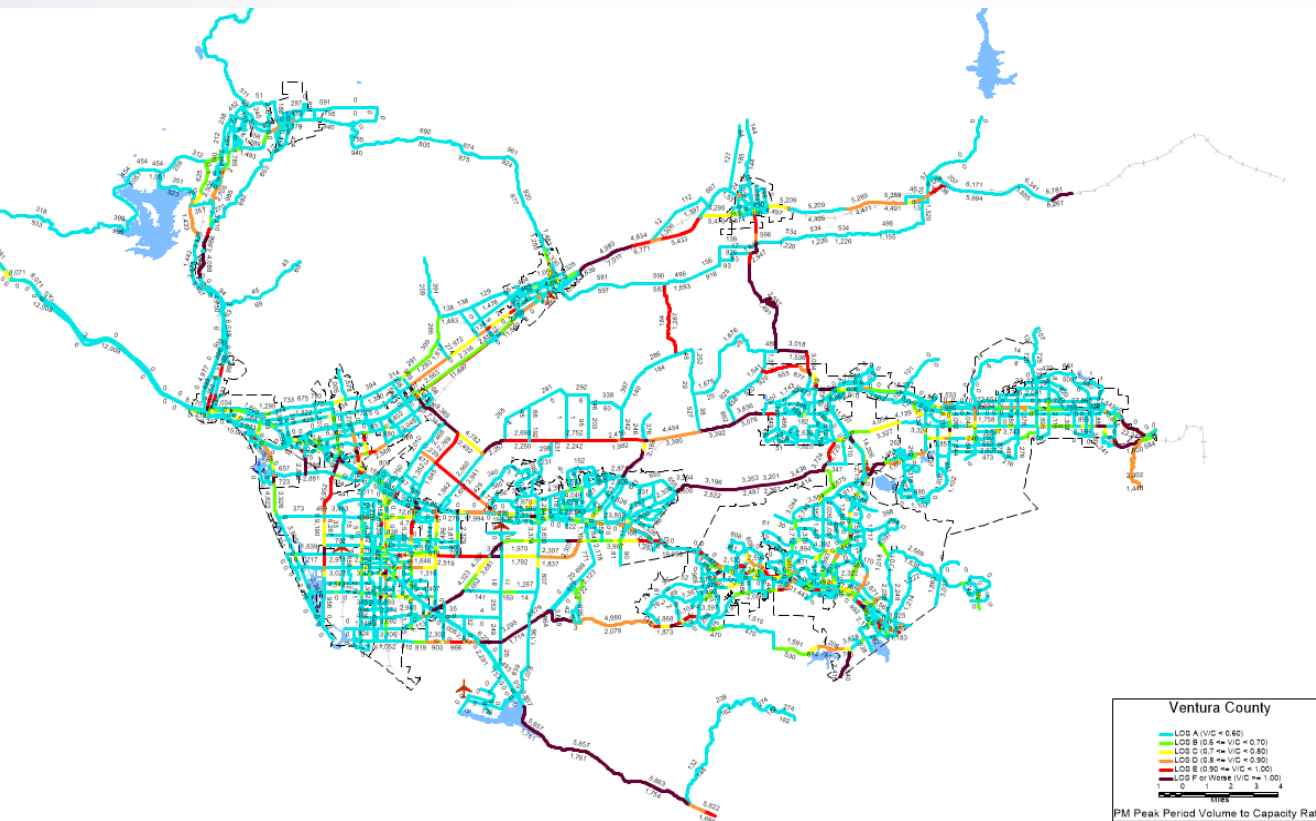


SB 743 VMT

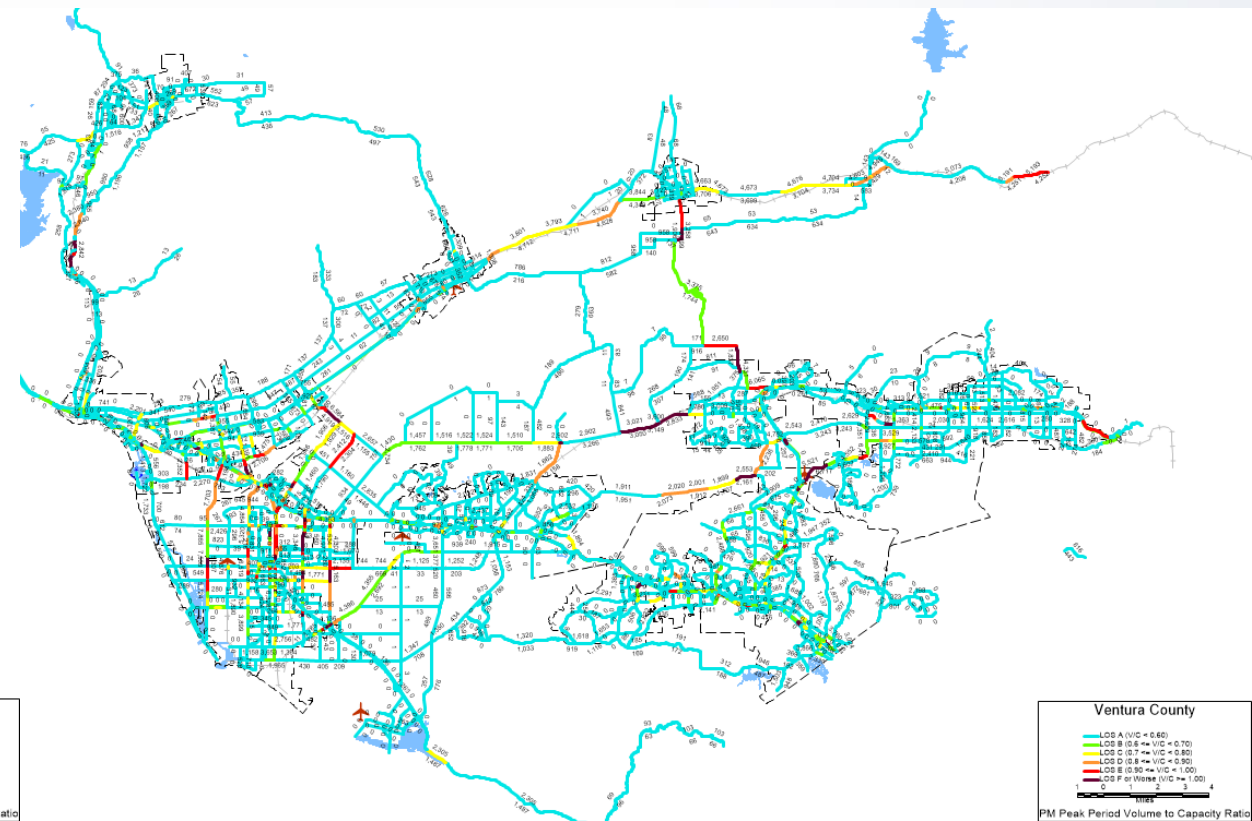


Forecast Plots – Congestion – Comparison

Previous VCTM (2040) – PM Peak Period



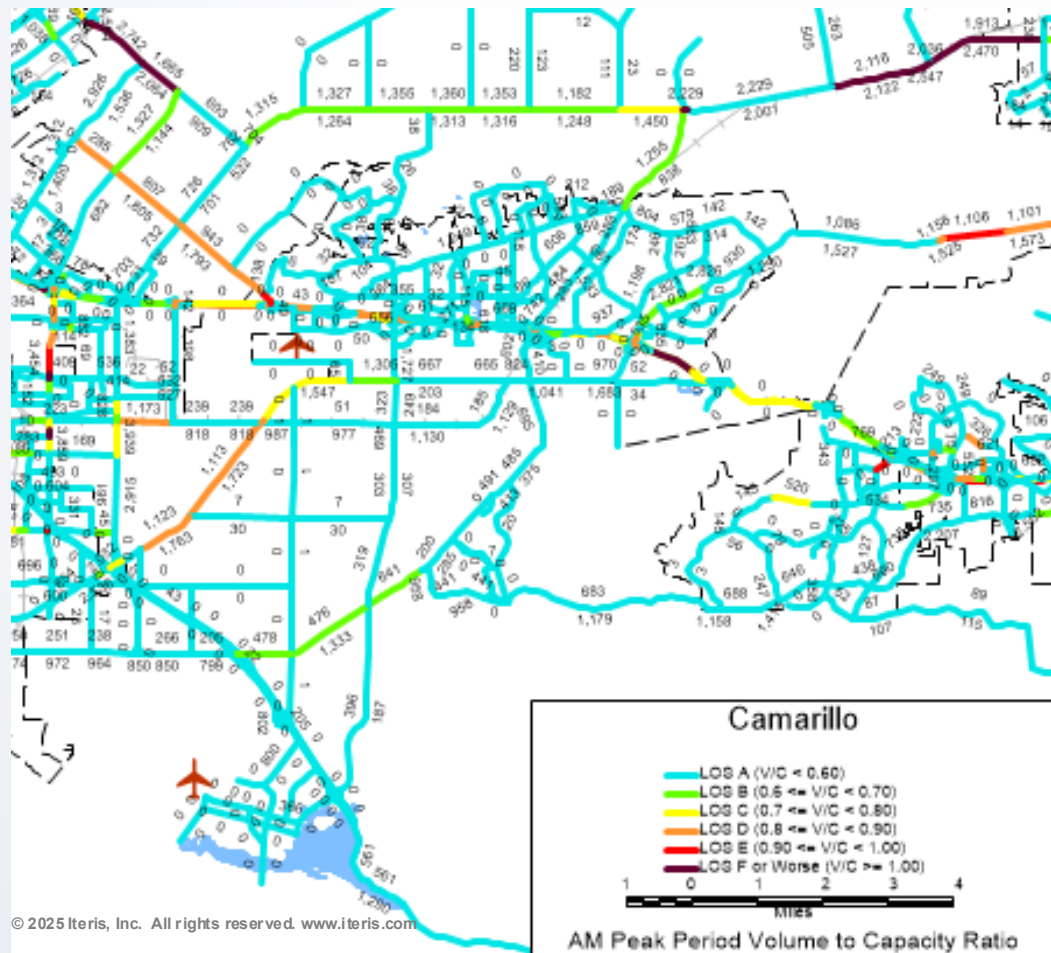
Updated VCTM (2050) – PM Peak Period



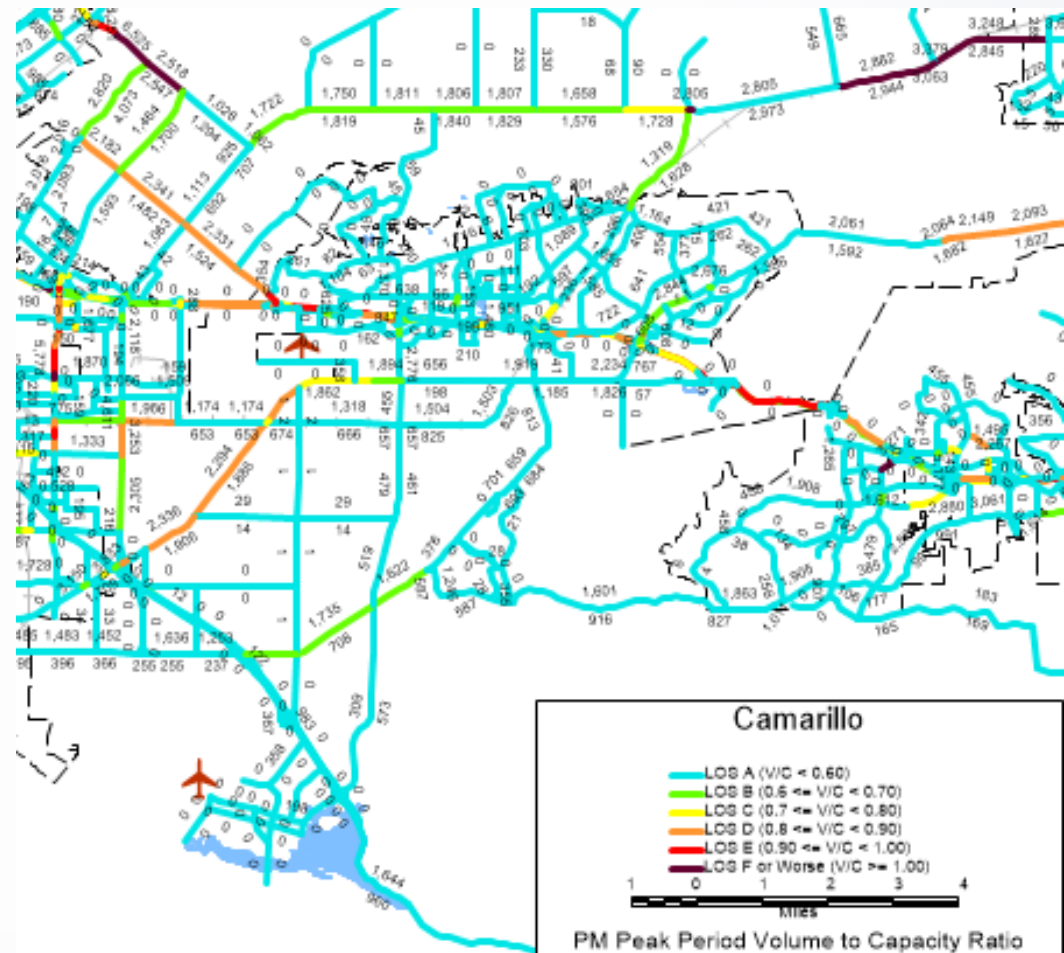
Add maps from Cities

AM PM Congestion – Camarillo

AM Peak Period (6-9 AM)

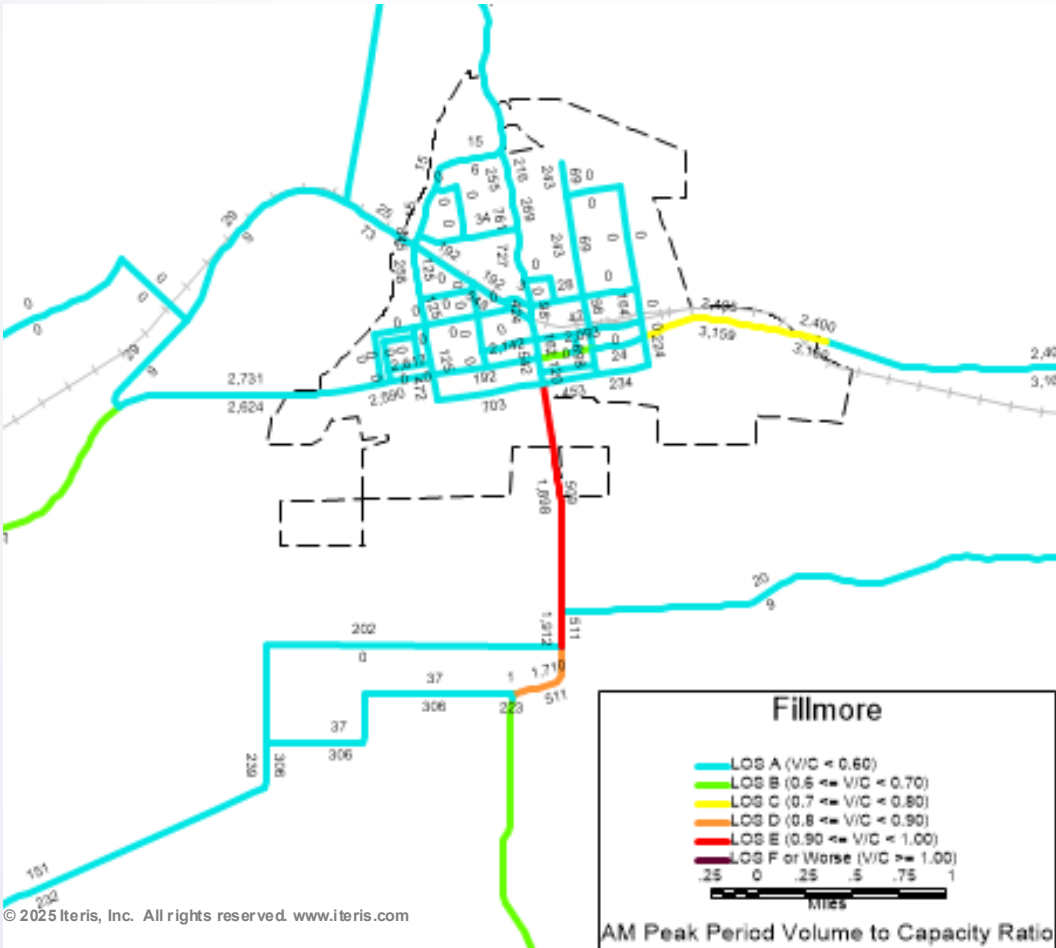


PM Peak Period (3-7 PM)

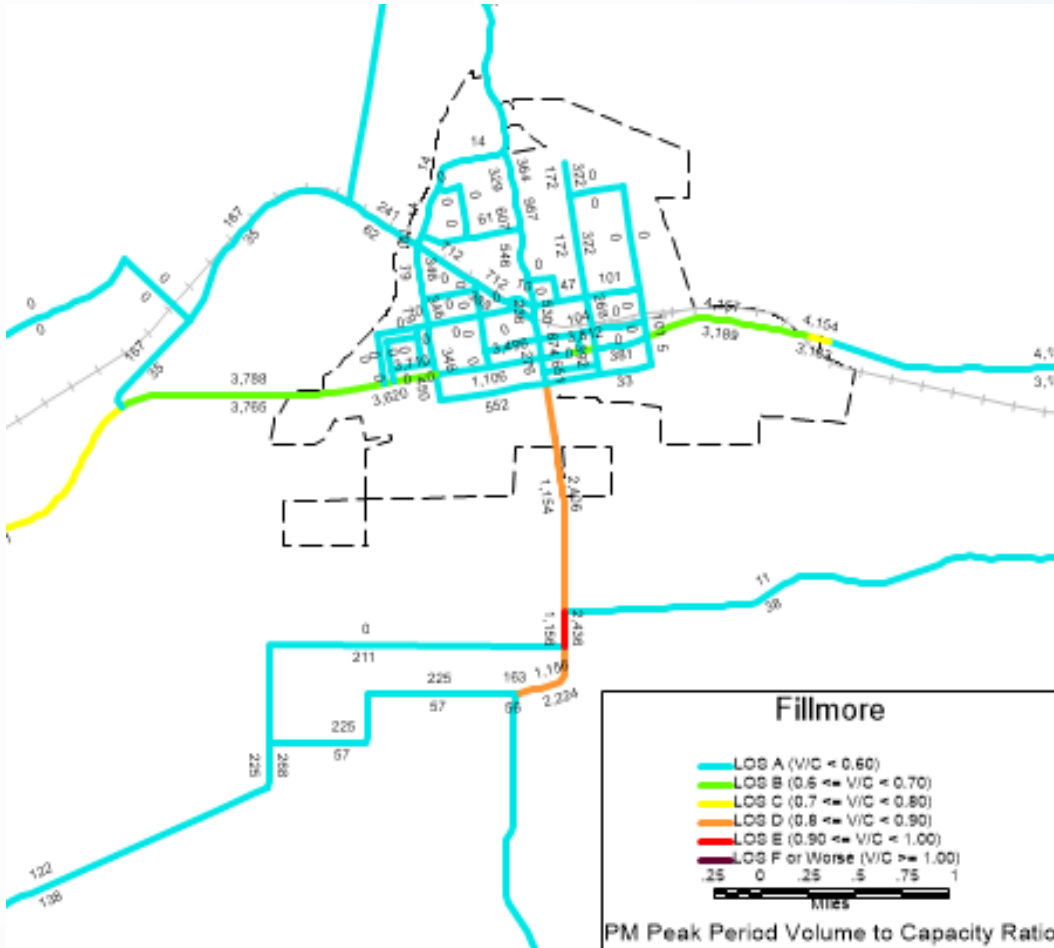


AM PM Congestion – Fillmore

AM Peak Period (6-9 AM)

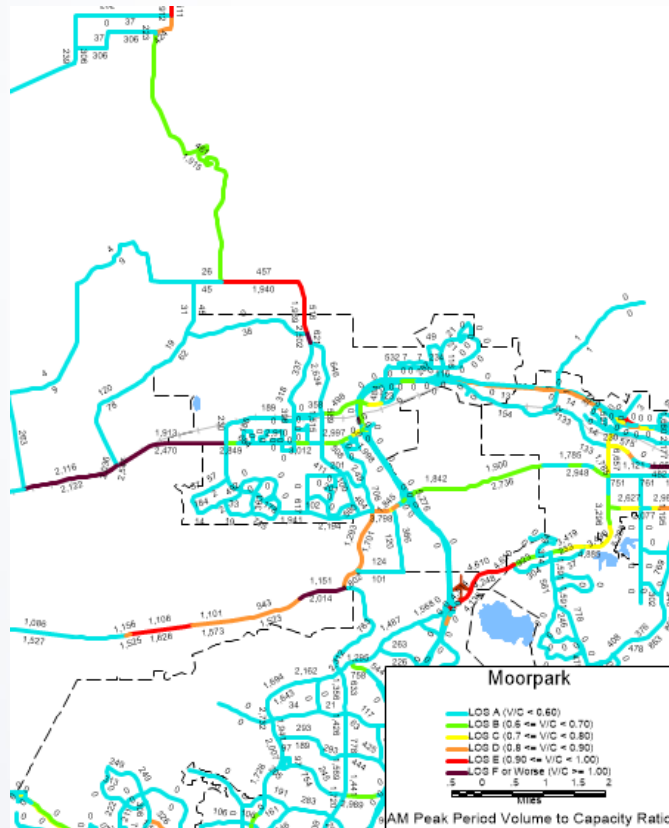


PM Peak Period (3-7 PM)

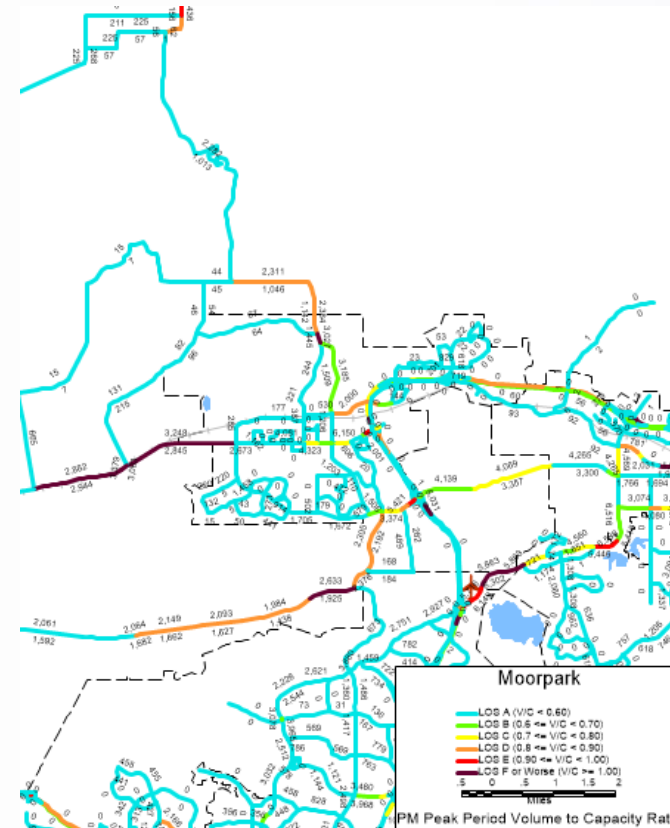


AM PM Congestion – Moorpark

AM Peak Period (6-9 AM)

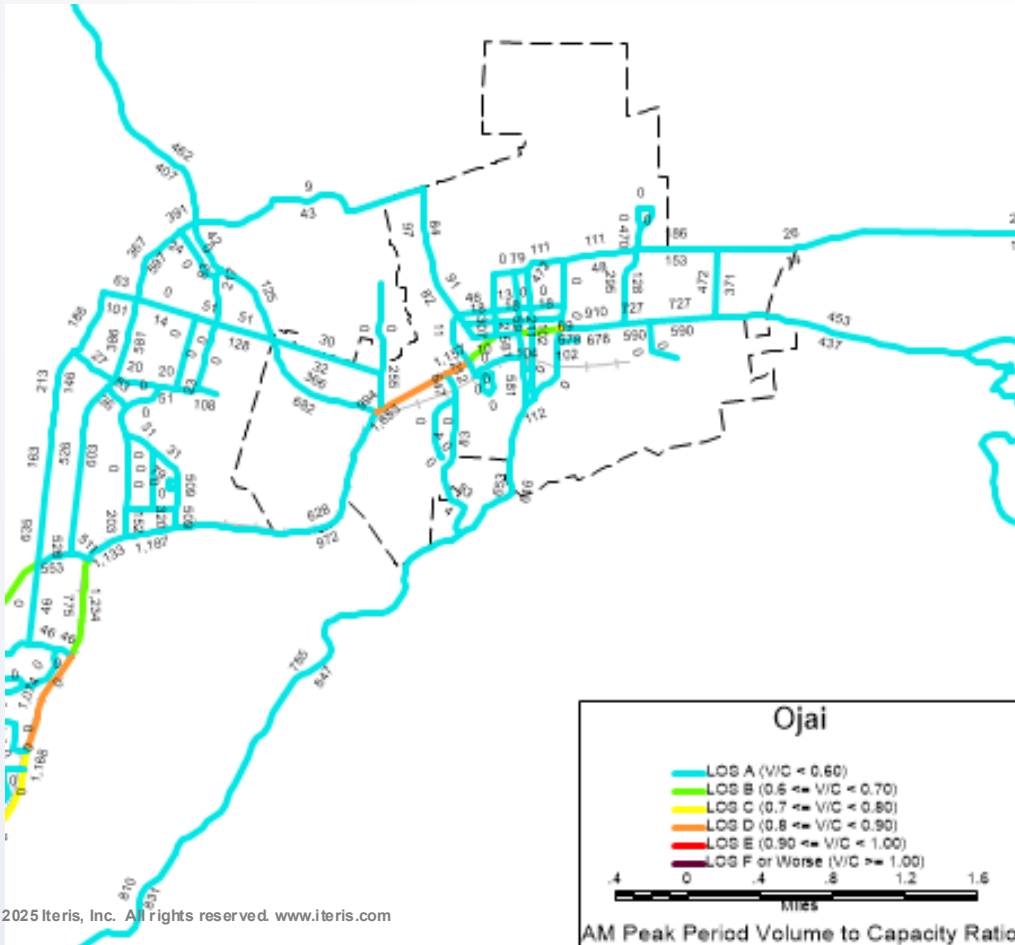


PM Peak Period (3-7 PM)

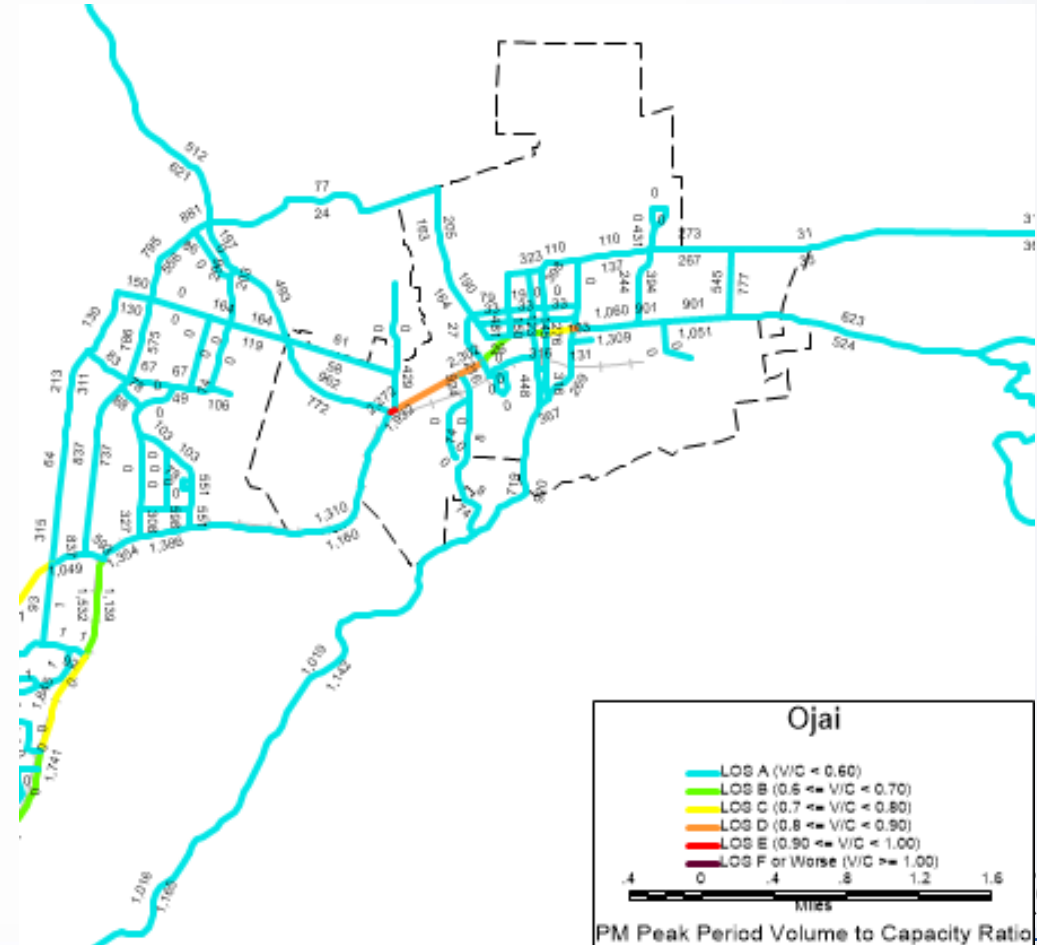


AM PM Congestion – Ojai

AM Peak Period (6-9 AM)

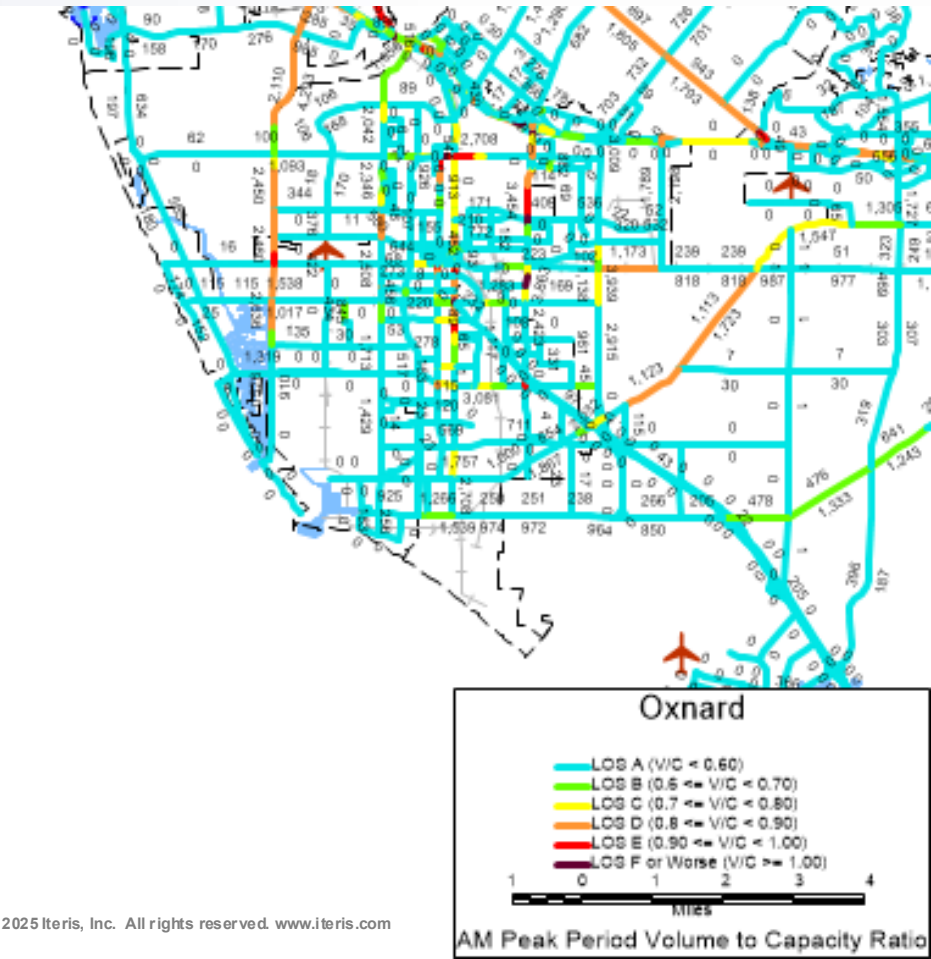


PM Peak Period (3-7 PM)



AM PM Congestion – Oxnard

AM Peak Period (6-9 AM)

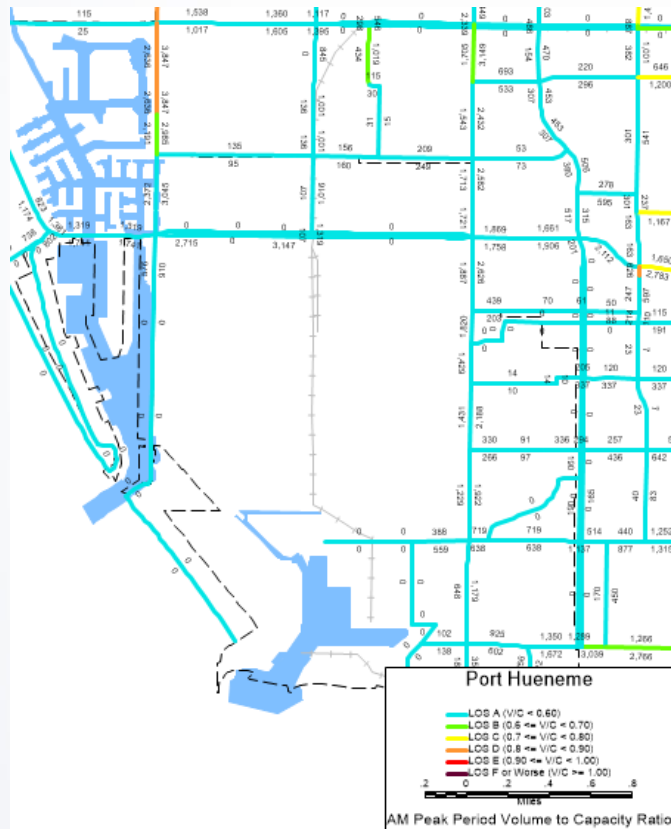


PM Peak Period (3-7 PM)

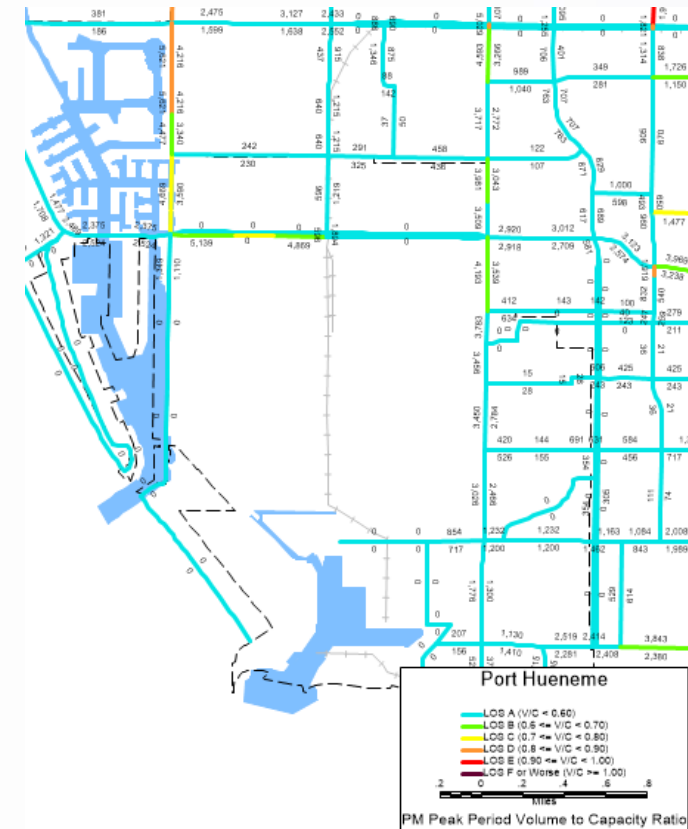


AM PM Congestion – Port Hueneme

AM Peak Period (6-9 AM)

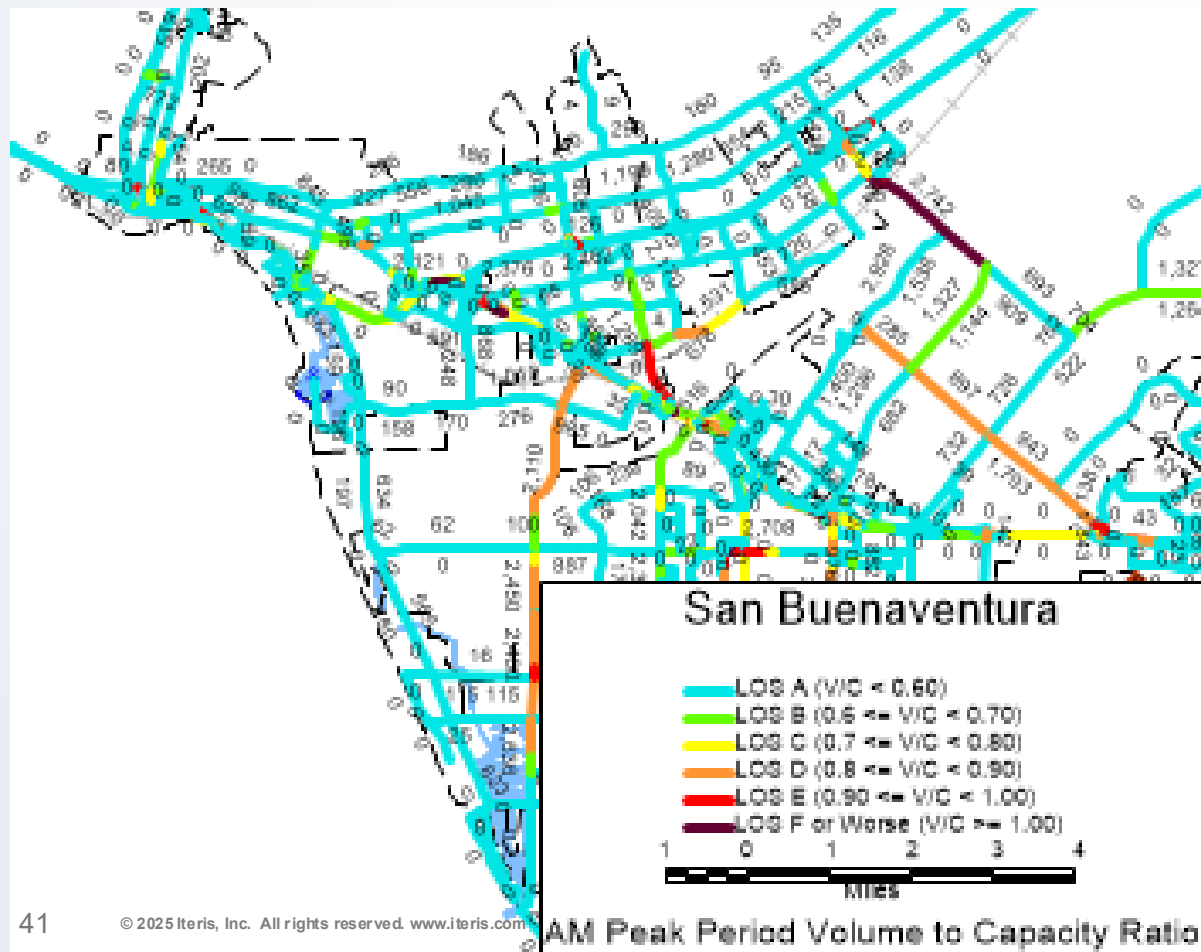


PM Peak Period (3-7 PM)

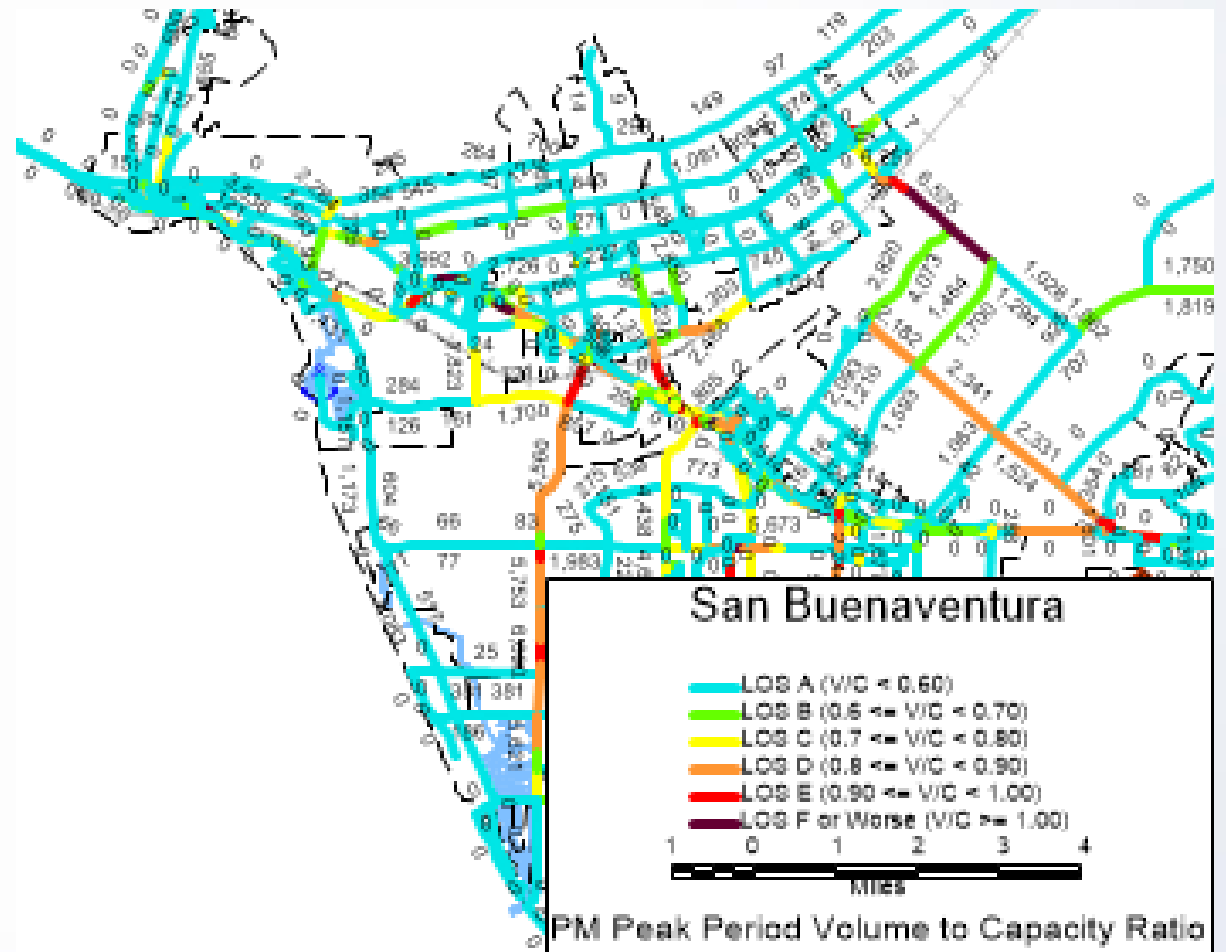


AM PM Congestion – San Buenaventura

AM Peak Period (6-9 AM)



PM Peak Period (3-7 PM)



AM PM Congestion – Santa Paula

AM Peak Period (6-9 AM)

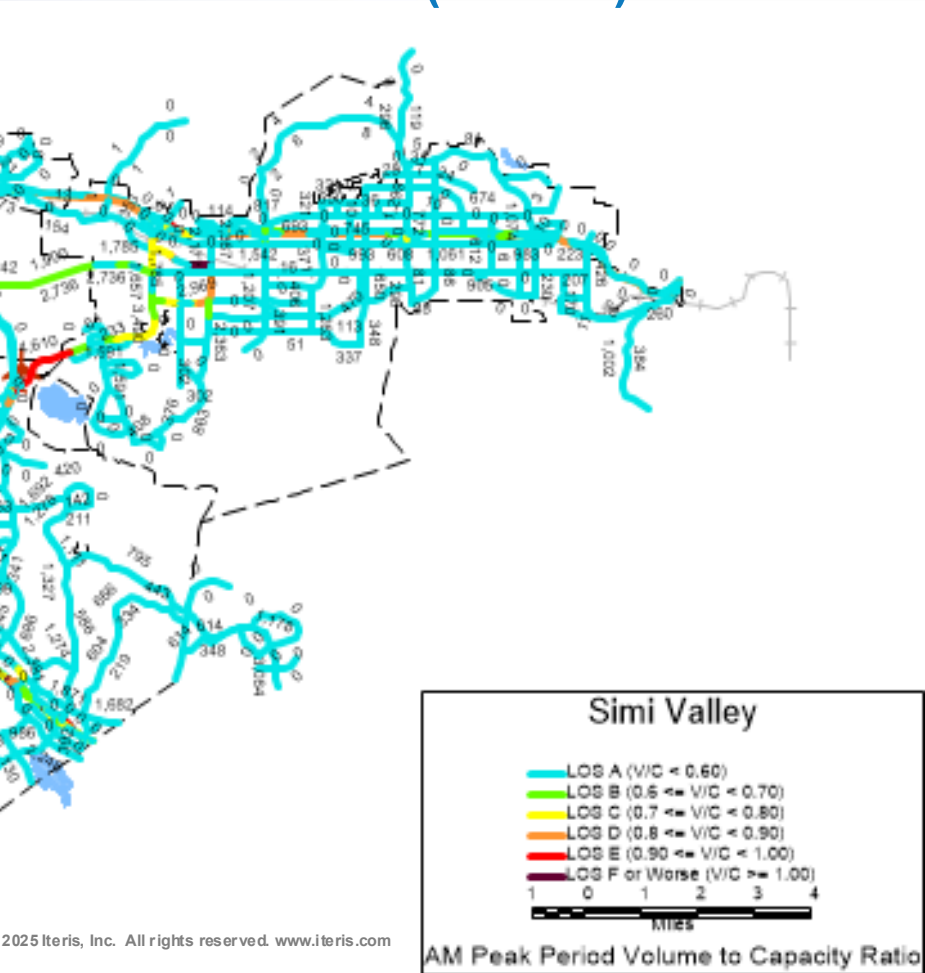


PM Peak Period (3-7 PM)

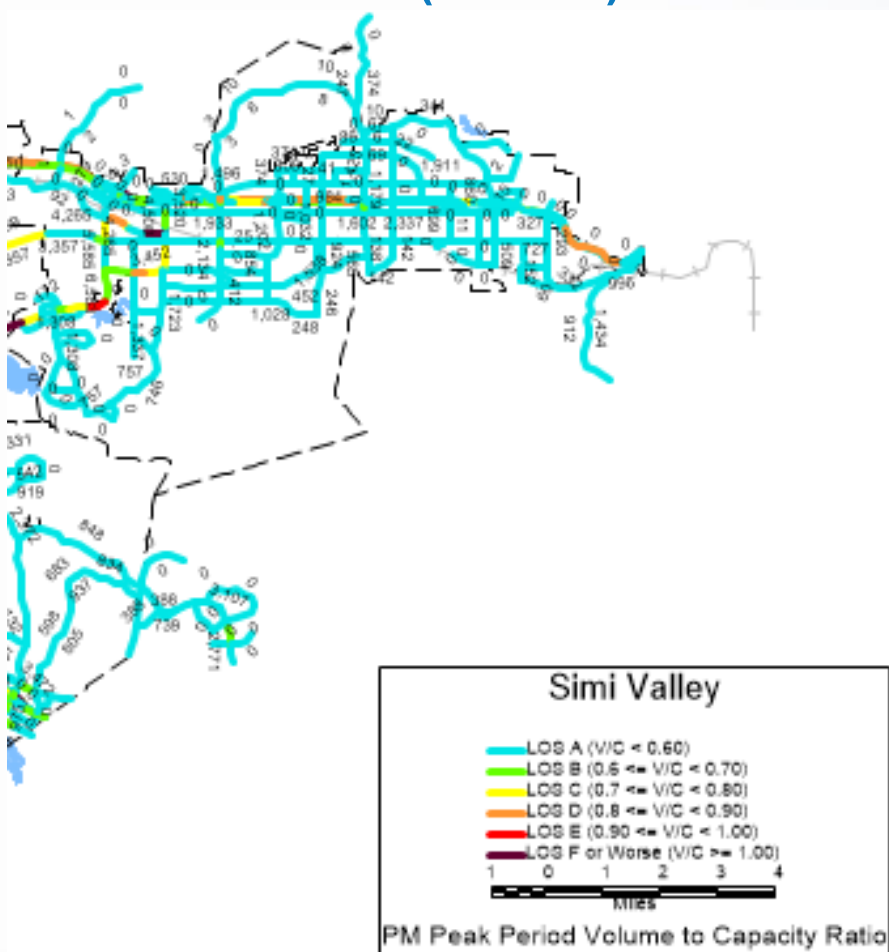


AM PM Congestion – Simi Valley

AM Peak Period (6-9 AM)

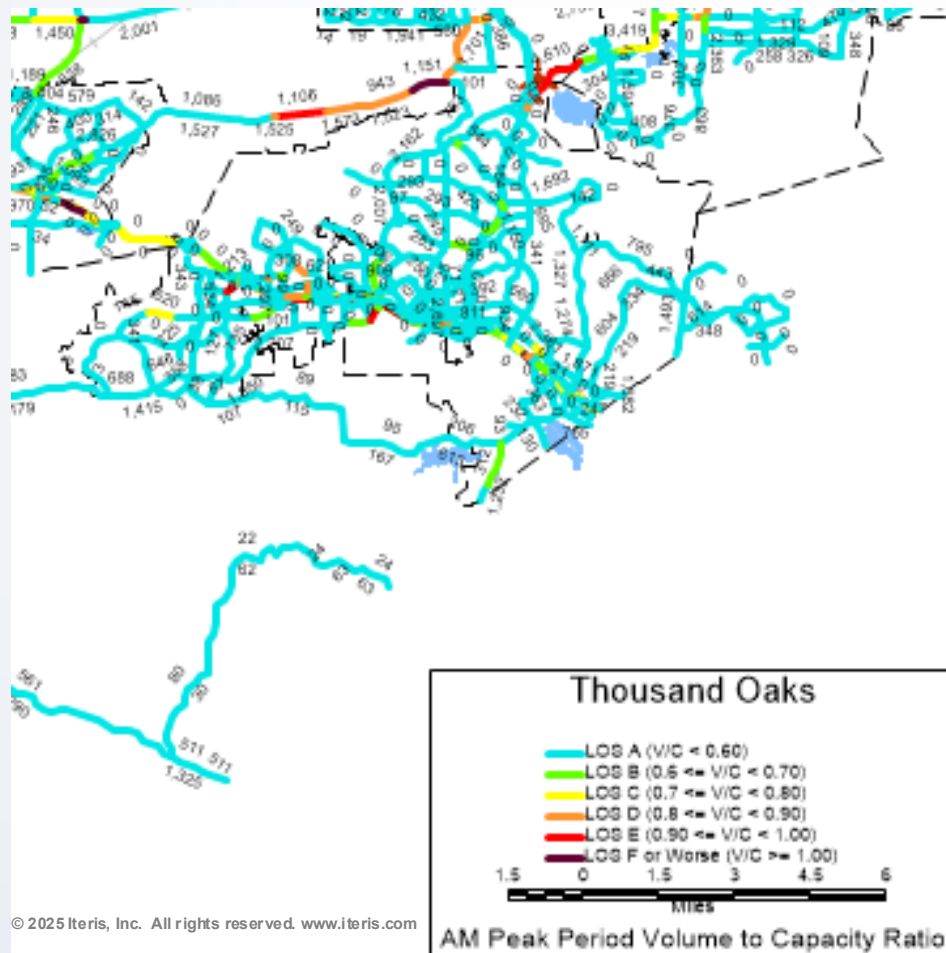


PM Peak Period (3-7 PM)

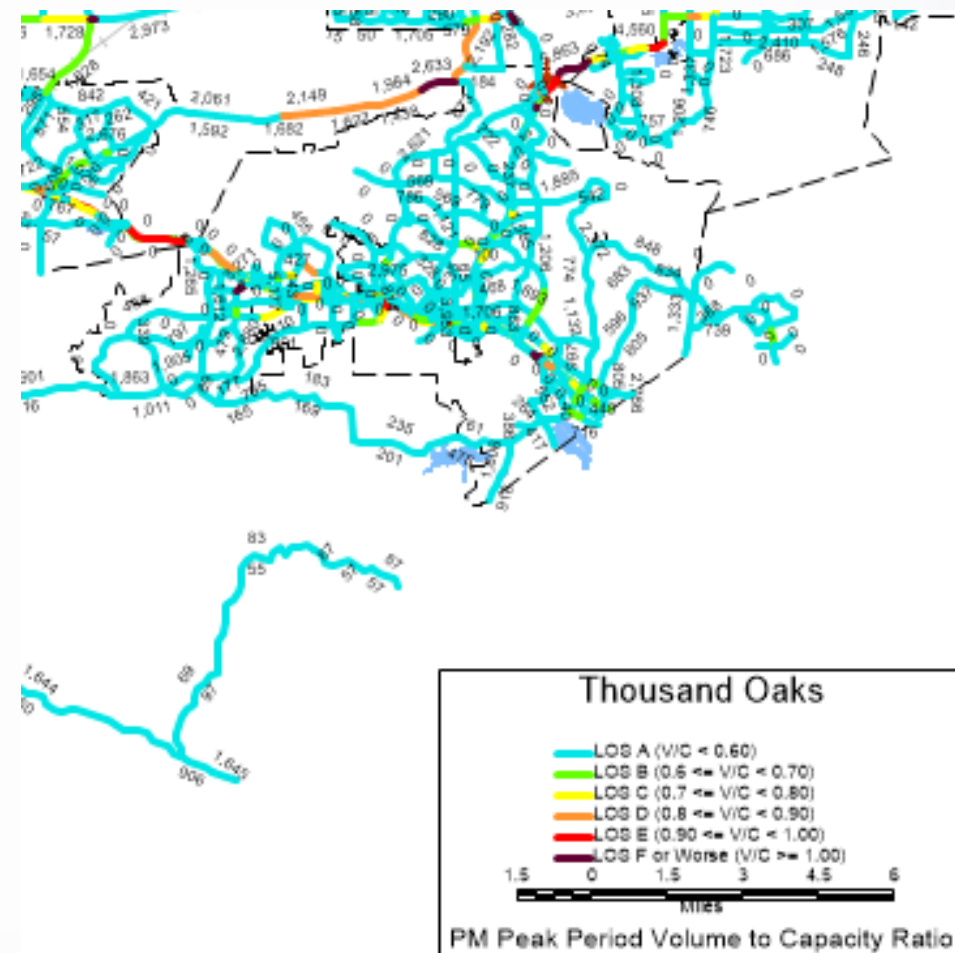


AM PM Congestion – Thousand Oaks

AM Peak Period (6-9 AM)



PM Peak Period (3-7 PM)

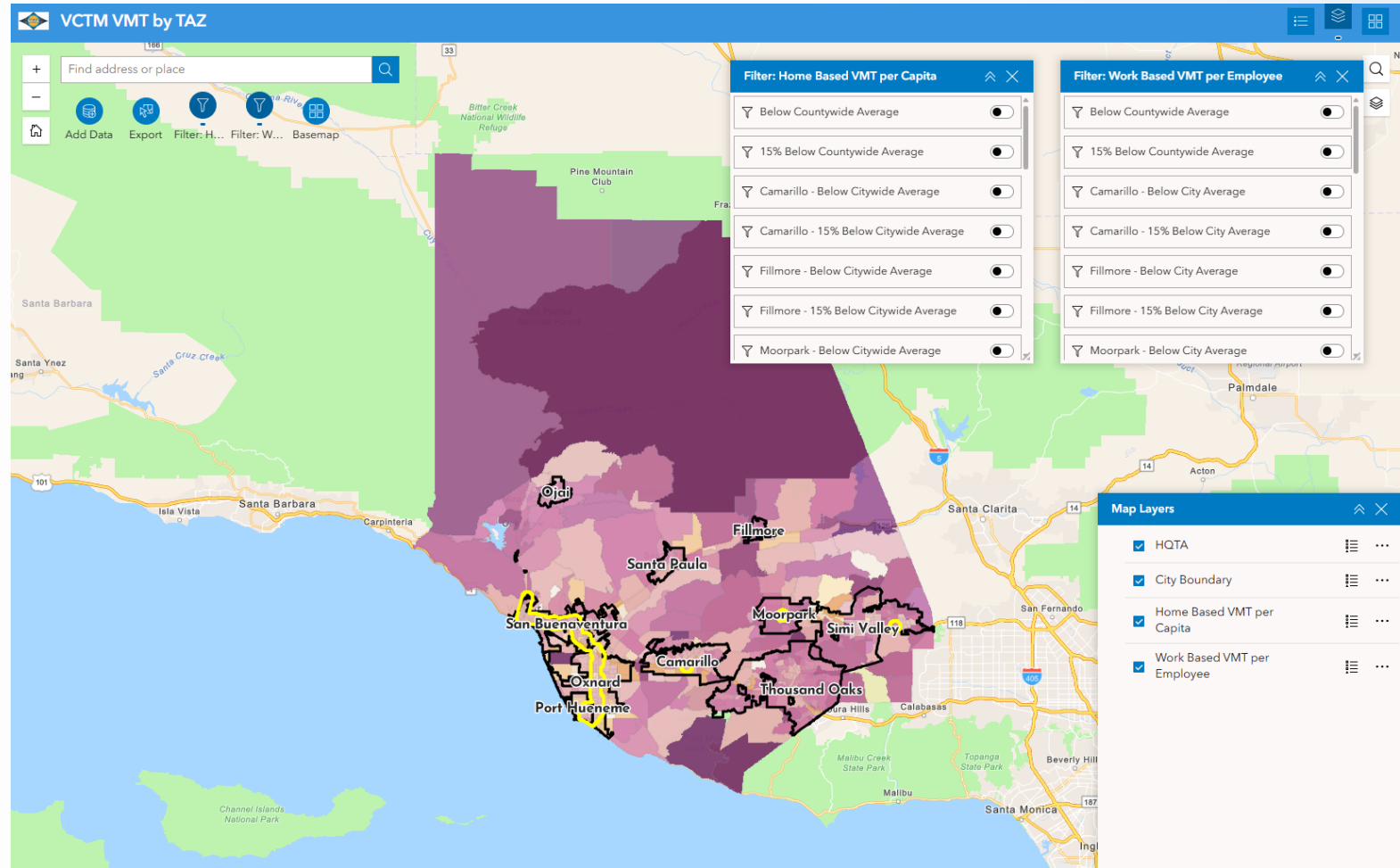


GIS Maps

VCTM SB743 VMT by TAZ

- Home-Based VMT per Capita
- Work-Based VMT per Employee
- Filter TAZs for SB 743 Screening Purposes:
 - Below County Average
 - 15% Below Countywide Average
 - Below Citywide Average
 - 15% Below Citywide Average
- Each TAZ includes:
 - Households, Population, Employment
 - Total Home-based VMT
 - Total Work-based VMT
 - Home-based VMT per Capita
 - Work-based VMT per Employee

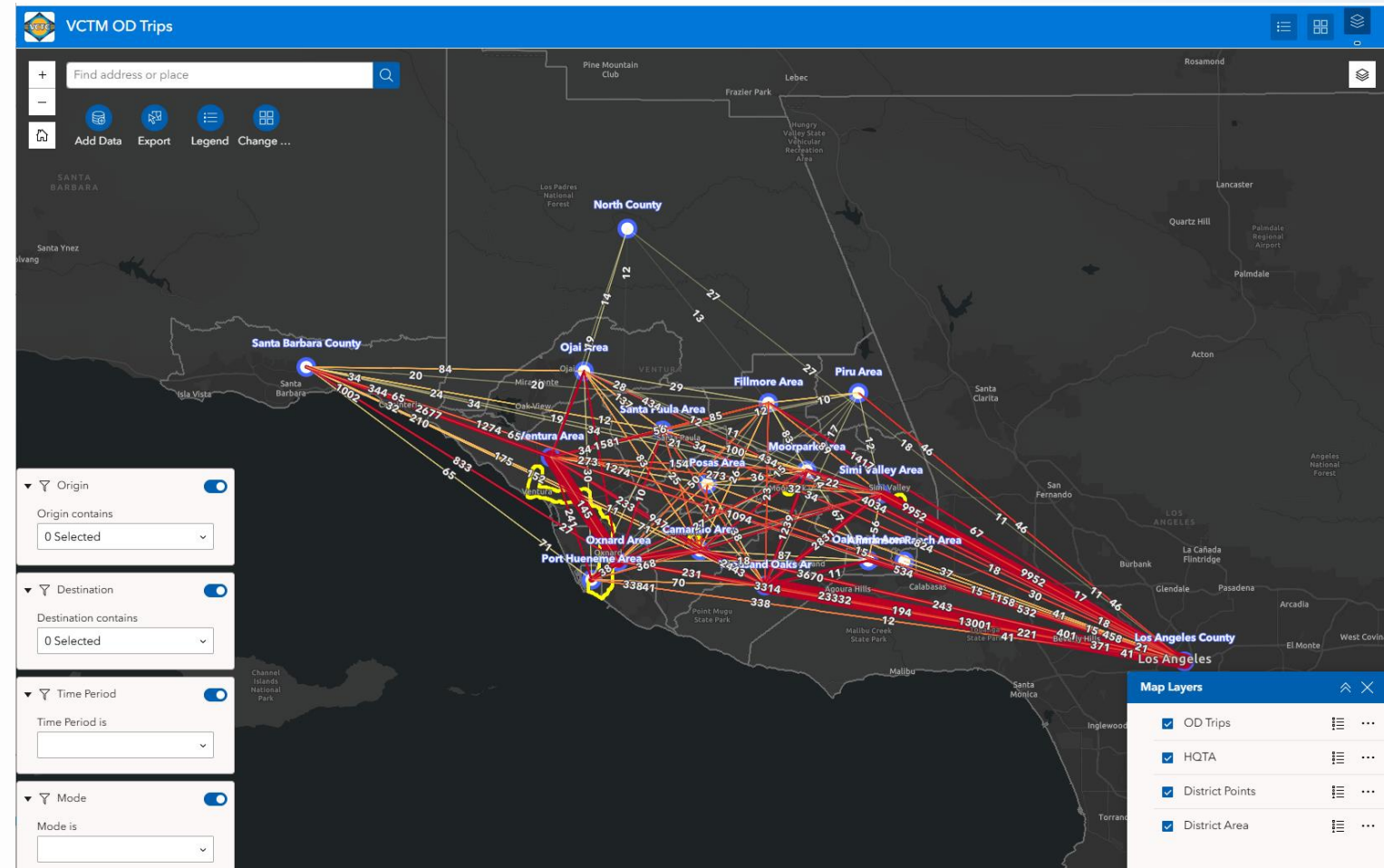
[Link to Map](#)



VCTM Origin-Destination (OD) Trips Map

- OD Trips between Planning Area/Districts
- Filter by:
 - Origin Planning Area/Districts
 - Destination Planning Area/Districts
 - Time Period: AM, PM, Daily
 - Travel Mode: SOV, HOV, Trucks, All modes

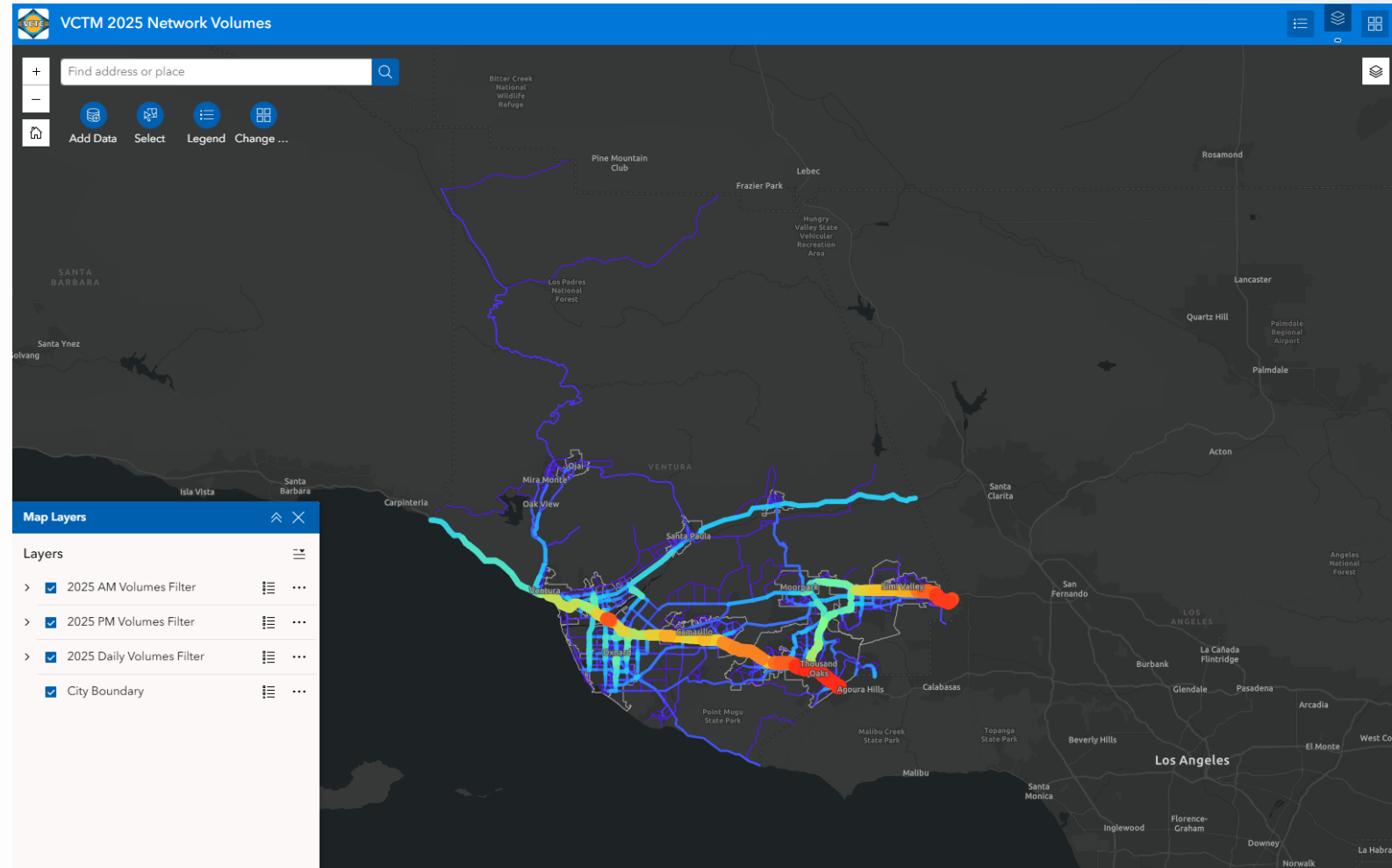
[Link to Map](#)



VCTM 2025 Network Volume

- VCTM Network link volumes (total)
- Filter:
 - AM, PM, Daily
 - Mode: SOV, HOV, Trucks, All modes

[Link to Map](#)



Training Agenda



Training Kickoff (March 4, 10:00 AM – noon)

- Demo of the updated VCTM model interface
- Highlights of new features and functionality



Video Training Series (Mid-March)

- Installing VCTM
- Running the standard model scenarios
- Changing model inputs
- Running scenario models (with or without feedback)
- VCTM Utilities
- VMT calculations with VCTM
- Example Scenario



Office Hours (Late March)

- One-on-One support

A blue-tinted background image showing a close-up of a computer chip with the letters 'AI' prominently displayed on its surface.

Thank You.

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