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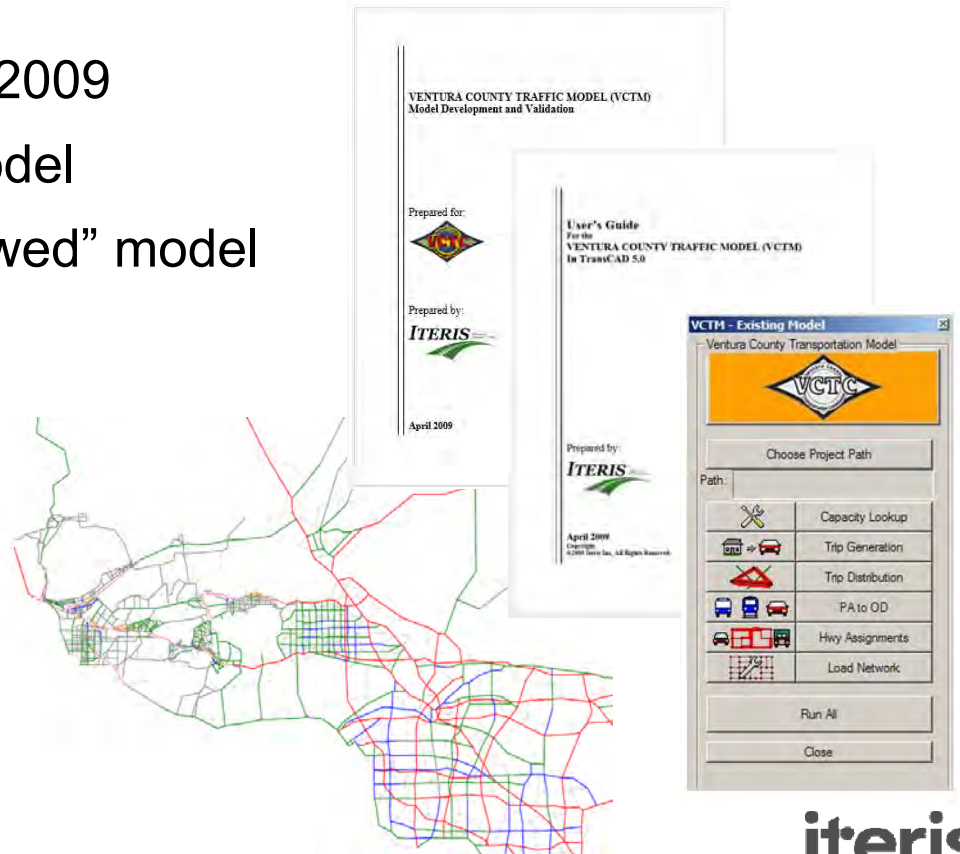


## Ventura County Traffic Model SCAG Modeling Task Force Meeting

May 24, 2017

# A Long History

- Previous Model completed in 2009
- Older generation of SCAG Model
- Based on older 1990s “windowed” model
- No Transit
- No Active Transportation
- Limited special generators
- Good TAZ size
- Useable parameters



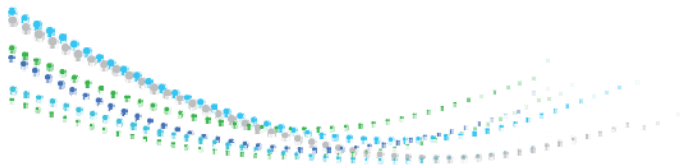
# Focus on the Goals

- Meet Key Application Needs
  - VCTC's Highway Program Development
  - County's Multi-Modal Planning
  - Ventura County's General Plan Update
  - SB 743 Needs
  - Compatibility with CMP
  - Impact Fee/Fair Share Analyses
  - Next Generation of Local Models
- Leverage Current Model's Features
- Consistency with SCAG



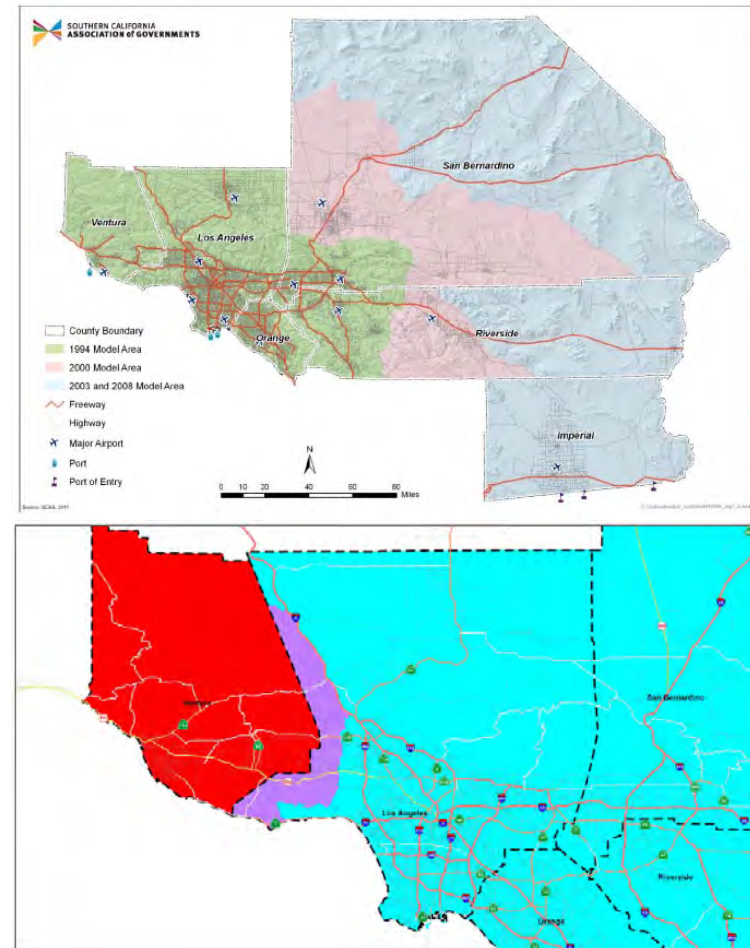
# Collaboration is the Key!

- Working Closely with SCAG Modeling Staff
- Collaboration with all local agencies through VCTC and TTAC
- Data exchange and review
- Centroid connection locations (link mid-points)
- Local street link additions during SMDT
- Running of model add-ins for initialization
- Potential uses of the model for other agencies



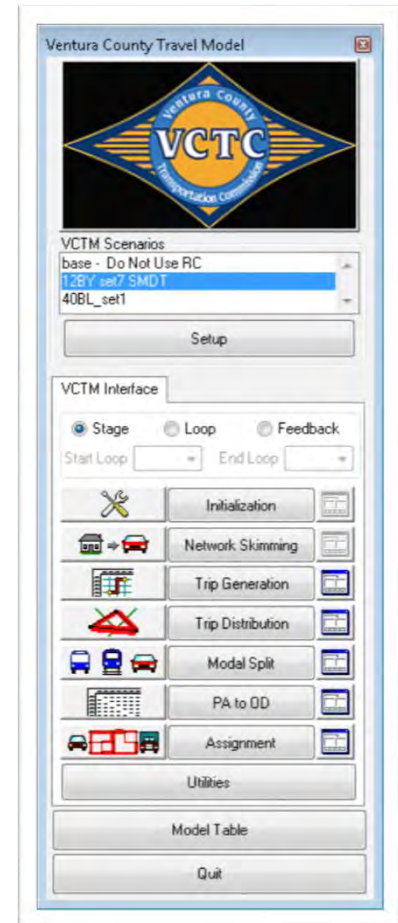
# What's in the Model?

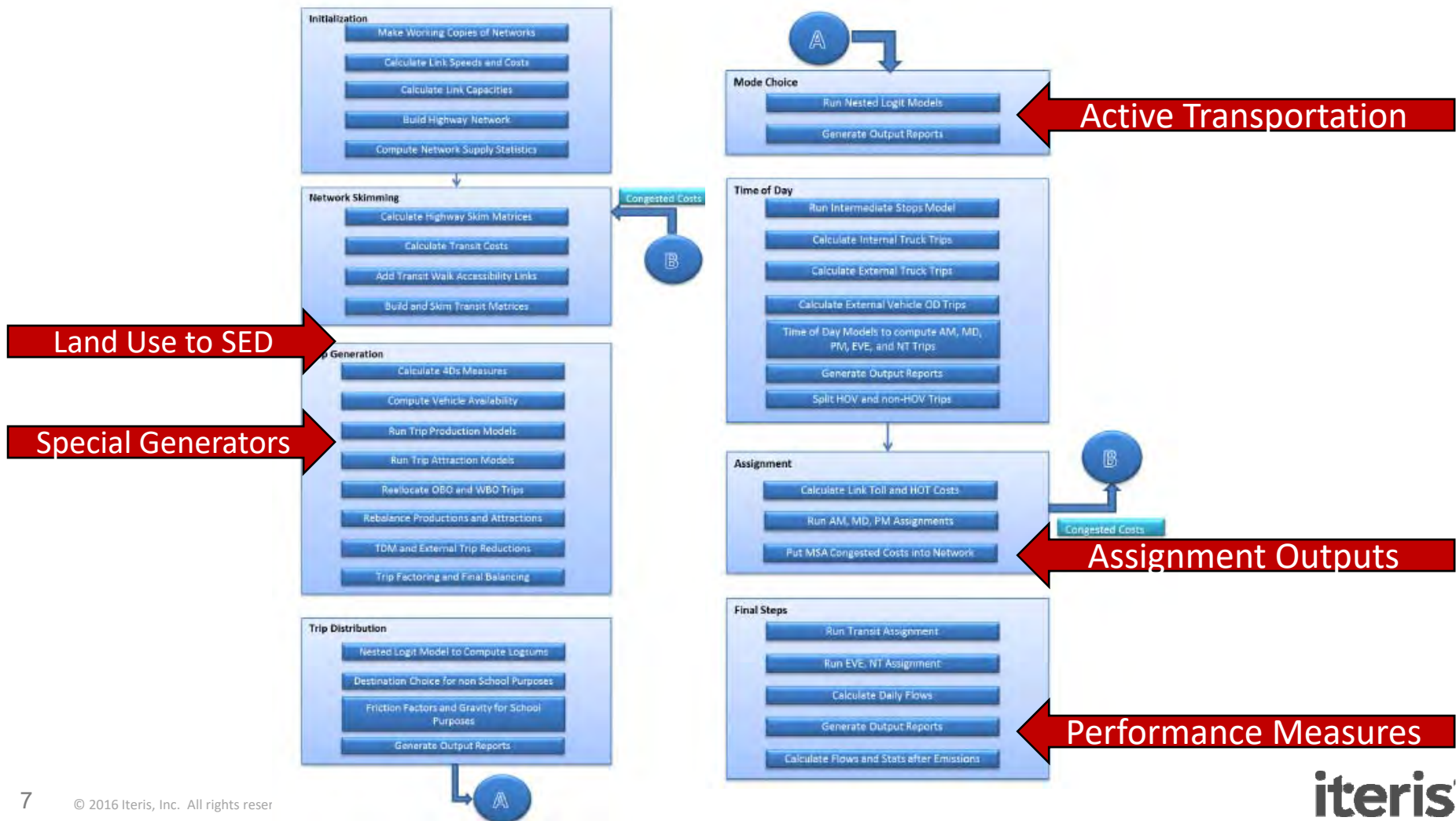
- **SCAG 2016 Regional Transportation Plan (RTP)/Sustainable Communities Solutions (SCS) Regional Travel Model**
  - Subarea Model Development Tool (SMDT)
  - Ventura County Subarea Model
- **SCAG**
  - 11,000+ zones – Used for trip distribution and mode choice
  - Full Model run time upwards of 7-10 days
- **VCTM**
  - 663 Ventura County zones
  - 1,021 total zones
  - Full Model run time 13-15 hours.



# Improvements Customized to Local Needs

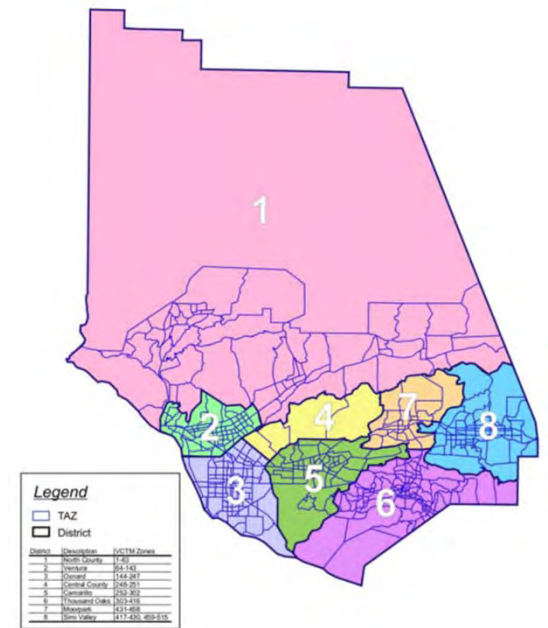
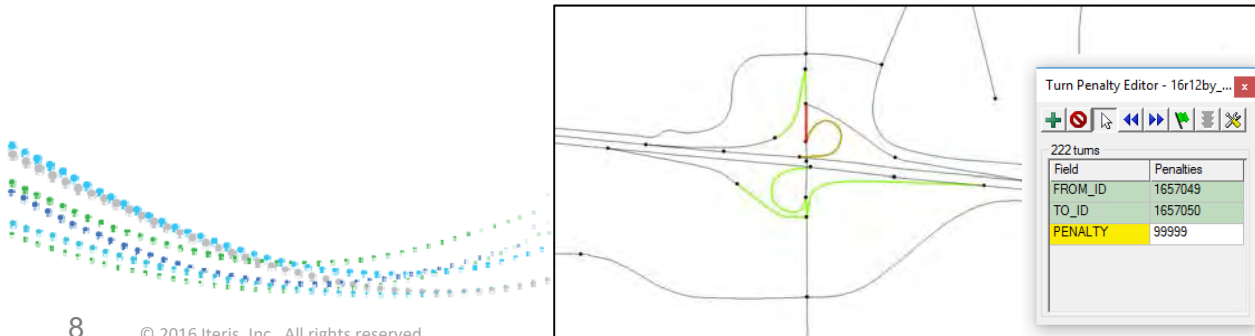
- Land Use to Socio-Economic Data Conversion
- Special Generator Trip Generation
- Enhanced Active Transportation in Mode Choice
  - Previous Model did not include a Mode Choice component
- Additional Assignment Output Capabilities
- Specialized and Standardized Performance Measure Outputs for VCTC and local needs





# Added Features for Practical Applications

- **Updated UI Format**
- **Turn Penalties & Turn Movements:** Turn penalties have been added into the model stream. Turn movements are now reported for flagged model nodes.
- **Specialized District & City-level Reporting**

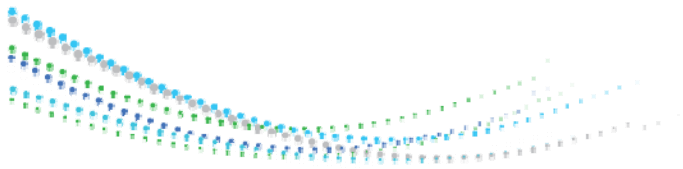
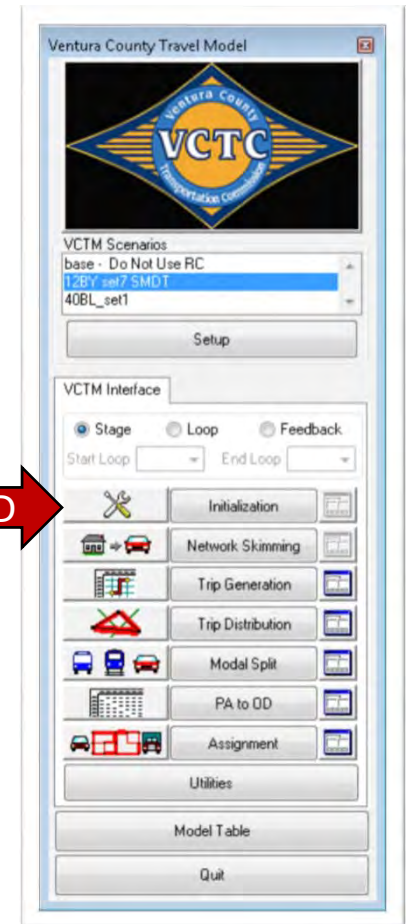




# Land Use Model

- Obtained raw land use for 2012 and 2040 from SCAG
  - Converted to Square Feet (SCAG Maintains Square Meters)
  - Adjusted some of inputs (water, undevelopable, etc.)
- Developed local factors for Land Use to SED
  - Based on Representative Zones
  - Developed for Total Employment & Total Households
- Currently Collecting Feedback from TTAC on Land Use Data

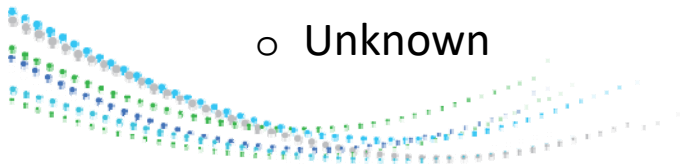
Land Use to SED



# Land Use Conversion Rates

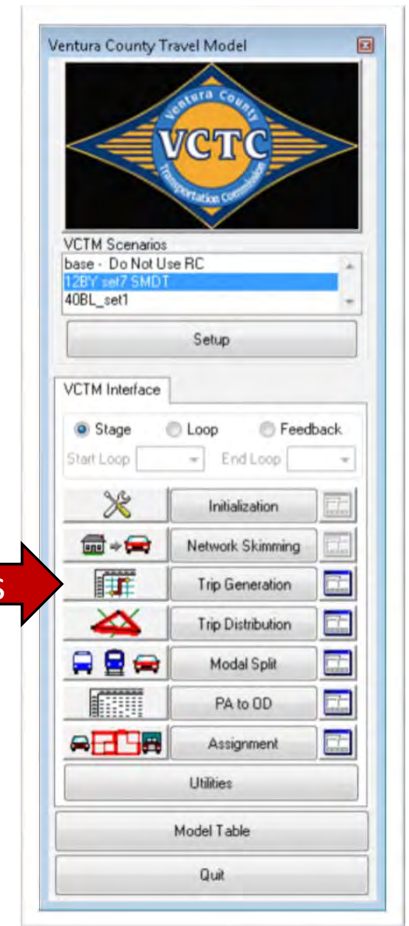
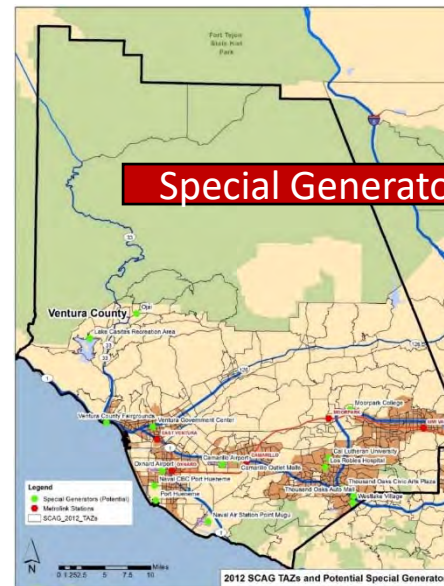
- Households are Raw Model Inputs
  - No land use inputs for Residential
  - Mixed Residential and Commercial Remains
- Employment
- No Employment Categories:
  - Vacant
  - Water
  - Undevelopable or Protected Land
  - Unknown

Land Use Code	2012 SCAG Existing Land Use Category	Validated Land Use to SED Rate
1200	General Commercial	2.57
1210	General Office Use	1.14
1220	Retail Stores and Commercial Services	2.00
1221	Regional Shopping Center	2.21
1230	Other Commercial	2.57
1233	Hotels and Motels	1.38
1240	Public Facilities	5.42
1250	Special Use Facilities	5.42
1260	Educational Institutions	7.67
1265	Colleges and Universities	20.67
1270	Military Installations	33.70
1300	Industrial	1.93
1310	Light Industrial	5.97
1311	Light Manufacturing, Assembly, and Industrial Services	1.89
1320	Heavy Industrial	7.82
1321	Heavy Manufacturing	24.54
1340	Wholesaling and Warehousing	4.41
1410	Transportation	50.33
1420	Communication Facilities	432.12
1430	Utility Facilities	432.12
1500	Mixed Commercial and Industrial	2.25
1600	Mixed Residential and Commercial	37.58
1800	Open Space and Recreation	6,434.73
2000	Agriculture	1,668.37
3000	Vacant	0.00
4000	Water	0.00
8888	Undevelopable or Protected Land	0.00
9999	Unknown	0.00



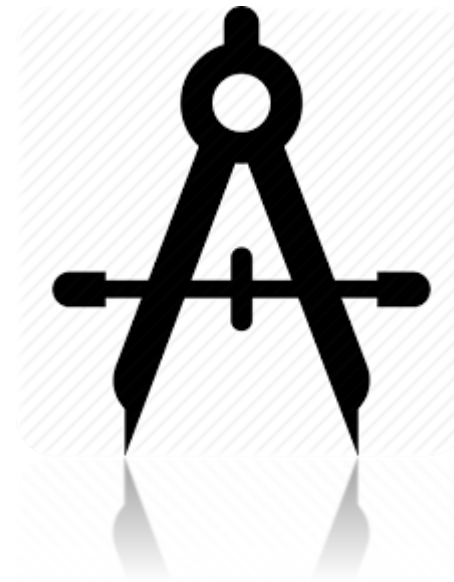
# Special Generators

- Facilities with Unique Trip Making Characteristics
  - Examples: Universities, Military Bases, Airports
  - Based on ITE Trip Rates or Special Local Surveys/Research
- Areas Under Review for Employment Development/Trip Generation
  - Ventura Oil Fields
  - Point Mugu
  - San Buenaventura Light Industrial
  - Port of Hueneme
  - Oxnard High Density Light Industrial
  - Los Robles Hospital



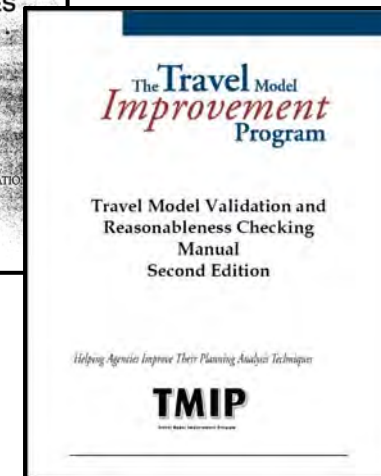
# Model Calibration

- What needs calibration?
  - Trip Generation Rates
  - Regional Boundaries (External Stations)
  - Special Generator Rates
  - Agriculture Trip Rates
  - Transit Trips
  - Mode Choice Coefficients
  - Trip Distribution
- Currently in process!



# Model Validation

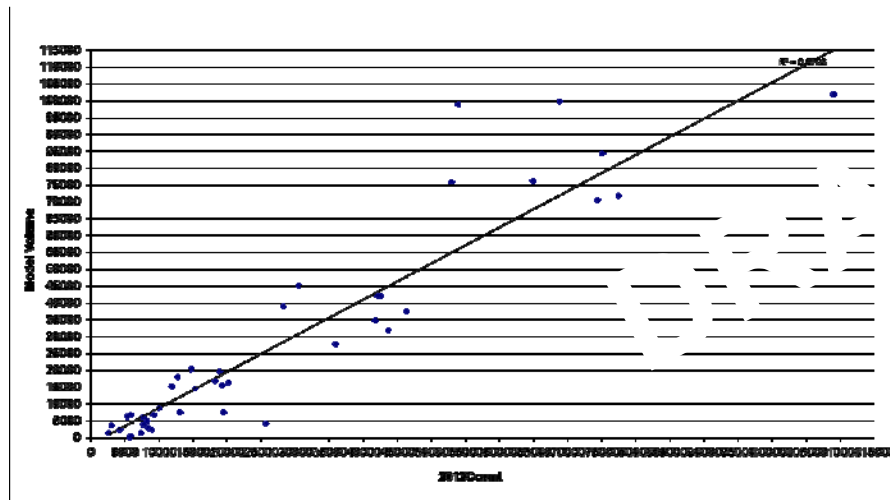
- Freeway and Arterial Street Networks
  - Count/Volume Comparison (FHWA & Caltrans)
    - Freeways +/- 7%
    - Major Arterials +/- 10%
    - Minor Arterials +/- 15%
  - Percent Root Mean Squared Error (%RMSE )
    - Caltrans = 40
    - FHWA = 30
  - Coefficient of Determination ( $R^2$ ) (FHWA & Caltrans)
    - 0.88
  - Caltrans Standard Deviation
    - >0.75



- ❖ *Caltrans Criteria from the Caltrans Travel Forecasting Guidelines, November 1992*
- ❖ *FHWA Criteria from the TMIP Model Validation and Reasonableness Checking Manual*

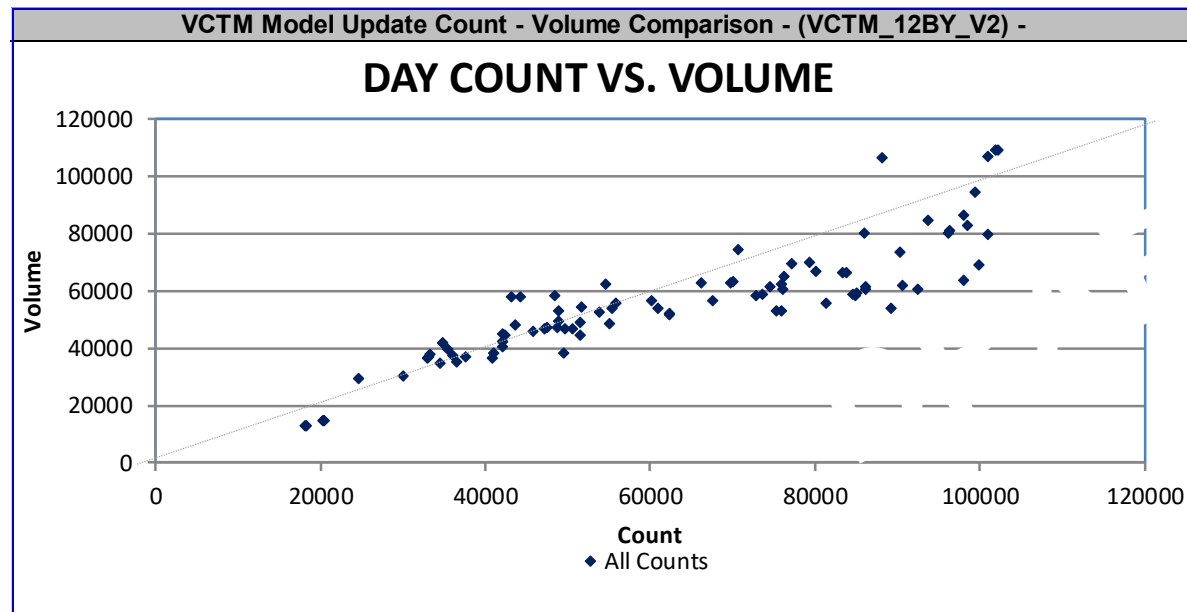
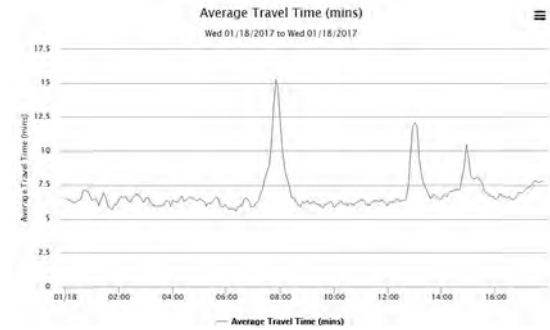
# Model Validation

- Screenlines



# Model Validation

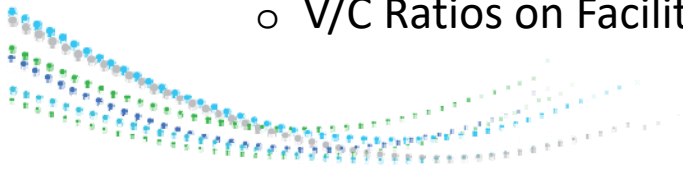
- Freeway and Arterial Street Networks
- Use of PeMS & Big Data Analytics



# Performance Measures

- Specialized Outputs for Various Stages of Model Run
- Compatibility with CMP
- Standardized Model Outputs For Each Model Loop
  - Network Outputs
  - Assignment Loading (Volumes and Speeds)
  - Screenline Outputs
  - Internal/External Origins and Destinations By District
  - Air Quality Outputs
  - Vehicle Miles Traveled/Vehicle Hours of Travel/Vehicle Hours of Delay (VMT/VHT/VHD)
  - V/C Ratios on Facilities

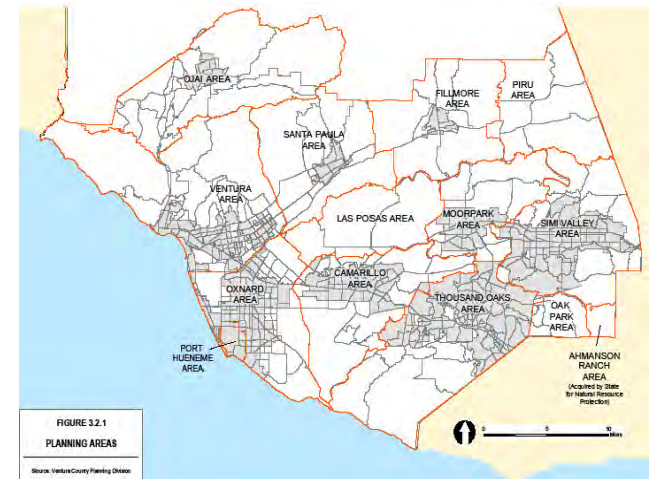
Performance Measures





# Next Steps

- Collect Feedback from TTAC regarding Land Use Data
- Complete Special Generator Determination and Inclusion into the Model
- Complete Model Calibration and Validation
- Finalize Standardized Performance Measures
- Modify and Refine Active Transportation Model
- Coordination with General Plan



# Thank You!

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