Sacramento Area Council of Governments

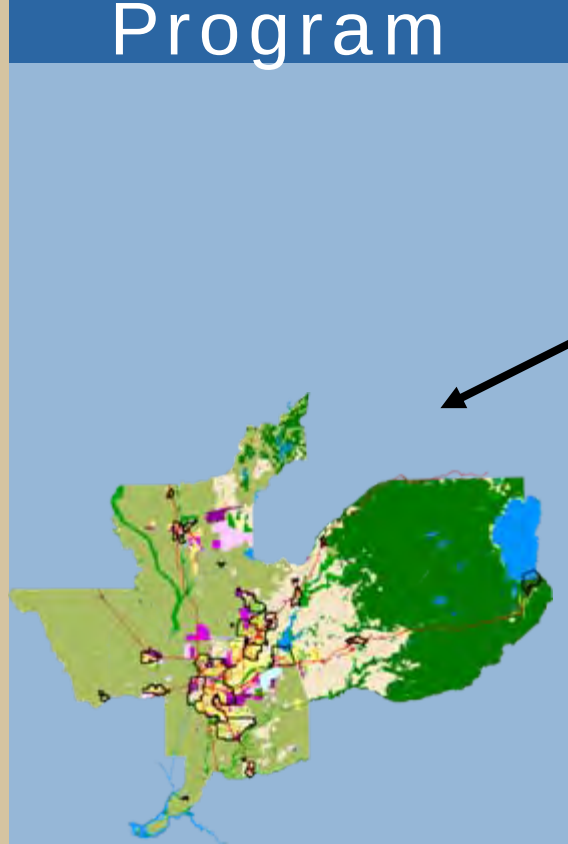
I-PLACE^{3}S Overview

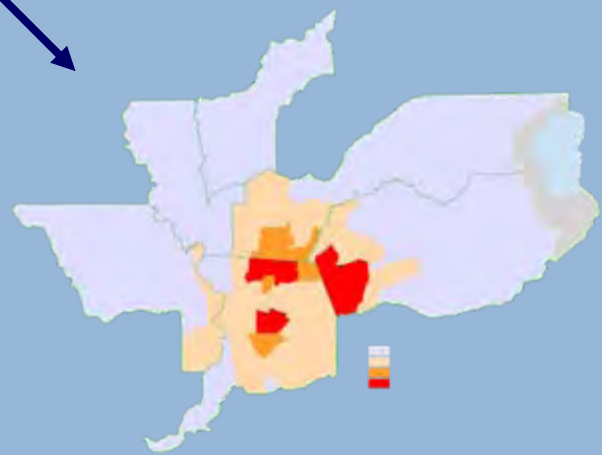
King County HealthScape Seminar

Gordon Garry, Sacramento Area Council of Governments

September 10, 2008

I-PLACE^{3}S is One of Several Tools in SACOG's Modeling Program





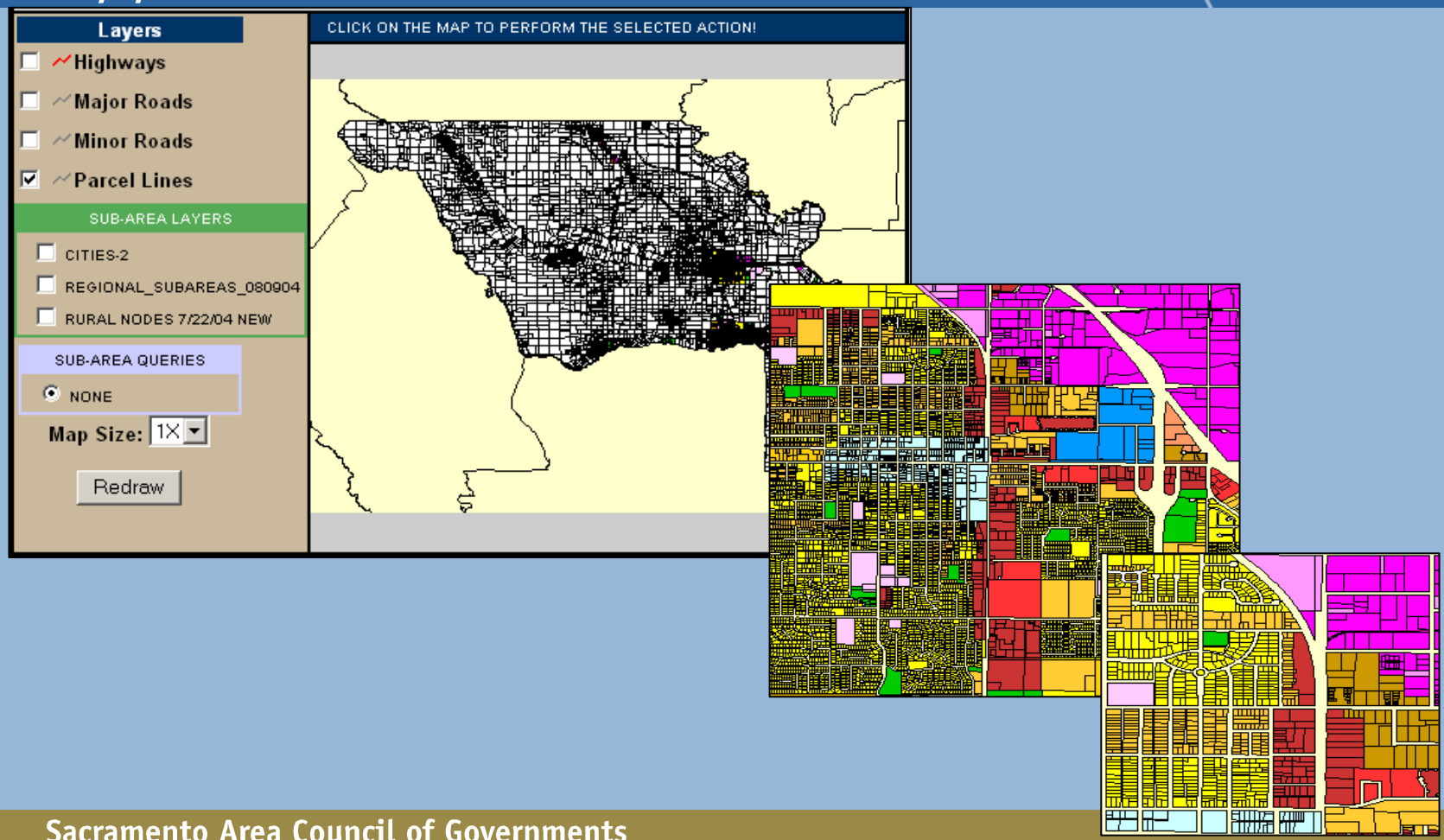
I-PLACE3S - Land Use/Transportation Impacts

GIS – Monitoring & Forecasting Data

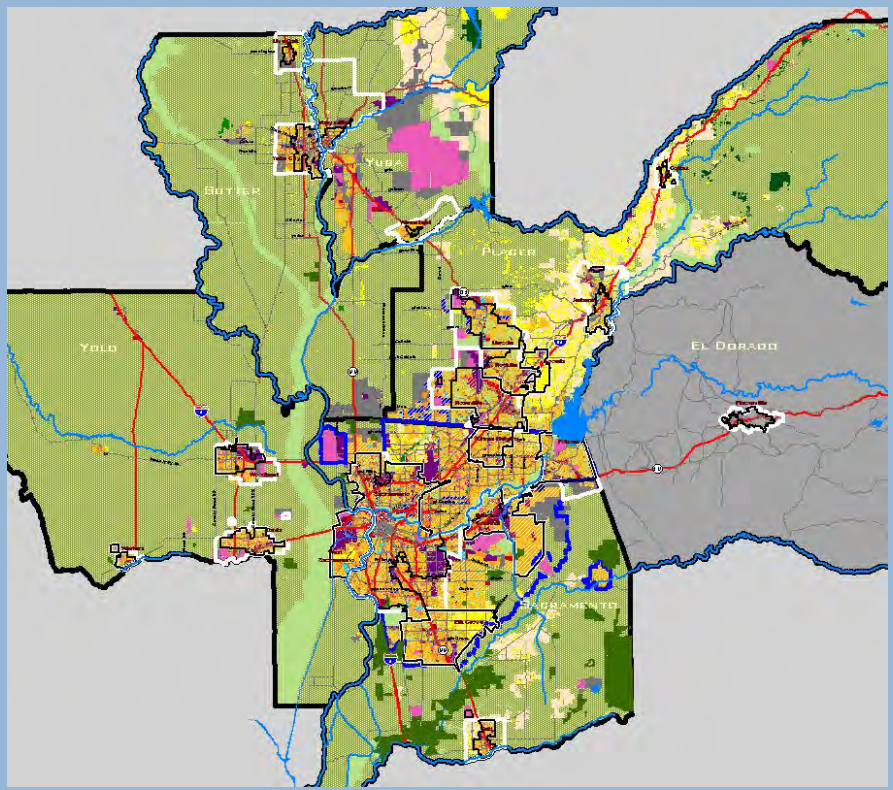
Regional Travel Model

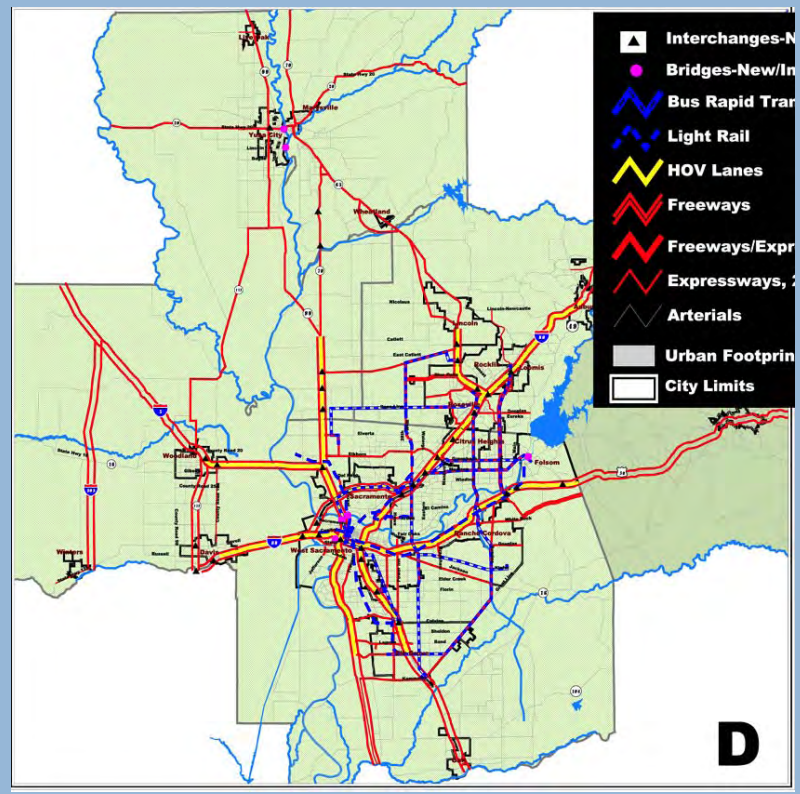
I-PLACE³S Uses

Regional to Neighborhood-level applications

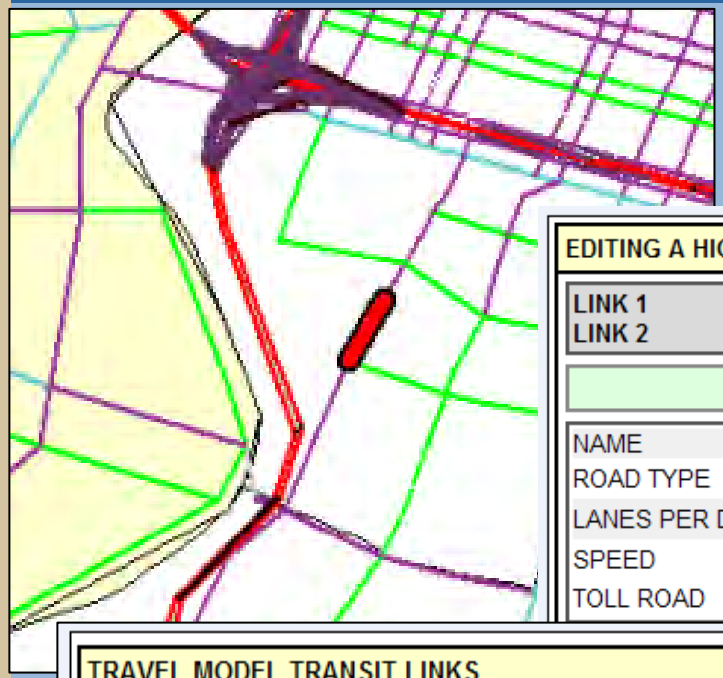


Regional Blueprint Land Use Scenarios





Regional Transportation Plan Public Workshops



EDITING A HIGHWAY LINK — EDIT DETAILS

LINK 1	3823 : 3824
LINK 2	3824 : 3823

ENABLED - YES

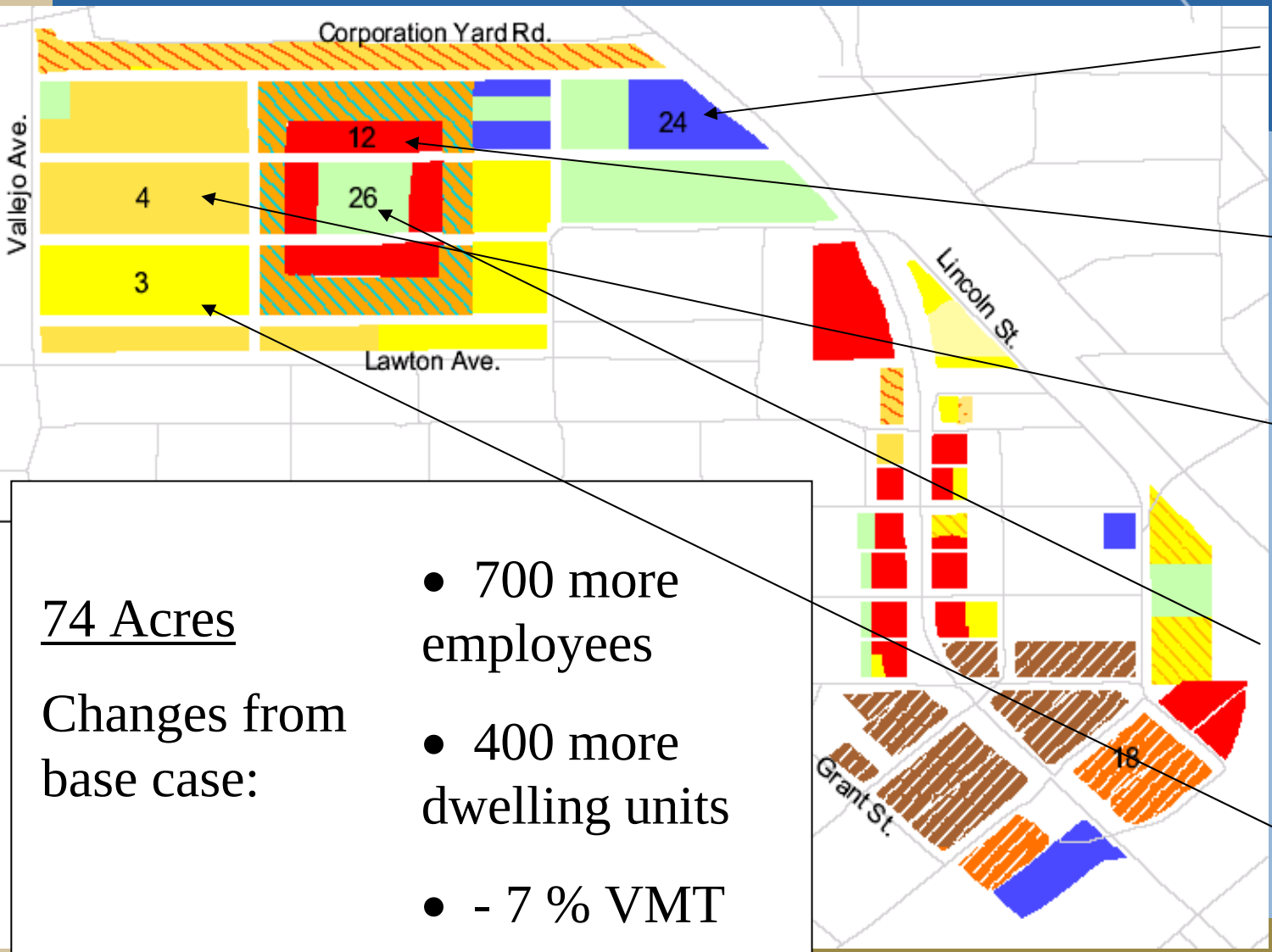
NAME	
ROAD TYPE	4 - Minor Arterial
LANES PER DIRECTION	1 LANE
SPEED	35 MPH
TOLL ROAD	○ YES ◉ NO

TRAVEL MODEL TRANSIT LINKS

LINK NAME	TRANSIT TYPE	ENABLED	FREQ1	FREQ2
001	Local Bus	☑	15	30
003	Local Bus	☑	15	0
004	Local Bus	☑	60	60
007	Local Bus	☑	45	0
009B	Local Bus	☑	60	60

- Edit roadway links or roadway projects
- Edit transit routes

Neighborhood Study Area Land Use Scenario



Key Land Uses Featured

24 Public/Civic/ Education

12 Community/ Neighborhood Retail

4 Small Lot Single Family Residential

26 Parks

3 Medium Lot Single Family Residential

<u>74 Acres</u>

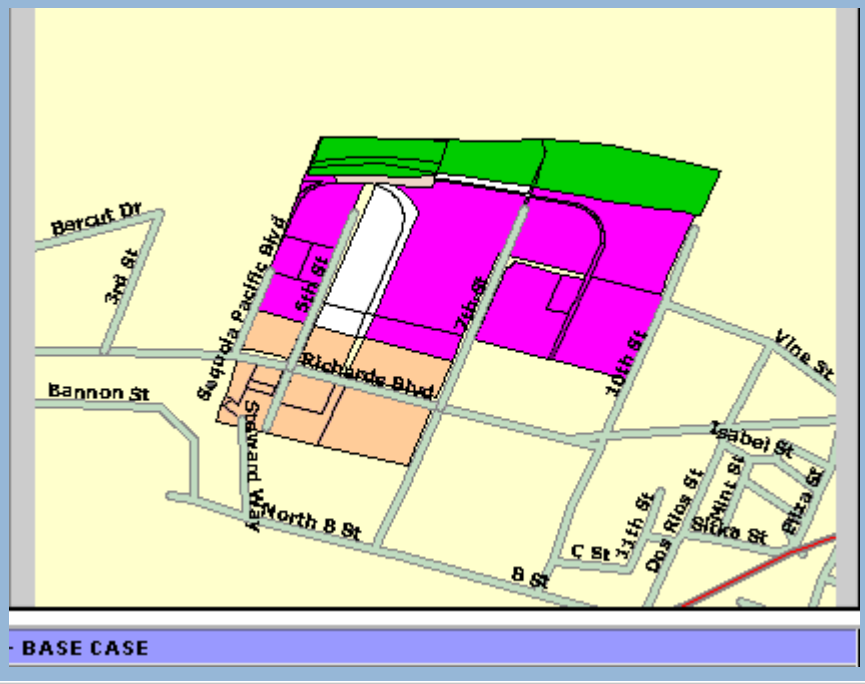
Changes from base case:

- 700 more employees
- 400 more dwelling units
- - 7 % VMT

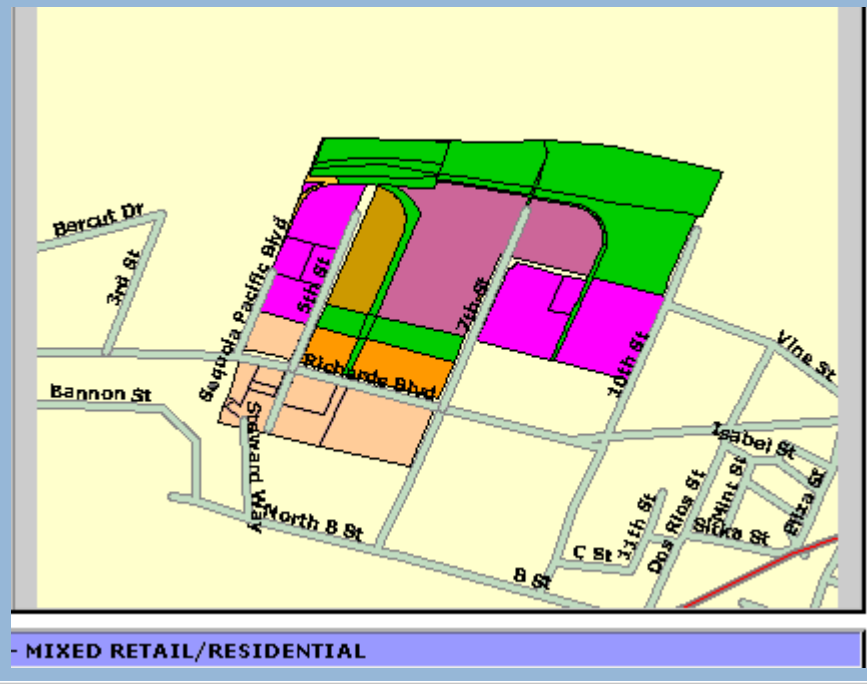
Local Land Use Plan Updates

- Two cities used I-PLACE^{3}S to develop General Plan land use scenarios

Blueprint Development Review



- BASE CASE



- MIXED RETAIL/RESIDENTIAL

SCENARIO COMPARISON

SCENARIO NAME	TOTAL EMPLOYEE CHANGE	TOTAL EMPLOYEES	EMPLOYEES PER ACRE	TOTAL DWELLING UNIT CHANGE	TOTAL DWELLING UNITS	DWELLING UNITS PER ACRE	VMT PER HOUSEHOLD CHANGE	VMT PER RETAIL JOB CHANGE	VMT PER NON-RETAIL JOB CHANGE	TRANSIT CHANGE	PED/BIKE CHANGE
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%

“Place Types” are the Building Blocks

RESIDENTIAL BUILDING TYPES

1	Rural Residential			2	1	–	Rural residential includes very large lot residential (1 acre per lot).
2	Large Lot Single Family Residential			1	4	–	Arden Park has mainly large lots in the _ to 1/5 acre size. Gardenland (South Natomas) has grid-streets with 1 acre lots and small houses.
3	Medium Lot Single Family Residential			2	6	–	Standard single family lot of 52x100 min. Allows cul-de-sacs or grid pattern, w/cul-de-sac subdivisions at low end of range. Curtis Park at high end of range.
4	Small Lot Single Family Residential			2	12	–	Small lot subdivisions: Villa Palazzo in Pocket (3,500 sqft lots), standard lots in Laguna West and some low density suburban garden apartments.
5(O)	Townhouse (Owner)			3	15	–	Metro Square in midtown is detached townhouse project at approx. 20 DU/ac. Most standard 2-story apts w/ surface parking are in this range.
5(R)	Townhouse (Rental)						
6(O)	Low-Rise Condos (Owner)			2	24	–	2+ story attached units with structured parking (e.g., tuck-under).
6(R)	Low-Rise Apartments (Rental)						
7(O)	Mid-Rise Condos (Owner)			3	35	–	3 story mid-level development. Less space dedicated to landscaping; more frontage on street.
7(R)	Mid-Rise Apartments (Rental)						
8(O)	High-Rise Condos (Owner)			6	66	–	6 story development with structured parking. Buildings include elevators, interior courtyards, and hallways.
8(R)	High-Rise Apartments (Rental)						
9(O)	Urban Condos (Owner)			10	105	–	10 story urban development. Buildings may include a health facility, door man, etc.
9(R)	Urban Apartments (Rental)						

User-Defined, includes:

- Inventoried allowed land uses
- Land uses that might not yet exist in codes (e.g. mixed use)

User Defines Place Type Physical Assumptions

18 Mixed-use
Employment Focus
High-rise

PERCENT OF PLACE TYPE BY SECTOR

% RESIDENTIAL	% RETAIL	% OFFICE	% INDUSTRIAL	% PUBLIC	% OTHER
45%	40%	15%	0%	0%	0%

RESTARAUNTS	RETAIL	SERVICE
33.33333%	33.33333%	33.33333%

GOVERNMENT	OFFICE	SERVICE	MEDICAL
0%	100%	0%	0%

EDUCATION	MEDICAL	GOVERNMENT
0%	0%	0%

SQUARE FOOTAGE BY SECTOR

RESIDENTIAL	RETAIL	OFFICE	INDUSTRIAL	PUBLIC	OTHER
900	250	300	0	0	0

PARKING RATIOS PER 1000 SQ FT OR PER DWELLING UNIT

RESIDENTIAL	RETAIL	OFFICE	INDUSTRIAL	PUBLIC	OTHER
1.5	4	3	0	0	0

PARKING TYPES DISTRIBUTION (# OF LEVELS)

ABOVE GROUND PARKING	UNDER BUILDING PARKING	TUCKUNDER PARKING
2	0	0

MISCELLANEOUS SETTINGS

LANDSCAPING / SETBACK (%)	UNDERBUILD (%)	SQFT PER PARKING SPACE
15	100	325

RESIDENTAL TYPE	AVG LOT SIZE	MAXIMUM HEIGHT (# OF STORIES)	# OF BEDROOMS
Attached	0	3	

ACCESSORY UNITS	EXISTING UNITS ACCESSORY RATIO	NEW ACCESSORY RATIO
○ YES ◉ NO	1	1

I-PLACE³S Provides Calculated Yield

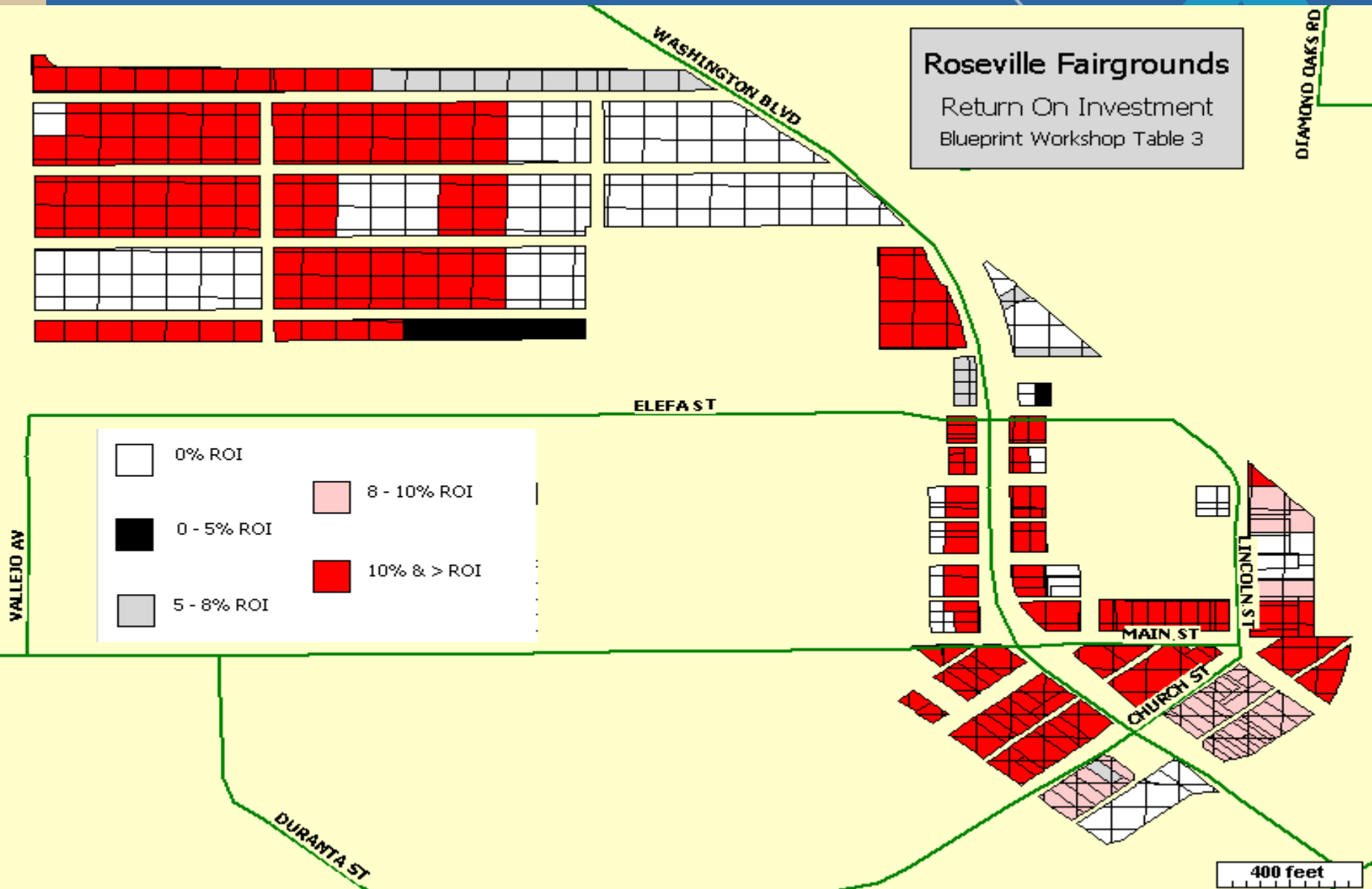
SACOG

PLACE TYPES | PLACE TYPE MARKING RULES | ENERGY SETTINGS | ADD NEW PLACE TYPE

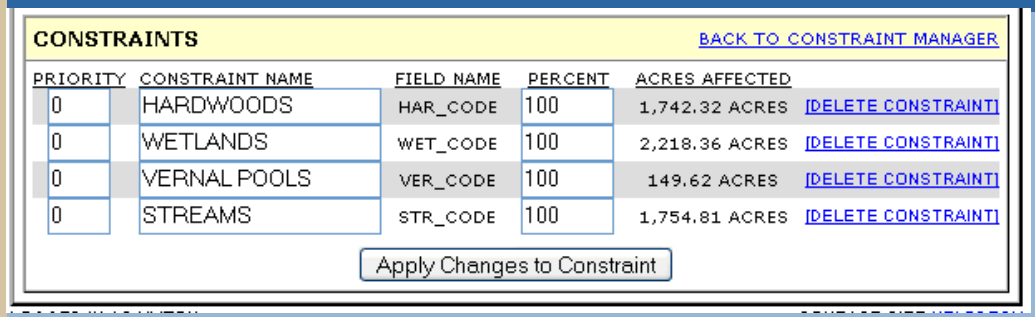
PLACE TYPE NAME	DU / ACRE	EMP / ACRE	% RESIDENTIAL	% RETAIL	% OFFICE	% INDUSTRIAL	% PUBLIC	% OTHER	FLOOR AREA RATIO
1. RURAL RESIDENTIAL	1.00000	0.00000	100%	0%	0%	0%	0%	0%	0.09
2. LARGE LOT SINGLE FAMILY RESIDENTIAL	4.00000	0.00000	100%	0%	0%	0%	0%	0%	0.28
3. MEDIUM LOT SINGLE FAMILY RESIDENTIAL	6.00000	0.00000	100%	0%	0%	0%	0%	0%	0.34
4. SMALL LOT SINGLE FAMILY RESIDENTIAL	12.00000	0.00000	100%	0%	0%	0%	0%	0%	0.47
5(O). TOWNHOUSE (OWNER)	15.00000	0.00000	100%	0%	0%	0%	0%	0%	0.48
5(R). TOWNHOUSE (RENTAL)	15.00000	0.00000	100%	0%	0%	0%	0%	0%	0.41
6(O). LOW-RISE CONDOS (OWNER)	23.59500	0.00000	100%	0%	0%	0%	0%	0%	0.65
6(R). LOW-RISE APARTMENTS (RENTAL)	24.55200	0.00000	100%	0%	0%	0%	0%	0%	0.56
7(O). MID-RISE CONDOS (OWNER)	35.41794	0.00000	100%	0%	0%	0%	0%	0%	0.89
7(R). MID-RISE APARTMENTS (RENTALS)	35.28486	0.00000	100%	0%	0%	0%	0%	0%	0.77
8(O). HIGH-RISE CONDOS (OWNER)	69.01934	0.00000	100%	0%	0%	0%	0%	0%	1.58
8(R). HIGH-RISE APARTMENTS (RENTAL)	68.64000	0.00000	100%	0%	0%	0%	0%	0%	1.42
9(O). URBAN CONDOS (OWNER)	105.38710	0.00000	100%	0%	0%	0%	0%	0%	2.30
9(R). URBAN APARTMENTS (RENTAL)	105.68656	0.00000	100%	0%	0%	0%	0%	0%	2.30
10. MID-RISE OFFICE	0.00000	54.15769	0%	5%	95%	0%	0%	0%	1.50
11. HIGH-RISE OFFICE	0.00000	154.62889	0%	5%	95%	0%	0%	0%	4.00
12. COMMUNITY/NEIGHBORHOOD RETAIL	0.00000	47.39328	0%	100%	0%	0%	0%	0%	0.50
13. HOTEL	0.00000	74.50534	0%	65%	35%	0%	0%	0%	1.50
14(O). HORIZONTAL MIXED USE	6.00000	33.60000	50%	50%	0%	0%	0%	0%	0.50
15(O). LIVE/WORK (OWNER)	22.47015	22.47015	80%	0%	20%	0%	0%	0%	0.72
15(R). LIVE/WORK (RENTAL)	23.39716	23.39716	80%	0%	20%	0%	0%	0%	0.72
16(O). MIXED USE RESIDENTIAL FOCUS MID-RISE (OWNER)	23.28871	39.62556	67%	25%	8%	0%	0%	0%	0.72
16(R). MIXED USE RESIDENTIAL FOCUS MID-RISE (RENTAL)	23.28871	39.62556	67%	25%	8%	0%	0%	0%	0.72
17(O). MIXED USE RESIDENTIAL FOCUS HIGH-RISE (OWNER)	85.10470	83.14075	78%	17%	5%	0%	0%	0%	2.25
17(R). MIXED USE RESIDENTIAL FOCUS HIGH-RISE (RENTAL)	85.10470	83.14075	78%	17%	5%	0%	0%	0%	2.25
18. MIXED USE EMPLOYMENT FOCUS MID-RISE	13.28327	54.54995	45%	33%	22%	0%	0%	0%	0.61

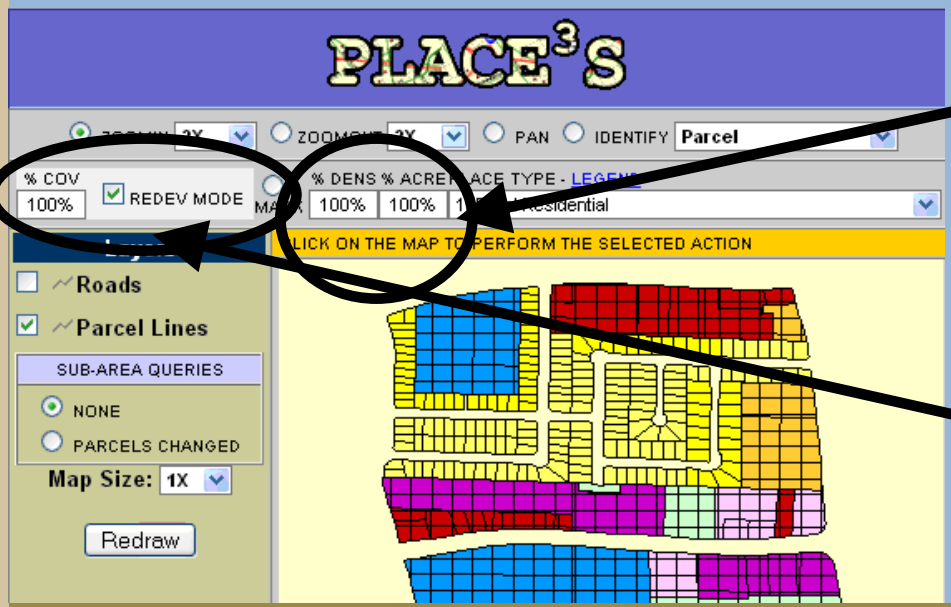
Calculated Maximum Dwelling Units/Acre and Employees/Acre

Return on Investment



Other Parameters and Variables





- Define Constrained Lands
- Vary development densities (gross and net)
- Redevelopment Rate

Basic Data Needs

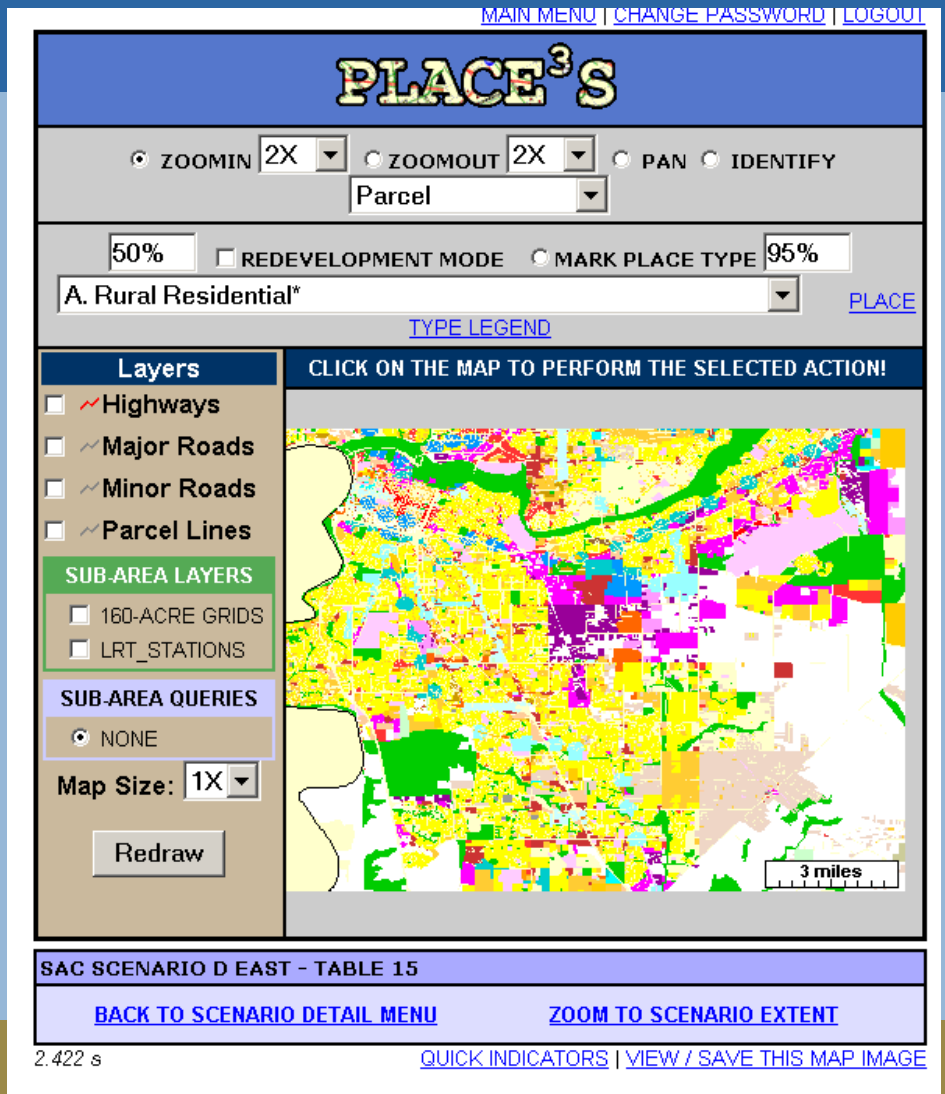
- General Plan or Zoning designations
- Existing Conditions:
  - Housing Units
  - Employees
  - Land uses
- Growth forecast:
  - Housing Units
  - Employees
- Parcel data
- Environmental Constraints
- Subarea shapefiles for reporting and analysis

Building Scenarios

- One Set of Tools, Two Applications
  - Scenario Building to establish alternatives from ground up
  - Public Workshops to evaluate and refine scenarios

Blueprint Planning Land Use Alternatives

Building Scenarios



User Applies Place Types to study area via:

- Map
- Query
- Overlay

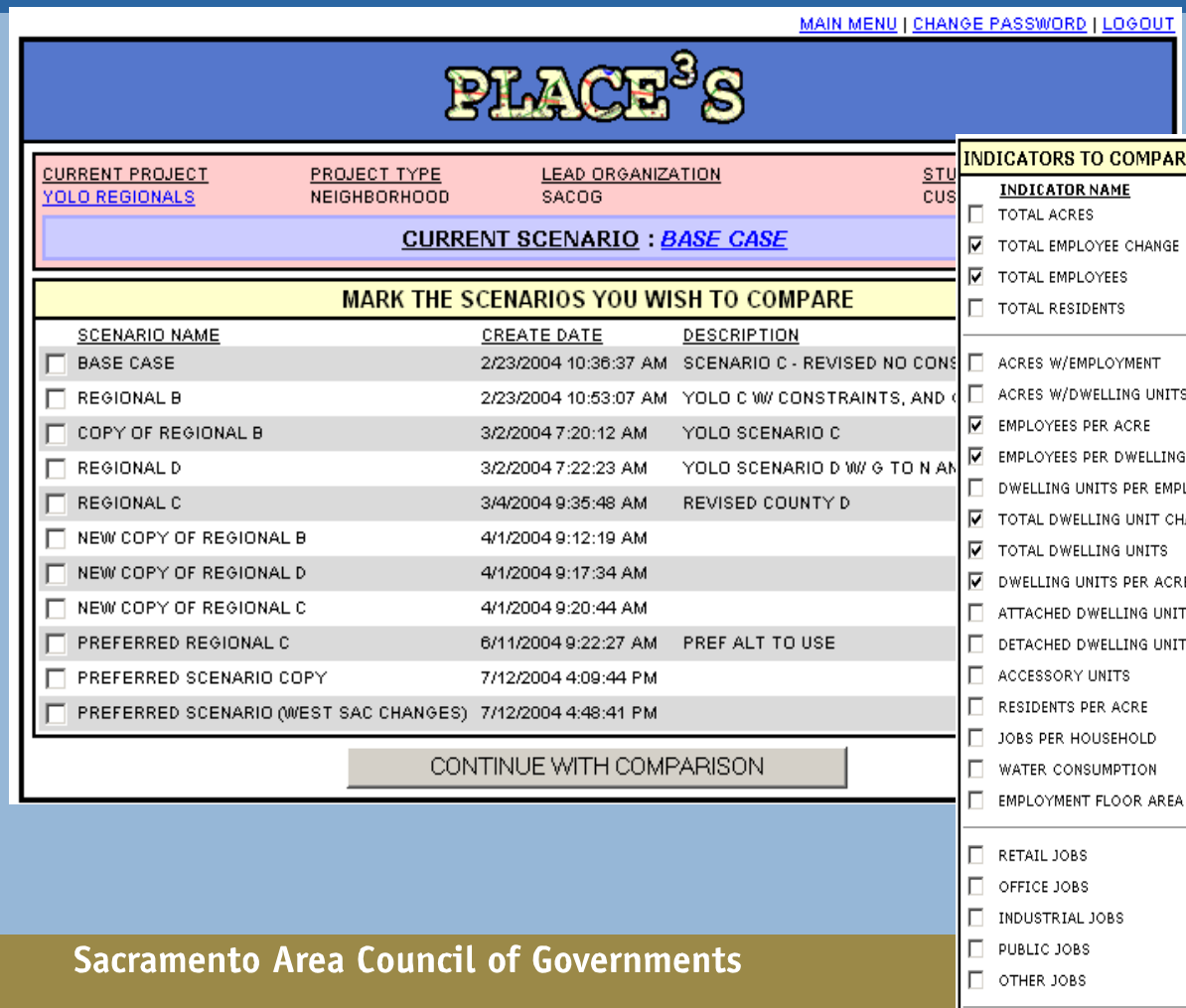
Building Scenarios

- User Decides Scenario Parameters
  - How much growth?
  - What principles will be used to shape the growth?
  - What is the housing stock?
- User Allocates Growth
  - Where will the growth go?

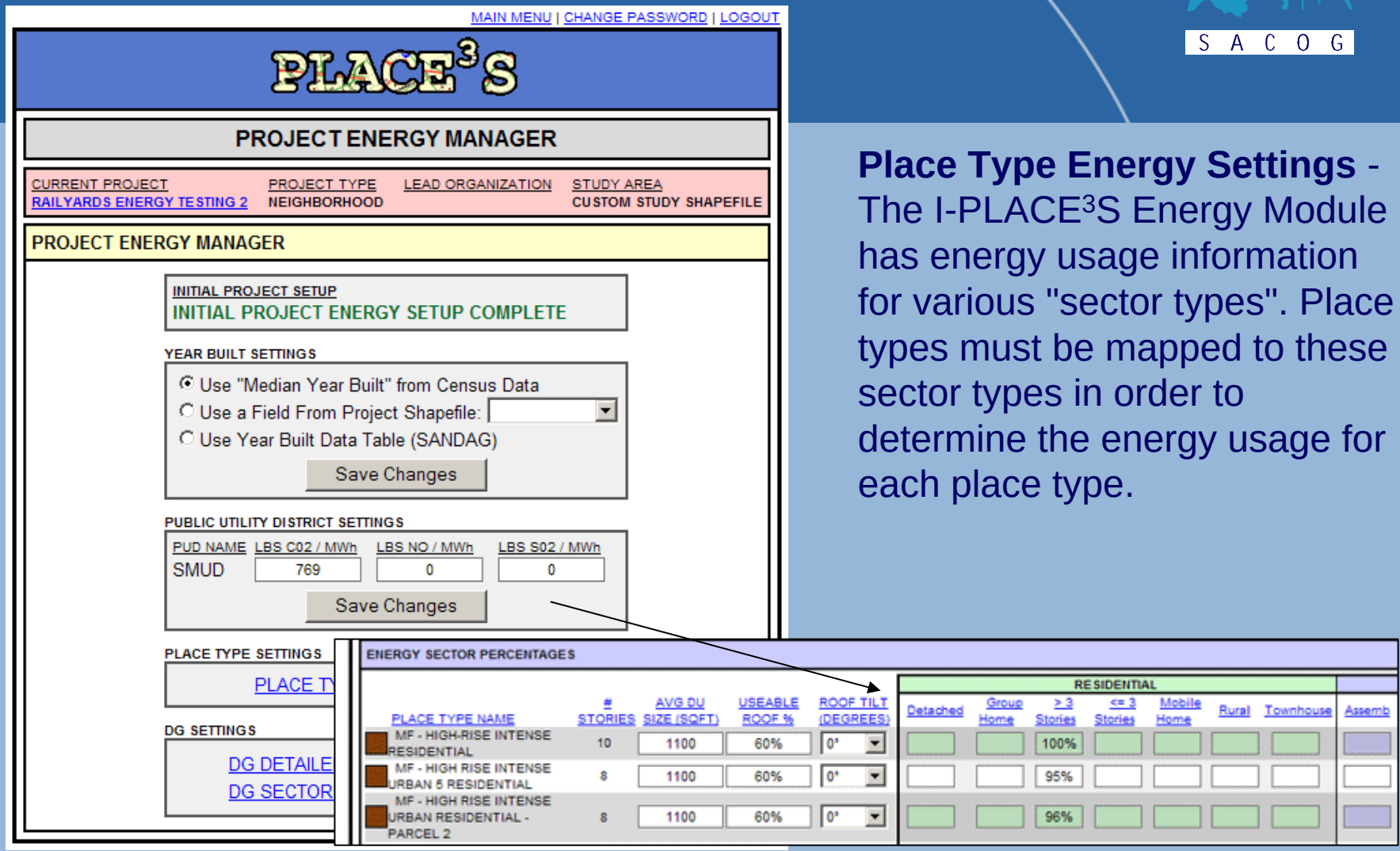
Performance Measures to Compare Alternative Planning Scenarios

- Total jobs and dwelling units
- Density by land use type
- Mix of uses (defined by land use type)
- Economic feasibility (Return on Investment)
- Vehicle mile traveled and vehicle trips per household
- Change in walk/bike and transit mode shares
- Export data to regional travel model
- Mobile source air emissions

Compare Alternative Land Use Scenarios



New Module: I-PLACE^{3}S Energy Module

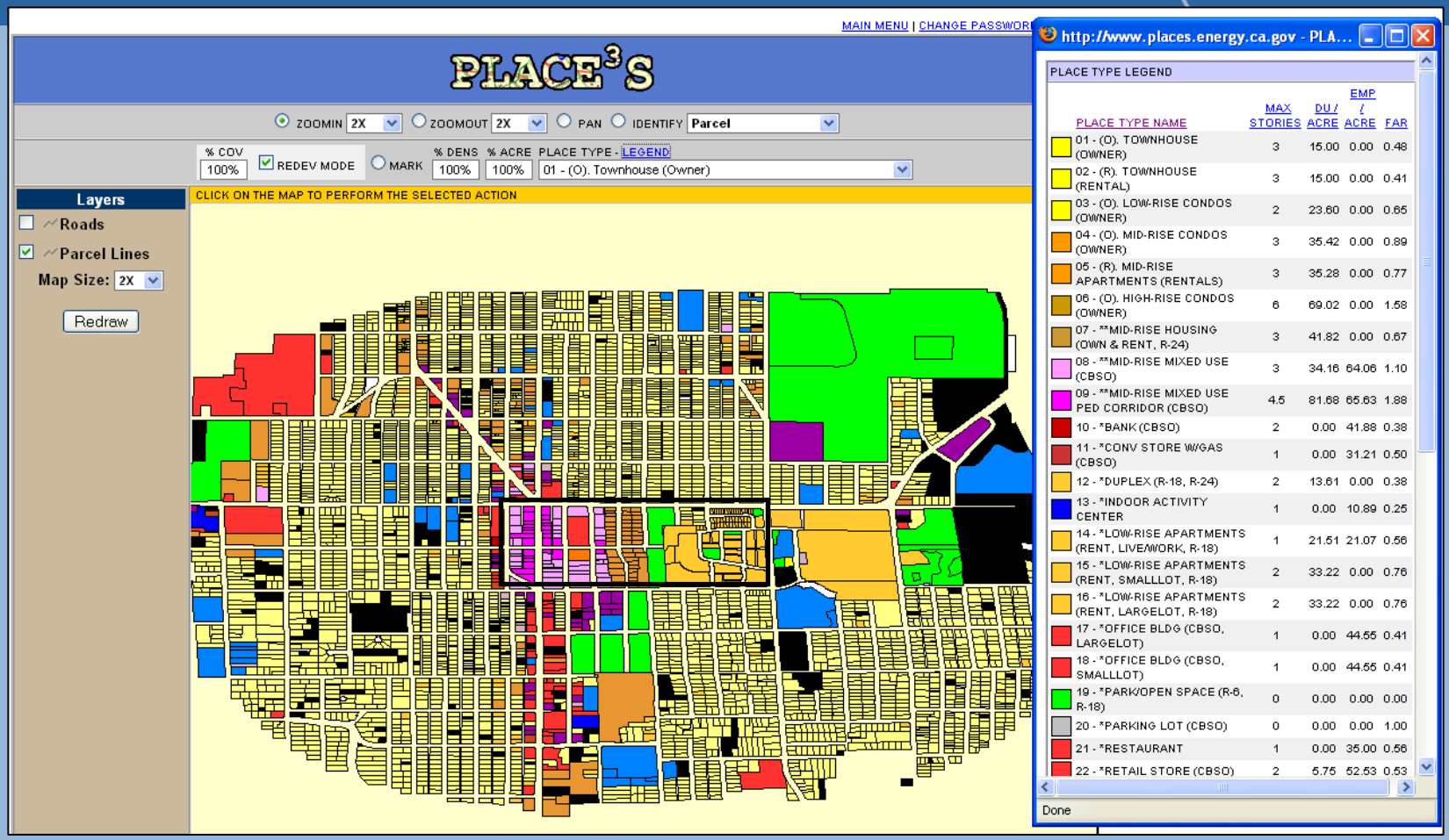


Place Type Energy Settings - The I-PLACE^{3}S Energy Module has energy usage information for various "sector types". Place types must be mapped to these sector types in order to determine the energy usage for each place type.

Future Applications Under Development

- Rural landscapes evaluation
- CO_2 emissions calculation added to I-PLACE^{3}S SACMET travel model
- Infrastructure costs impacts

The White Center/ 98th Street Corridor Study



New Modules Developed Through This Study

Public health (outcomes: physical activity, BMI, walk and bike trips)

Climate change and air quality (outcomes: CO_2, NOX, HC, and CO; vehicle trips and VMT)

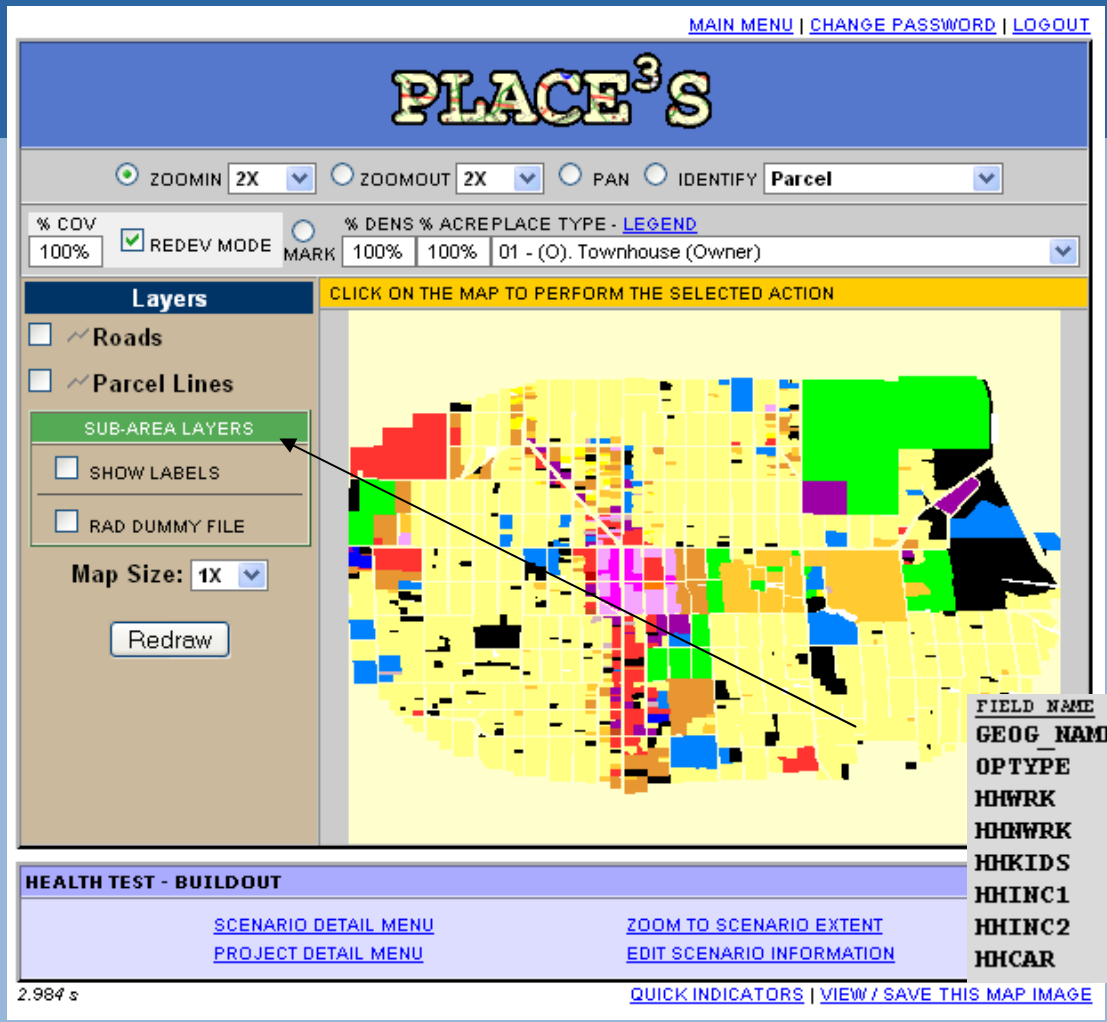
Physical Activity and BMI Module (Person Inputs)

- Demographics
  - Number of adults in household
  - Employment status
  - Number of children in household
- Ratio of adults to cars
- Household income
- Access to transit
- Intersection density
- Area housing density
- Area land use mix
- Park availability
- Area retail and fast food establishments

Climate Change Module (Household Inputs)

- Household demographics
  - Working adults
  - Non-working adults
  - Children
- Household Income
- Access to transit
- Area intersection density
- Household area density
- Area mix of land uses

I-PLACE³S Demographic Variables



FIELD NAME	FIELD DESCRIPTION
GEOG_NAME	THIS IS THE NAME OF EACH SUB-AREA
OPTYPE	PLACE TYPE NAME
HHWRK	NUMBER OF WORKERS IN HH
HHNWRK	NUMBER OF NON-WORKERS IN HH
HHKIDS	NUMBER OF CHILDREN IN HH
HHINC1	HOUSEHOLD INCOME 1
HHINC2	HOUSEHOLD INCOME 2
HHCAR	NUMBER OF CARS OWNED BY HH