

Update on SCAG Modeling & Forecasting Projects

SCAG Modeling Task Force Meeting

September 27, 2017

SCAG Modeling & Forecasting Staff



Agenda

- Overview & Priority: Hsi-Hwa Hu
- Projects:
 - Model Update/Validation: Bayarmaa Aleksandr
 - SPM: Jung A Uhm
 - HDT: Mana Sangkapichai
 - Screenline counts: Kihong Kim
 - ICTM: Hui Deng
 - HTS: Yang Wang

Year 2016 Model Update and Validation for 2020 RTP/SCS

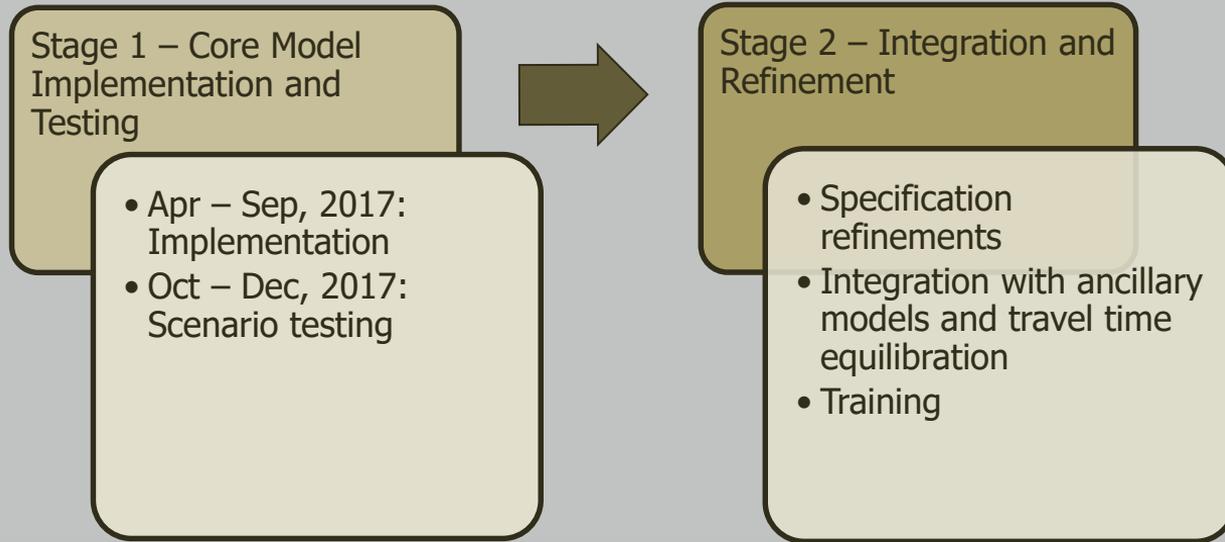
Bayarmaa Aleksandr



Objectives

- Update and validate SCAG ABM to the base year 2016 for the 2020 RTP/SCS
- The model will be used for the analysis of SCAG 2020 RTP/SCS
- Team
 - WSP: model framework review/update, model estimation, model implementation, model calibration/validation and sensitivity test
 - SCAG: supporting model estimation, data analyses, model validation and model testing

2-Stage Approach



Stage 1 Tasks & Deliverables

- Software and Scenario Tests:
 - Preliminary validation of all sub-models for 10% sample
 - Some 100% runs for debugging and verification
 - Preliminary 2016 validation
 - Test and analyze 2016 RTP/SCS scenarios

Stage 2 Tasks & Deliverables

- Further Model Refinement and Fine Tuning
 - Update/Enhance selected Sub-models
 - Software fine tuning
- SCAG ABM software and User's Guide
- Staff Training

Scenario Planning Model (SPM) Project Update

JungA Uhm



SCENARIO PLANNING MODEL



Introduction

- A web-based land use sketch planning tool for data management, scenario development and modeling
- Built on 'UrbanFootprint' modeling platform developed by Calthorpe Analytics
- Customized with collaboration with other major Metropolitan Planning Organizations (MPOs) in California
- Built from bottom-up with SPM Working Group



Objectives

- Building an improved linkage between local and regional planning
- Improving the region's ability to address complex issues and evolving challenges

Top Section Menu Pane
The Top section menu drop down allows the users to toggle between Project Info, Data Explorer, and Approval/Merge options.

Tools
These tools allow the user to navigate around the map, as well as select and identify map features.

Layers
This section displays layers that have been preloaded into the Scenario Planning Model and that can be turned on for display and activated for selection, editing, and queries. Functionality that allows a user to customize layer ordering and visibility, as well as import and export capability is also available.

Style Editor Window
Style Editor Window allows the user to modify the way a layer is displayed on the map.

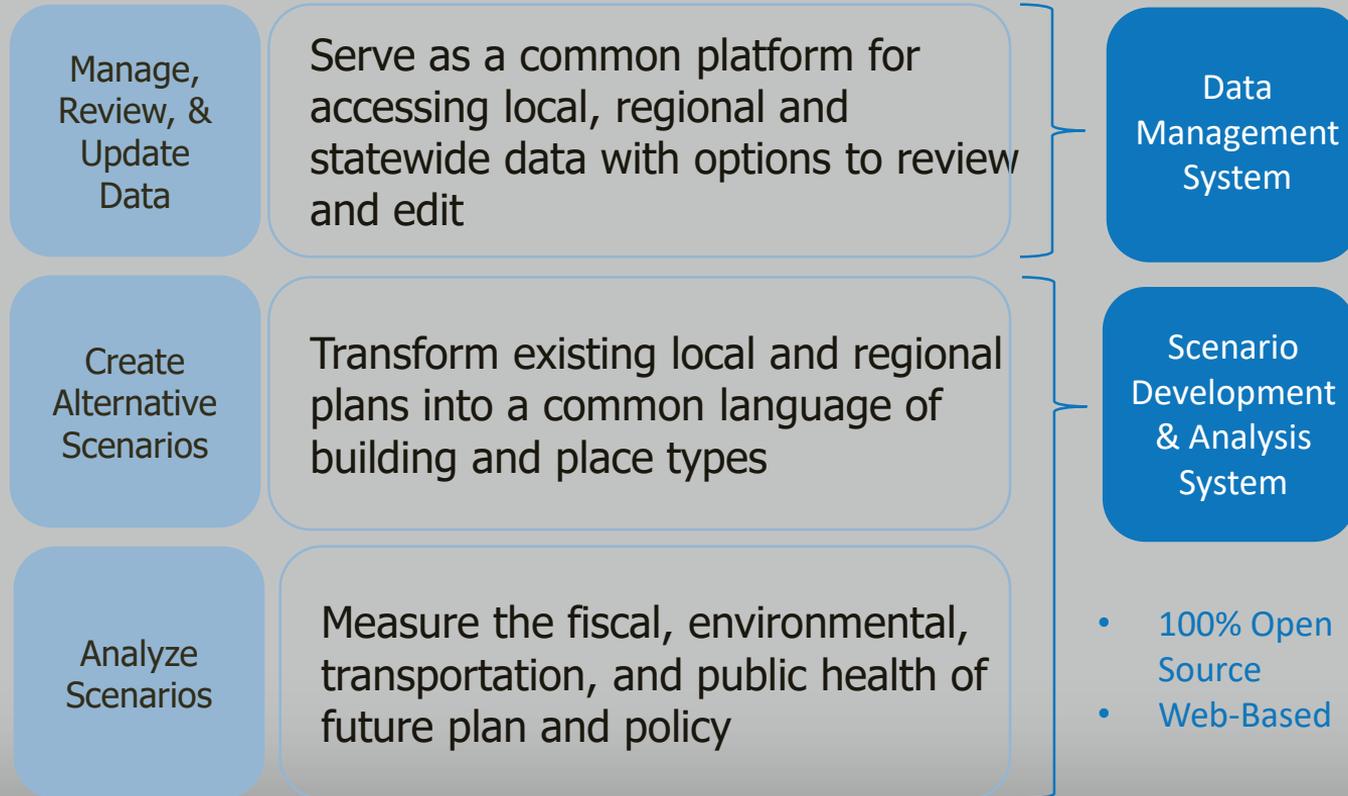
User Manager
The User Manager allows managers and admin users to manage users in their jurisdiction.

Charts
This area contains basic statistics for the jurisdiction (population, household, and employment).

Map Area
This is where all map layers are displayed and where the user makes selections and queries data with tools.

The interface also features three line charts at the top: 'Population By Year' (2016-2040), 'Households By Year' (2016-2040), and 'Employment By Year' (2016-2040). A central map displays 'SCAG Existing Land Use' with a legend for various land use types (e.g., Residential, Commercial, Industrial). A 'Style Editor Window' is open over the map, showing color and opacity settings for a selected layer.

Progress



Utilities and Timeline

Data Management System

- Local review/input of key planning datasets in the development of Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)
- Will be released to all local jurisdictions in November 2017

Scenario Development & Analysis System

- Development of a comprehensive existing condition and growth scenarios for plan horizon
- Analysis of the impacts of scenarios on water and energy use, public health, fiscal impacts, regional vehicle miles traveled (VMT) and others

Heavy Duty Truck Model Update

Mana Sangkapichai



Background

- Current model structure:
 - Internal HDT model:
 - Truck trips inside the SCAG region (II)
 - External HDT model:
 - Truck trips that passing through, coming into & leaving the SCAG region (IE, EI and EE)
 - Port HDT model:
 - Entering or exiting the POLA/POLB
- Last major updated: 2012

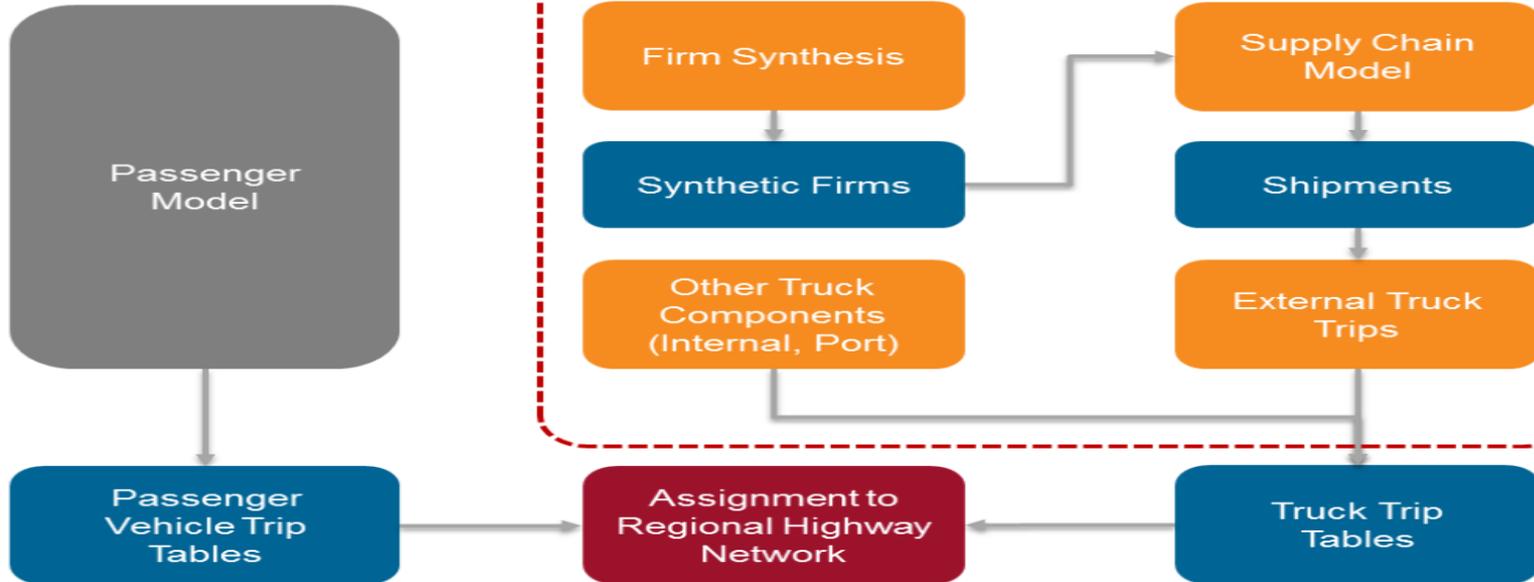
Objective & Expectation

- Focus on External HDT model only
- Supply Chain Model
 - Longer term model structure update
 - Further enhancements to the model forecasting sensitivity
 - Improve ability to understand and evaluate truck related policies, e.g. role of warehousing & distribution center or environmental impacts

Model Integration

SCAG Travel Demand Model

Freight Model



Proposed Schedule

- Model Development Plan: Oct 2017
- Model Estimation and Implementation: Dec 2017
- Model Calibration, Validation and Testing: Mar 2018
- Final Report and Workshop: Jun 2018

Screenline Counts

KiHong Kim



Objectives

- 24-hour traffic counts of freeways and non-freeways by time period and vehicle type on SCAG's all screenline and external cordon locations
 - Used for update and validation of SCAG's Regional Travel Demand Model for 2020 RTP/SCS
- ❖ Consultant Team
- Cambridge Systematics (Prime consultant)
 - National Data and Surveying Services (Sub-consultant)

Main Task: Field Traffic Counts Survey

- Non-Freeway Locations
 - Collect all 526 non-freeway locations (95% done as of 9/22)
 - Tube counters
 - 15-min time intervals and 13 FHWA vehicle classifications
- Freeway Locations
 - Collect only 27 out of 125 freeway locations
 - Combination of Wavetronix and video
 - 15-min time intervals and 4 vehicle classifications
 - For remaining freeway locations, rely on PeMS, TAMS and WIM
- Collect on Tue, Wed and Thu in Spring and Fall of 2017

Next Steps

- Complete and review field traffic counts
- Develop procedures for
 - Annual and seasonal adjustments
 - Data expansion to 15-min detail and 13 vehicle classifications
- Design database to house raw and processed data
- Integrate in SCAG's 2016 Base-Year network
- Present to MTF in March 2018

Imperial County Transportation Model (ICTM) Update

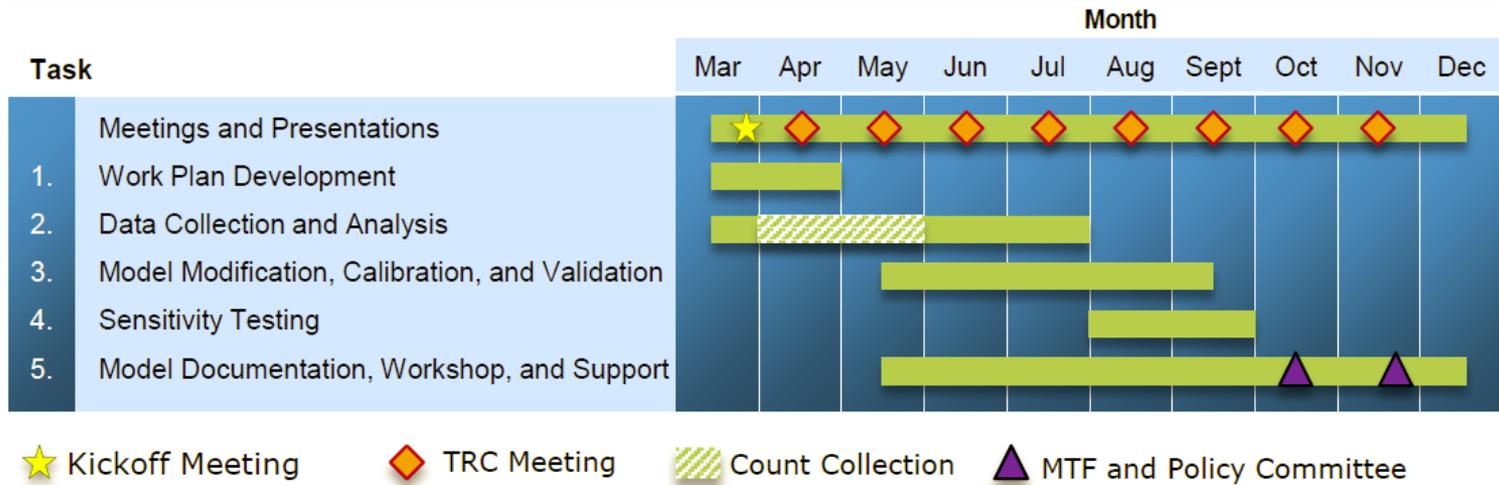
Hui Deng



ICTM: Background

- **Objective:** Develop and validate an Imperial County Transportation Model.
- **Consultant:** Cambridge Systematics, Inc.
- **Expectations:**
 - SCAG provides a draft version of ICTM using the Subregional Model Development Tool (SMDT); and Provides initial model network, socioeconomic data, and other needed data or information to Cambridge Systematics.

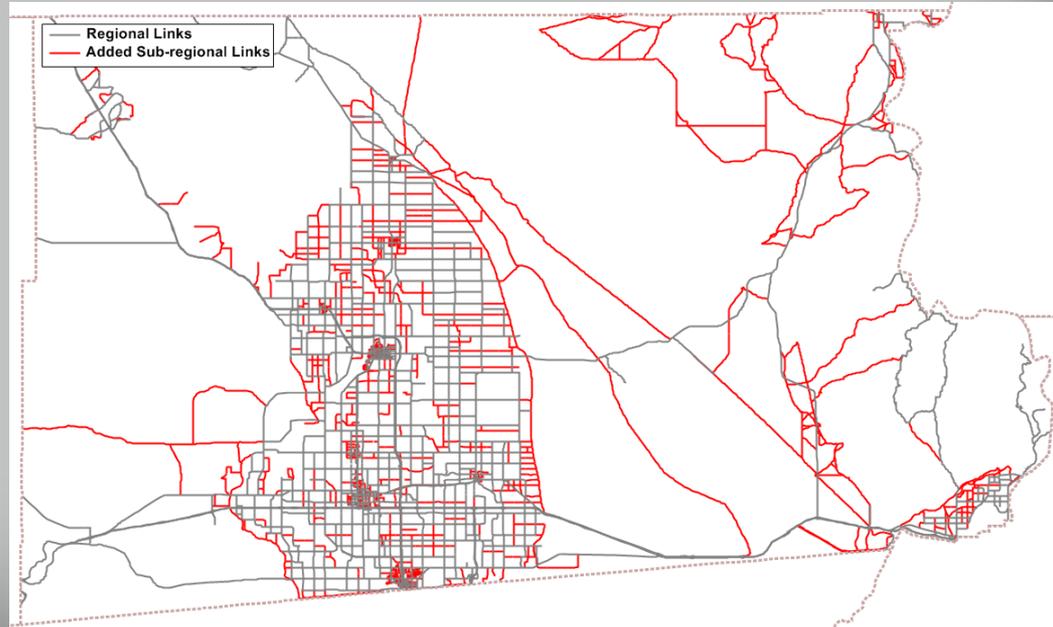
Project Schedule



Highway Network

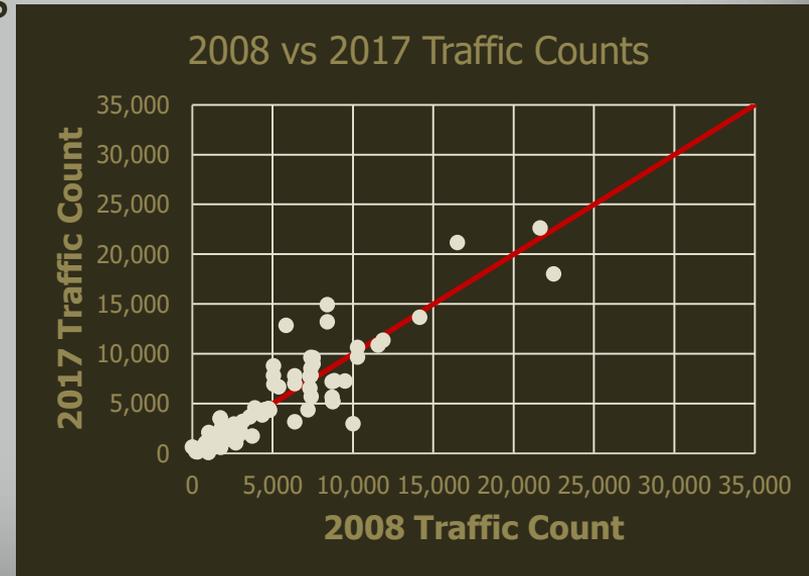
- Updated Highway Network based on:
 - New 2016 RTP regional network
 - Previous 2008 sub-regional network

Changes between 2008 and new 2014 base year



Observed Data

- Coordination between regional and subregional screenline counts
 - 65 Counts on Regional Screenlines
 - 99 Counts on local sub-region screenlines
- Comparison to Previous (2008) Counts
 - Many counts very similar
 - Overall 3.3% Growth from 2008 to 2017
- Household Survey
 - **347** households in the county
 - About **5,500** trip-ends in the county



Current Activity

- Stepwise Calibration

Trip
Generation

- Trips by District
- Trips per Pop, HH, Employee

Trip
Distribution

- Trip Length Distributions
- District-to-District Patterns

Mode
Choice

- Transit Share
- Route Group Boardings

Assignment

- Time of Day Factors
- Volume / Count Comparisons

California MPO Cooperative Household Travel Survey

Yang Wang



Household Travel Survey

- **Background:** SCAG is currently working with other three MPOs in California for the next household travel survey.
 - SCAG, MTC, SANDAG, SACOG
- **Objective:** Four MPOs cooperate survey development phase; share methodology on survey design, sampling, and data collection.
- **Status:** Currently SACOG; SCAG 2010-2011.

Thank You

