

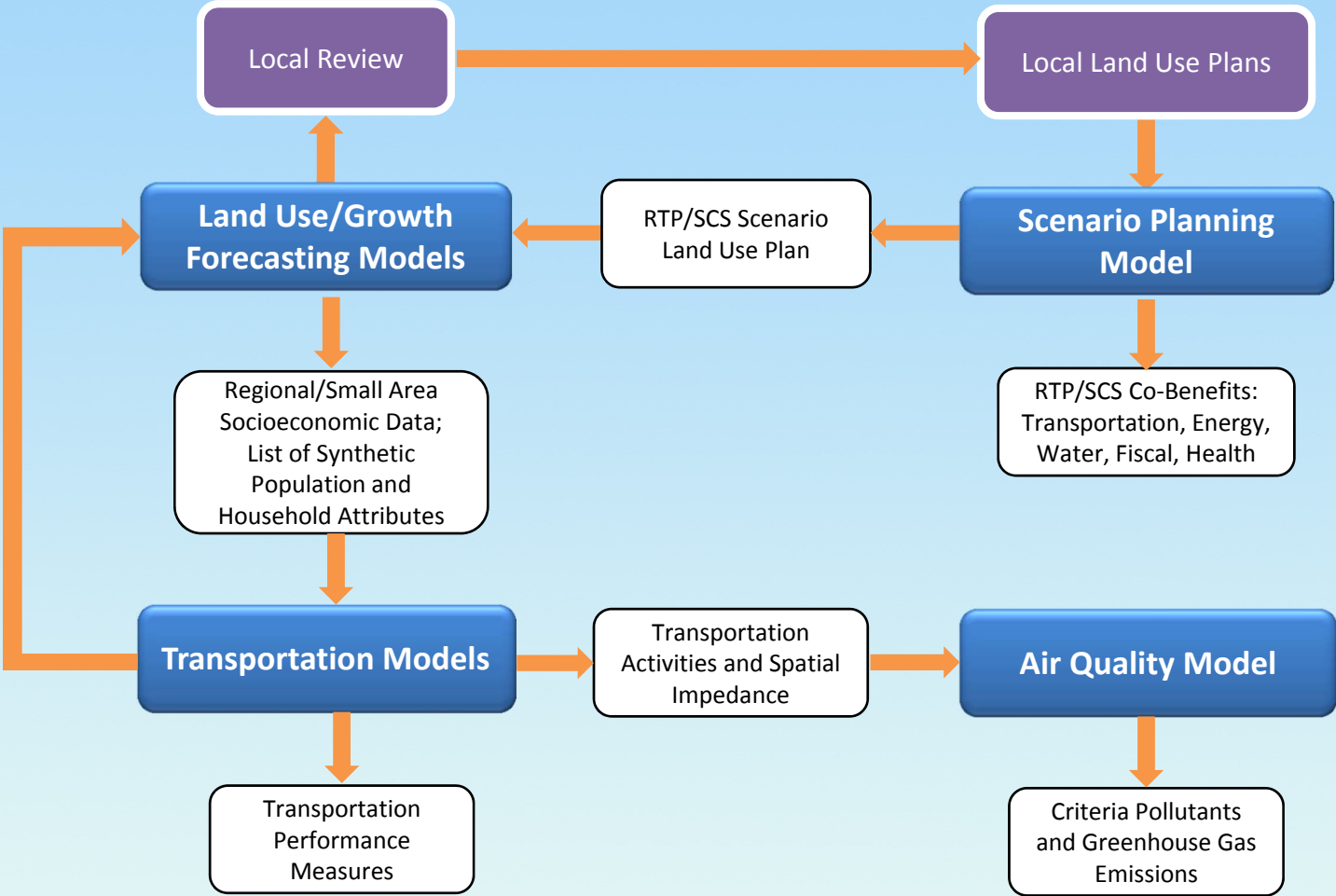
Modeling and Forecasting Programs

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Modeling Task Force
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SCAG Integrated Modeling & Forecasting Framework



SCAG SPM: A Web Based Land Use Planning Collaboration Tool

Irvine SCAG UrbanFootprint Scenario Planning Model

Select features from Existing Land Use Parcels 45 Query or Selection Results

Where: Join: Results Limited to Selected Area Show Selection Shape on Map Zoom map to selection

id	comment	updated	approval_status	apn	scaguid12	city	county
645464		2014-08-26T18:11:16	null	451-071-26	590462559	Irvine	Orange
645483		2014-08-26T18:11:16	null	451-071-49	590462578	Irvine	Orange
645472		2014-08-26T18:11:16	null	451-071-36	590462567	Irvine	Orange
645473		2014-08-26T18:11:16	null	451-071-37	590462568	Irvine	Orange
645462		2014-08-26T18:11:16	null	451-071-24	590462557	Irvine	Orange

Layers for Draft

- Background Imagery
 - Google map
 - Google aerial
 - Google labels
 - Open Street Map
- Draft
 - Existing Land Use Parcels
 - Tier2 Taz
 - Jurisdiction Boundary
 - Sphere Of Influence
 - Scenario Planning Zones
 - General Plan Parcels
- Orange County
 - Farmland
 - High Quality Transit Corridors
 - Cpad Holdings
 - Census Tracts
 - Habitat Conservation Areas
 - Endangered Species
 - County Boundary
 - Transit Priority Areas
 - Flood Zones
 - High Quality Transit Areas
 - Sub Region
 - Major Transit Stops

Search Map

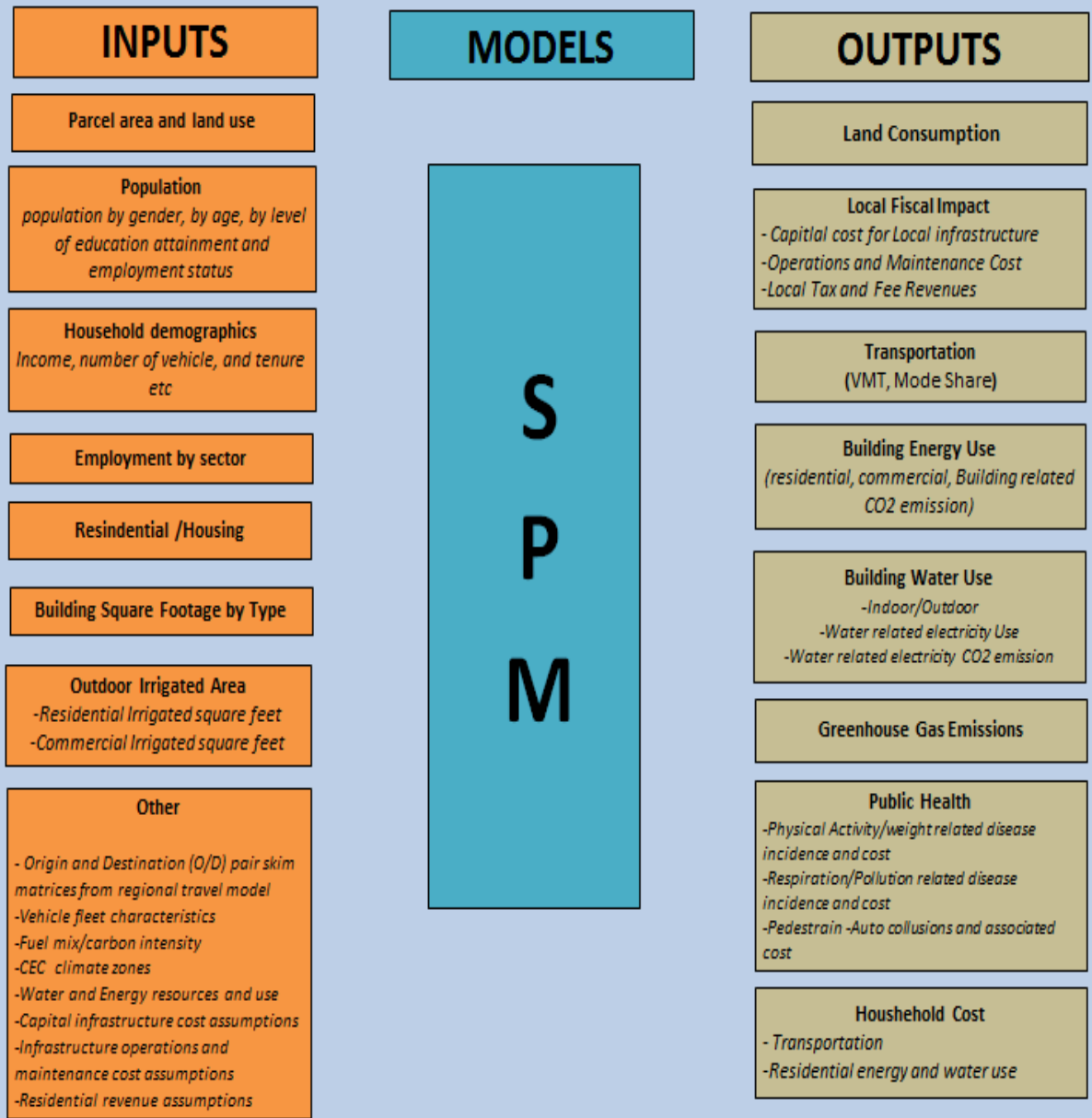
Layer: Existing Land Use Parcels
User: Orange_director Selected Records: 45

Existing Land Use 2012
1110: Single Family Residential

Comments

UrbanFootprint rev. 2014.9.12 © 2014 Calthorpe Associates

SCAG Scenario Planning Model



Expert Recommendation

Regional / County Projection Method

- Shift-Share Model
- Input-Output Model
- Base Employment Model

Employment Projection

Benchmark DOF

- Cohort-Component Model
- Gross-Migration Model

Population / Demographic Projection

- Headship Rate Model

Household Projection

- Land Use Scenario
- Existing Land Use
- General Plan / Zoning
- EDD City, ES202
- InfoGroup Business
- IGR Projects

Dynamic Jurisdictional / Small Area Allocation Model

- Excess Capacity Analysis

- Trend Extrapolation
- Household Size, GQ
- Shift Share

Household Allocation
Population Allocation
Employment Allocation

Demographic Consistency QC

Local Review

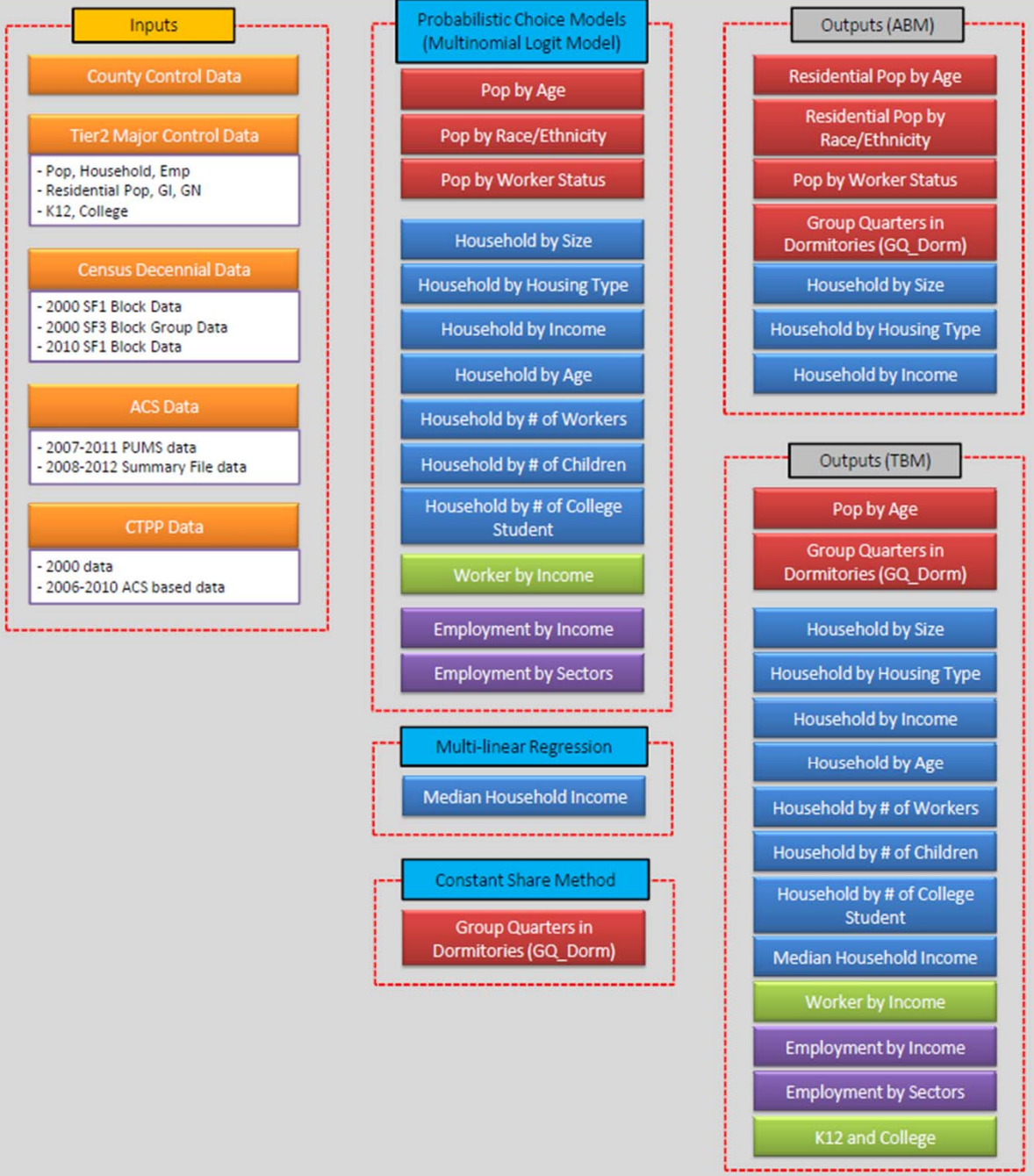
Small Area SED

Scenario Land Use Plan

Socioeconomic Growth Forecasting

Socioeconomic Data

Small Area SED Allocation Model System



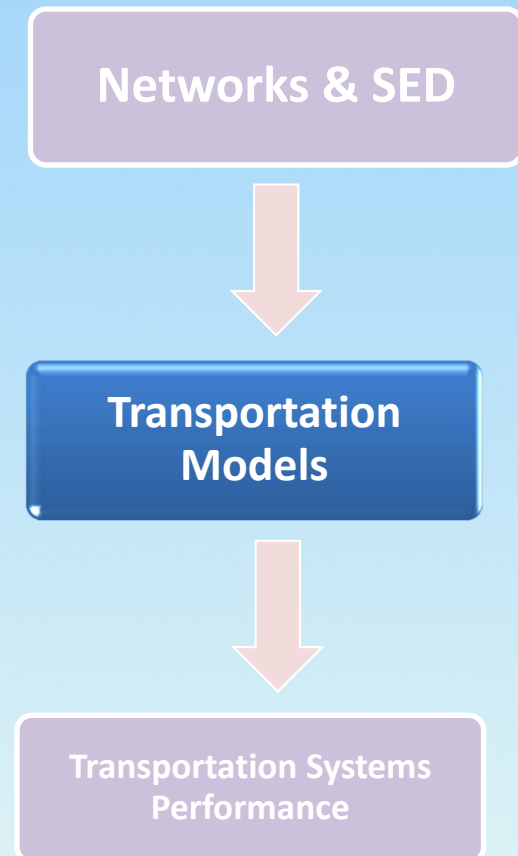
Primary Variables
Census data

Small Area
Forecasting Models

Secondary
Variables SED

SCAG Transportation Models

Activity Based Model	• 2016 RTP/SCS
Trip Based Model	• 2012 RTP/SCS
Sub-regional Models	• Modeling Tools for Locals
Heavy-Duty Truck Model	• Truck and Goods Movements
Dynamic Traffic Assignment	• Network Simulation



Transportation Model System

INPUTS

SED

1. Regional/Small area Socio-Economic control data
2. Public Use Micro-Data household attributes
3. Public Use Micro-Data person

Land Use, built environment and

Business hour profile

Accessibility

- By mode (auto, transit and non-motorized)
- By activity type (mandatory and non-mandatory)
- By household car sufficiency level (0 car, suff and insuff car)
- By hour (time=1-24)

Zone Equivalence file

Parking cost data

Highway skim

- Network
- Capacity table
- Speed table
- Volume delay function

Transit skim

- Network
- Fare Matrix
- Link fares
- Mode table

Truck data

- Truck grade factors
- Truck Congestion factor
- Truck composite factor

External trips

- Port trips
- Gordon trips

Models

Population Synthesis

Long term and Mobility Choices

Activity Generation and Tour/Trip Scheduling

Sub-regional Model

Heavy-Duty Truck Model

Highway and transit assignments

Outputs

Synthetic household and person attributes

Work and School location

Driver license

Number of household vehicles

Number of activities by purpose

Number of tours by mode and by purpose

Number of trips by mode and by purpose

Number of stops by purpose

Number of truck and external vehicle trips

Highway Volumes and Speed

Other data

- Screenline count
- HPMS data
- Transit level of service data
- Parameters

Networks & SED

Transportation Models

Transportation Systems Performance

EMFAC Model

Air Quality Model

INPUTS

1. Base Input

1. Area
2. Calendar Year
3. Season

2. Vehicle Miles of Travel (VMT) Profile (for each Base Input category)

1. Vehicle Category and Technical
2. Daily VMT by vehicle category

3. Speed profile (for each Base Input and vehicle category)

1. Speed bin
2. Speed distribution

4. Emission rates

5. Vehicle Fleet Compositions

MODELS

EMFAC2011 LDA

EMFAC2011 HD

EMFAC2011 SG

OUTPUTS

Criteria Pollutants Emissions

(tons/average weekday)

1. Total organic gases (TOG) emissions
2. Reactive organic gases (ROG) emissions
3. Carbon monoxide (CO) Emissions
4. Nitrogen oxides (NOx) emissions
5. Particulate matter 10 microns or less in diameter (PM10) emissions
6. Particulate matter 2.5 microns or less in diameter (PM2.5) emissions
7. Sulfur oxides (Sox) emissions

Greenhouse Gas Emissions

(tons/average weekday)

1. Carbon dioxide (CO2) emissions
2. Carbon dioxide (CO2) emissions (including Pavley I and LCFS adjustments)

Fuel Consumptions

(1,000 gallons/average weekday)

1. Gasoline Consumptions
2. Diesel consumptions

Transportation Activity
Data

Air Quality Models

Emissions

Questions?

For more information, please contact

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