



MOVING CALIFORNIA FORWARD

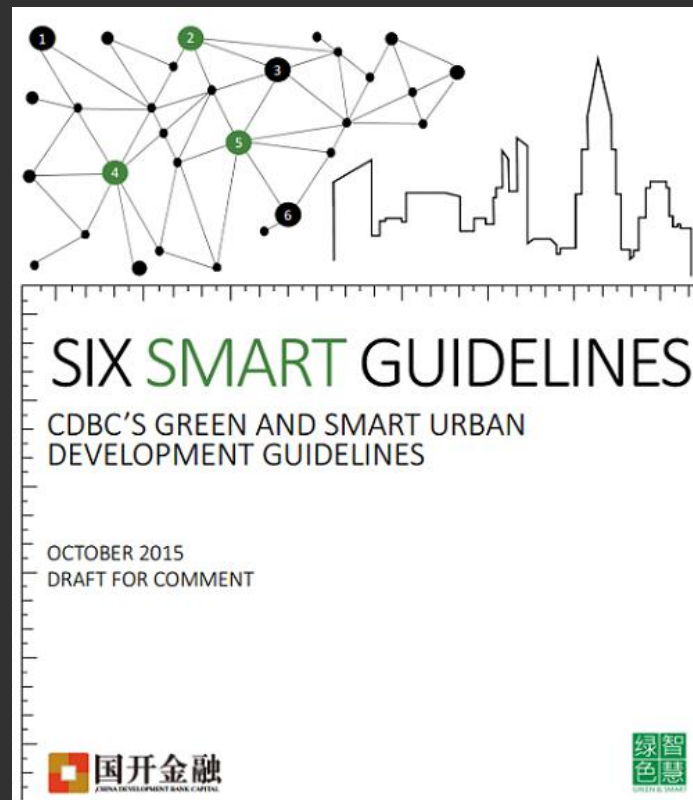
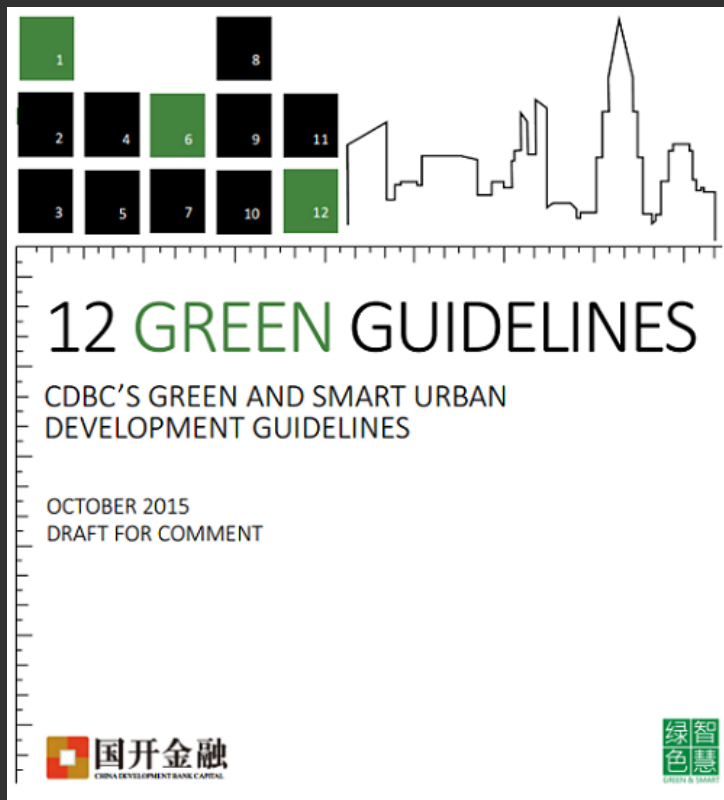
CHRIS BUSCH AND ERIKA LEW
SPUR PRESENTATION
18 FEBRUARY 2016

ENERGY INNOVATION 
POLICY & TECHNOLOGY LLC



CALTHORPE
ANALYTICS

ABOUT ENERGY INNOVATION



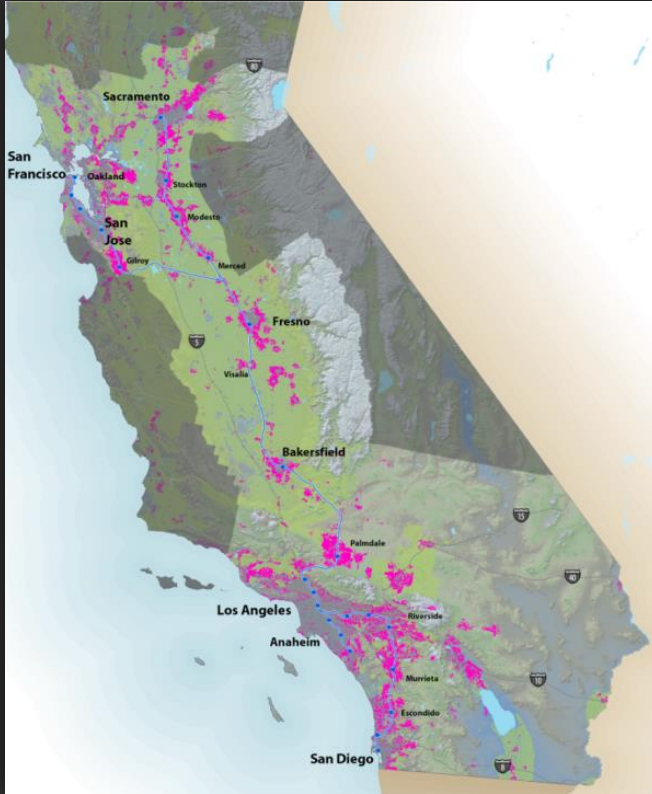
The screenshot shows the UrbanFootprint Scenario Planning Model interface. The main window displays a map of a city area with various land use zones color-coded. To the left is a sidebar with a list of layers and scenarios. To the right are several summary charts and a detailed scenario breakdown table. The top bar shows the application name 'UrbanFootprint' and the project path 'S:\4203.163.82\footprint\'. The bottom status bar indicates the version 'UrbanFootprint ver. 2014.11.6' and copyright '© 2014 California Association'.

& Policy Package Selection

2. SELECT POLICY PACKAGE(S)									
Definitions									
Scenario		Compact		Standard		Scenario %		% of total growth	
Scenario %		% of total growth		Scenario %		% of total growth		% of total growth	
10%	25%	15%	70%	0%	0%	9%	9%	9%	9%
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ABOUT CALTHORPE ANALYTICS

VISION CALIFORNIA



OUTLINE

1. Overview of study and findings
2. Policy motivation
3. Methodology
4. Results. Why is it important for California?
5. Policy revisited: recommendations

OVERVIEW: OUR RECENT STUDY



MOVING CALIFORNIA FORWARD

HOW SMART GROWTH CAN HELP CALIFORNIA REACH ITS
2030 CLIMATE TARGET WHILE CREATING
ECONOMIC AND ENVIRONMENTAL CO-BENEFITS

NOVEMBER 2015

By Chris Busch, Erika Lew, and Joe DiStefano

ENERGY INNOVATION
POLICY & TECHNOLOGY LLC

CALTHORPE
ANALYTICS

OVERVIEW: DEFINING SMART GROWTH



Sprawl



Smart growth

OVERVIEW

OVERLAP WITH SPUR'S AGENDA FOR CHANGE

SPUR'S AGENDA FOR CHANGE

1. Concentrate growth inside existing cities.
2. Build great neighborhoods.
3. Make it affordable to live here.
4. Give people better ways to get where they need to go.
5. Lay the foundations of economic prosperity — for everyone.
6. Reduce our ecological footprint and prepare for climate change.
7. Support local government.

IN THE
SAN FRANCISCO
BAY AREA

OVERVIEW: HOW



Location **inefficiency**
Forces people to drive almost everywhere



Location **efficiency**
Compact and mixed-use development means more walkable and bike accessible

OVERVIEW: HOW



Location **inefficiency**
Forces people to drive almost everywhere



Location **efficiency**
More cost effective to serve with transit

POLICY MOTIVATION

AB 32 signing in 2006



Global Warming Solutions Act

SB 375 signing in 2008



Sustainable Communities Act

POLICY MOTIVATION

AB 32 AND 2030 EXECUTIVE ORDER

1. AB 32

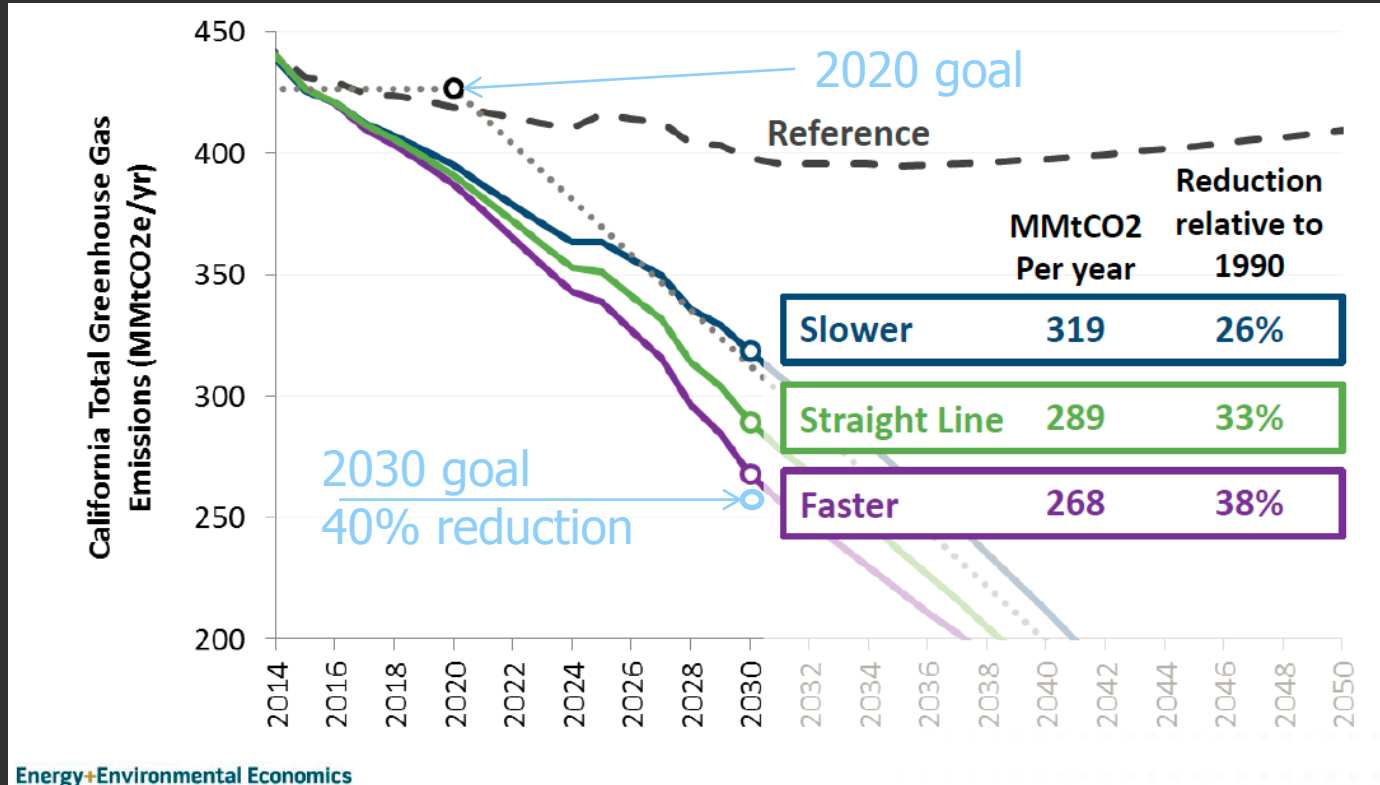
Reduce statewide emissions to 1990 levels by 2020

2. Executive Order B-30-15

Reduce emissions 40 Percent Below 1990 Levels by 2030

POLICY MOTIVATION

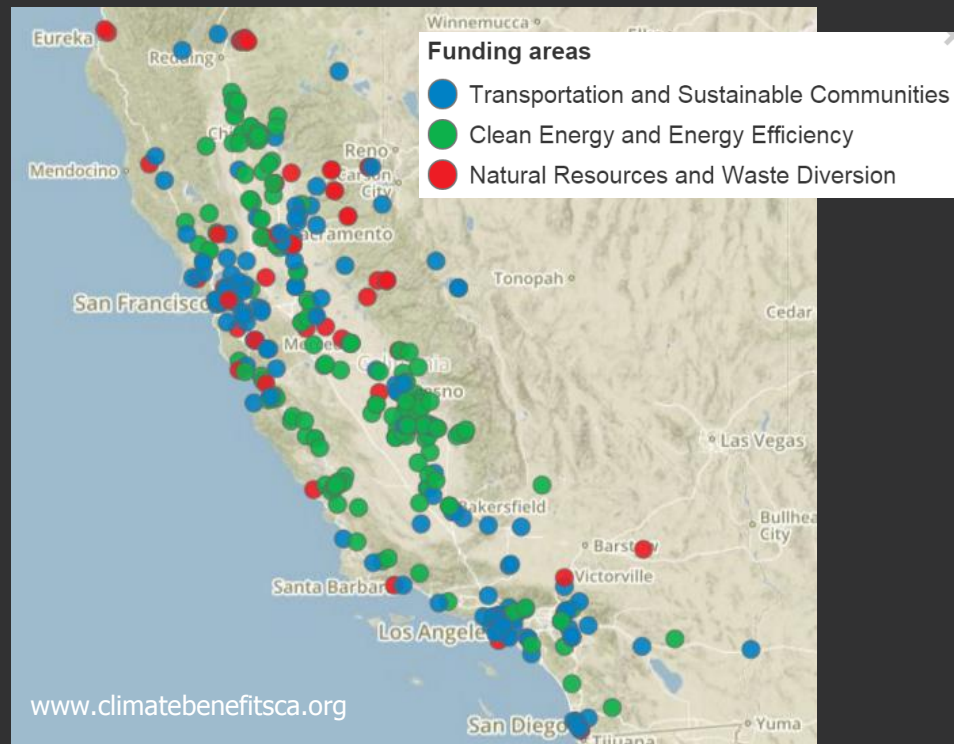
2030 SCOPING PLAN UNDER DEVELOPMENT



POLICY MOTIVATION:

OPPORTUNITY IN INVESTMENT OF CARBON REVENUE

- Largest share (35%) for transportation and sustainable communities
- \$1.24 billion invested so far →
- \$2.8 billion appropriated, \$800 million for disadvantaged communities under SB 535



POLICY MOTIVATION

SB 375 SUSTAINABLE COMMUNITIES ACT

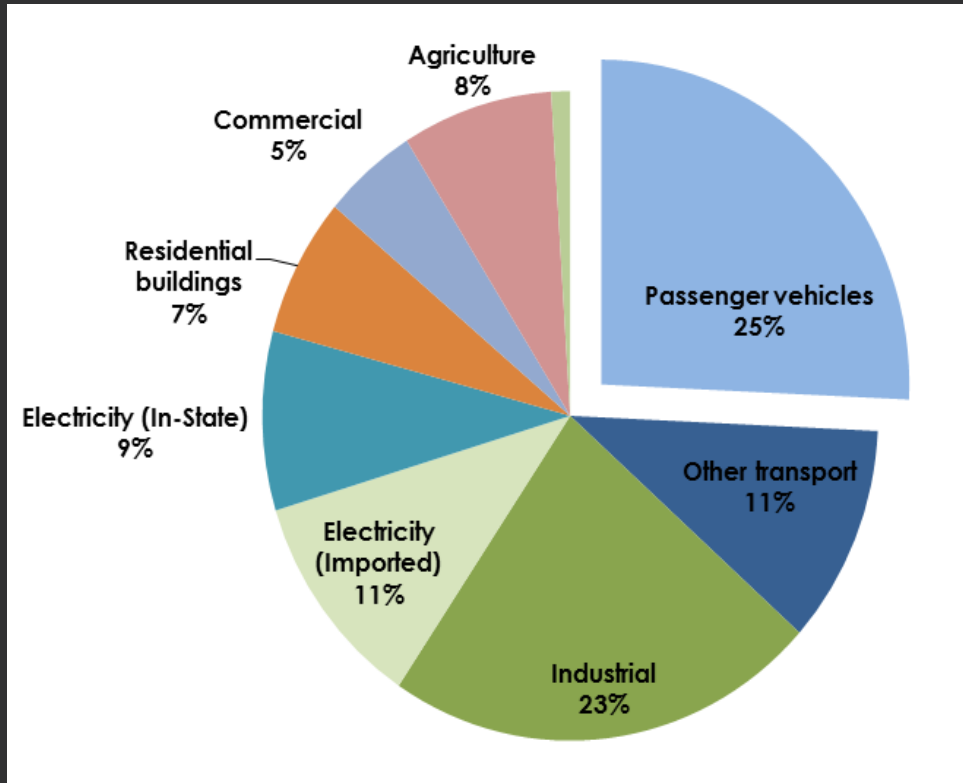
Metropolitan Planning Organizations submit Sustainable Community Plans

Targets	VMT per capita	% Below 2005
2020	7,630 miles	7%
2035	7,130 miles	13%
Historical data		
2005	8,200 miles	Not applicable
2014	7,200 miles	12%

Air Resources Board considering revision of targets this year.

POLICY MOTIVATION

PASSENGER VEHICLES
LARGEST SOURCE OF
EMISSIONS IN 2013



California Air Resources Board

POLICY MOTIVATION

CALIFORNIA GROWTH TO 2030

AN OPPORTUNITY FOR URBAN REDESIGN

+5.7 million people

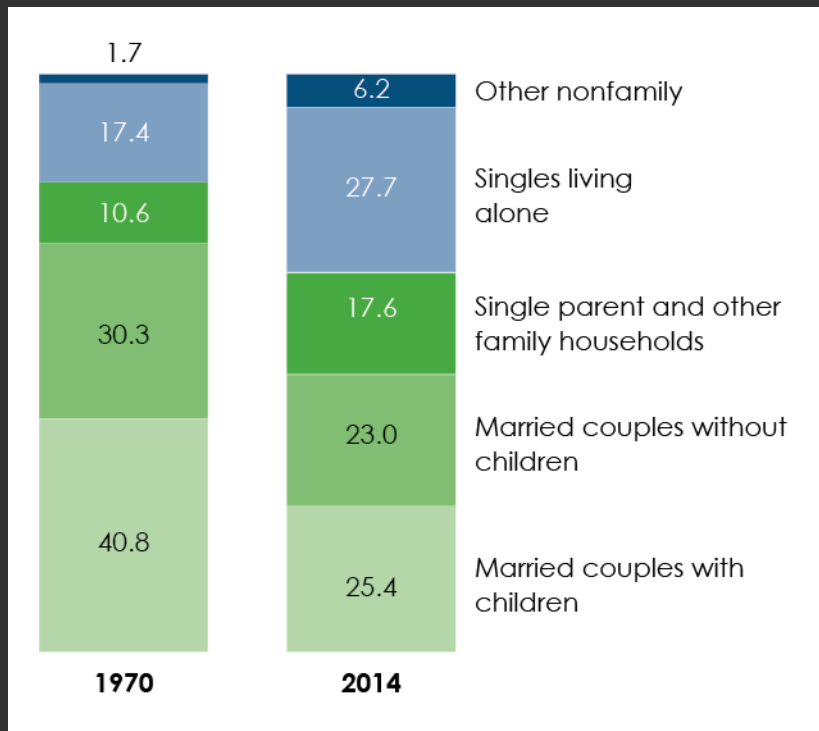
+1.6 million households

+3.8 million jobs

POLICY MOTIVATION

MEETING CHANGING HOUSING DEMAND

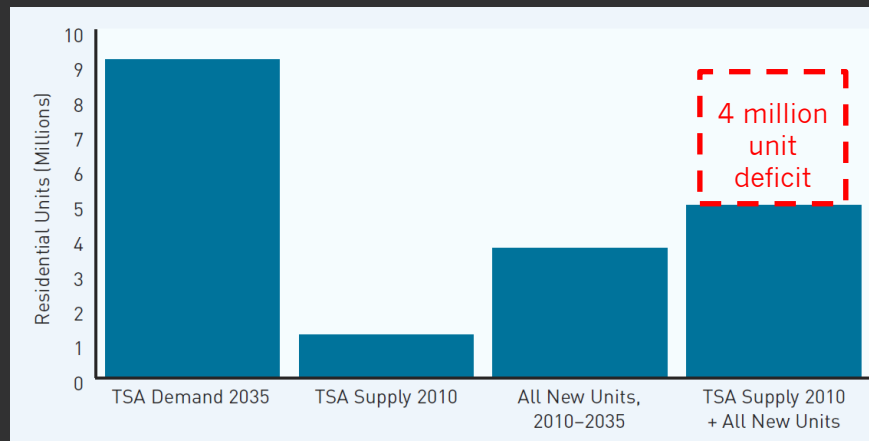
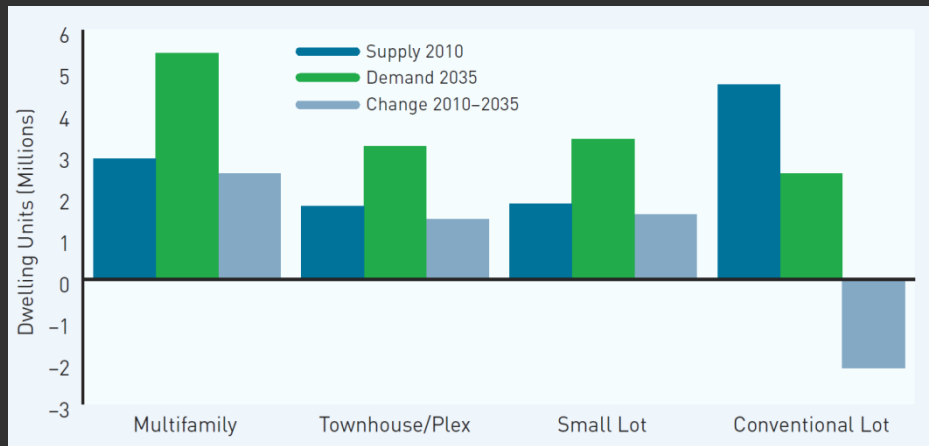
Household demographics



POLICY MOTIVATION

MEETING CHANGING HOUSING DEMAND

Market preferences



Arthur Nelson. 2011. The New California Dream. Urban Land Institute.

METHODOLOGY

THE RAPIDFIRE MODEL



- Spreadsheet-based model developed to quickly evaluate alternatives across a range of metrics
- Scenarios defined by allocation of new population, jobs, and housing types to broad development patterns
- Applies energy technology assumptions from recent E3 study (California PATHWAYS)

RAPIDFIRE MODEL FLOW

BASE + GROWTH PROJECTIONS

Population

Households

Jobs



LAND USE OPTIONS

**Land
Development
Categories
(LDCs):**

**Urban
Compact
Standard**

**Development
condition:
Greenfield
Infill/Redev**

**Housing unit
mix**

**Commercial
space
allocation**



POLICY & PERFORMANCE ASSUMPTIONS

**Per-capita by
LDC**

**Per-unit by
housing type**

**Per-square foot
by building type**

**Energy and
emissions
assumptions**



OUTPUT METRICS

Land consumption

Transportation

Health impacts

Building energy use

Water use

Local fiscal impacts

Household costs

GHG emissions

RAPIDFIRE

LAND DEVELOPMENT CATEGORIES (LDCs)



Urban

Moderate- to high-intensity urban centers



Compact

Walkable and transit-accessible, with mixed uses and moderate densities



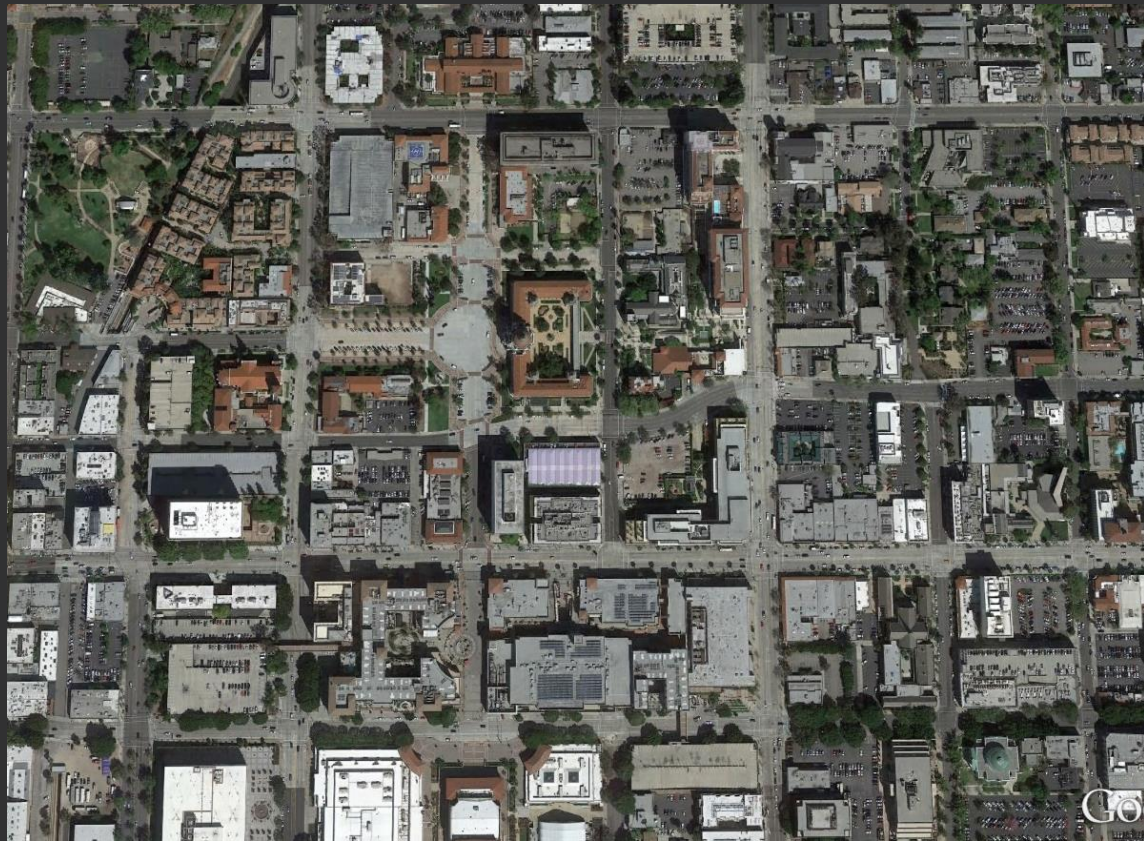
Standard

Auto-oriented suburban development

URBAN LDC



COMPACT LDC



STANDARD LDC



STANDARD LDC



Urban	Compact	Standard	Land Development Category Comparison (Typical per capita, 2012)
 4,300 mi/yr	 6,000 mi/yr	 10,000 mi/yr	Vehicle Miles Traveled (VMT)
 25,000 gal/yr	 29,000 gal/yr	 44,000 gal/yr	Residential Water Use
 17 mil btu/yr	 19 mil btu/yr	 26 mil btu/yr	Residential Energy Use
From driving, residential energy, water-related energy. Excludes commercial energy use  3.1 MT/year	 4.0 MT/year	 6.2 MT/year	Carbon Emissions
Transport, Bldg. Energy, Bldg. Water  \$3,000 \$/year	 \$4,000 \$/year	 \$6,500 \$/year	Household Costs

FOUR STATEWIDE SCENARIOS

Past Trends

A continuation of the expansive development patterns of decades past

Current Plans

A possible trajectory given current planning and policy in line with SB 375

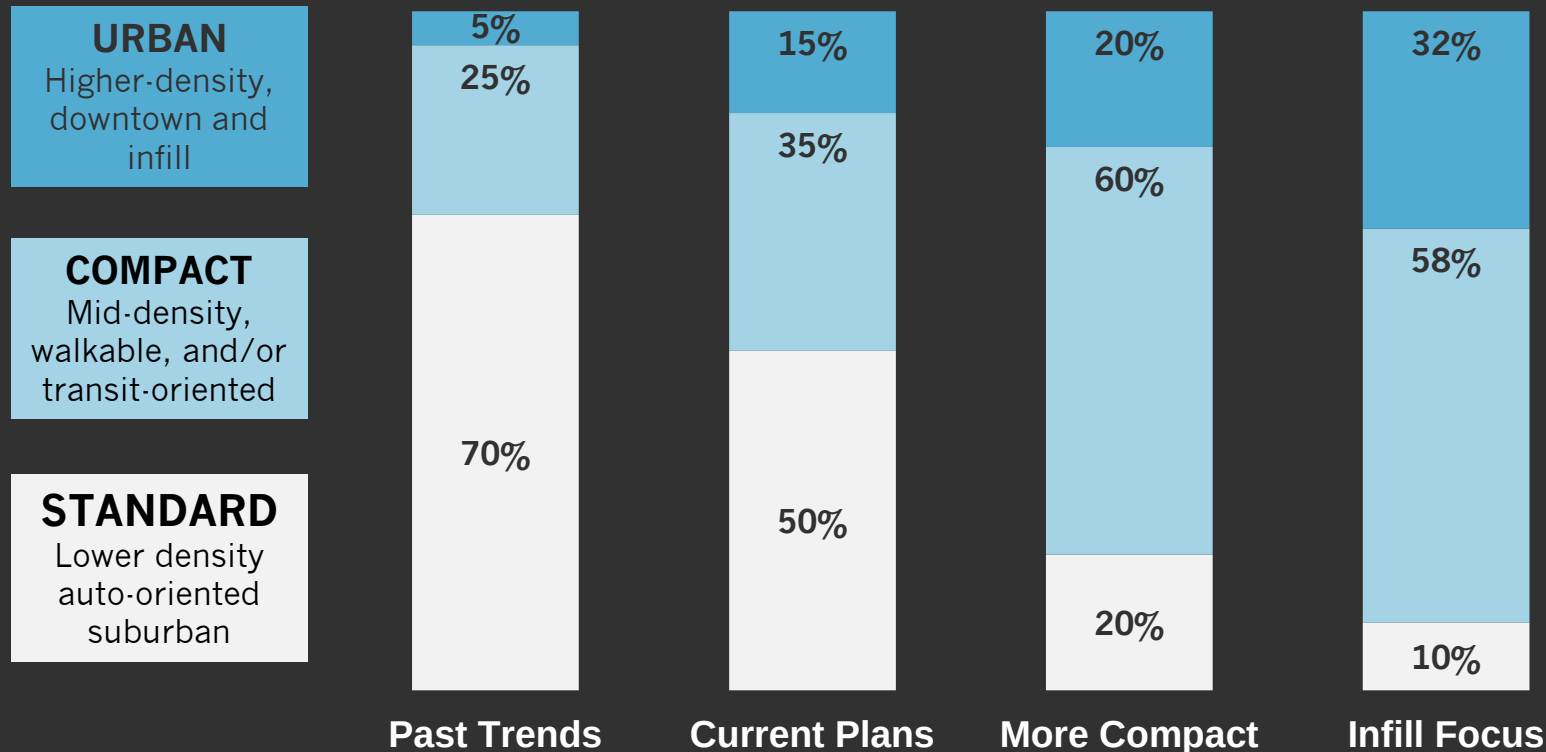
More Compact

A future with stronger smart growth policy that prioritizes focused development in coordination with transit investments, and meets demand for housing in walkable, accessible communities

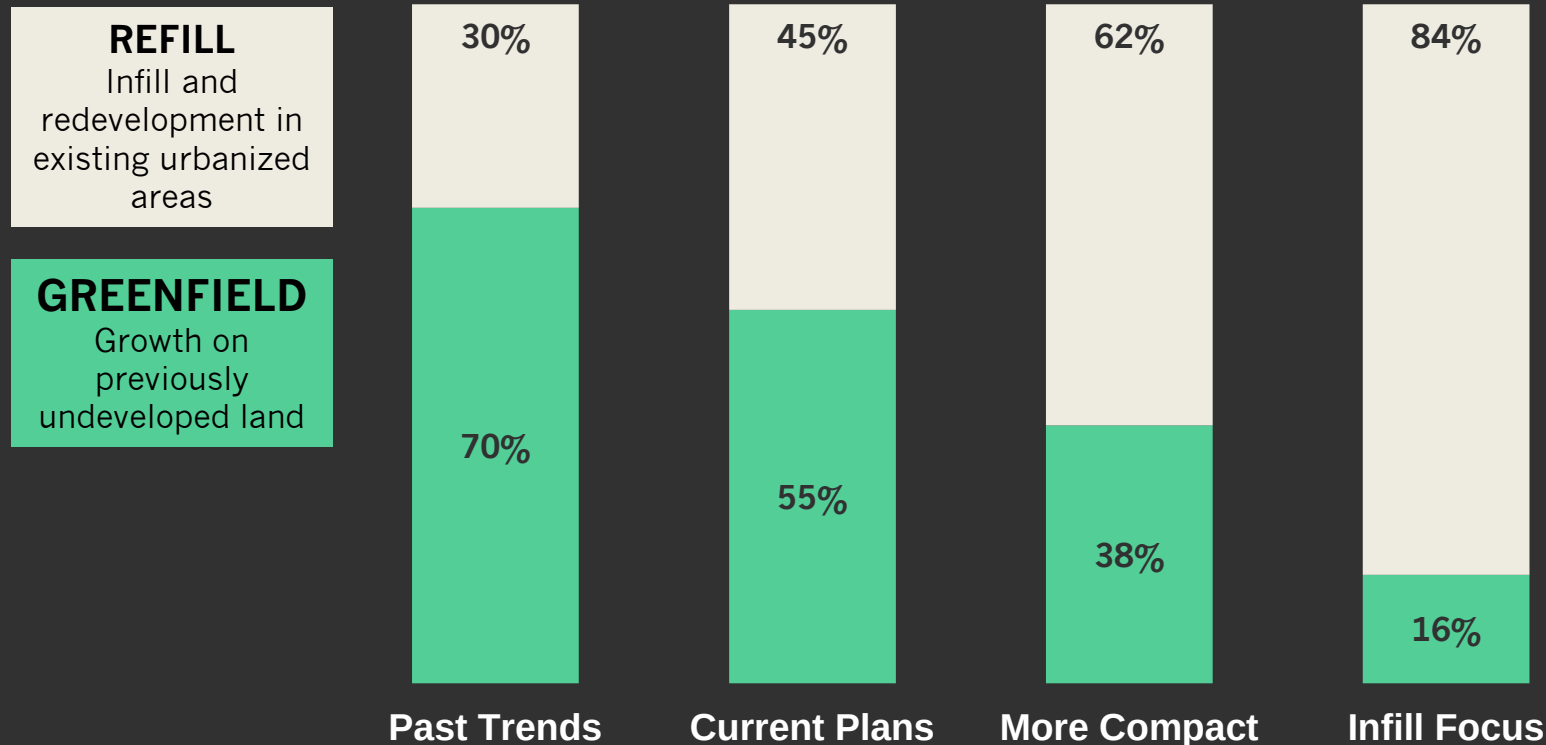
Infill Focus

A smart growth future with a greater focus on infill within existing urban boundaries

LAND USE MIX – NEW GROWTH



DEVELOPMENT LOCATION – NEW GROWTH



STANDARD



Public investment catalyzes development...



COMPACT



STANDARD

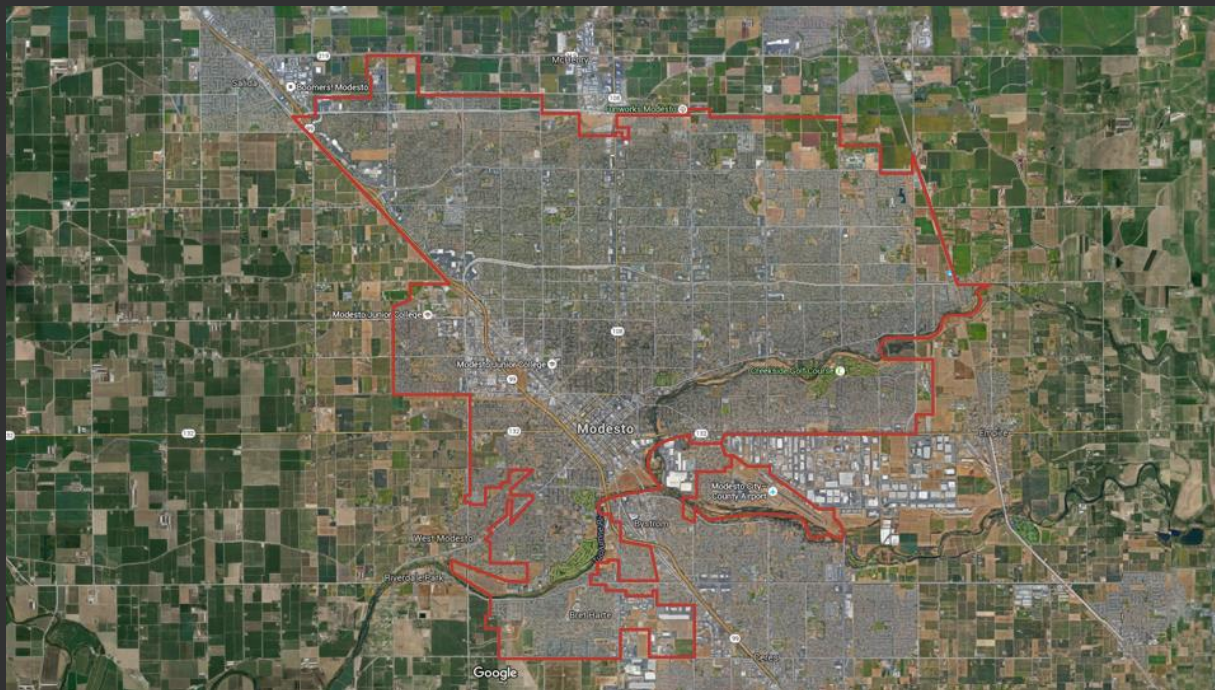


COMPACT

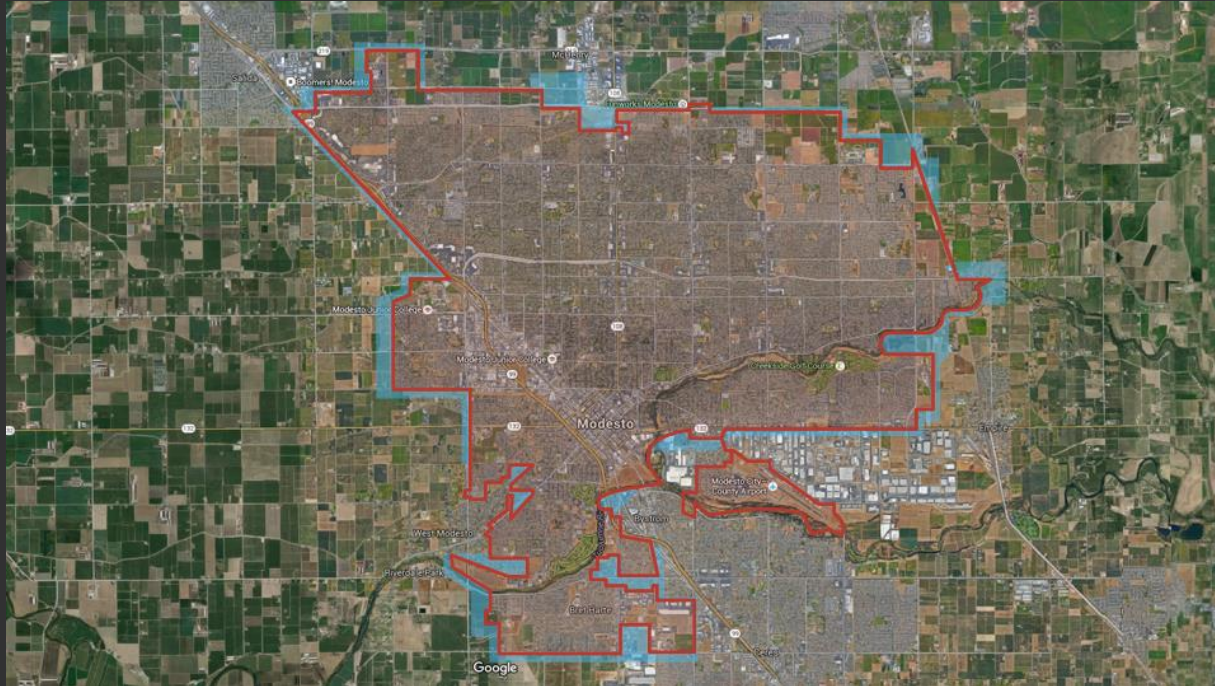


Visual example #1: Modesto

Current boundary

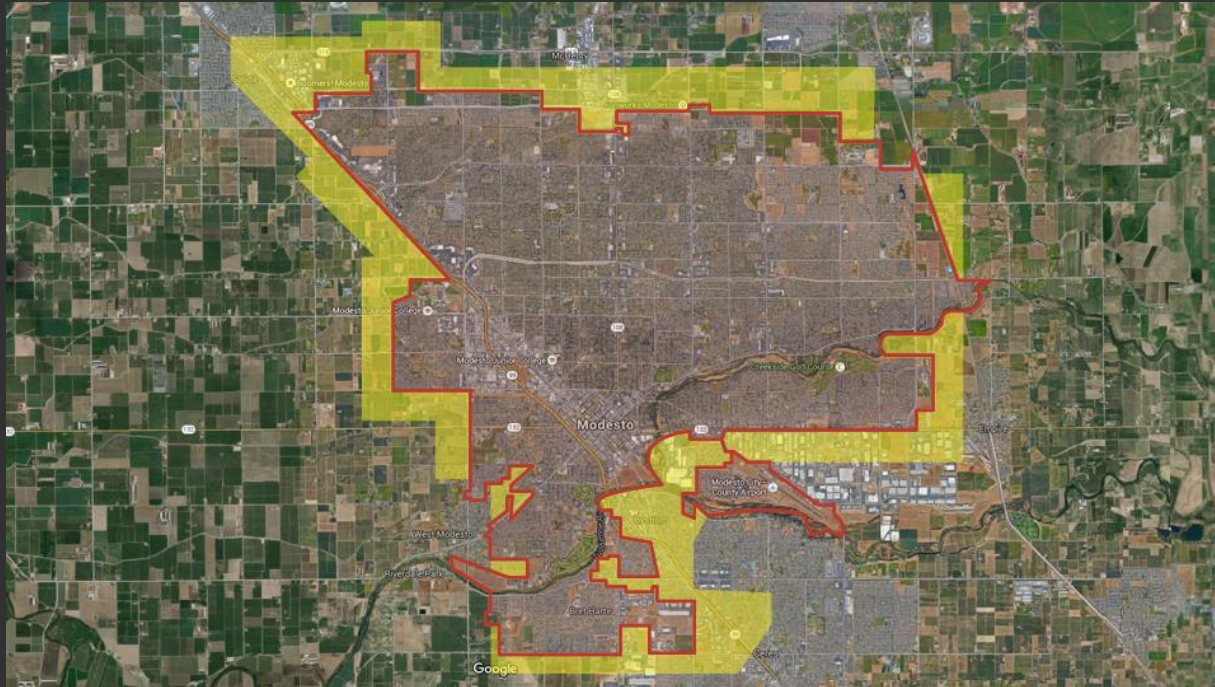


2030 stylized result illustrated under Infill Focus scenario



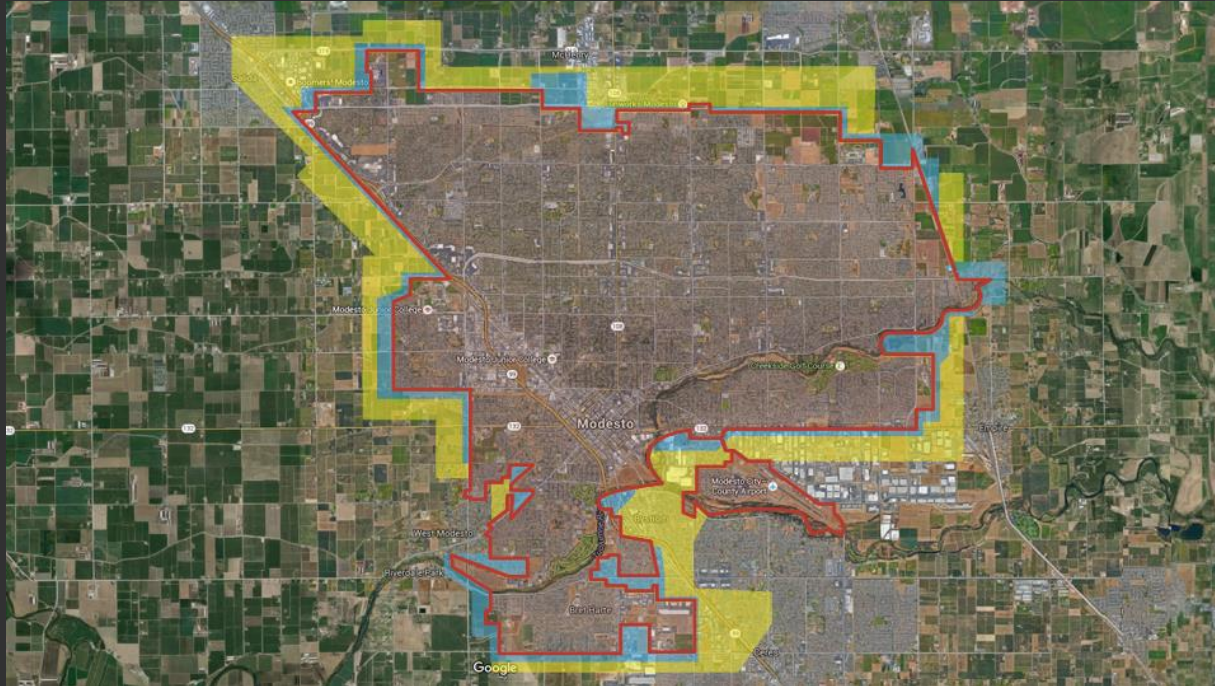
Visual example #1: Modesto

2030 stylized result illustrated under Past Trends scenario

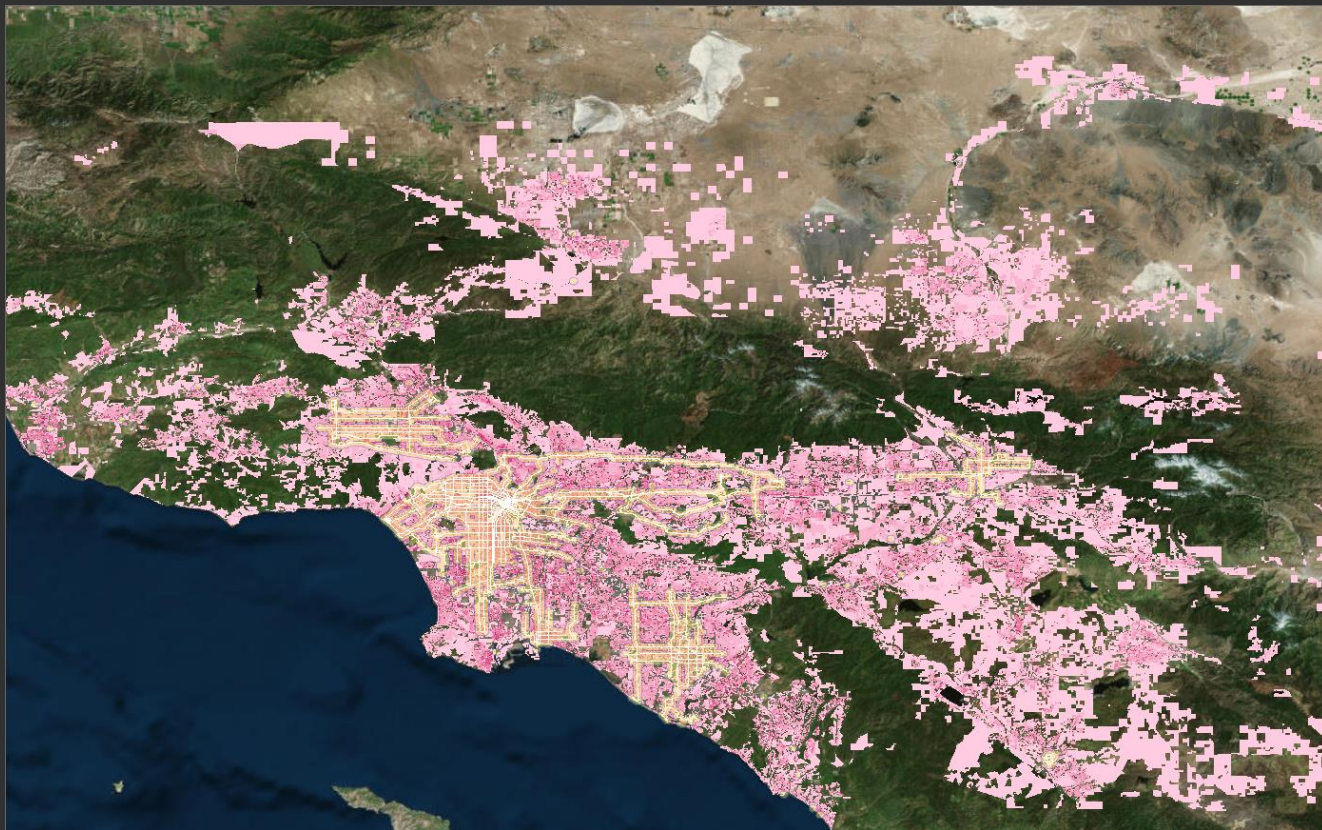


Visual example #1: Modesto

Difference in 2030 between Infill Focus and Past Trends scenarios

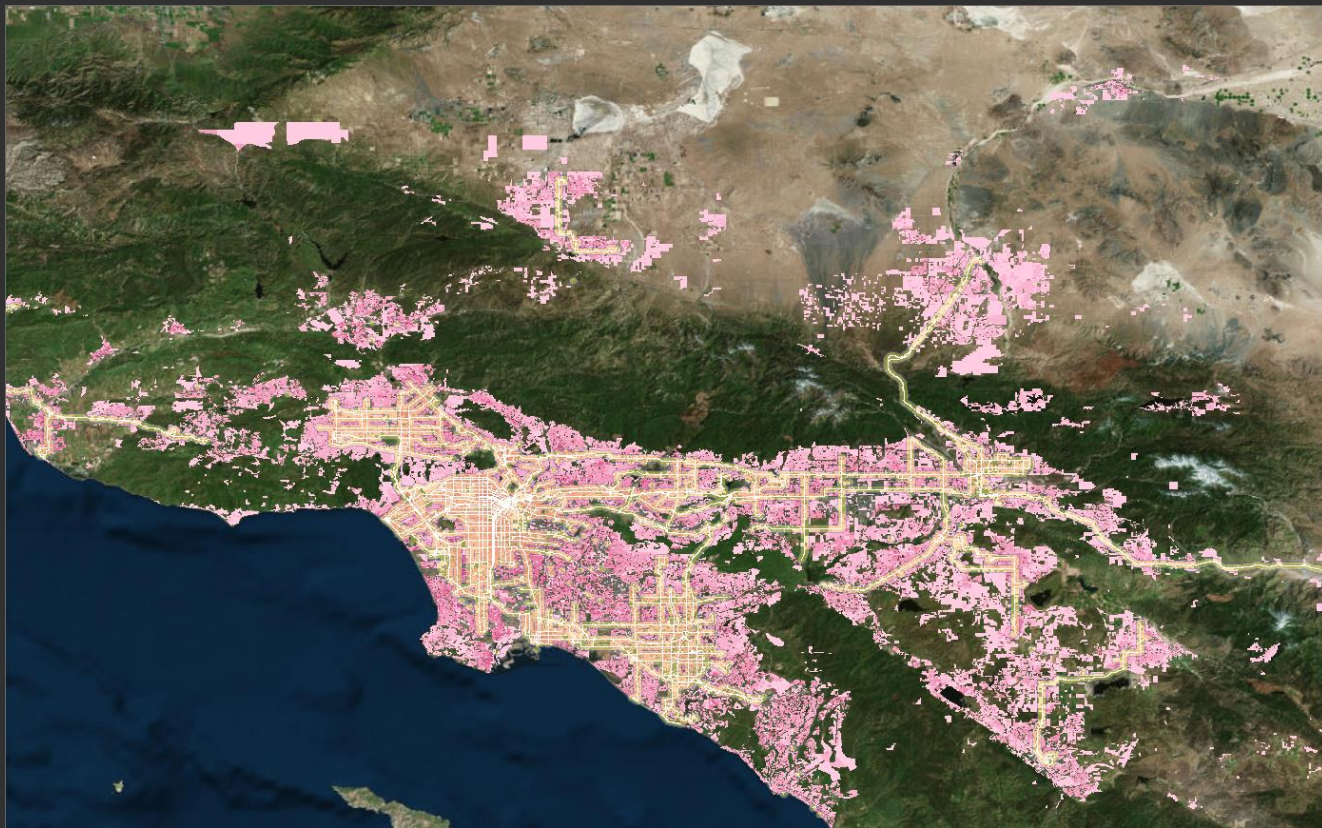


Visual example #2: Past Trends



Illustrative only

Visual example #2: Current Plans



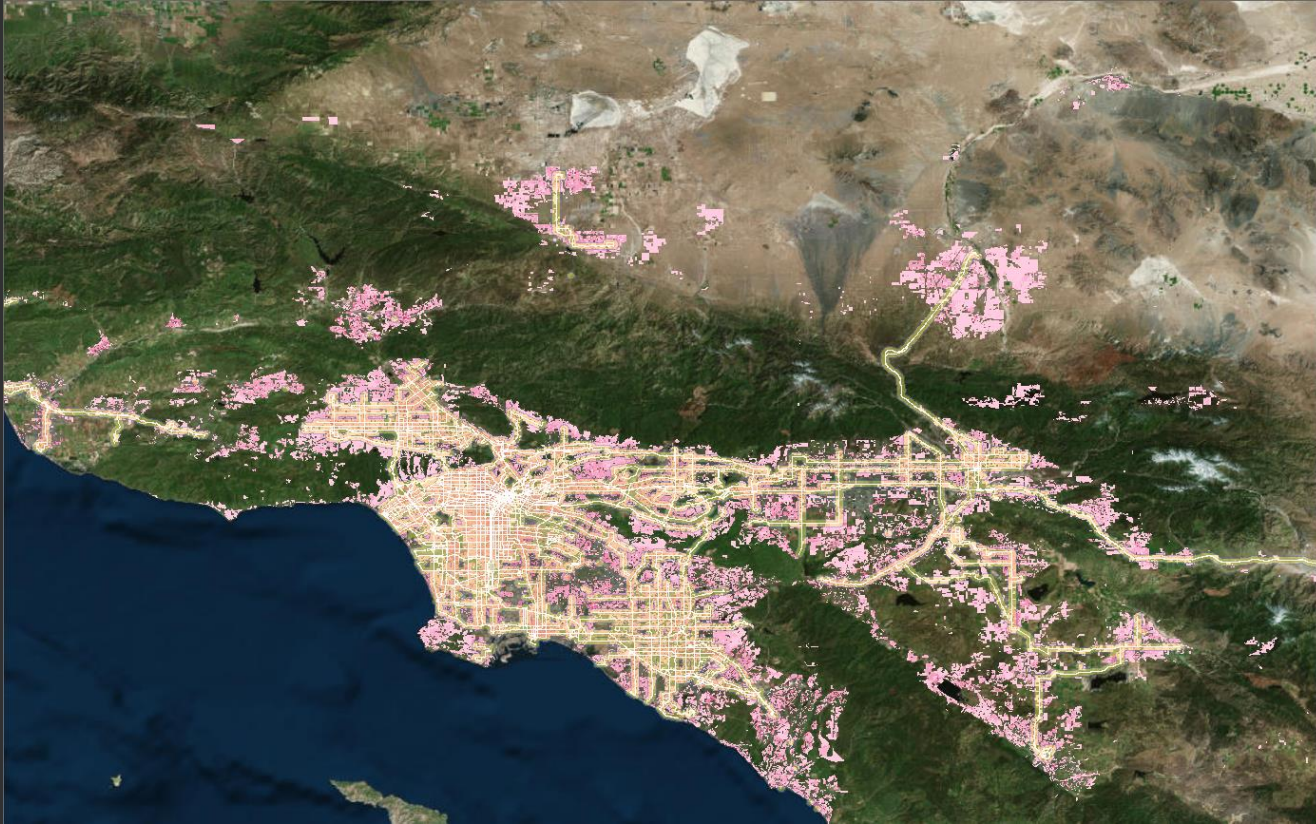
Illustrative only

Visual example #2: More Compact



Illustrative only

Visual example #2: Infill Focus



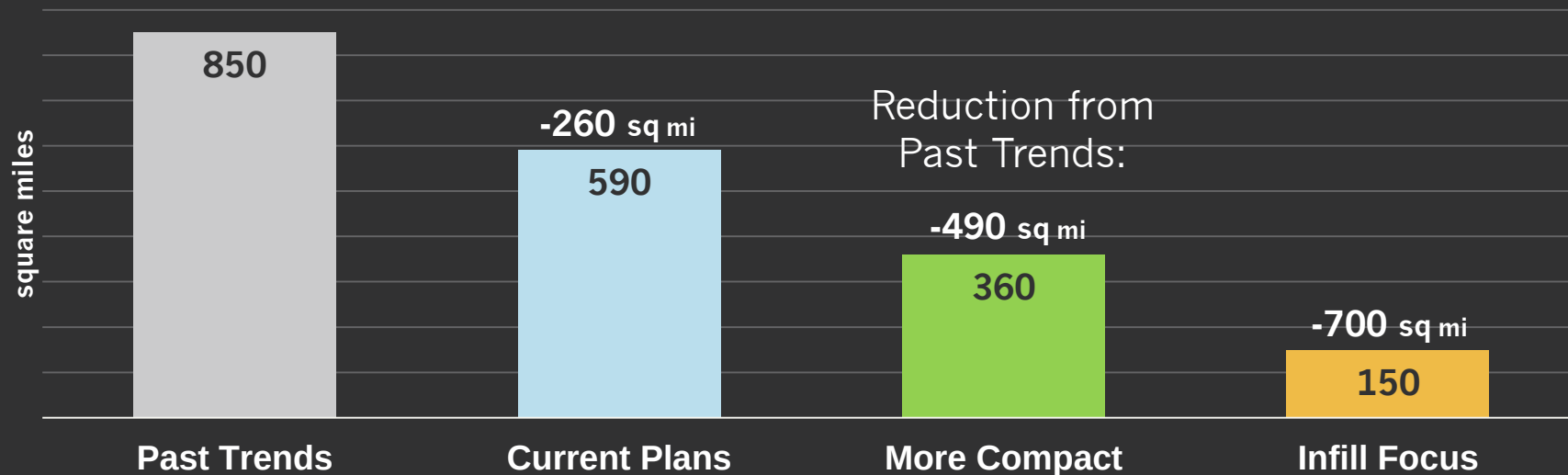
Illustrative only

SCENARIO RESULTS!

(Selected results presented here; see report for full results.)

LAND CONSUMPTION

New (greenfield) land consumed to accommodate growth to 2030

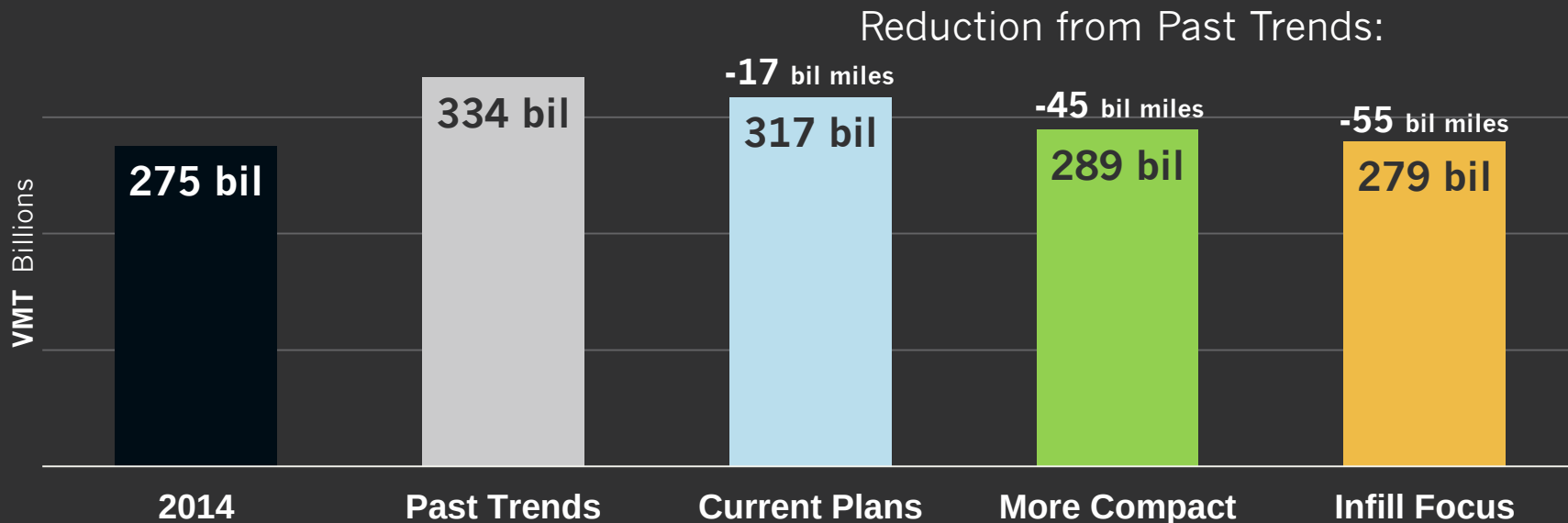


Compared to Past Trends:

Land saved in Infill Focus is equivalent to 14 times that of San Francisco

HOUSEHOLD DRIVING

Annual Passenger Vehicle Miles Traveled (VMT), 2030

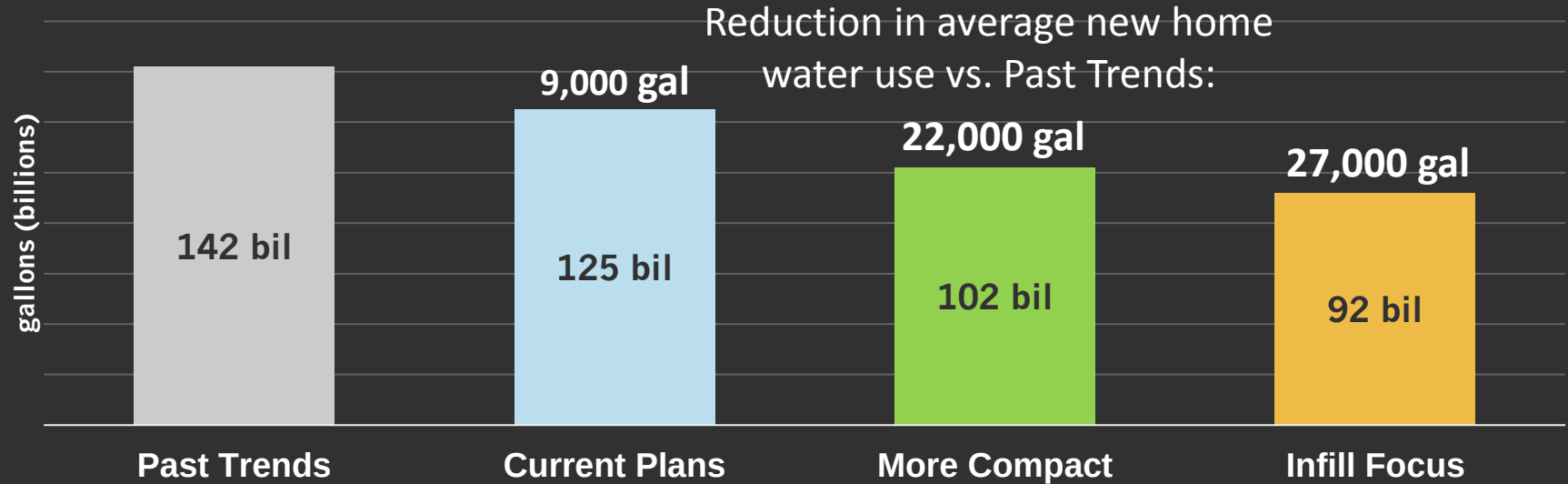


Compared to Past Trends:

*VMT reduction in Infill Focus is like taking **4.6 million cars** off California roads.*

WATER USE

Residential water use for new homes in 2030

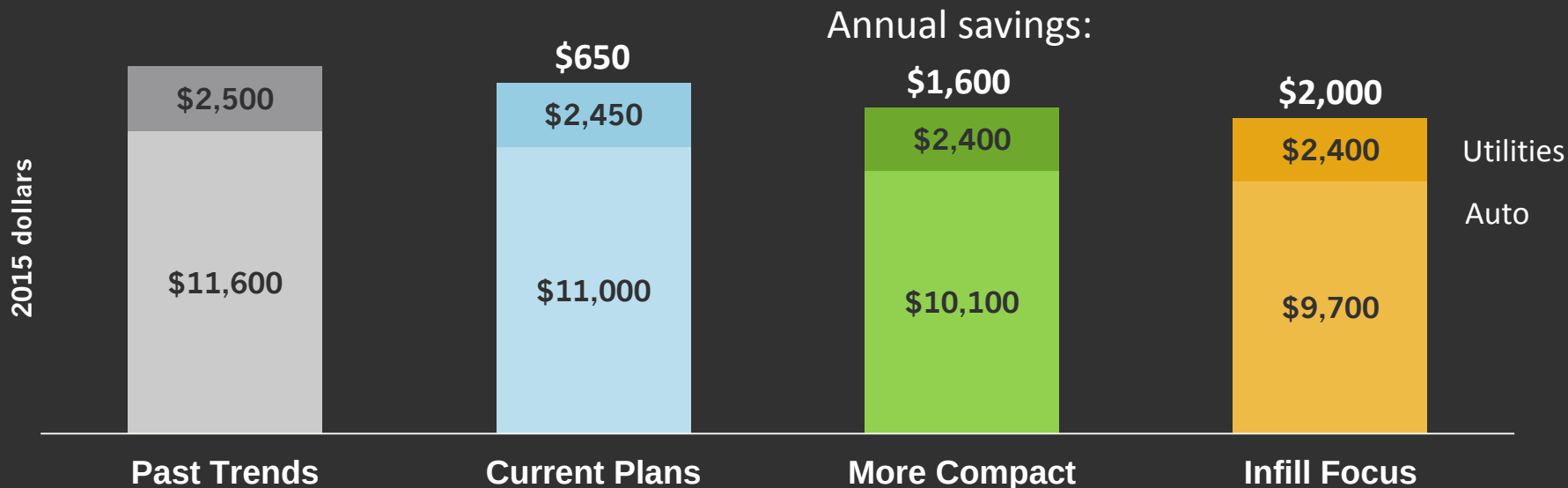


Compared to Past Trends:

Infill Focus saves enough water to supply 470,000 homes in 2030.

HOUSEHOLD AUTO & UTILITY COSTS

Household costs for auto fuel, ownership, and maintenance + energy and water use in 2030

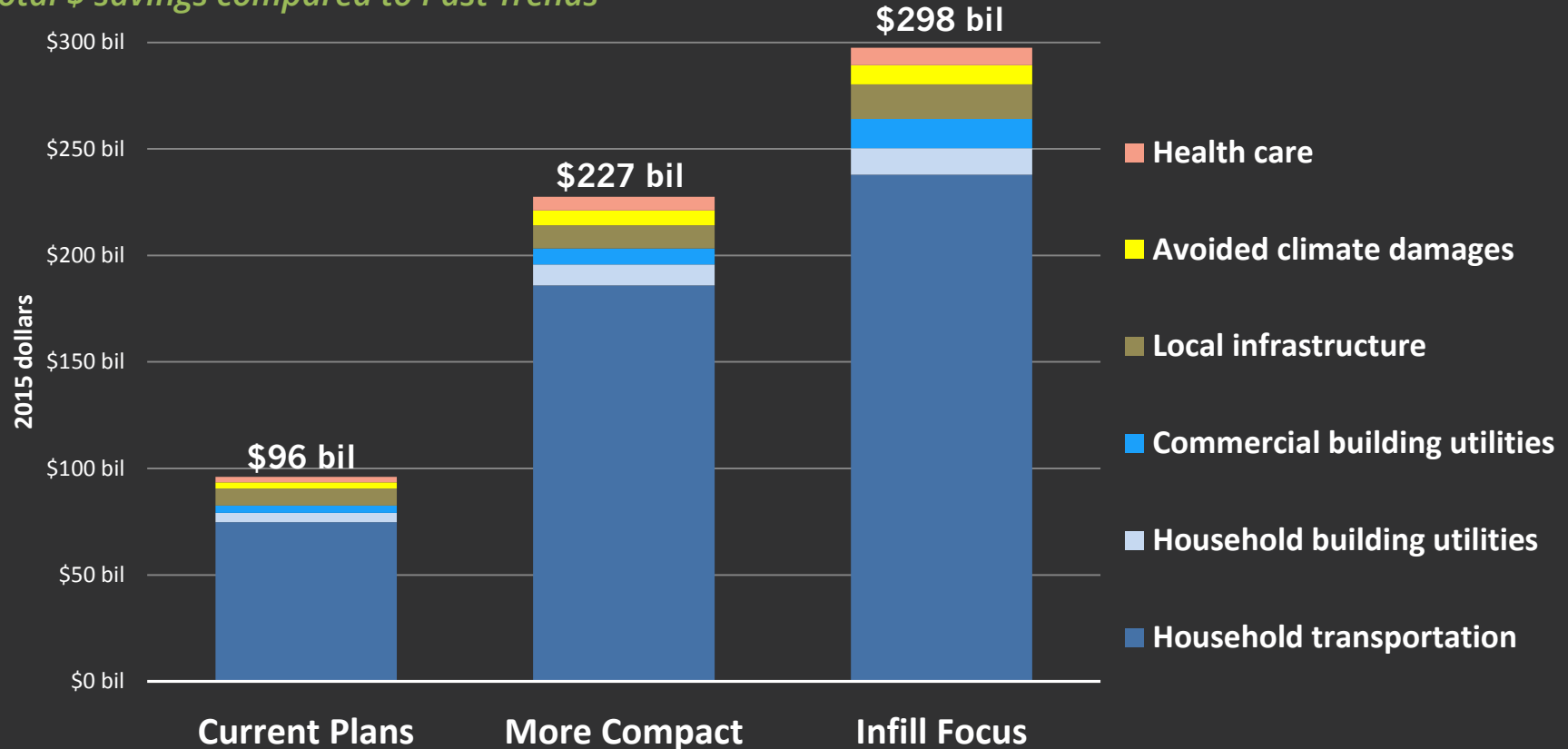


Compared to Past Trends:

*Infill Focus saves California households a cumulative total of **\$250 billion** to 2030.*

COST SAVINGS: CUMULATIVE TO 2030

Total \$ savings compared to Past Trends



POLICY REVISITED

Top three targets for statewide policy

1. SB 375 target re-evaluation
2. 2030 Scoping Plan
3. GHG Reduction Fund spending

An aerial night photograph of a city, likely San Francisco, showing a dense grid of buildings and streets. The city lights are blurred in the background, creating a bokeh effect. A dark blue rectangular box is centered horizontally across the middle of the image, containing the text 'THANK YOU' in white, bold, sans-serif capital letters.

THANK YOU

ENERGY INNOVATION 
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