

# UPlan, iPlace3s, Statewide Tools Development, CalSIIM (PECAS), and CSTDM

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# UPlan and Transportation Models

## A Brief Description

- A Simple, Rule-based Land Use Model
- Purpose:
  - Land use scenario modeling
  - Land use disaggregation
- How it works:
  - Simple demographics
  - User defined rules and roles for spatial data
  - “General Plans”, masks, attractors, discouragers
- What it isn't:
  - A fully integrated land use/transportation model

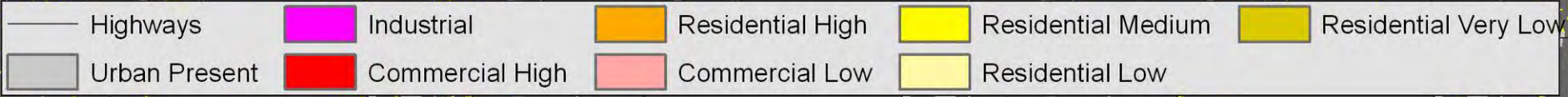
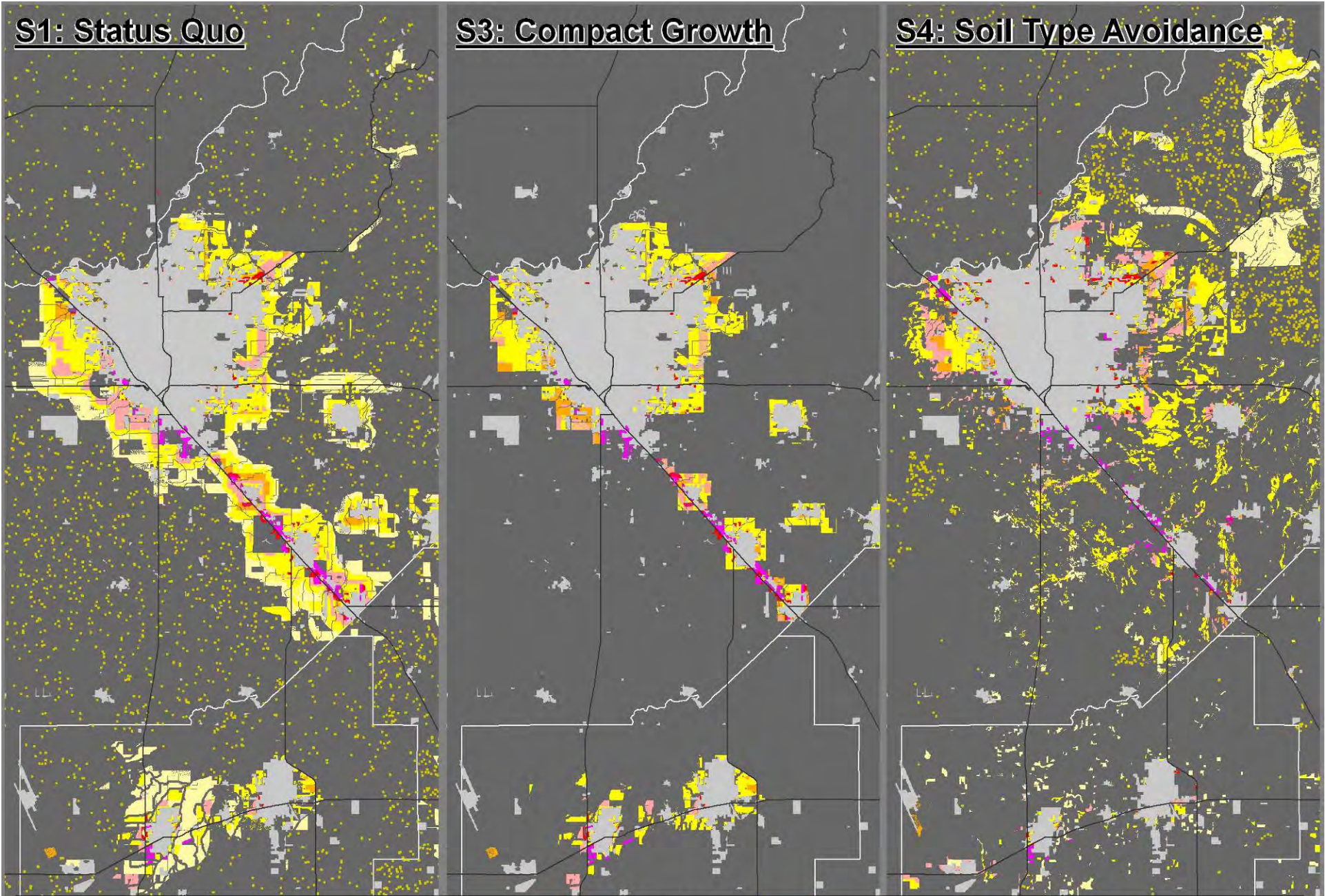
## Challenges Integrating UPlan with Travel Demand Models

- Data Challenges:
  - Recent trends (building permits, employment)
  - Existing land use
- Integration is a manual process
  - Feedback loops
- Requires matching land uses from UPlan to the transportation model
- Tools exist for exporting the new land use
  - Default export
  - Custom export

**S1: Status Quo**

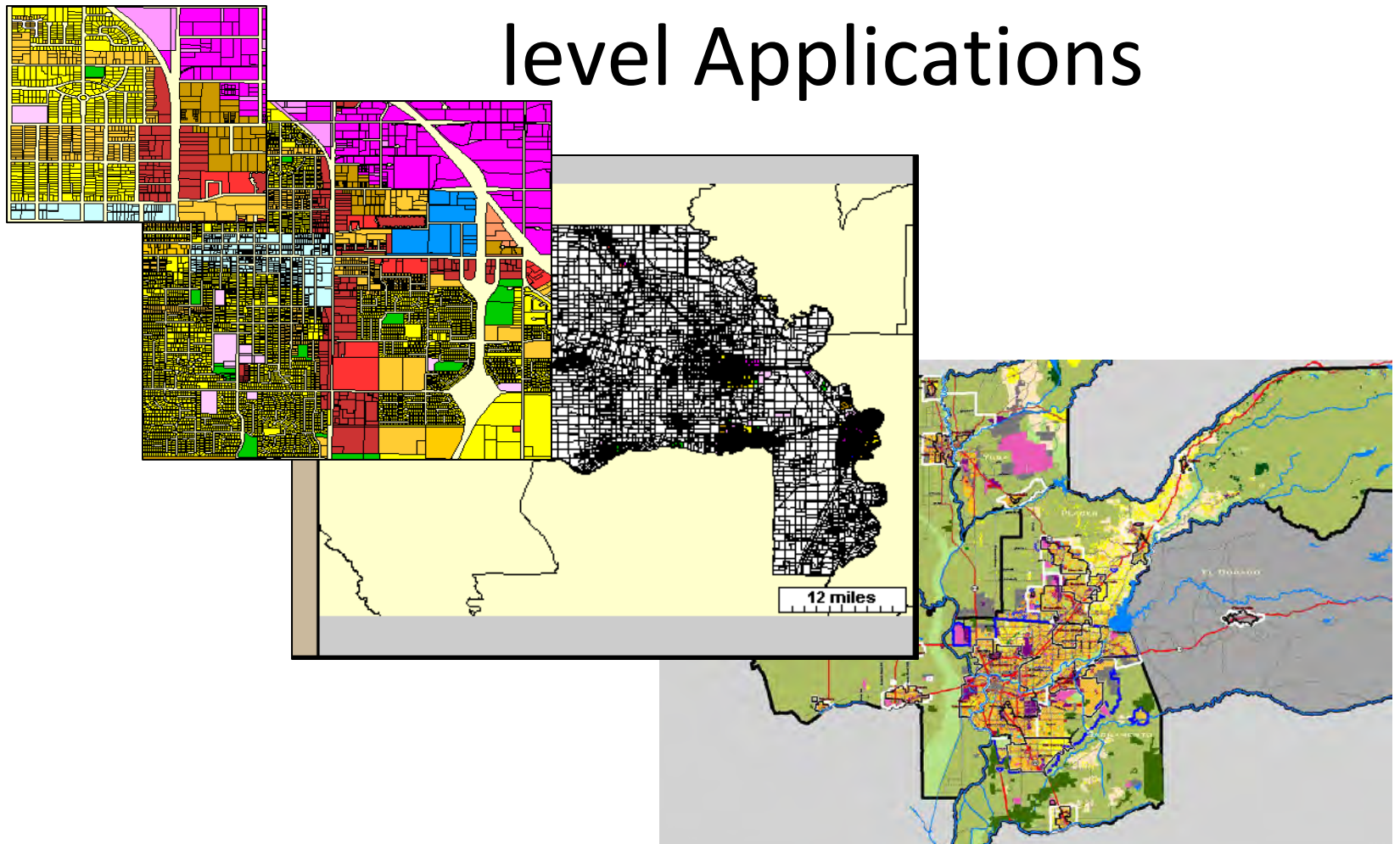
**S3: Compact Growth**

**S4: Soil Type Avoidance**



# iPlace3s

## Neighborhood to Region-level Applications



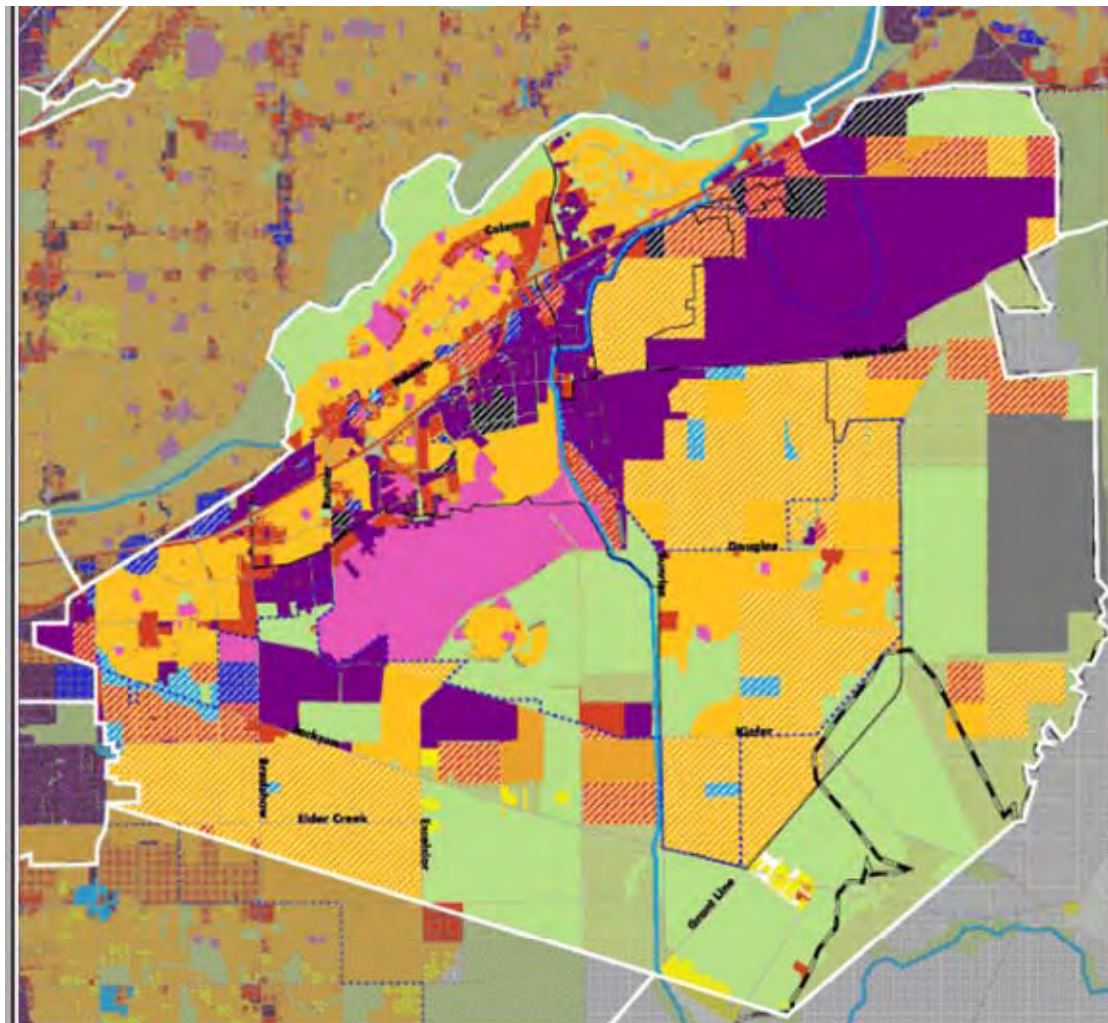
# Regional to Neighborhood- level applications

- Blueprint planning land use alternatives
- RTP land use allocations
- Local land use plan updates (general plans, etc.)
- Measure performance of development proposals
- Staff level tool AND public outreach tool

# Measure and Compare Results

- Total jobs and dwelling units
- Density by land use type and mix of uses
- Change in vehicle mile traveled and vehicle trips
- Change in walk/bike and transit mode shares
- Building GHG emissions
- Building energy consumption
- Economic feasibility (Return on Investment)
- Export data to regional travel model
- Mobile source air emissions (from regional travel model)

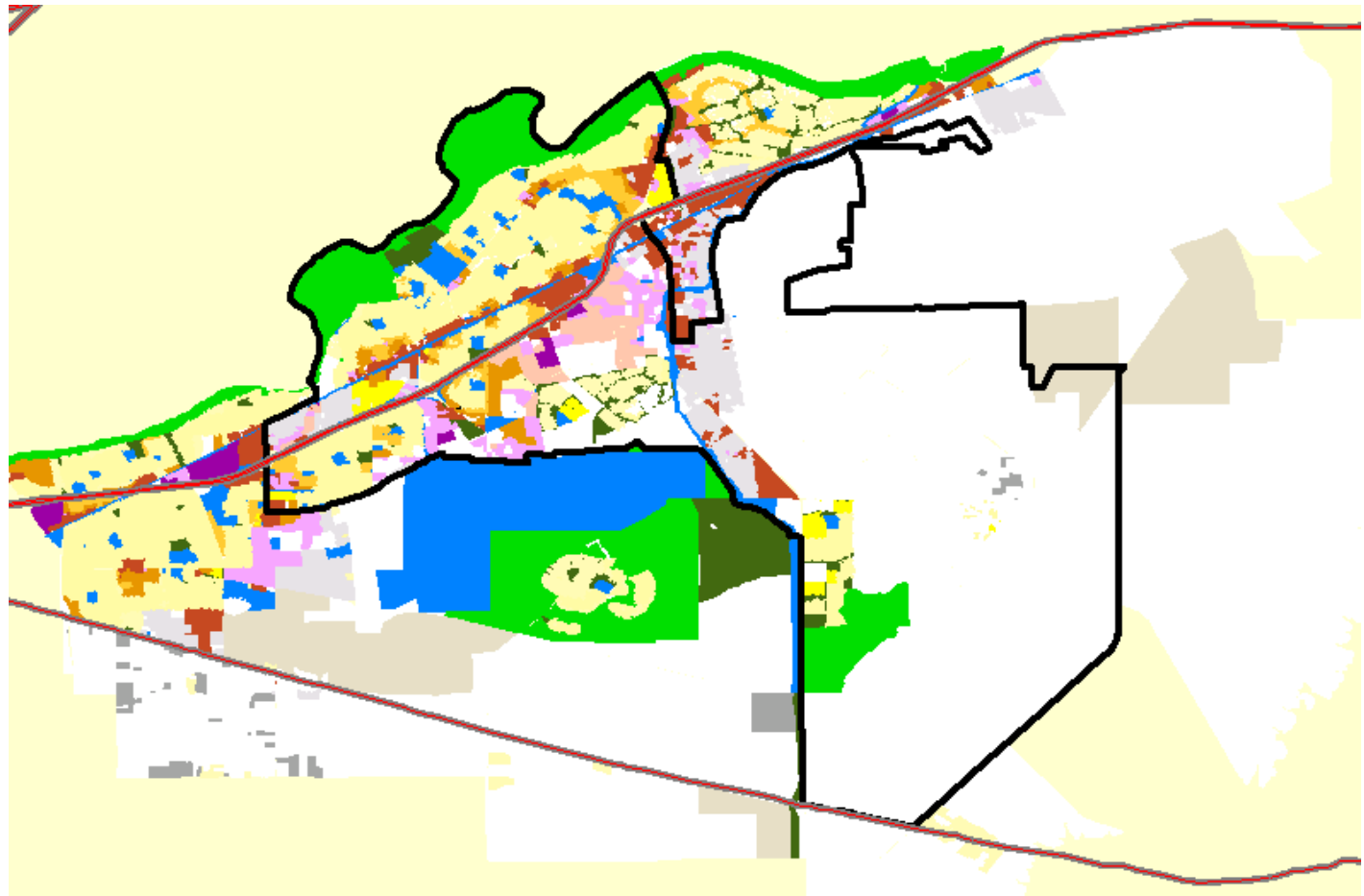
# Blueprint Growth Scenario: Rancho Cordova



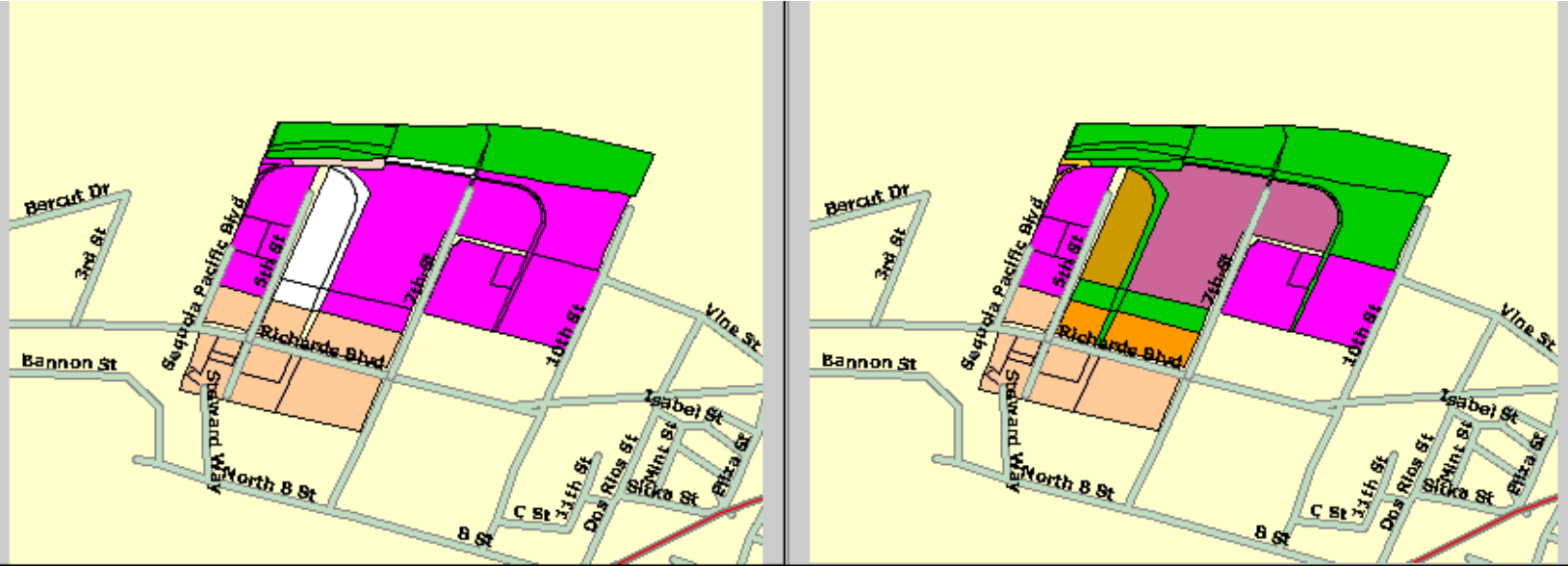




# Local Land Use Plan Monitoring



# Measure Local Land Use Changes



BASE CASE				MIXED RETAIL/RESIDENTIAL								
SCENARIO COMPARISON												
SCENARIO NAME	TOTAL EMPLOYEES		EMPLOYEES PER ACRE	TOTAL DWELLING UNITS		DWELLING UNITS PER ACRE	VMT PER HOUSEHOLD CHANGE	VMT PER JOB		TRANSIT CHANGE	PED/BIKE CHANGE	
	CHANGE	TOTAL		CHANGE	TOTAL			PER RETAIL	PER NON-RETAIL			
BASE CASE	0	2,209	21.16	0	2	1.07	0%	0%	0%	0.0%	0.0%	
MIXED RETAIL/RESIDENTIAL	-604	1,605	29.46	+2,999	3,001	72.27	-56%	-85%	-64%	+0.6%	+6.2%	

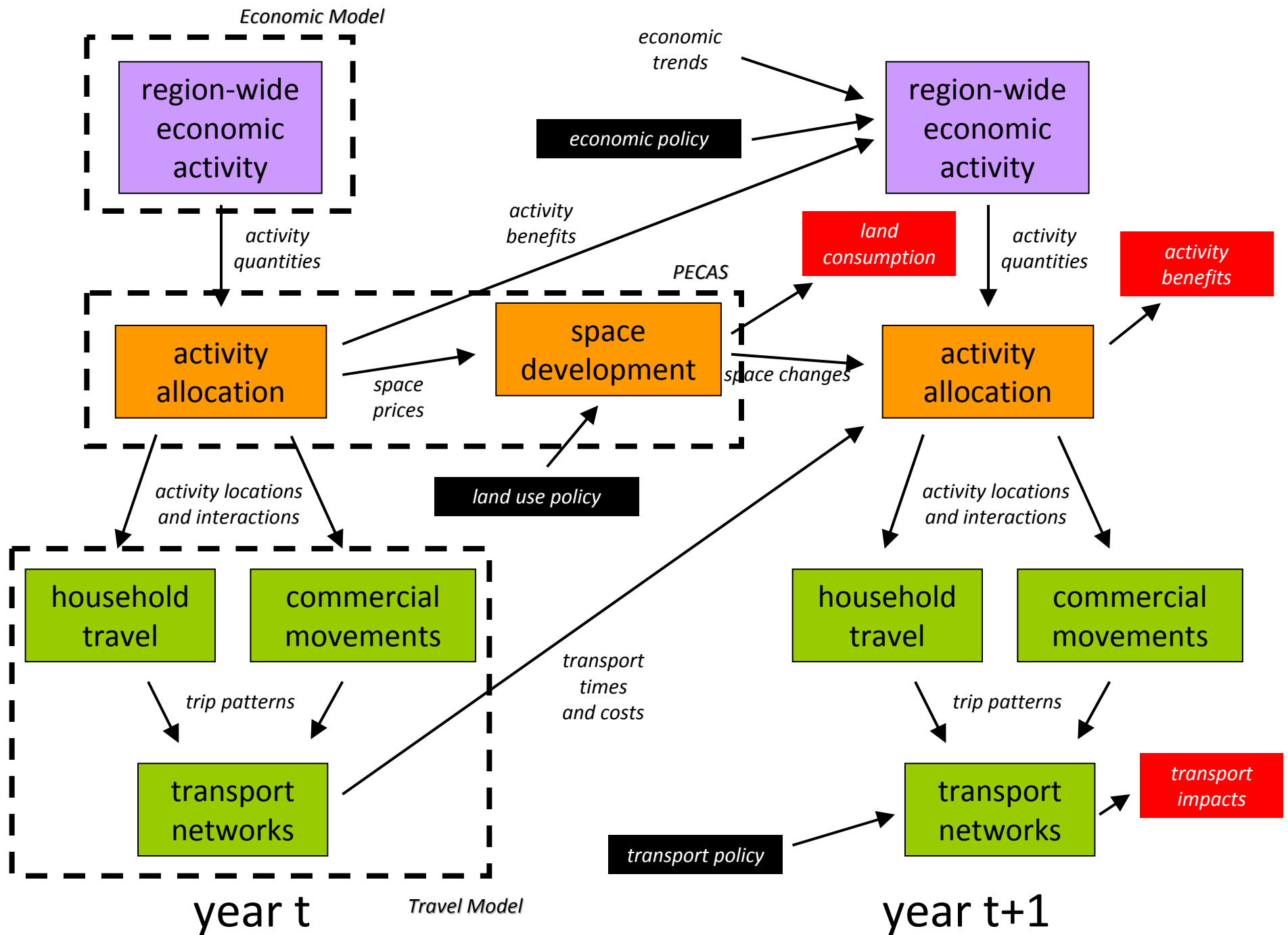
# Statewide Development of Transportation / Land Use Planning Tools

- Development of “Ds” elasticities for representative regions across the state
- 2 Large MPOs and 6 smaller RTPA/MPOs
- Using similar data and methods
  - Structural Equation Modeling for large MPOs
  - Hierarchical Linear Models for smaller areas
- A toolset for applying these elasticities to areas using an open framework
  - UPlan
  - iPlace3s
  - Standalone spreadsheets

# PECAS/CalSIIM

- Integrated economic land use/transportation model
- Purpose:
  - To enable testing of policy scenarios with explicit economic analysis
- Structure:
  - Some of the numbers:
    - 526 Land Use Zones (LUZ)
    - 5191 TAZs
    - ~165 million 50mx50m cells
    - 63 Activities
    - 78 Commodities
    - 38 Land use types
    - 25 Household types
- What it does, in two parts:
  - Market clearing economic model with transportation coefficients for exchange locations. (AA: Activity Allocation)
  - Floorspace supply controlled by development event probabilities. (SD: Space Development)

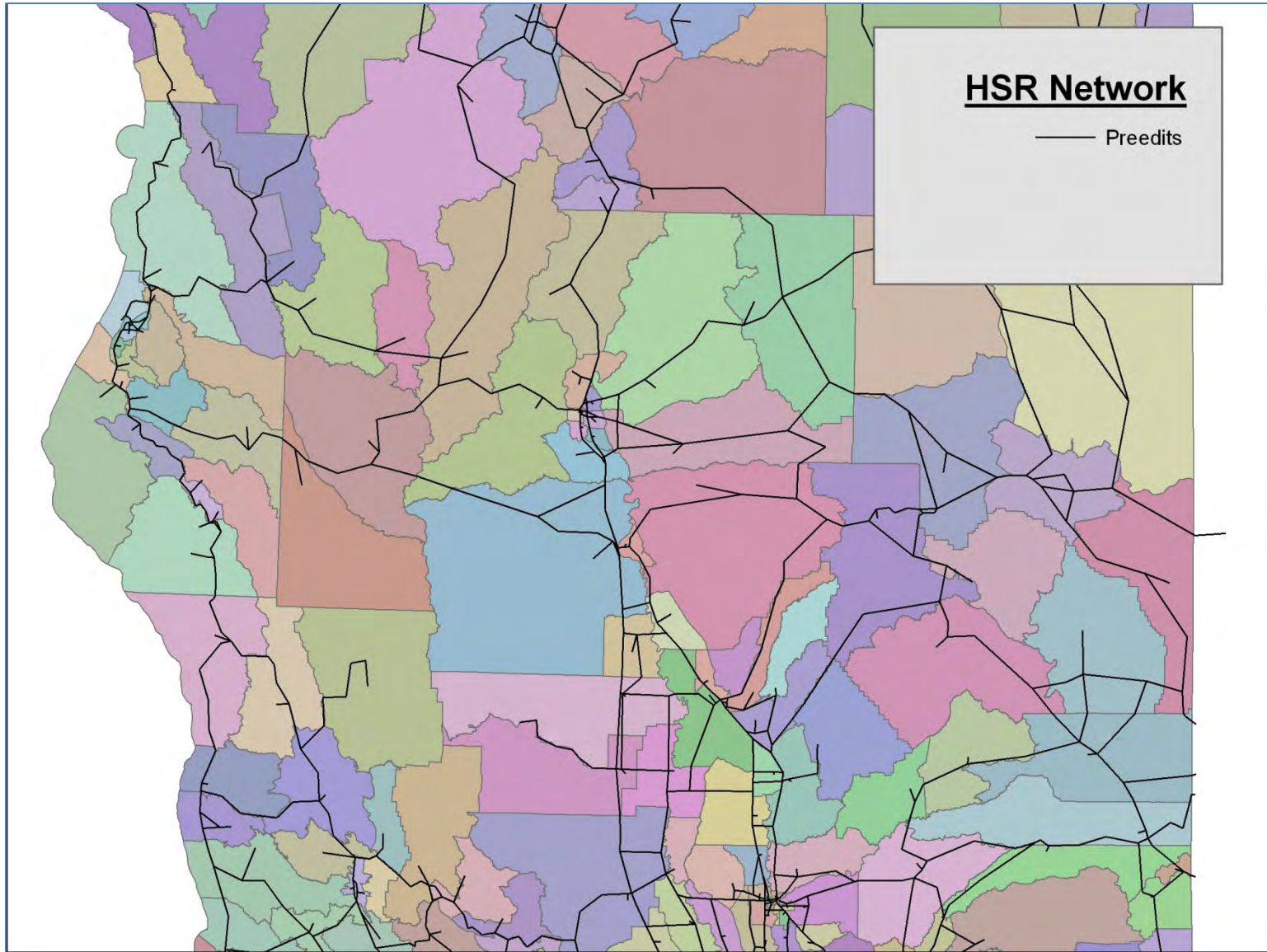




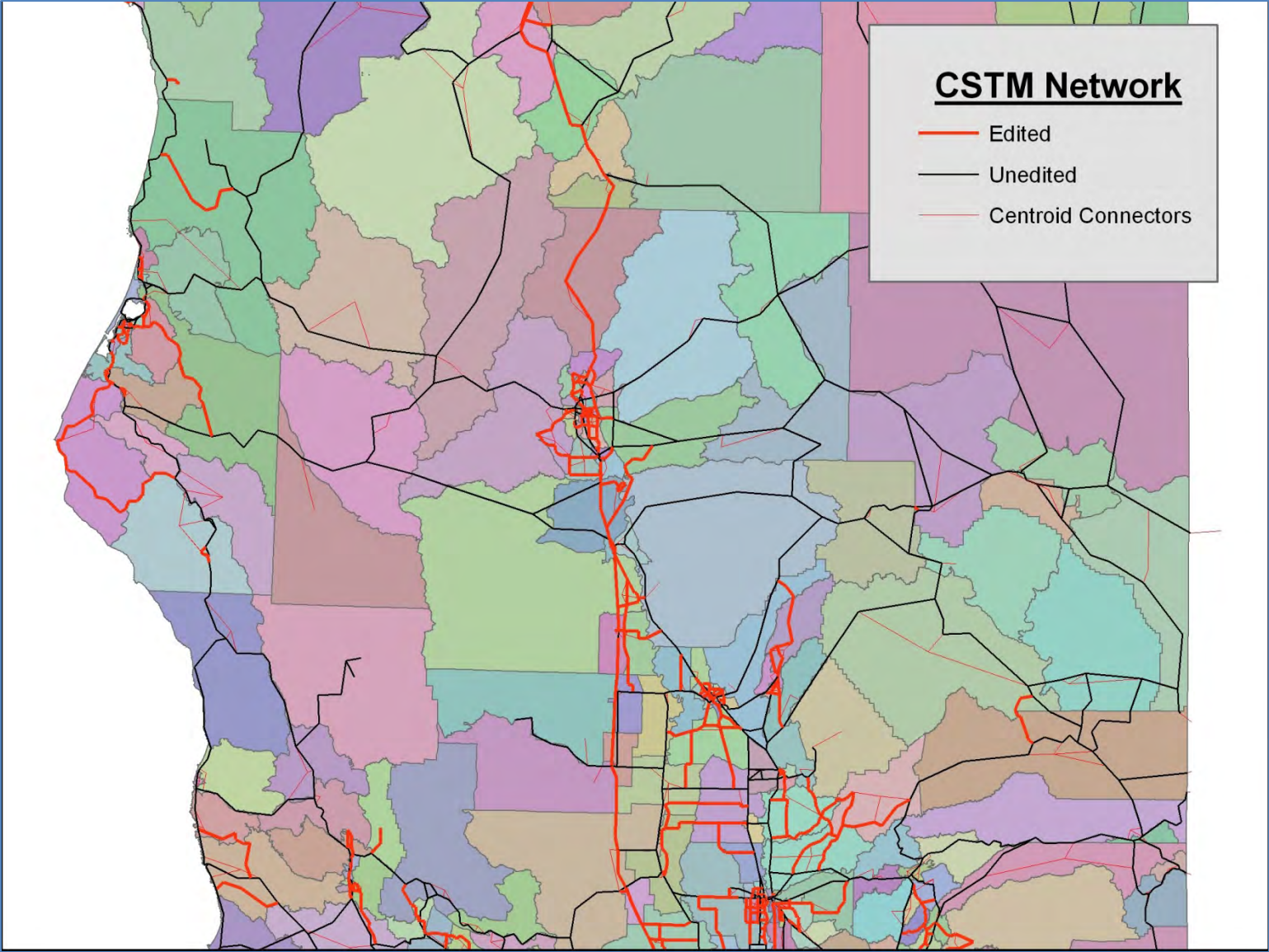
# CSTDM

- Statewide Interregional Travel Demand Model
- Purpose:
  - Track interregional travel and intraregional travel with interregional implications
- Structure:
  - 5 component models:
    - Short Distance Personal Travel
    - Long Distance Personal Travel
    - Short Distance Commercial Vehicle
    - Long Distance Commercial Vehicle
    - External
  - Simulates population movements and commercial vehicle patterns
  - 4 daily time periods
  - 5191 TAZs
  - Modes: SOV, HOV2, HOV3+, Truck, Local Transit, Rail, Air
- Synthetic population and employment
- Networks are enhanced from the HSR Model
- Socio-demographics from integrated Census, MPO, and commercial data sources.
- Travel surveys, 2001 Statewide Travel Survey, and 2000-2004 Surveys from SANDAG, SCAG, MTC and SACOG.

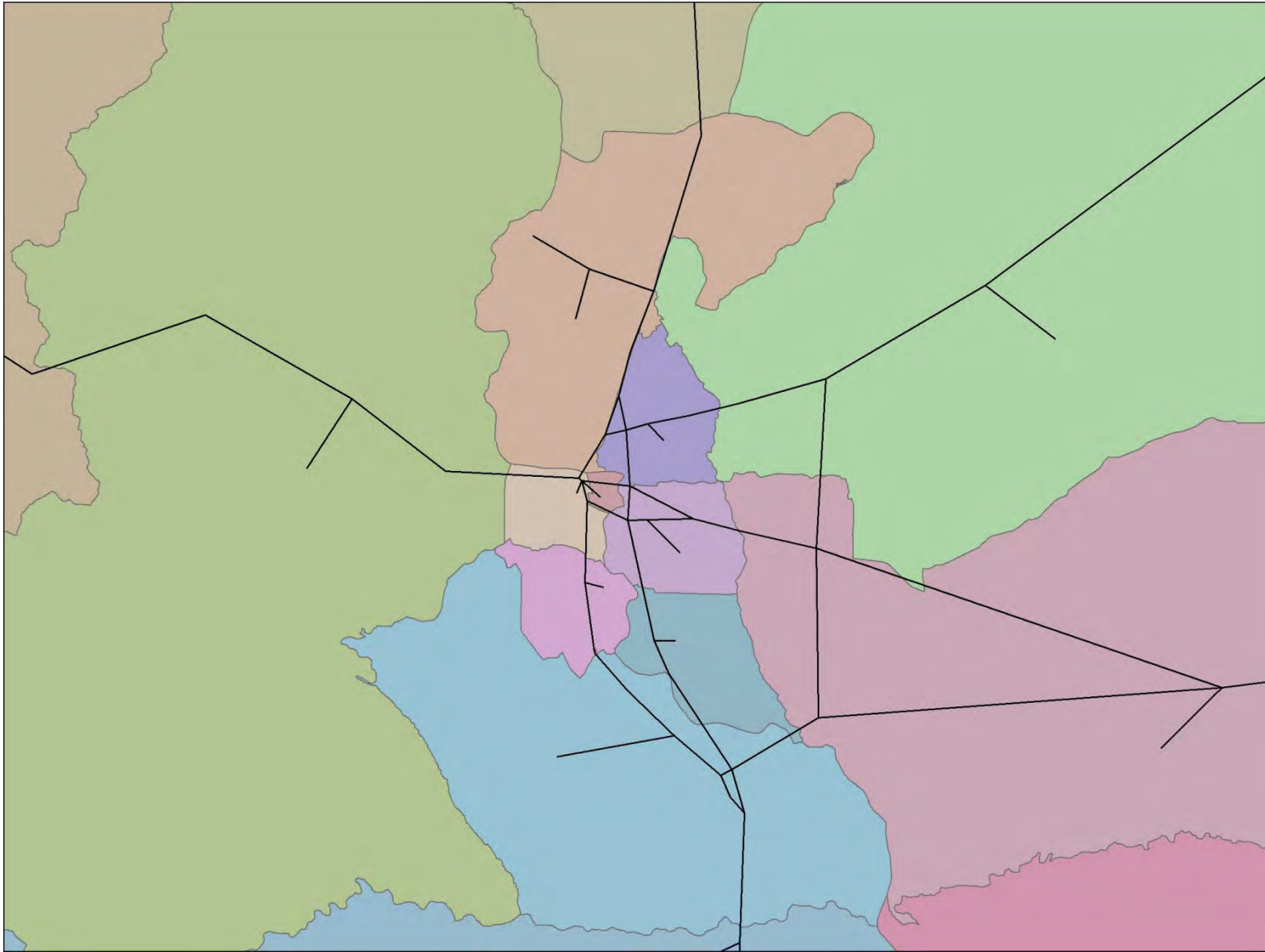
# HSR TAZ System and Network



# CSTDM TAZ System and Network



# HSR TAZ System and Network



# CSTDM TAZ System and Network

