# SCAG Transportation Models Update

## 01/28/2015
## SCAG Modeling Task Force

Modeling and Forecasting

Hsi-Hwa Hu

SOUTHERN CALIFORNIA
**ASSOCIATION of GOVERNMENTS**

50 YEARS

# Outline

➢ **SCAG Trip-Based Model Updates**

➢ **SCAG Activity-Based Model Updates**

➢ **Software & Hardware**

➢ **SCAG ABM Framework**

# TBM Updates since 2012RTP/SCS

➤ **Updated various model modules including:**

➤ Auto ownership model

➤ Trip production model

➤ Heavy-Duty Truck Model (particularly warehouse component)

➤ Parking cost model

# TBM Updates (continued)

➢ **Updated various model inputs including:**

    ➢ SED (with new income category)

    ➢ Highway and transit networks

    ➢ Trip-in-motion factors

# TBM Updates (continued)

- **Updated various model parameters including:**
  - Auto operating cost, HDT cost, Value of time
  - All cost-related variables and parameters updated from $1999 to $2011
- **Recalibrated destination choice model and mode choice model**
- **Validated to year 2012 conditions**

# SCAG ABM Updates

➤ **Completed Model Estimations:**
  ➤ For 40+ sub-models
➤ **Conducted 1ˢᵗ Peer Review Panel on June 26ᵗʰ 2014:**
  ➤ Overall the comments were positive
  ➤ Some concerns about complexity of the model

| Name | Type | |
|------|------|---|
| Eric Pihl | Federal | Panel member |
| Chaushie Chu | SCAG Region | Panel member |
| Guy Rousseau | MPO | Panel member |
| David Ory | MPO | Panel member |
| Cynthia Chen | University | Panel member |
| Eric Miller* | University | Panel member |
| Keith Lawton | Consultant | Panel member |
| Tom Rossi | Consultant | Panel member |
| Ken Cervenka | Federal | Advisor |

# SCAG ABM Assessment

- SCAG staff initiated an internal review procedure of the SCAG ABM Development.

- Each sub-model has been reviewed and analyzed by SCAG staff.

- Based on our data analysis, about 70% of sub-models have been enhanced by SCAG staff.
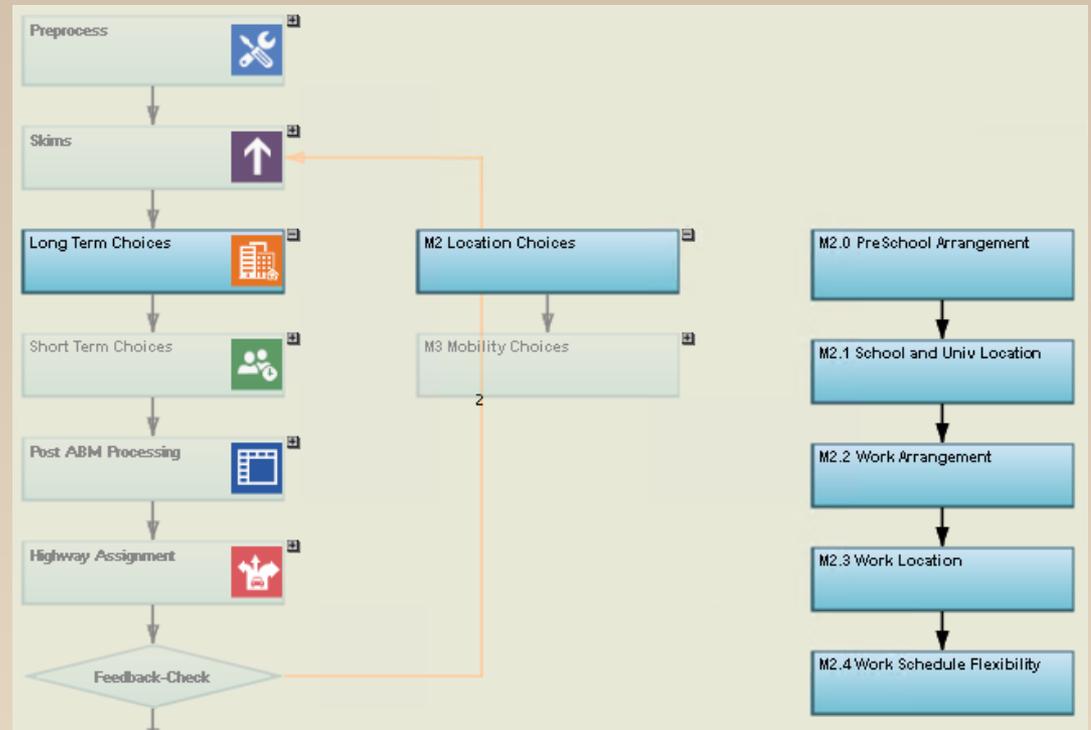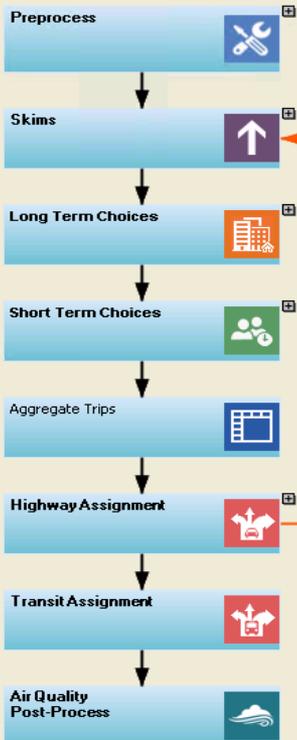
# SCAG ABM Software & Hardware

- SCAG ABM is built in new TransCAD 7.0
- The software has been delivered to SCAG.
- Current running time is 10 days - with 5 loops.

# SCAG ABM Software & Hardware



UI Snapshot

# SCAG ABM Software & Hardware

## Model Inputs & Parameters

# SCAG ABM Software & Hardware

## Model Server

| | |
|---|---|
| **CPU** | Intel Xeon E5-4627 v2, 3.3Ghz 8-Core (effective: 32x3.3Ghz cores) |
| **Memory** | 480 GB |
| **Hard Drive** | 2TB SSD (2x1TB RAID1) |
| **OS** | Windows Server 2012 R2 |

# SCAG ABM Framework

**Population Synthesis Model**

**Long-Term Choice Models**

**Mobility Choice Models**

**Short-Term Choice Models**

*Activity Generation Allocation*

*Joint Activity Scheduling*

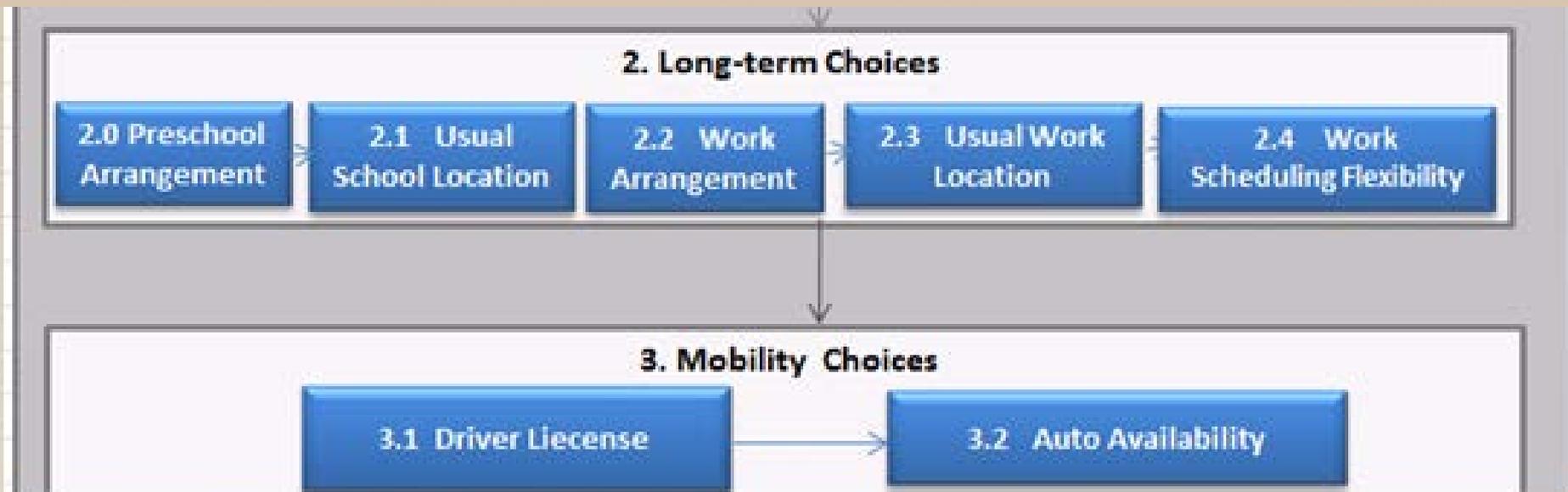*Tour & Trip Scheduling*

**Assignment – same as TBM**
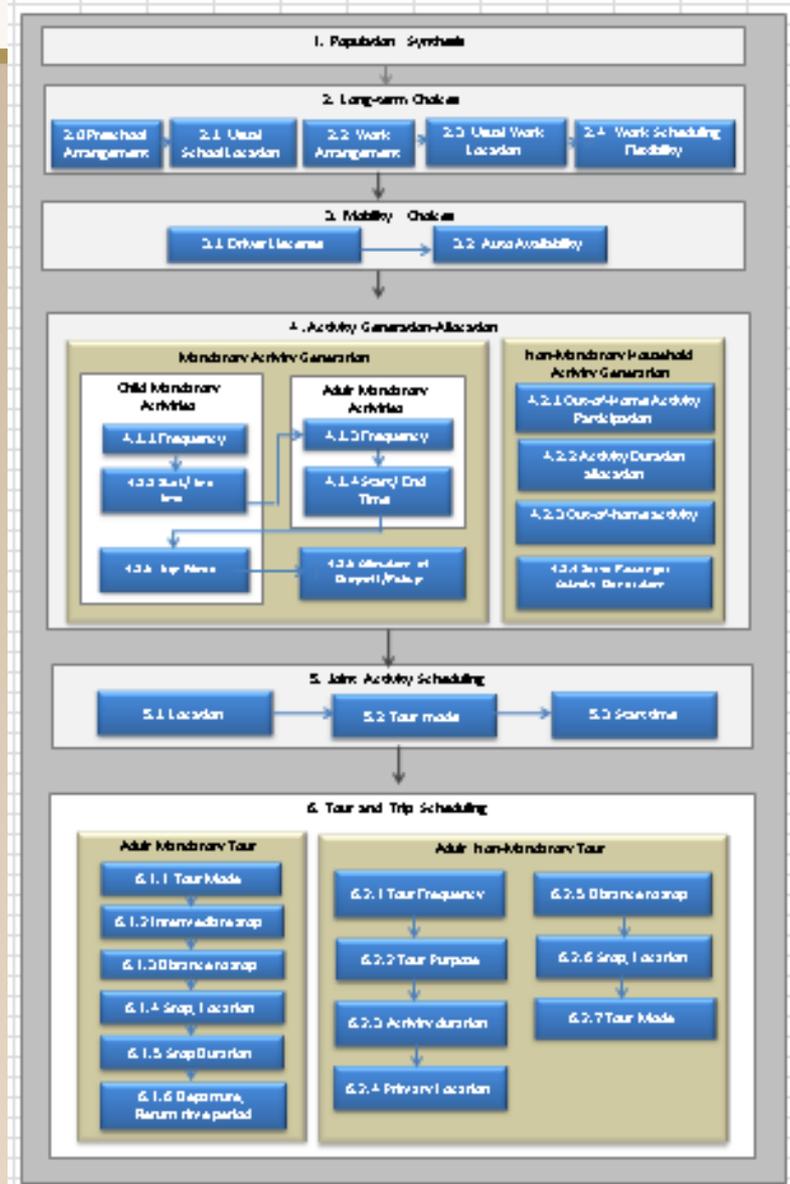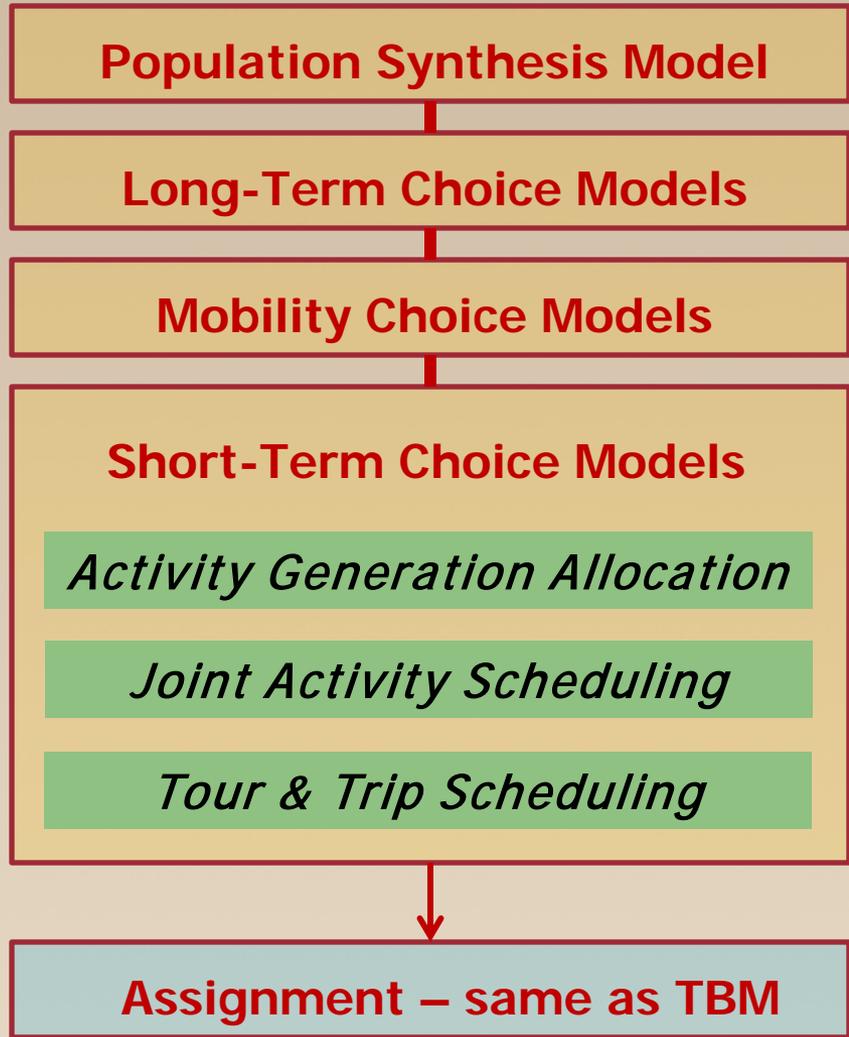
# Population Synthesis

- Creates basic socioeconomic data for each individual and household.
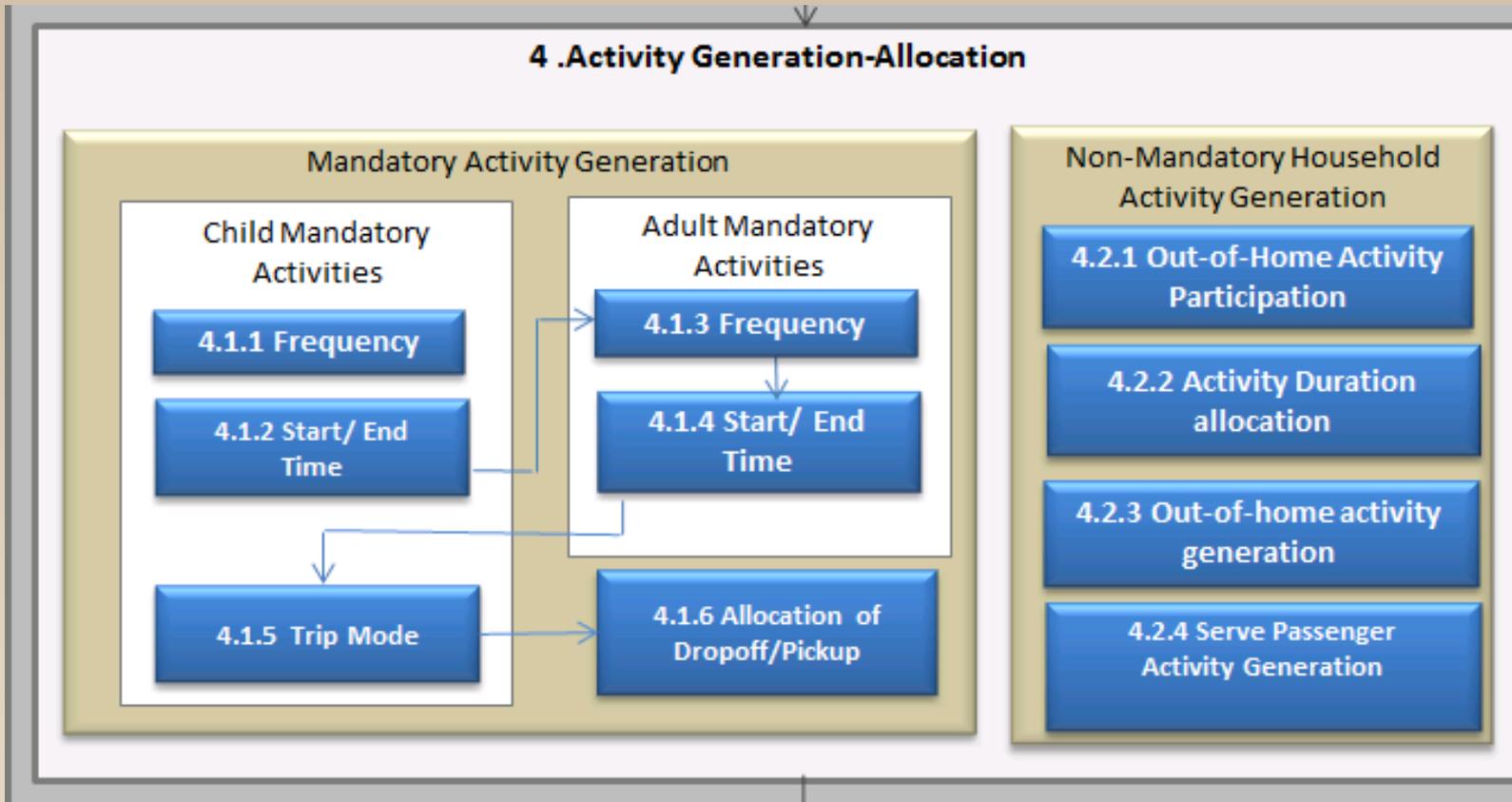- PopSyn model is operated by Forecasting staff.

# Long Term and Mobility Choices

- Location choice models for students and workers
- Work arrangement and work flexibility models
- Mobility choice models

# Activity Generation-Allocation

- Activity generation, frequency, start time/end time, and duration.

# Joint Activity Scheduling

- Household members participate in same activity
  - Joint activity: location, mode, start time

# Tour and Trip Scheduling

- Individual Activity: mode, location, travel start/arrival time



### 6. Tour and Trip Scheduling

**Adult Mandatory Tour**
- 6.1.1 Tour Mode
- 6.1.2 Intermediate stop
- 6.1.3 Distance to stop
- 6.1.4 Stop, Location
- 6.1.5 Stop Duration
- 6.1.6 Departure,

**Adult Non-Mandatory Tour**
- 6.2.1 Tour Frequency
- 6.2.2 Tour Purpose
- 6.2.3 Activity duration
- 6.2.4 Primary Location
- 6.2.5 Distance to stop
- 6.2.6 Stop, Location
- 6.2.7 Tour Mode

# Thank You

Hsi-Hwa Hu
hu@scag.ca.gov