



SPECIAL JOINT MEETING OF THE REGIONAL COUNCIL; COMMUNITY, ECONOMIC AND HUMAN DEVELOPMENT; ENERGY AND ENVIRONMENT; AND TRANSPORTATION COMMITTEES

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Please Note Date and Time
Thursday, June 18, 2015
9:00 a.m. – 11:00 a.m.

SCAG Main Office
818 W. 7th Street, 12th Floor
Board Room
Los Angeles, CA 90017
(213) 236-1800

See Videoconference Locations on next page

If members of the public wish to review the attachments or have any questions on any of the agenda items, please contact Tess Rey-Chaput at (213) 236-1908 or via email at REY@scag.ca.gov. In addition, regular meetings of the Joint Meetings may be viewed live or on-demand at <http://www.scag.ca.gov/NewsAndMedia/Pages/SCAGTV.aspx>

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Coachella Valley Association of Governments (CVAG)

73-710 Fred Waring Dr., Suite 200
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South Bay Cities Council of Governments (SBCCOG)

South Bay Environmental Services Center
20285 S. Western Avenue, Suite 100
Torrance, CA 90501

**JOINT MEETING OF THE
REGIONAL COUNCIL AND POLICY COMMITTEES
(COMMUNITY, ECONOMIC AND HUMAN DEVELOPMENT COMMITTEE;
ENERGY AND ENVIRONMENT COMMITTEE; TRANSPORTATION COMMITTEE)
AGENDA
THURSDAY, JUNE 18, 2015**

CALL TO ORDER & PLEDGE OF ALLEGIANCE

(Hon. Cheryl Viegas-Walker, President)

PUBLIC COMMENT PERIOD – Members of the public desiring to speak on items on the agenda, or items not on the agenda, but within the purview of the Council, must fill out and present a Public Comment Card to the Assistant prior to speaking. Comments will be limited to three (3) minutes per speaker. The President has the discretion to reduce the time limit based upon the number of speakers. The President may limit the total time for all public comments to twenty (20) minutes.

Time Page No.

PRESENTATION ITEMS

- | | | | |
|---|-------------------|-----------------|-----------|
| 1. <u>2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) - Goals, Guiding Policies and Performance Measures, and Preliminary Scenario Results Discussion (Land Use/Urban Form, Shared Mobility and Technology)</u>
<i>(Hasan Ikhata, Executive Director)</i> | Attachment | 20 mins. | 1 |
| 2. <u>2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) – Scenario Results Focusing on Land Use and Urban Form</u>
<i>(Joe DiStefano, Principal, Calthorpe Analytics)</i> | Attachment | 30 mins. | 15 |
| 3. <u>2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) – Road Charge and the Future of Transportation</u>
<i>(Jim Madaffer, Commissioner, California Transportation Commission)</i> | Attachment | 30 mins. | 42 |

DISCUSSION

40 mins.

ADJOURNMENT

SCHEDULE OF THE NEXT JOINT MEETINGS:

- Thursday, July 23, 2015
- Thursday, August 6, 2015



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DATE: June 18, 2015

TO: Regional Council (RC)
Transportation Committee (TC)
Community, Economic and Human Development (CEHD)
Energy and Environment Committee (EEC)

FROM: Hasan Ikhmeta, Executive Director, 213-236-1944, ikhmeta@scag.ca.gov

SUBJECT: 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy
(2016 RTP/SCS) – Overview

EXECUTIVE DIRECTOR'S APPROVAL:



RECOMMENDED ACTION:

Discuss and provide input to staff.

EXECUTIVE SUMMARY:

This is the first of a series of three (3) Special Joint Regional Council and Policy Committees meeting regarding an overview of key elements expected to be addressed in the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS). Hasan Ikhmeta, Executive Director, will provide an update of the existing 2012 RTP/SCS Goals, Guiding Policies, and Performance Measures; and provide an overview for the 2016 RTP/SCS. Joe DiStefano, Principal, Calthorpe Analytics, will provide an overview of the key findings from the scenario analysis work associated with the 2016 RTP/SCS, and potential benefits and impacts of key transportation and land use policies. Jim Madaffer, Commissioner, California Transportation Commission, will discuss about shared mobility and implications of future technology on mobility and sustainability. The next series of Special Joint meetings will be held in July and August, 2015.

STRATEGIC PLAN:

This item supports SCAG's Strategic Plan, Goal 1: Improve Regional Decision Making by Providing Leadership and Consensus Building on Key Plans and Policies; Objective: a) Create and facilitate a collaborative and cooperative environment to produce forward thinking regional plans.

BACKGROUND:

Every four years, SCAG prepares and updates the long-range Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) for the six-county region. As SCAG goes through the RTP/SCS update process, overarching goals, guiding policies, and performance measures are assessed for whether they need to be adjusted. In addition to making refinements to the RTP/SCS goals, guiding policies, and performance measures, SCAG has also been assessing different urban forms and land uses in coordination with the proposed investments to improve and enhance transportation choices for people as well as goods. A SCAG consultant will provide an overview of the preliminary findings of this effort and discuss the potential policy benefits and implications for the 2016 RTP/SCS.

Jim Madaffer, a California Transportation Commissioner and a policy leader on a host of public policy issues, will discuss shared mobility and transportation technology.

RTP/SCS Goals, Guiding Policies, and Performance Measures

Since the adoption of the 2012 RTP/SCS, several developments have occurred that were considered as a part of this assessment, including:

- The Moving Ahead for Progress in the 21st Century Act (MAP-21) surface transportation funding and authorization bill was passed by Congress on June 29, 2012 and signed into law by President Obama on July 6, 2012, and adopted specific goals, namely safety, infrastructure condition, congestion reduction/system reliability, freight movement & economic vitality, and environmental sustainability. MAP-21 required the use of specific performance measures related to transportation safety and preservation. Subsequent draft MAP-21 rulemaking required that Metropolitan Planning Organizations (MPOs) set targets for these performance measures.
- The rapid advancement of new technologies (e.g. real-time traveler information, on-demand shared mobility services enabled by smartphone applications, car share, bike share, etc.) is influencing travel behavior, encouraging more efficient transportation choices, and helping public agencies manage the multi-modal transportation system more efficiently.
- There is increasing emphasis on reducing greenhouse gas (GHG) emissions. Most recently, on April 29, 2015 Governor Brown issued an Executive Order¹ that establishes a California GHG reduction target of 40 percent below 1990 levels by 2030. Because the transportation sector is the largest contributor to California's GHG emissions (more 36%), we anticipate updated and more stringent regional GHG goals are forthcoming.

RTP/SCS Goals

The RTP/SCS goals are intended to help carry out the vision for improved mobility, economy, and sustainability. The following goals were adopted in the 2012 RTP/SCS:

1. Align the plan investments and policies with improving regional economic development and competitiveness.
2. Maximize mobility and accessibility for all people and goods in the region.
3. Ensure travel safety and reliability for all people and goods in the region.
4. Preserve and ensure a sustainable regional transportation system.
5. Maximize the productivity of our transportation system.
6. Protect the environment and health of our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking).
7. Actively encourage and create incentives for energy efficiency, where possible.

¹ <http://gov.ca.gov/news.php?id=18938>

8. Encourage land use and growth patterns that facilitate transit and non-motorized transportation.
9. Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.

Staff believes that these goals already address the aforementioned developments as follows:

- All MAP-21 goals are specifically addressed by the 2012 RTP/SCS goals.
- Goal 2 (Maximize mobility and accessibility for all people and goods in the region) and Goal 5 (Maximize the productivity of our transportation system) are supportive of leveraging emerging technologies.
- Goal 3 (Ensure travel safety and reliability for all people and goods in the region) and Goal 4 (Preserve and ensure a sustainable regional transportation system) address MAP-21 performance measurement requirements.
- Goal 6 (Protect the environment and health of our system by improving air quality and encouraging active transportation) and Goal 7 (Actively encourage and create incentives for energy efficiency, where possible) also support leveraging emerging technologies as well as reducing GHG emissions.

Staff therefore recommends adopting the same goals for the 2016 RTP/SCS.

RTP/SCS Guiding Policies

The RTP/SCS guiding policies are intended to help to focus future investments on the best-performing projects and strategies that seek to preserve, maintain, and optimize the performance of the existing system. The following guiding policies were adopted in the 2012 RTP/SCS:

1. Transportation investments shall be based on SCAG's adopted regional Performance Indicators.
2. Ensuring safety, adequate maintenance, and efficiency of operations on the existing multimodal transportation system should be the highest RTP/SCS priorities for any incremental funding in the region.
3. RTP/SCS land use and growth strategies in the RTP/SCS will respect local input and advance smart growth initiatives.
4. Transportation demand management (TDM) and non-motorized transportation will be focus areas, subject to Policy 1.
5. HOV gap closures that significantly increase transit and rideshare usage will be supported and encouraged, subject to Policy 1.
6. Monitoring progress on all aspects of the Plan, including the timely implementation of projects, programs, and strategies, will be an important and integral component of the Plan.

Staff believes that two additional guiding policies should be added. The first addition (proposed Guiding Policy 6) addresses emerging technologies and the potential for such technologies to reduce accidents, improve traveler information, reduce demand for single occupancy vehicle use,

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and reduce congestion related to incidents and other non-recurring circumstances (i.e. non-recurrent congestion). The second addition (proposed Guiding Policy 7) recognizes the potential for transportation investments to improve both the efficiency of the transportation network and the environment. Staff recommends adopting the following guiding policies (the new guiding policies are underlined).

1. Transportation investments shall be based on SCAG’s adopted regional Performance Indicators.
2. Ensuring safety, adequate maintenance, and efficiency of operations on the existing multimodal transportation system should be the highest RTP/SCS priorities for any incremental funding in the region.
3. RTP/SCS land use and growth strategies in the RTP/SCS will respect local input and advance smart growth initiatives.
4. Transportation demand management (TDM) and non-motorized transportation will be focus areas, subject to Policy 1.
5. HOV gap closures that significantly increase transit and rideshare usage will be supported and encouraged, subject to Policy 1.
6. The RTP/SCS will support investments and strategies to reduce non-recurrent congestion and demand for single occupancy vehicle use, by leveraging advanced technologies.
7. The RTP/SCS will encourage transportation investments that result in cleaner air, a better environment, a more efficient transportation system, and sustainable outcomes in the long run.
8. Monitoring progress on all aspects of the Plan, including the timely implementation of projects, programs, and strategies, will be an important and integral component of the Plan.

RTP/SCS Performance Measures

Performance measures quantify the impacts of the investments and strategies contained in the RTP/SCS. The 2012 RTP/SCS included the following performance measure outcomes and indicators:

Performance Outcome	Related Performance Measures
Location Efficiency	<ul style="list-style-type: none"> • Share of growth in High-Quality Transit Areas (HQTAs) • Land consumption • Average distance for work or non-work trips • Percent of work trips less than 3 miles • Work trip length distribution
Mobility and Accessibility	<ul style="list-style-type: none"> • Person delay per capita • Person delay by facility type (mixed flow, HOV, arterials) • Truck delay by facility type (highways, arterials) • Travel time distribution for transit, SOV, HOV for work

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	and non-work trips
Safety and Health	<ul style="list-style-type: none"> • Collision/accident rates by severity by mode • Criteria pollutant emissions
Environmental Quality	<ul style="list-style-type: none"> • Criteria pollutant and greenhouse gas emissions
Economic Well-Being	<ul style="list-style-type: none"> • Additional jobs supported by improving competitiveness • Additional jobs supported by transportation investment • Net contribution to gross regional product
Investment Effectiveness	<ul style="list-style-type: none"> • Benefit/cost ratio
System Sustainability	<ul style="list-style-type: none"> • Cost per capita to preserve multi-modal system to current and state of good repair conditions

These outcomes and measures address all of the MAP-21 requirements and are consistent with measuring GHG emissions and the impacts of leveraging transportation investments. However, recognizing that the RTP/SCS integrates transportation and land use and has impacts beyond those exclusively transportation-related, staff recommends adding performance measures for safety and health, which are as follows:

- Air-pollution-related health measures;
- Physical activity-related health measures; and
- Mode share of walking and biking.

SCAG staff did not have the capability to quantify these measures during the 2012 RTP/SCS development process. Since then, however, SCAG has acquired new tools to provide that capability, and as a result, staff recommends adding these measures to the 2016 RTP/SCS.

SCAG staff also recommend the addition of performance measures that better quantify the location efficiency and system sustainability outcomes, including:

- Vehicle Miles Traveled (VMT) per capita;
- Mode share of transit;
- State Highway System Pavement Condition; and
- Local Roads Pavement Condition.

These additional performance measures will help SCAG strengthen its monitoring of the location efficiency and system sustainability outcomes and further support the implementation of MAP-21.

SCAG makes a special effort to gauge the effects of the 2016 RTP/SCS on the region’s low-income and minority populations through the RTP/SCS Environmental Justice (EJ) analysis. EJ-specific performance measures are included in the RTP/SCS to assess the impacts of the RTP/SCS on different low-income and minority populations. Consistent with federal policies and regulations, the EJ analysis and measures are intended to:

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- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Prevent the denial of, reduction in or significant delay in the receipt of benefits by minority and low-income populations.

There are a number of EJ measures that will be quantified and reported in the 2016 RTP/SCS, including:

- RTP revenue source in terms of tax burdens;
- Share of transportation system usage;
- RTP/SCS investments;
- Distribution of travel time savings and travel distance reductions;
- Jobs-housing imbalance or jobs-housing mismatch;
- Accessibility to employment and services;
- Accessibility to parks;
- Gentrification and displacement;
- Air quality health impacts along freeway and highly traveled corridors;
- Environmental impacts of plan and baseline scenarios;
- Aviation noise impacts;
- Roadway noise impacts;
- Active transportation hazard; and
- Rail-related impacts.

Staff believes that the addition of the new performance measures to the previous 2012 RTP/SCS measures along with the EJ findings address all aforementioned developments since the 2012 RTP/SCS adoption. Therefore, staff recommends adopting the revised set of performance measures for the 2016 RTP/SCS update as reflected in the table that follows. Updates to the 2012 RTP/SCS list are underlined.

Performance Outcome	Related Performance Measures
Location Efficiency	<ul style="list-style-type: none"> • Share of growth in High-Quality Transit Areas (HQTAs) • Land consumption • <u>Vehicle Miles Traveled (VMT) per capita</u> • <u>Mode share of transit</u> • Average distance for work or non-work trips • Percent of work-trips less than 3 miles • Work trip length distribution
Mobility and Accessibility	<ul style="list-style-type: none"> • Person delay per capita • Person delay by facility type (mixed flow, HOV,

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	<ul style="list-style-type: none"> arterials) Truck delay by facility type (highways, arterials) Travel time distribution for transit, SOV, HOV for work and non-work trips
Safety and Health	<ul style="list-style-type: none"> Collision/accident rates by severity by mode Criteria pollutant emissions <u>Air-pollution-related health measures</u> <u>Physical activity-related health measures</u> <u>Mode share of walking and biking</u>
Environmental Quality	<ul style="list-style-type: none"> Criteria pollutant and greenhouse gas emissions
Economic Well-Being	<ul style="list-style-type: none"> Additional jobs supported by improving competitiveness Additional jobs supported by transportation investment Net contribution to gross regional product
Investment Effectiveness	<ul style="list-style-type: none"> Benefit/cost ratio
System Sustainability	<ul style="list-style-type: none"> Cost per capita to preserve multi-modal system to current and state of good repair conditions <u>State Highway System Pavement Condition</u> <u>Local Roads Pavement Condition</u>
Environmental Justice	<ul style="list-style-type: none"> No unaddressed disproportionately high or adverse effects for low income or minority communities (as further described above)

2016 RTP/SCS Preliminary Scenarios Results

As part of the development of the 2016 RTP/SCS, staff conducted a planning exercise – scenario development – to represent different conceptual futures of land use and transportation through the duration of the plan, year 2040, in the six-county SCAG region. Staff developed four scenarios which explore the degree to which growth will be focused within our region’s cities and towns over the next twenty-five years. The scenarios take into consider the potential shape and style of neighborhoods and transportation systems. These scenarios model land consumption, travel, energy, water, and pollutant impacts related to varying combinations of land use and transportation strategies. This exercise was conducted to inform the public, SCAG technical working groups, SCAG policy committees and the Regional Council of the impacts of the different land use and transportation policies that will be considered in the Draft Preferred Alternative for the 2016 RTP/SCS.

Attachment #2 provides an in-depth presentation on the scenario development process and results. The presentation has been provided in its entirety for reference.

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Next Steps

Staff will document the discussion and input provided by this body and incorporate into the Draft 2016 RTP/SCS for consideration by the Regional Council and/or appropriate policy committees for approval to release for public review and comments in October of this year.

FISCAL IMPACT:

Work associated with this item is included in the Fiscal Year 2014-2015 Overall Work Program (WBS Number 15-010.SCG00170.01: RTP Support, Development, and Implementation).

ATTACHMENTS:

1. PowerPoint Presentation: 2016-2040 RTP/SCS Goals, Guiding Policies, and Performance Measures Update
2. PowerPoint Presentation: 2016-2040 RTP/SCS Preliminary Scenario Results -
3. PowerPoint Presentation: 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) – Road Charge, and the Future of Transportation

The logo features the years '2016' and '2040' stacked vertically on the left. To the right, the letters 'RTPSCS' are displayed in a large, bold, sans-serif font. The 'R' and 'P' are solid, while the 'S', 'C', and 'S' are hollow with a double-line border.

**GOALS, GUIDING POLICIES, &
PERFORMANCE MEASURES UPDATE**

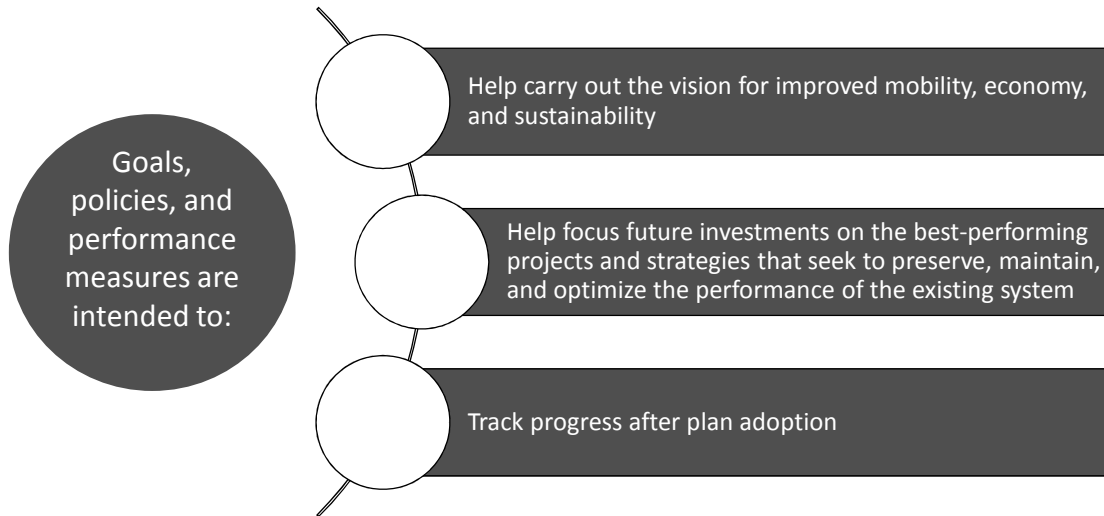
Joint Policy Committee

June 18, 2015

Outline for Today's Workshop

- Overarching vision/goals/policies/performance objectives for 2016 RTP/SCS
- 2016 RTP/SCS Scenario Results – Land Use and Urban Form to be presented by Joe DiStefano, Calthrope Analytics
- Shared Mobility and New Technology to be presented by Jim Madaffer, California Transportation Commissioner

Purpose of Goals, Policies, & Performance Measures



Why Revisit Goals, Policies, & Performance Measures?

- Moving Ahead for Progress in the 21st Century (MAP-21) goals and performance measures
- Advancement of new technologies (e.g. smartphone travel and transit applications, car share, bike share, etc.)
- Increasing emphasis on reducing GHG emissions
- Interest in measures for monitoring the health of residents



2016 RTP/SCS Goals (no changes proposed)

1. Align the plan investments and policies with improving regional economic development and competitiveness.
2. Maximize mobility and accessibility for all people and goods in the region.
3. Ensure travel safety and reliability for all people and goods in the region.
4. Preserve and ensure a sustainable regional transportation system.
5. Maximize the productivity of our transportation system.
6. Protect the environment and health of our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking).

2016 RTP/SCS Goals (no changes proposed)

7. Actively encourage and create incentives for energy efficiency, where possible.
8. Encourage land use and growth patterns that facilitate transit and non-motorized transportation.
9. Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.



2016 RTP/SCS Guiding Policies (2 additions)

1. Transportation investments shall be based on SCAG's adopted regional Performance Indicators.
2. Ensuring safety, adequate maintenance, and efficiency of operations on the existing multimodal transportation system should be the highest RTP/SCS priorities for any incremental funding in the region.
3. RTP/SCS land use and growth strategies in the RTP/SCS will respect local input and advance smart growth initiatives.
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2016 RTP/SCS Guiding Policies (2 additions)

6. The RTP/SCS will support investments and strategies to reduce non-recurrent congestion and demand for single occupancy vehicle use, by leveraging advanced technologies.
7. The RTP/SCS will encourage transportation investments that result in cleaner air, a better environment, a more efficient transportation system, and sustainable outcomes in the long run.
8. Monitoring progress on all aspects of the Plan, including the timely implementation of projects, programs, and strategies, will be an important and integral component of the Plan.

2016 RTP/SCS Performance Measure Categories

- Location Efficiency
- Mobility and Accessibility
- Safety and Health
- Environmental Quality
- Economic Well Being
- Investment Effectiveness
- System Sustainability
- Environmental Justice



Proposed Performance Measures (new)

- Vehicle Miles Traveled (VMT) per capita
- Mode share of transit
- Air-pollution-related health measures
- Physical activity-related health measures
- Mode share of walking and biking
- State Highway System Pavement Condition
- Local Roads Pavement Condition



2016
2040 **RTPSCS**

Thank you!

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2016 RTP SCS

DRAFT SCENARIOS DISCUSSION

SCAG Joint Regional Council / Policy Committee Meeting

A Presentation by Calthorpe Analytics
June 18, 2015

CALTHORPE ANALYTICS

FEHR & PEERS

Today's Presentation

- Brief Scenarios Review
 - 2016 RTP/SCS Alternatives Development Process (in brief)
 - Scenarios Overview
- Preliminary Scenarios Analysis Results
 - Benefits outputs
 - Land Consumption
 - Travel Outputs
 - Public Health Analysis
 - Energy and Water Consumption
 - Household Costs
 - Local Infrastructure Costs
 - Greenhouse Gas Emissions

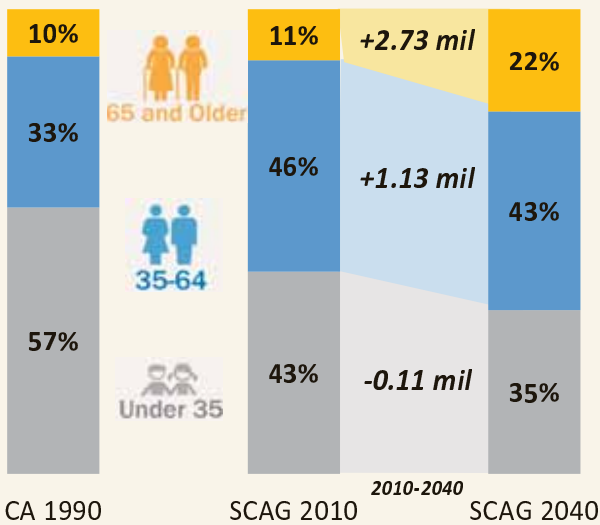
Introduction to the 2016 RTP/SCS Alternatives



Perspectives on Southern California Growth

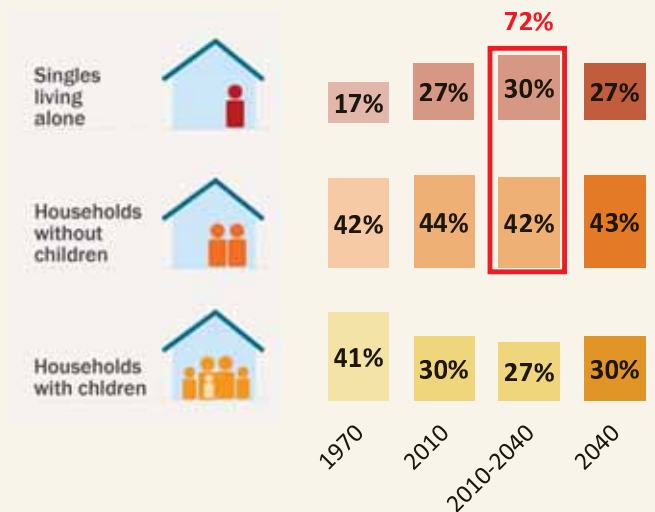
Changing Age and Household Types

Growth to 2040: **3.75 million people, 1.53 million households**



Current & Future Population by Age Group

Source: CA Department of Finance, 2014



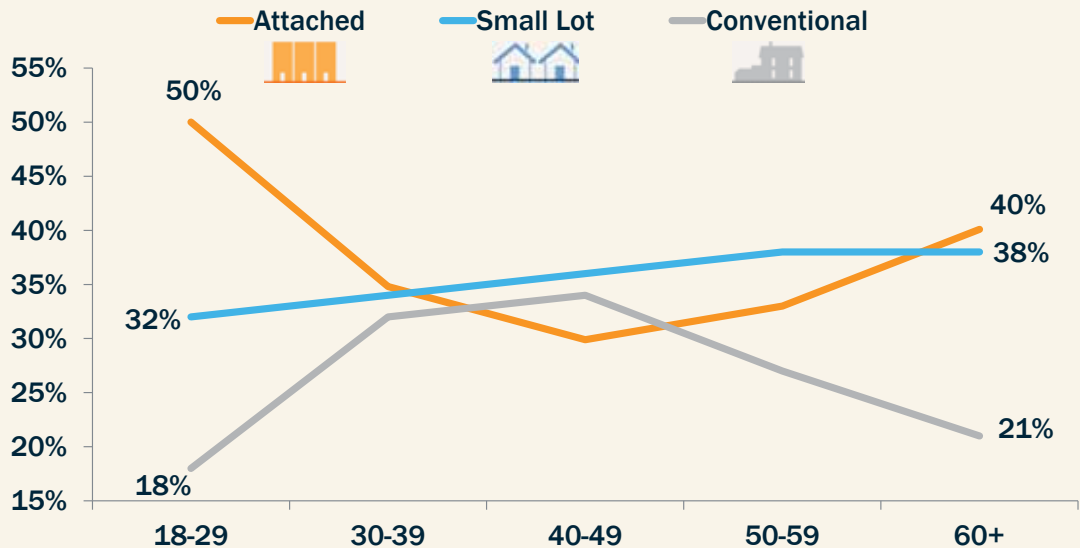
Current & Future Population by Household Type

Source: US Census Bureau, American Community Survey 2012

Perspectives on Southern California Growth

A Life Cycle of Housing Preferences

Housing Preferences by Age



Source: National Association of Realtors (2011)

Perspectives on Southern California Growth

The Market is Changing (or has changed)

November 1, 2013

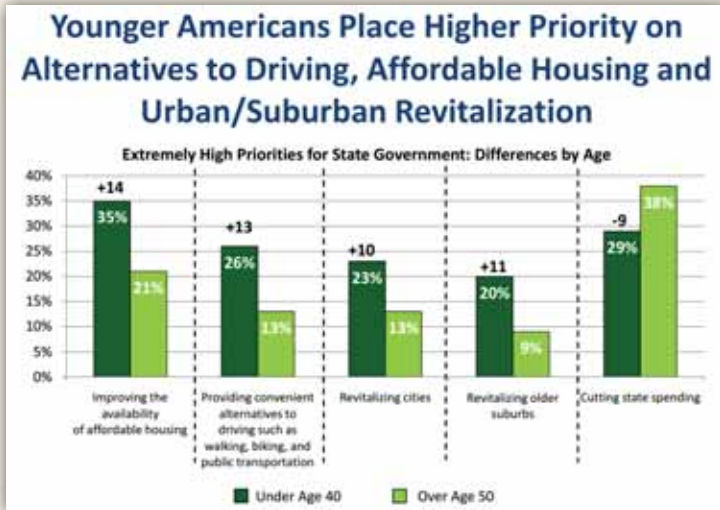
Americans Prefer to Live in Mixed-Use, Walkable Communities

According to the National Association of REALTORS® 2013 Community Preference Survey, 60 percent of respondents favor a neighborhood with a mix of houses, stores, and other businesses that are within walking distance, rather than neighborhoods requiring driving between home, work, and recreation. Respondents indicated that while the size of a home or yard does matter, most are willing to compromise size for a preferred neighborhood and less commuting.

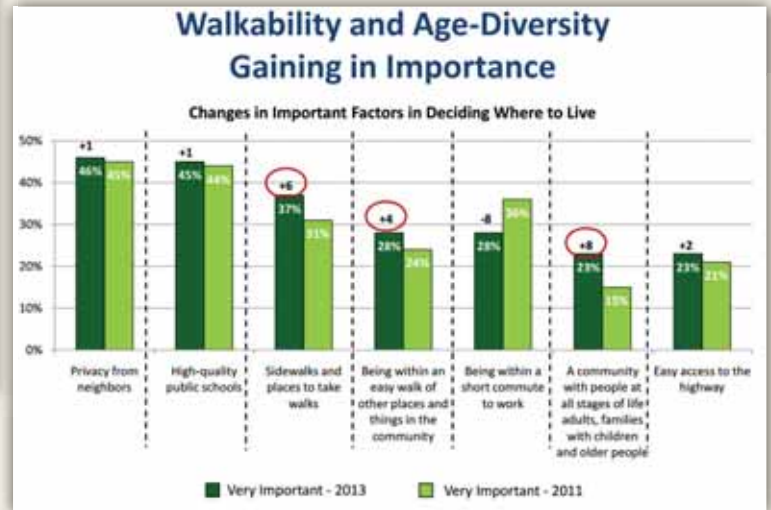
Source: National Association of Realtors (2013)

Perspectives on Southern California Growth

The Market is Changing (or has changed)



Source: National Association of Realtors (2013)



Perspectives on Southern California Growth

New Mobility Options

- Neighborhood Electric Vehicles (NEVs)
- Urban Mobility Platforms
- eBikes
- Car/Bike Sharing
- Travel Planning Apps
- Connected Vehicle Technologies
- Semi-automated drive modes
- Adaptive Cruise Control
- Lane centering
- Fully Autonomous Vehicles



Building the Scenario Alternatives

- Develop a solid **base year** data canvas
 - 2012 'Local Inputs' Base Year
- Calibrate **analytical engines** and policy assumptions
 - Energy and water use baselines
 - Energy portfolio mix and carbon intensity
 - Vehicle fleet mix and efficiency, fuel mix
 - Local infrastructure cost and O&M by land pattern
 - Trip distance and travel skim matrices
- Integrate 2040 Local Plans for '**2012 Updated**' Scenario
- Develop **Policy A & B** alternatives



Building the Scenario Alternatives



Place Types

35 Detailed Types

Mixed Use Centers and Corridors	1	Urban Mixed Use
	2	Urban Residential
	3	Urban Commercial
	4	City Mixed Use
	5	City Residential
	6	City Commercial
	7	Urban Mixed Use
	8	Urban Residential
	9	Urban Commercial
	10	Urban Mixed Use
Employment Areas	11	Wedge Residential
	12	Wedge Commercial
	13	Neighborhood Residential
	14	Neighborhood Low
	15	Office Focus
	16	Mixed Office and R&D
	17	Office / Industrial
	18	Industrial Focus
	19	Low Density Employment Park
	Suburban	20
21		Mid Intensity Activity Center
22		Low Intensity Retail Corridor Neighborhood
23		Retail Strip Mall / Big Box
24		Industrial / Office / Residential Mixed High
25		Industrial / Office / Residential Mixed Low
26		Suburban Multifamily
27		Suburban Mixed Residential
28		Residential Subdivision
29		Large Lot Residential Area
Suburban Residential	30	Rural Residential
	31	Rural Ranchettes
	32	Rural Employment
	33	Campus / University
	34	Institutional
Rural	35	Parks and Open Space

~ 100 Building Types

Mixed Use
Skyscraper Mixed Use
High-Rise Mixed Use
Mid-Rise Mixed Use
Low-Rise Mixed Use
Parking Structure/Mixed Use
Main Street Commercial/Mixed Use: High (3-6 Floors)
Main Street Commercial/Mixed Use: Low (1-2 Floors)
Residential
Skyscraper Residential
High-Rise Residential
Urban Mid-Rise Residential
Urban Podium Multi-Family
Standard Podium Multi-Family
Suburban Multifamily Apt/Condo
Urban Townhomes/Live-Work
Standard Townhome
Garden Apartment
Residential (Cont)
Very Small Lot 3000
Small Lot 4000
Medium Lot 5500
Large Lot 7500
Estate Lot
Rural Residential
Rural Ranchette
Commercial/Industrial
Skyscraper Office
High-Rise Office
Mid-Rise Office
Low-Rise Office
Main Street Commercial (Retail + Office/Medical)
Parking Structure + Ground Floor Retail
Parking Structure
Office Park High
Office Park Low

Studies of Places Across California and the West



Place Types

35 Detailed Types

Mixed Use Centers and Corridors	1	Urban Mixed Use
	2	Urban Residential
	3	Urban Commercial
	4	City Mixed Use
	5	City Residential
	6	City Commercial
	7	Urban Mixed Use
	8	Urban Residential
	9	Urban Commercial
	10	Urban Mixed Use
Employment Areas	11	Wedge Residential
	12	Wedge Commercial
	13	Neighborhood Residential
	14	Neighborhood Low
	15	Office Focus
	16	Mixed Office and R&D
	17	Office / Industrial
	18	Industrial Focus
	19	Low Density Employment Park
	Suburban	20
21		Mid Intensity Activity Center
22		Low Intensity Retail Corridor Neighborhood
23		Retail Strip Mall / Big Box
24		Industrial / Office / Residential Mixed High
25		Industrial / Office / Residential Mixed Low
26		Suburban Multifamily
27		Suburban Mixed Residential
28		Residential Subdivision
29		Large Lot Residential Area
Suburban Residential	30	Rural Residential
	31	Rural Ranchettes
	32	Rural Employment
	33	Campus / University
	34	Institutional
Rural	35	Parks and Open Space

Key Characteristics

- Density
- Mix of Uses
- Street Connectivity
- Location/Accessibility

Land Patterns



Urban



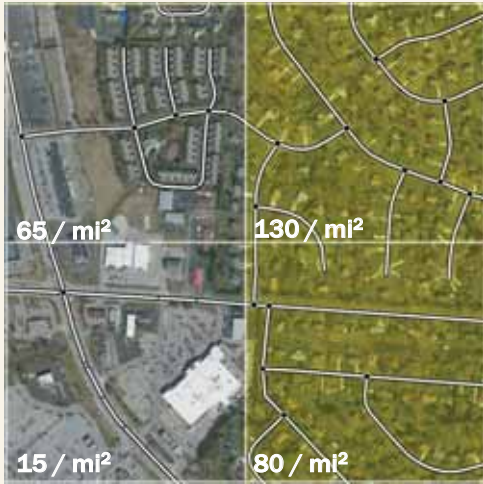
Compact



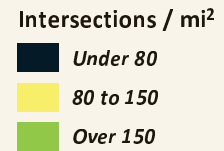
Standard

Place Types - Walkability

Standard



Compact

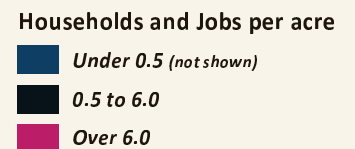
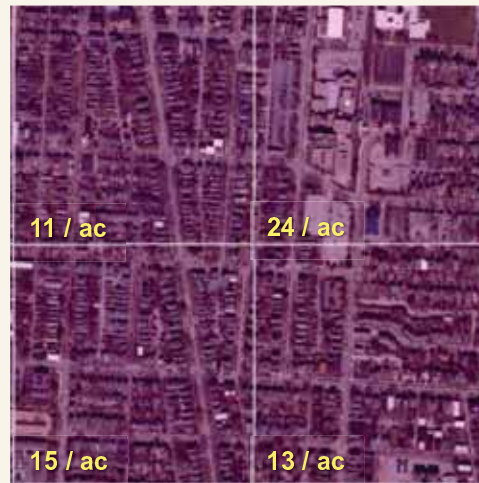


Place Types - Intensity and Mix of Use

Standard



Compact



Place Types - Household Driving

Standard



Compact



Miles traveled per hh / year

- Under 9,000 (not shown)
- 9,000 to 14,000
- Over 14,000

* Regional average

Urban	Compact	Standard
4,500 mi/yr	12,000 mi/yr	26,500 mi/yr
39 mil btu/yr	58 mil btu/yr	79 mil btu/yr
55,000 gal/yr	82,000 gal/yr	142,000 gal/yr
35 min/day	23 min/day	7 min/day
5 MT/year	9 MT/year	16 MT/year
\$17,300 \$/HH	\$22,600 \$/HH	\$26,300 \$/HH

Land Development Category Comparison (Typical Household, 2012)

Household VMT

Residential Energy Use

Residential Water Use

Walking

Carbon Emissions

Local Infrastructure Cost

From driving, residential energy, water-related energy. Excludes commercial energy use

Capital + O&M, 2012-2040

2016 RTP/SCS Scenario Alternatives

MAJOR COMPONENTS

	TREND	2012 PLAN UPDATE	POLICY A	POLICY B
Theme	Past trends extrapolated forward	How does the 2012 Plan look 4 years later?	More focused land use based on new policy considerations and shifting demographics/preference	Pushing the envelope with more aggressive transit investments, land use coordination, technology change
Projections (2012-2040) 21% Population Growth 25% Housing Growth 32% Jobs Growth	<ul style="list-style-type: none"> • 2012 Base Year: 18 million population, 6.4 million homes, 7.4 million jobs • 2012-2040 Change: 3.7 million population, 1.6 million homes, 2.4 million jobs • 2040 End State: 21.7 million population, 8 million homes, 9.8 million jobs 			
Transportation Network	<ul style="list-style-type: none"> ✓ 2012 RTP Network 	<ul style="list-style-type: none"> ✓ Updated 2012 RTP Network ✓ HQTAs/TPA Focus per plans 	<ul style="list-style-type: none"> ✓ Updated 2012 RTP Network ✓ Additional HQTAs ✓ Active Transport Investment ✓ Improved Walkability ✓ 'Last-Mile' Focus 	<ul style="list-style-type: none"> ✓ Updated 2012 RTP Network ✓ Increase in bus headways ✓ Additional Active Transport Investment ✓ Improved Walkability ✓ 'Last-Mile' Focus

2016 RTP/SCS Scenario Alternatives

LAND USE VARIABLES

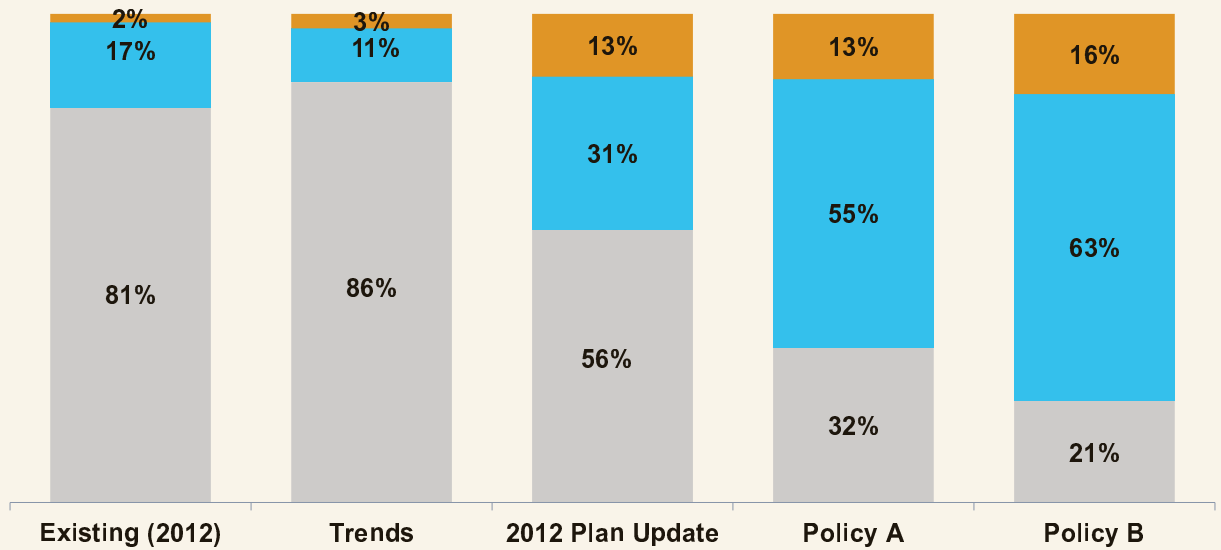
	TREND	2012 PLAN UPDATE	POLICY A	POLICY B
Housing Mix	Based on Past Trends <i>Growth Increment:</i> 67% Single Family 33% Multifamily/Townhome	Based on Local Plans <i>Growth Increment:</i> 44% Single Family 56% Multifamily/Townhome	Based on Shifting Demand <i>Growth Increment:</i> 31% Single Family 69% Multifamily/Townhome	Based on Shifting Demand <i>Growth Increment:</i> 27% Single Family 73% Multifamily/Townhome
Land Use/Transit Coordination	2040 Housing/Jobs Transit Focus High Quality Transit Areas: 35% homes/ 42% jobs Transit Priority Areas: 15% homes/ 20% jobs	2040 Housing/Jobs Transit Focus High Quality Transit Areas: 48% homes/ 60% jobs Transit Priority Areas: 20% homes/ 28% jobs	2040 Housing/Jobs Transit Focus High Quality Transit Areas: 53% homes/ 64% jobs Transit Priority Areas: 21% homes/ 29% jobs	2040 Housing/Jobs Transit Focus High Quality Transit Areas: 64% homes/ 76% jobs Transit Priority Areas: 33% homes/ 44% jobs
Land Pattern Focus	2012 – 2040 New Growth 3% Urban Infill 11% Compact Walkable 86% Standard Suburban	2012 – 2040 New Growth 15% Urban Infill 26% Compact Walkable 59% Standard Suburban	2012 – 2040 New Growth 20% Urban Infill 36% Compact Walkable 45% Standard Suburban	2012 – 2040 New Growth 24% Urban Infill 55% Compact Walkable 22% Standard Suburban
Conservation & Climate Resilience				Avoid New Growth in: <ul style="list-style-type: none"> ✓ Most Critical Habitat Areas (CHAP Level 5) ✓ 5 Foot Sea Rise Zones (NOAA/CalAdapt Year 2100)

Land Patterns New Growth (2012-2040)

URBAN
Higher-density,
downtown and
infill

COMPACT
Mid-density,
walkable, and/or
transit-oriented

STANDARD
Lower density
auto-oriented
suburban

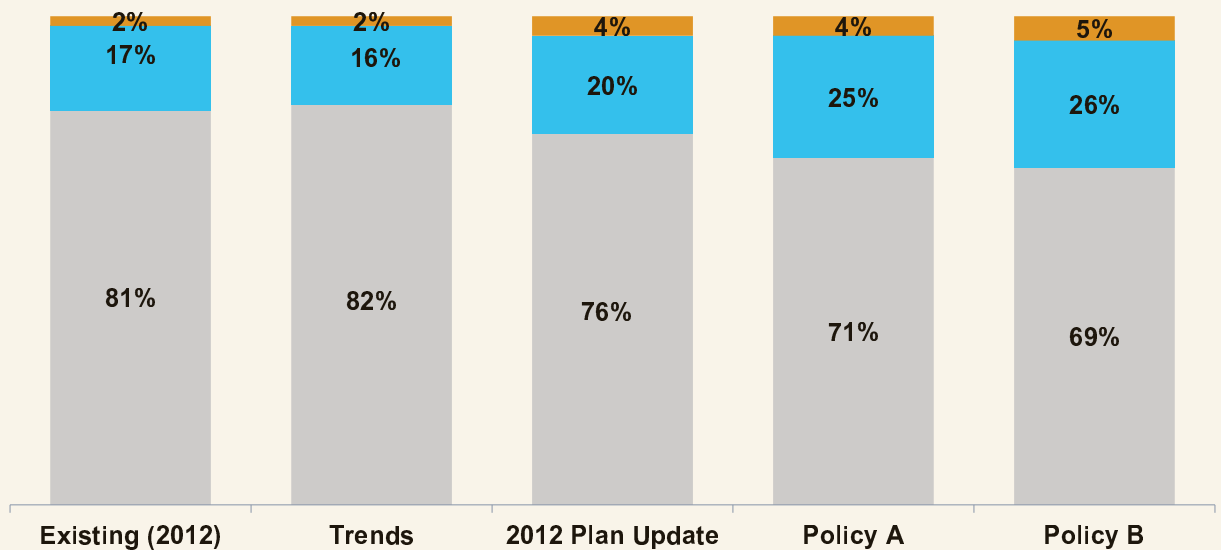


Land Patterns End State (2040)

URBAN
Higher-density,
downtown and
infill

COMPACT
Mid-density,
walkable, and/or
transit-oriented

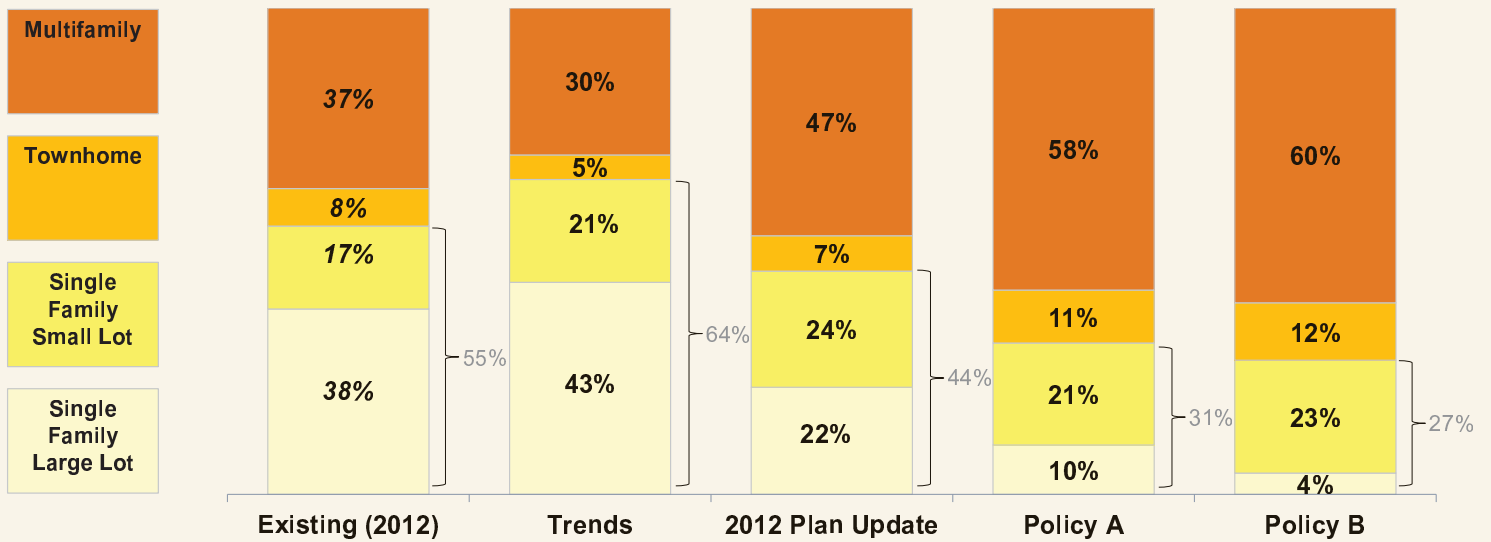
STANDARD
Lower density
auto-oriented
suburban



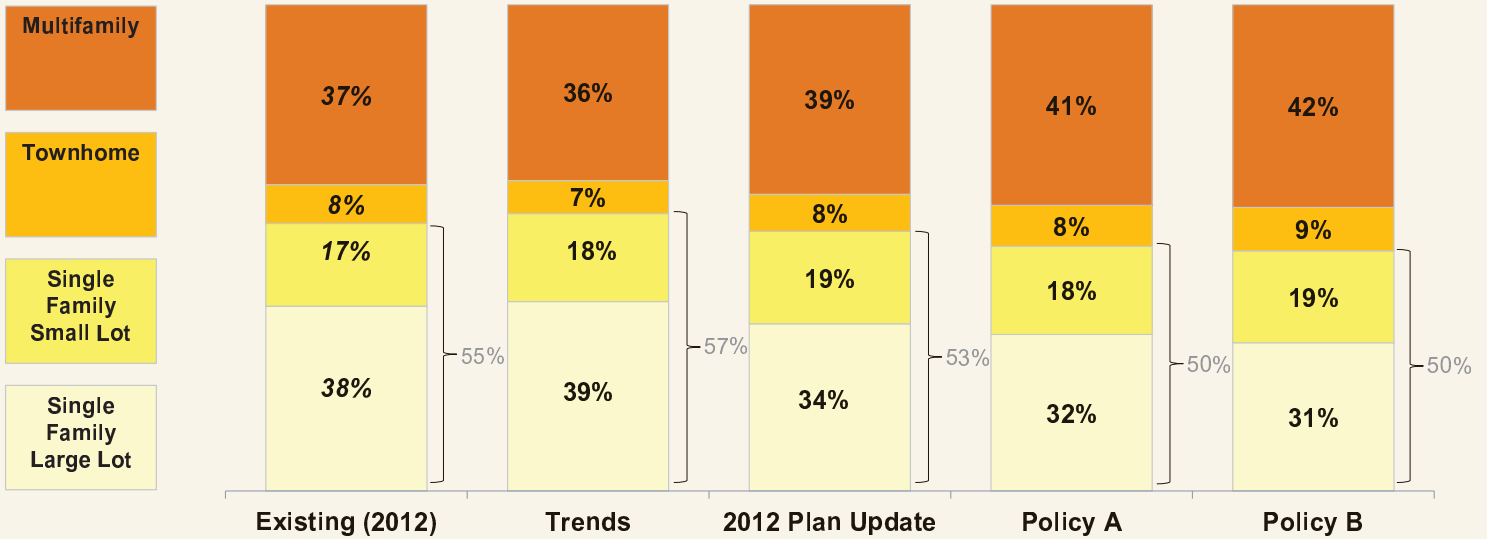




Housing Mix New Growth (2012-2040)

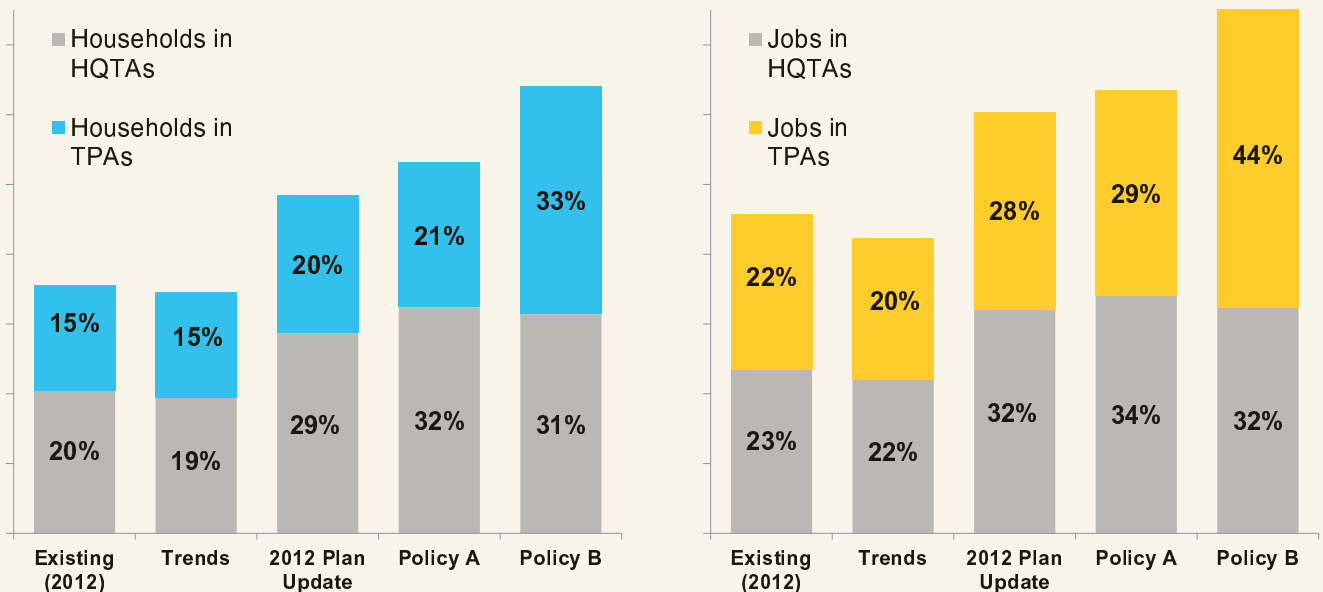


Housing Mix End State (2040)



HQTA & TPA Focus

Households and Jobs in High Quality Transit Areas (HQTAs) and Transit Priority Areas (TPAs) - 2040



1. Trend



2. 2012 Plan Update



3. Policy A



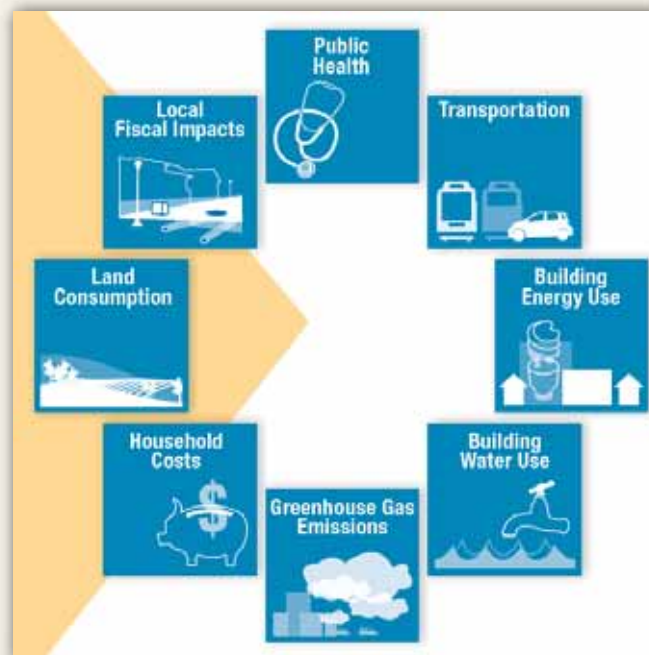
4. Policy B



Scenarios Analysis

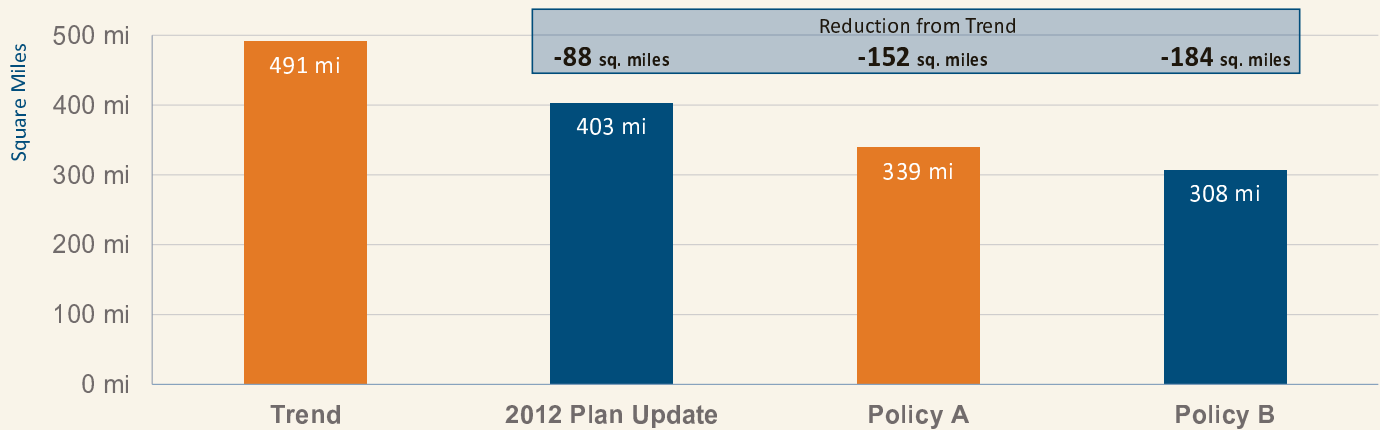
2016
2040 RTPSCS

Multi-Metric Analysis = More Informed Decisions



Land Consumption

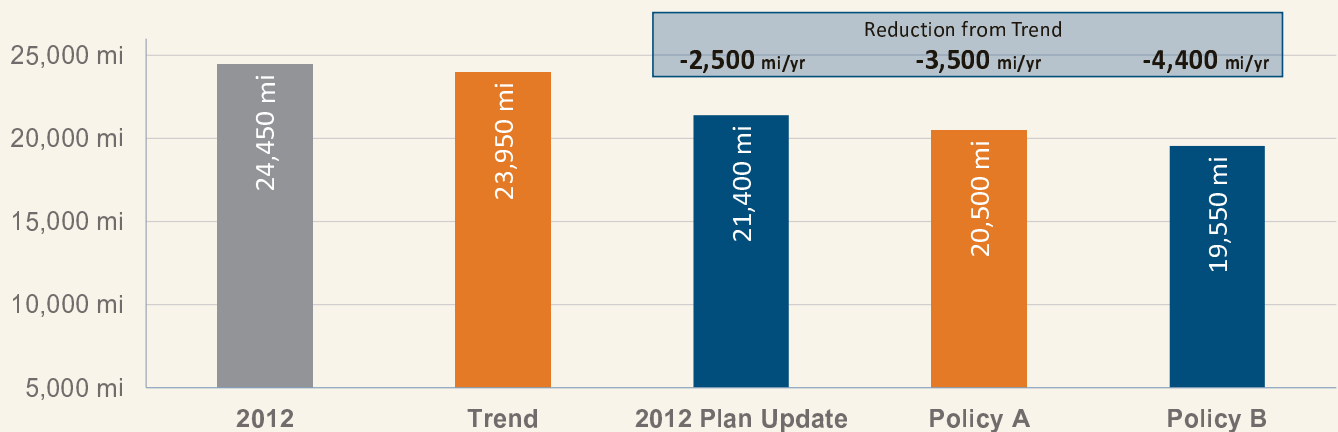
New (greenfield) land consumed to accommodate new growth, 2012-2040



Compared to Trend:
Land saved in Policy A is equivalent to 3 times that of the City of Anaheim.

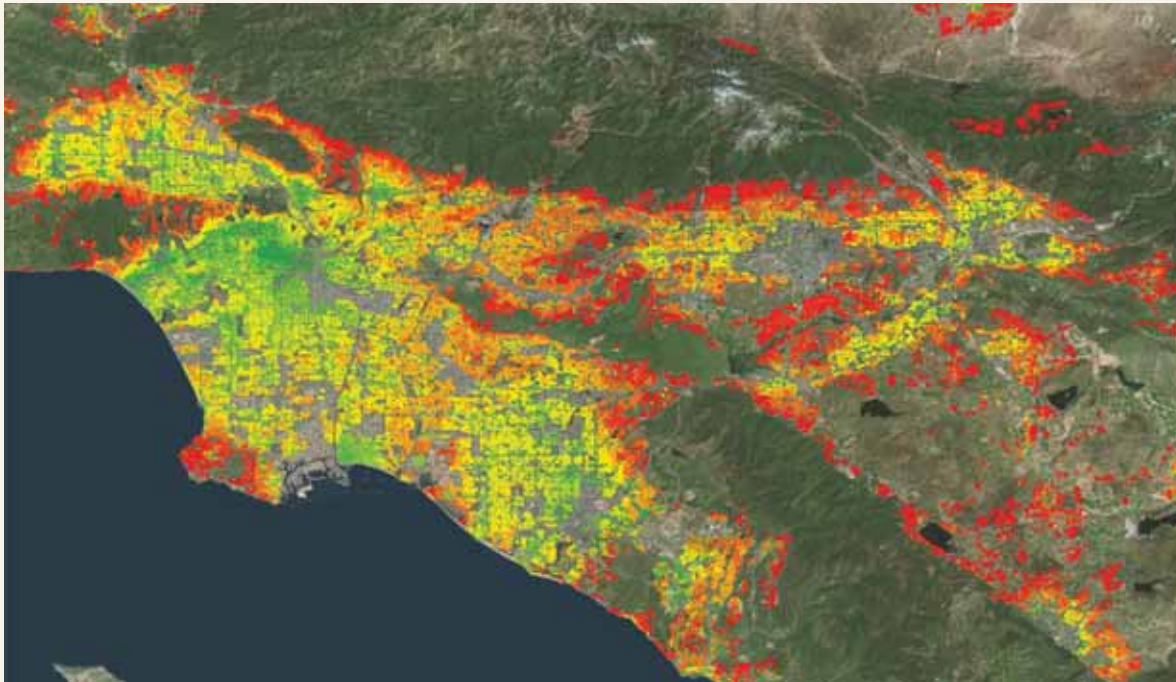
Household Driving

Passenger Vehicle Miles Traveled (VMT) per Household



Compared to Trend:
Households in Policy A are driving 3,500 fewer miles per year.

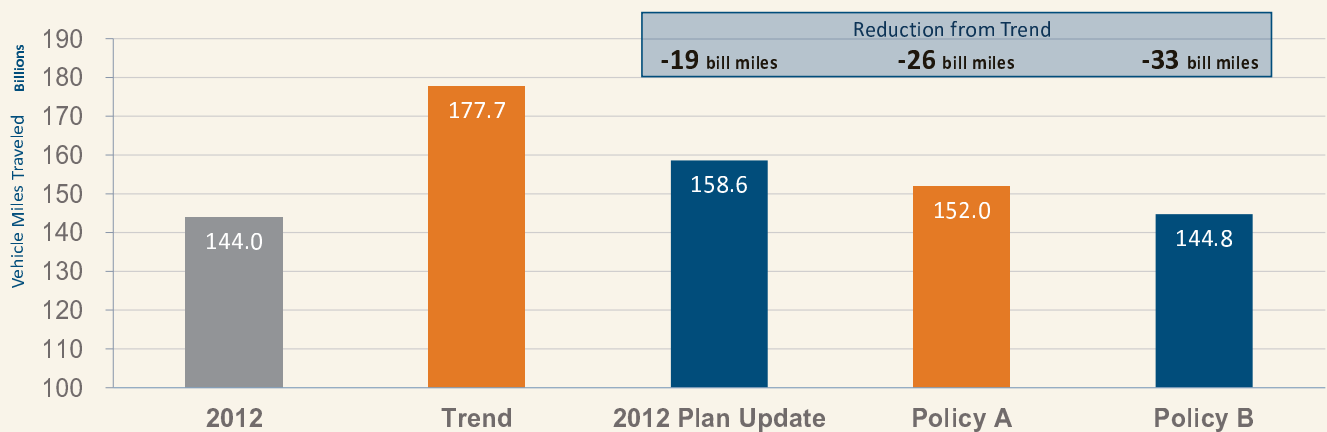
Household Driving



Base Year
(2012)
VMT Per Capita

Household Driving

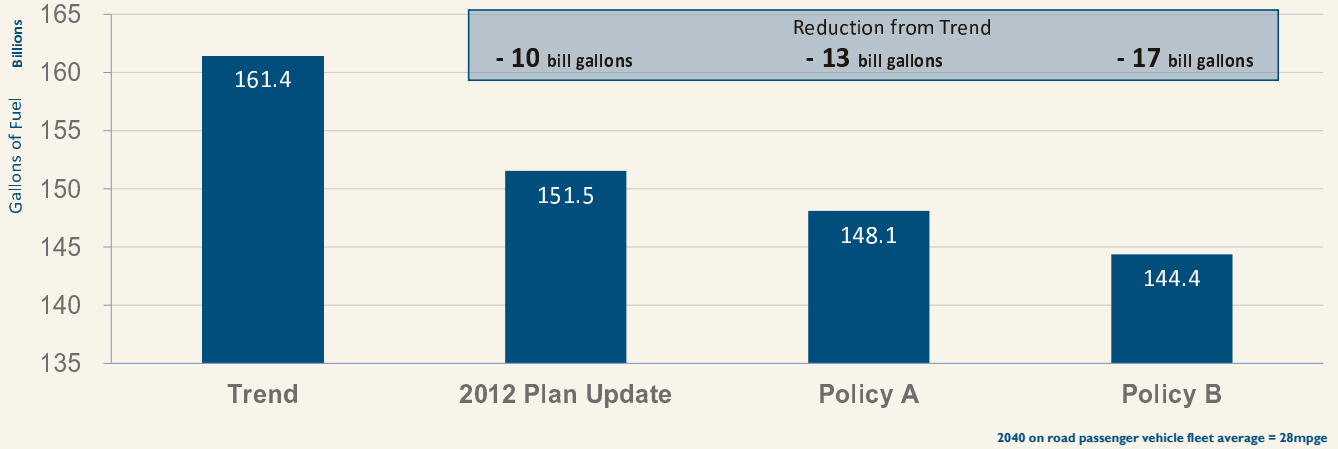
Annual Passenger Vehicle Miles Traveled (VMT), 2040



Compared to Trend:
VMT reduction in Policy A is like taking 2 million cars off SoCal roads.

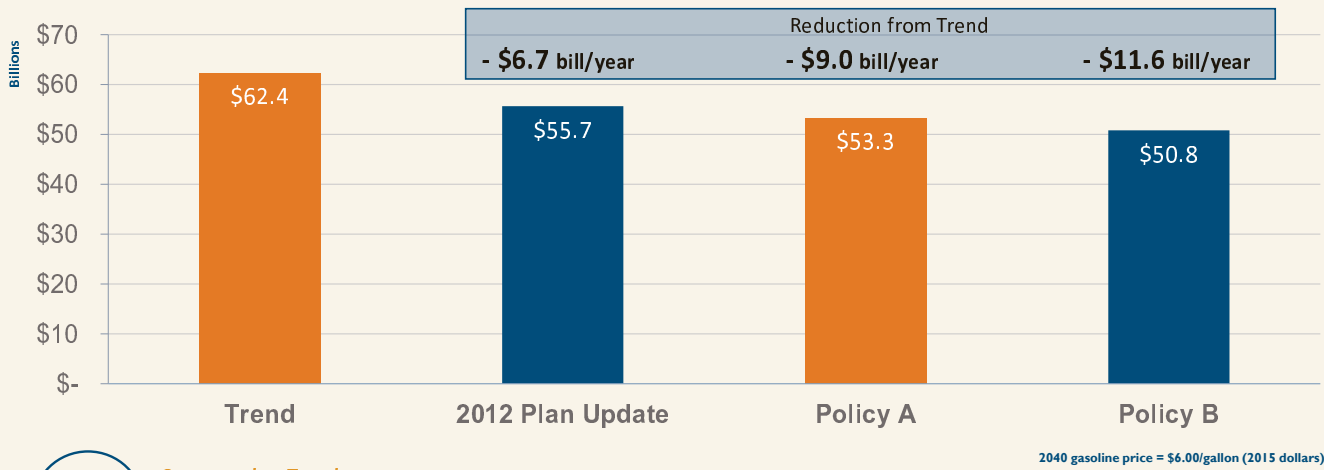
Fuel Use

Passenger Vehicle Fuel Use, Cumulative, 2012-2040



Costs of Driving

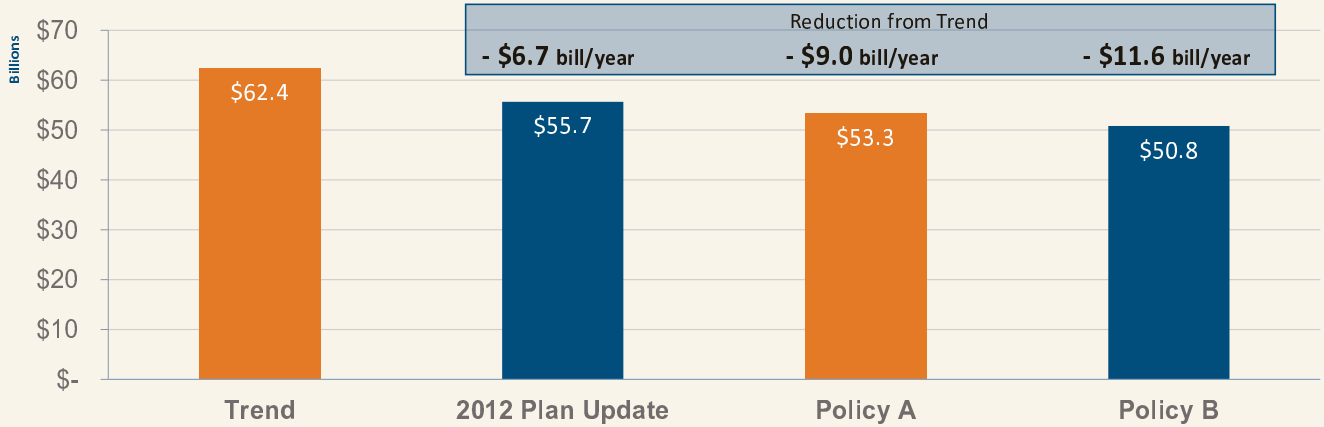
Fuel, Ownership, & Maintenance Costs Use, Annual, 2040



Compared to Trend:
Policy A saves SoCal households \$131 Billion in automobile-related costs from 2012-2040.

Costs of Driving

Fuel, Ownership, & Maintenance Costs Use, Annual, 2040



2040 gasoline price = \$6.00/gallon (2015 dollars)

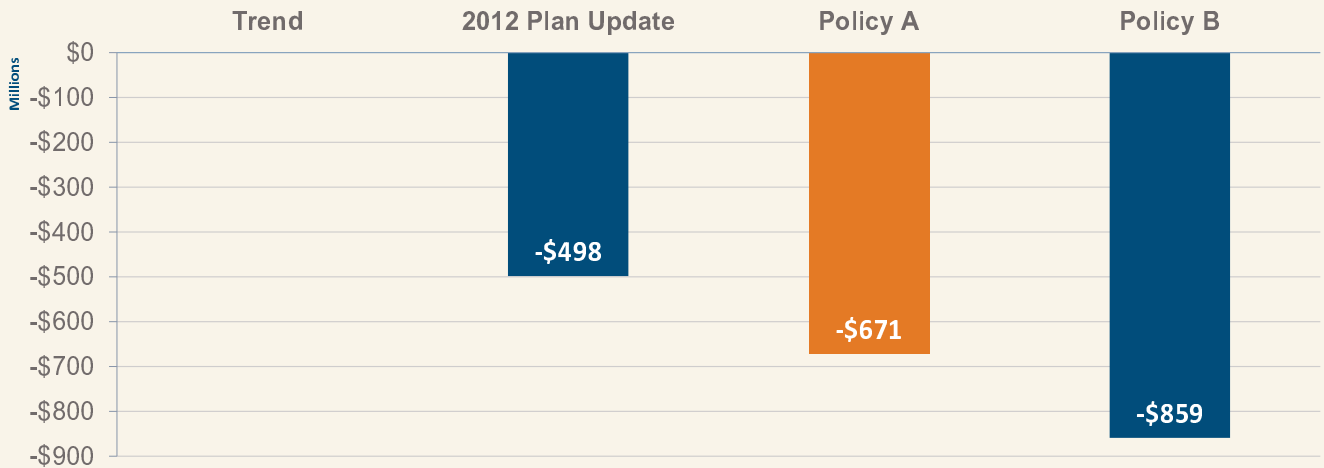


Compared to Trend:

Policy A saves the average SoCal household \$2,000/year in automobile-related costs.

Respiratory Health Impacts

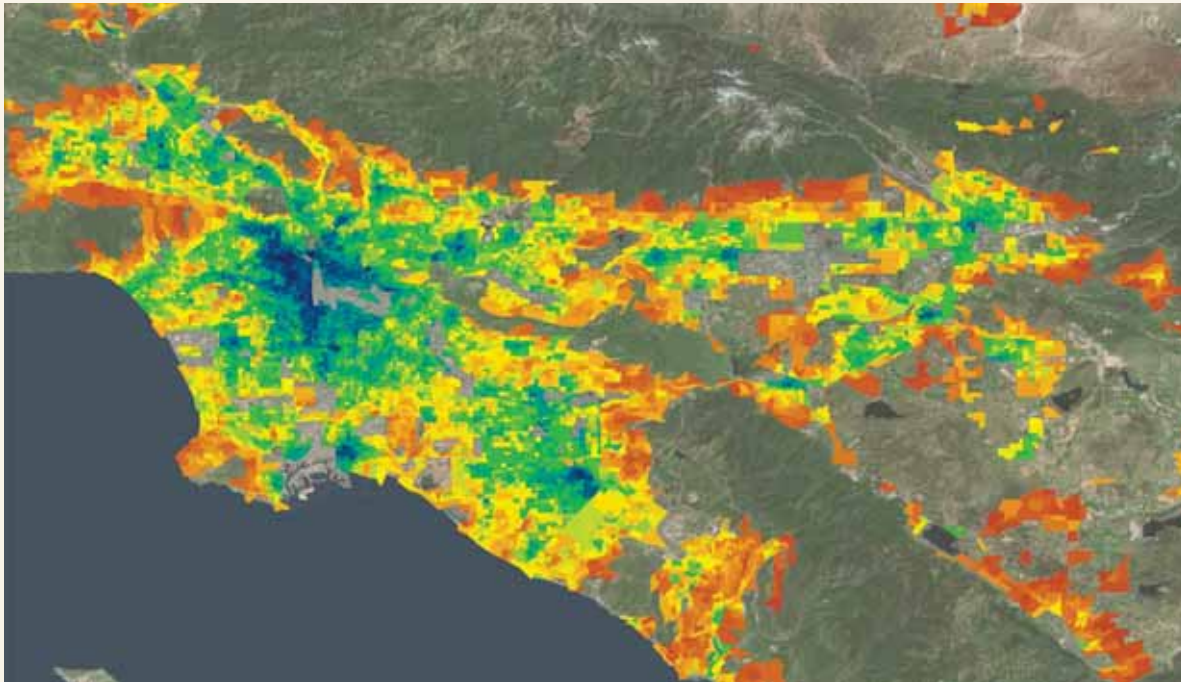
Cost Reduction from 'Trend' Due to Criteria Pollutant-Related Health Incidences, Annual in 2040



Compared to Trend:

Policy A reduces health incidences by 14% and saves more than \$670 million in 2040.

Active Transportation & Health Impacts



Base Year
(2012)
Walking
(min/day)

vdh

CALTHORPE ANALYTICS



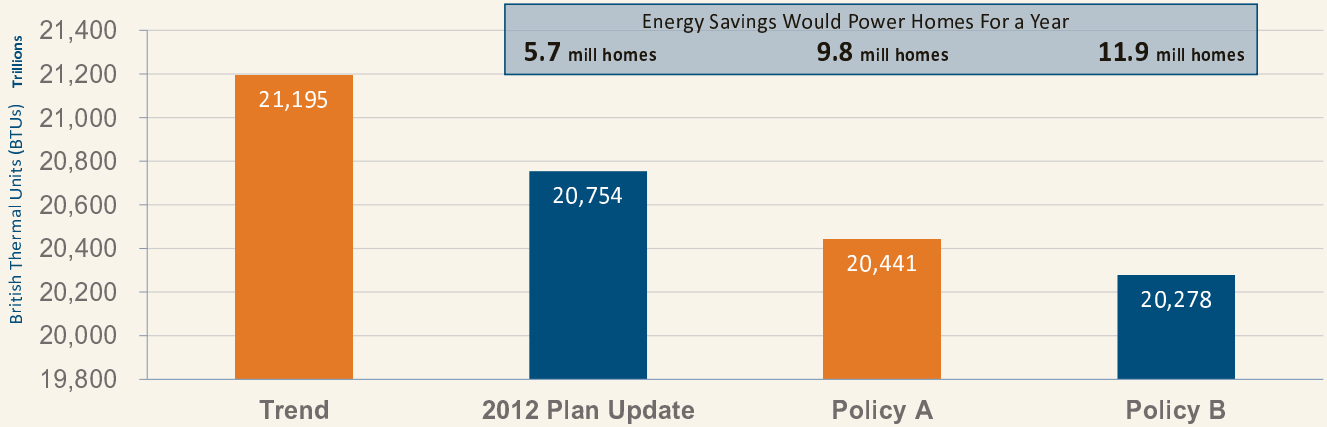
FEHR + PEERS

CALTHORPE ANALYTICS



Building Energy Use

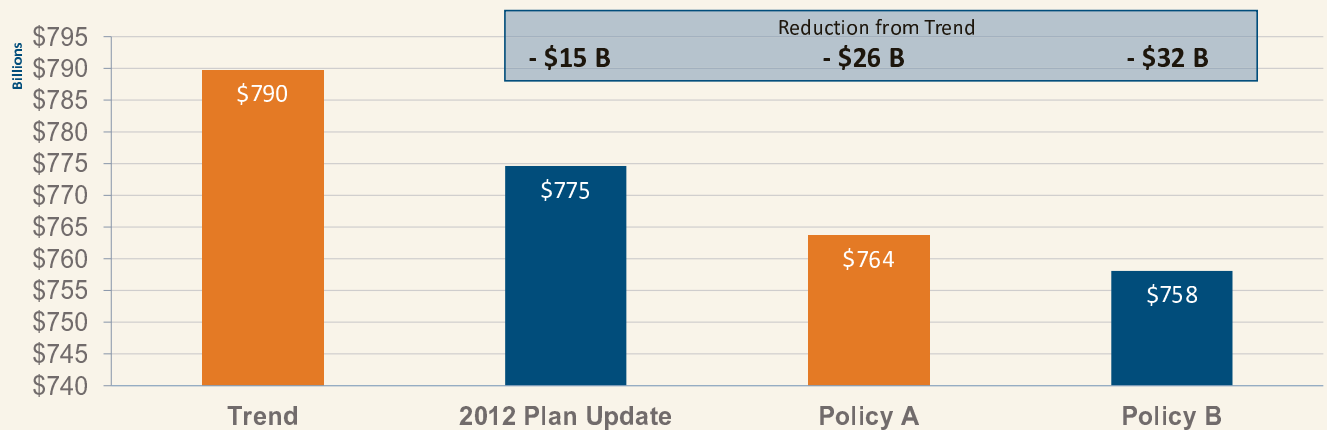
Residential & Commercial Buildings, Cumulative (2012-2040)



Compared to Trend:
Policy A saves the average SoCal household 10% on their electric and gas bills.

Building Energy Costs

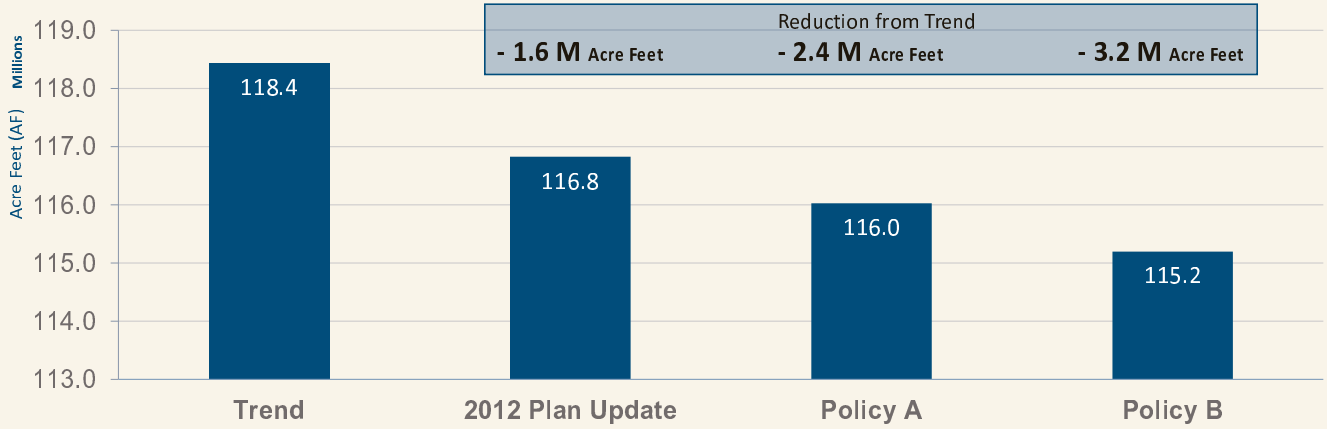
Residential & Commercial Buildings, Cumulative (2012-2040)



Compared to Trend:
Policy A saves SoCal households \$2.1 billion in annual electricity and gas costs.

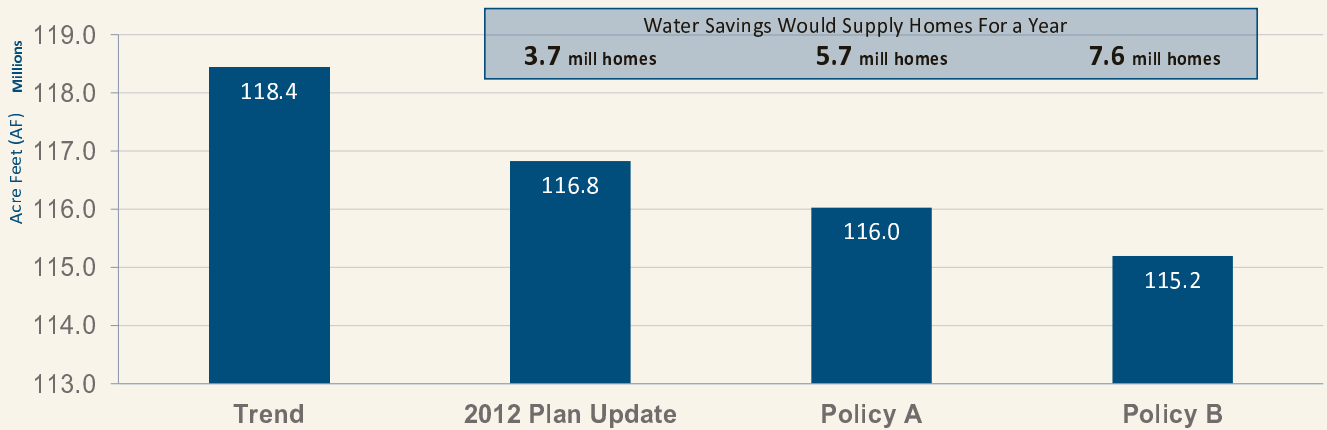
Building Water Use

Residential & Commercial Buildings, Cumulative (2012-2040)



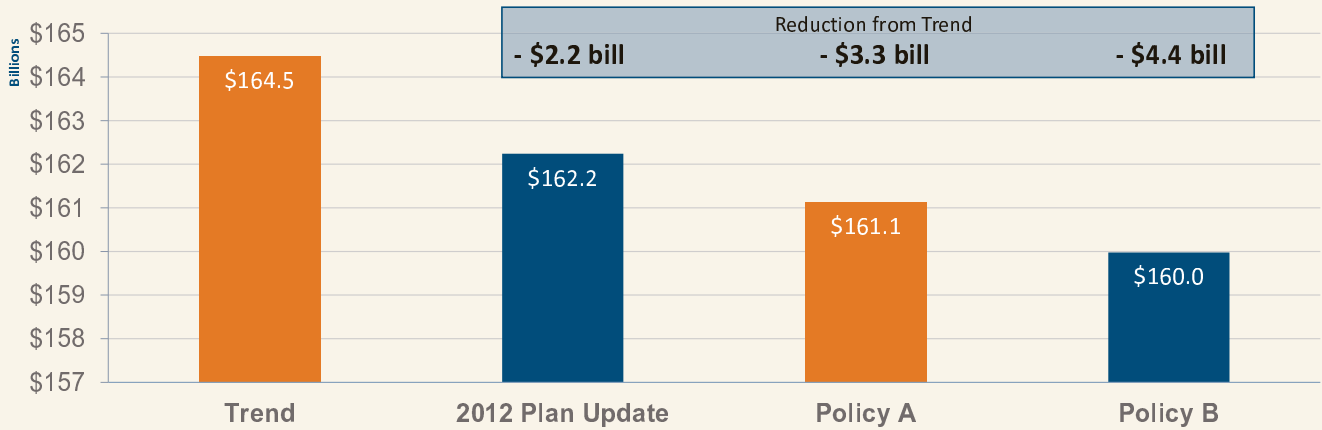
Building Water Use

Residential & Commercial Buildings, Cumulative (2012-2040)



Building Water Costs

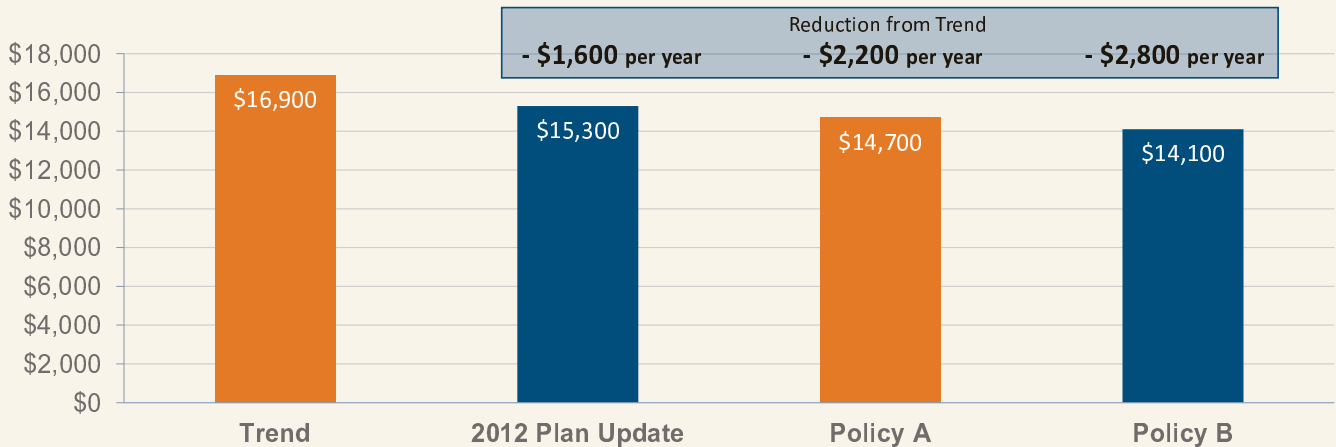
Residential & Commercial Buildings, Cumulative (2012-2040)



Compared to Trend:
Policy A saves SoCal households **\$230 million** on annual water bills.

Household Costs

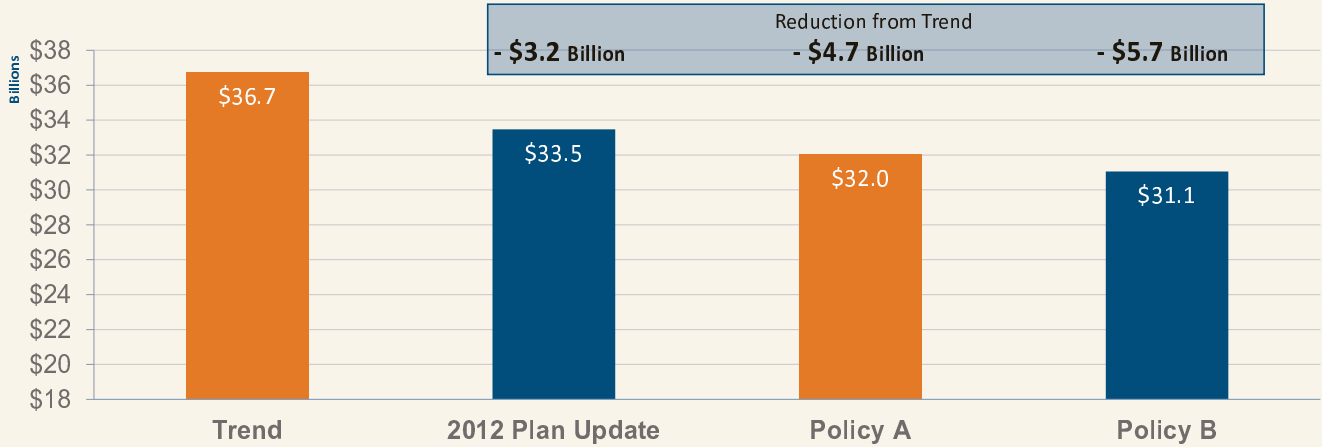
Transportation and Home Energy/Water Use, All Households, Annual (2040)



Compared to Trend:
Policy A saves SoCal households **\$16.8 billion** on annual auto and utility costs.

Local Infrastructure & Service Costs

Capital and Operations & Maintenance Costs to Support New Growth, 2012-2040



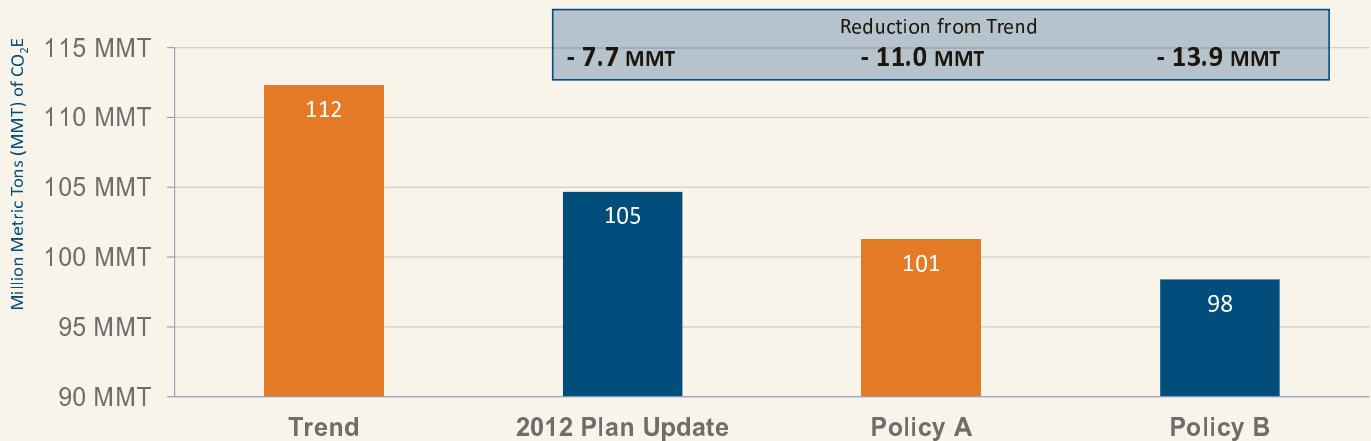
Compared to Trend:
Policy A saves \$168 million per year on capital and O&M costs.

Capital Costs includes local roads, waste water and sanitary sewer, water supply, and parks & recreation

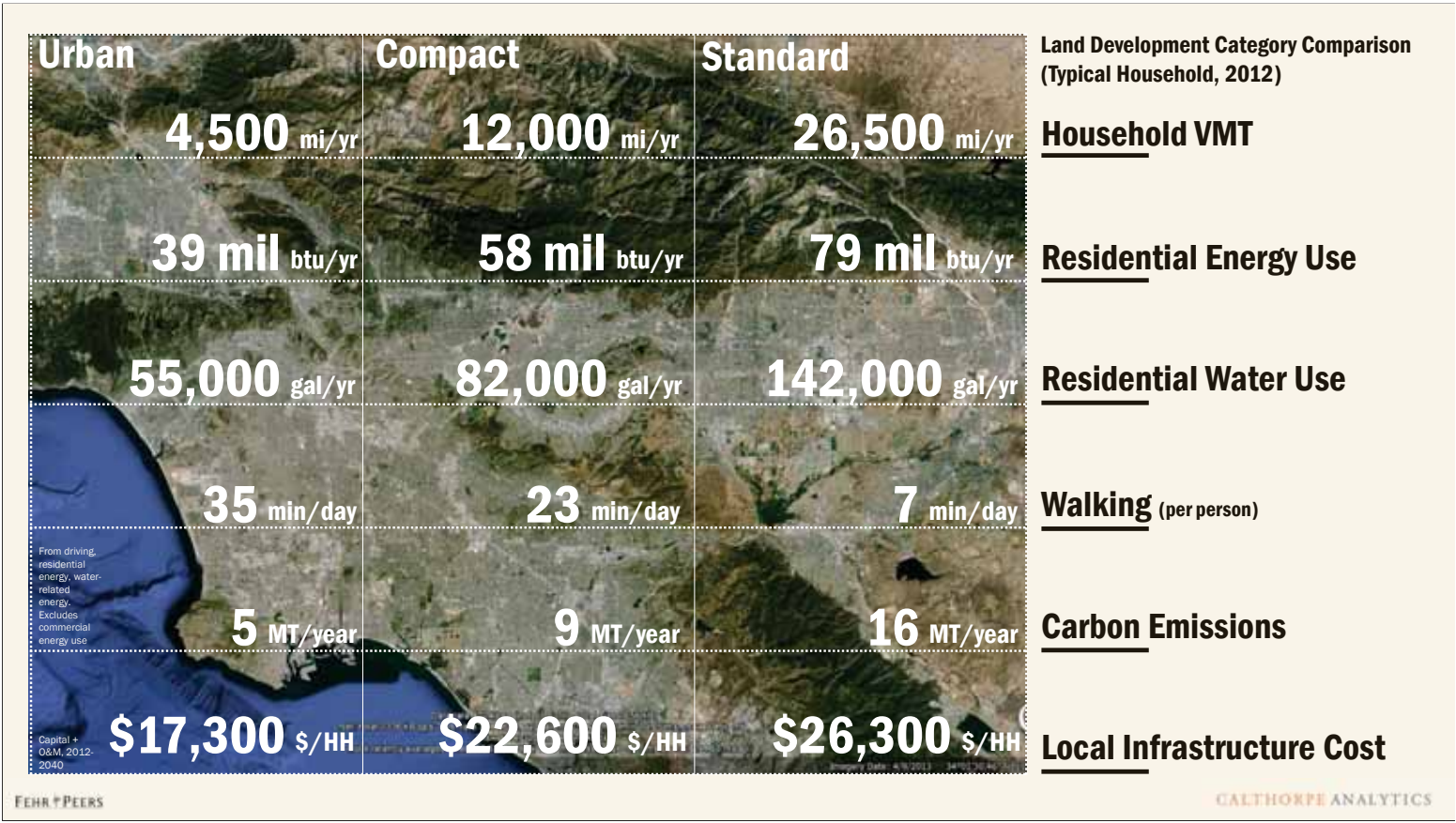
Operations & Maintenance includes City General Fund engineering and public works functions

Greenhouse Gas Emissions

From Transportation, Building Energy, and Water Use, Annual, 2040



Compared to Trend:
Policy A GHG reductions are like taking 3 million cars off SoCal roads.



2016 RTP SCS

DRAFT SCENARIOS DISCUSSION

SCAG Joint Regional Council / Policy Committee Meeting

A Presentation by Calthorpe Analytics
June 18, 2015



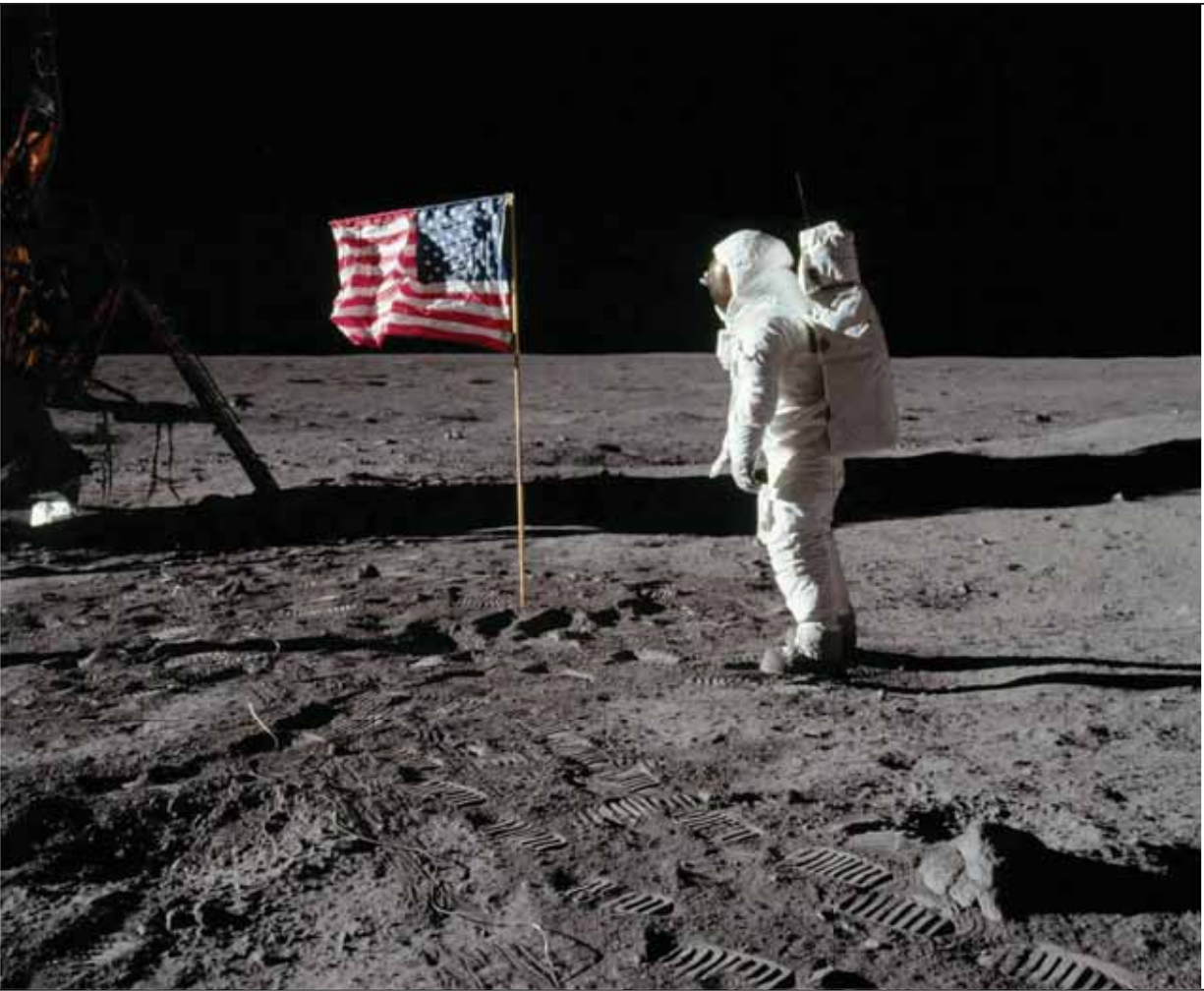
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ROAD CHARGE AND THE FUTURE OF TRANSPORTATION

*Southern California Association of Governments
2016 RTP/SCS
Joint Policy Committee
June 18, 2015*

Jim Madaffer
Commissioner
California Transportation Commission





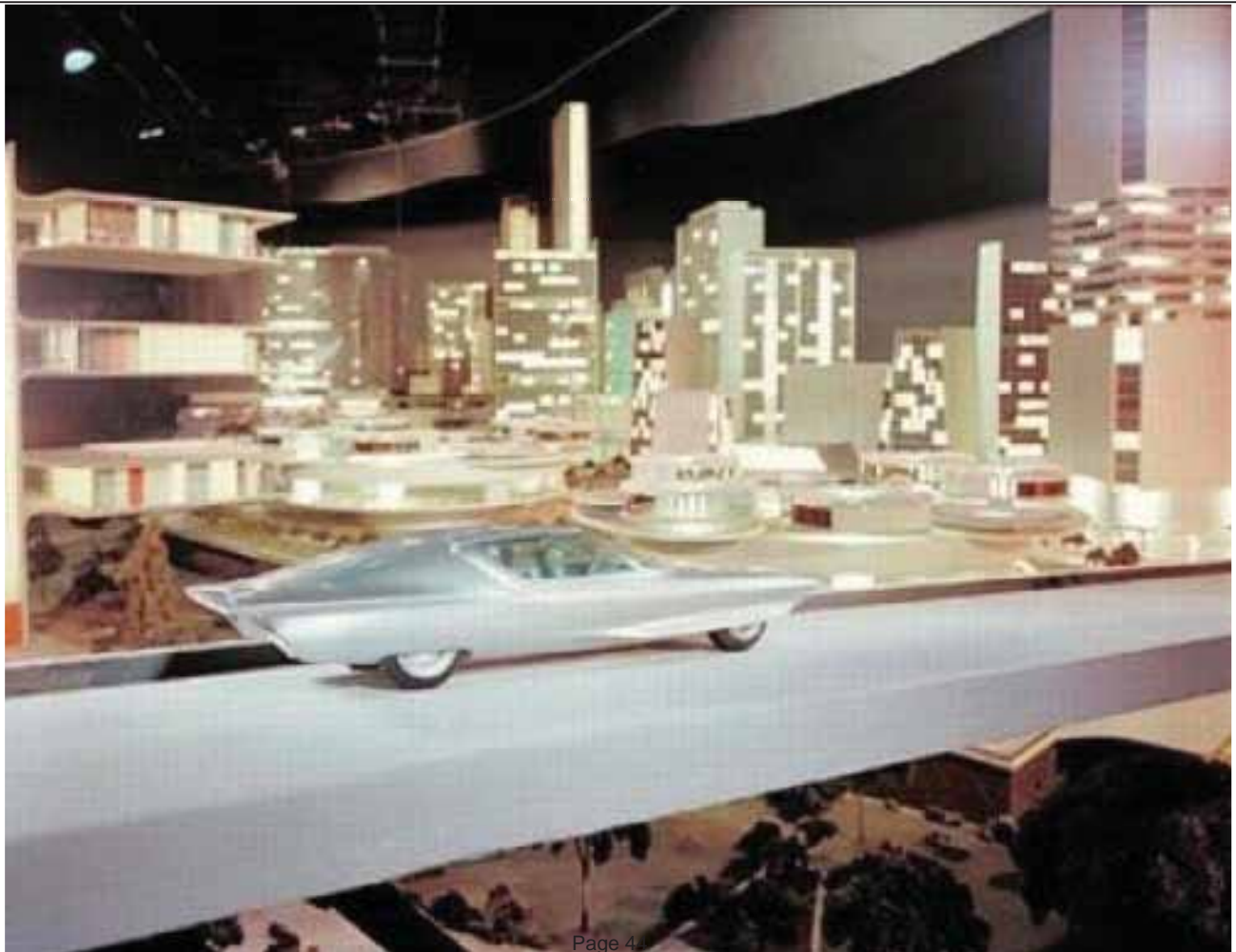
1964 World's Fair Futurama

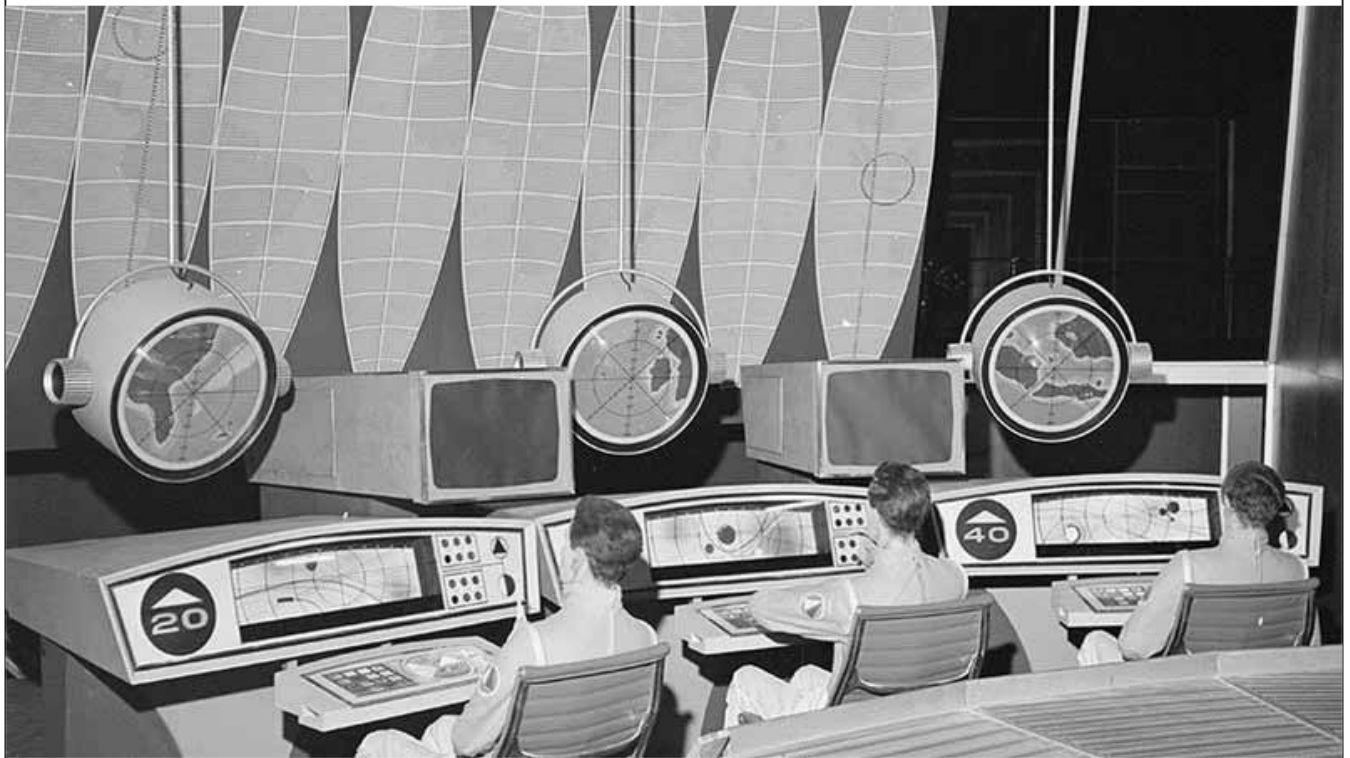
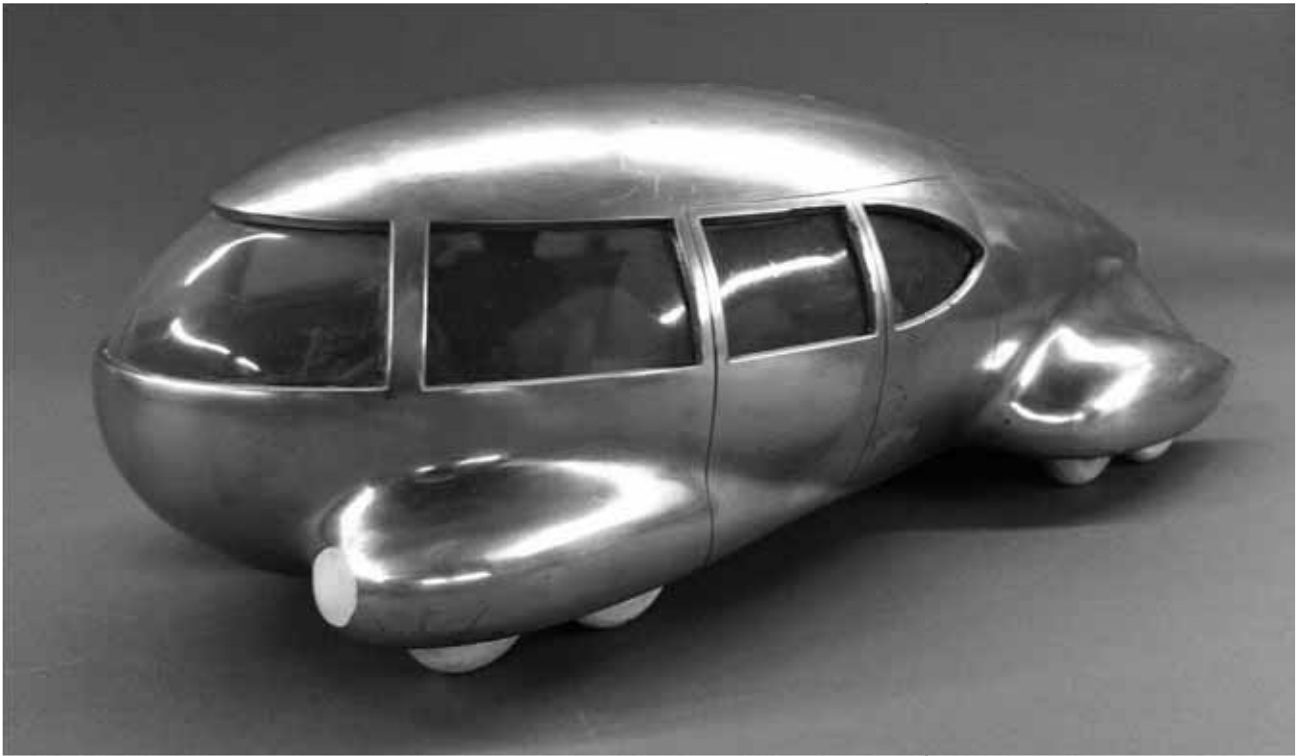
1939 World's Fair Futurama

**I HAVE SEEN
THE FUTURE**
GENERAL MOTORS *Futurama*

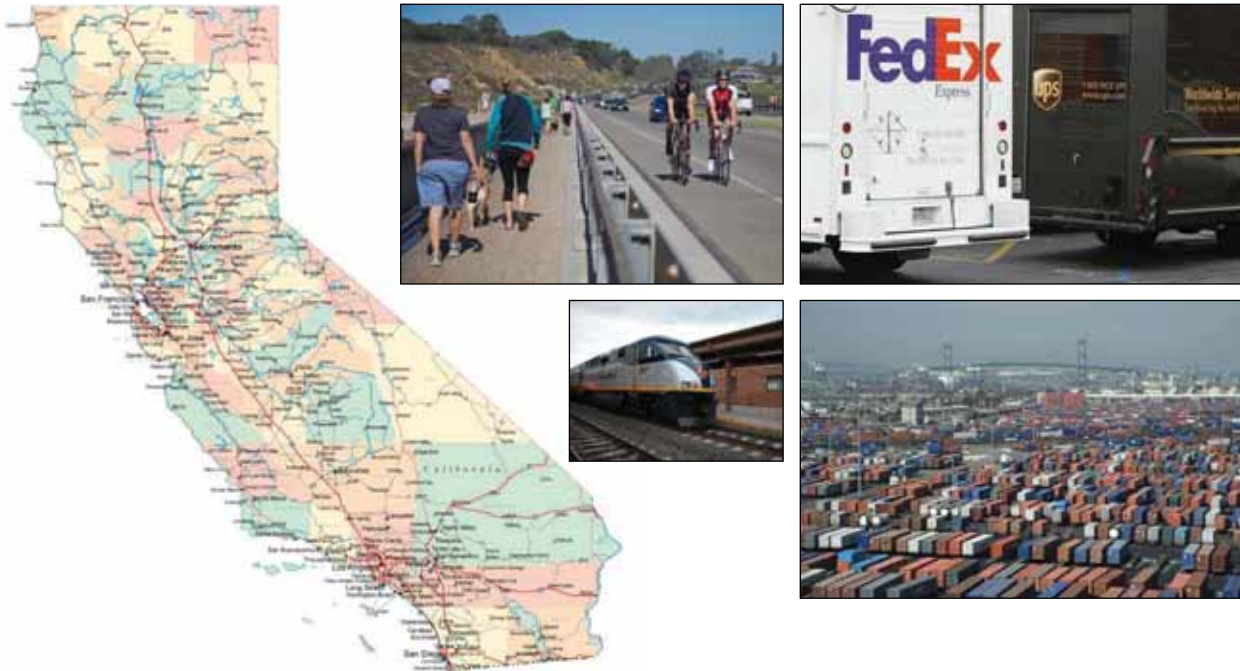
TOMORROW-LAND

High spot of the New York World's Fair reopening this Spring—GM Futurama!
You can look over GM's exciting "idea" cars—*Firebird IV* with television, stereo, game table, refrigerator; *GM-X* with jet aircraft cockpit and controls—fascinating design and engineering innovations right out of tomorrow.





An efficient transportation system is critical to California's economy and quality of life...



8

California Infrastructure Report Card

✓ **\$59 Billion** - Deferred Transportation Maintenance
Source: Governor Brown's 2015 Five-Year Infrastructure Plan

✓ **45th** - State Ranking for Overall Highway Performance
Source: Reason Foundation's 21st Annual Report on the Performance of State Highway Systems

✓ **\$296 Billion** - Ten-Year Project Funding Shortfall
Source: California Transportation Commission's 2011 Statewide Transportation Needs Assessment

9

California Infrastructure Report Card

Pavement

58% of California Roadways Require Rehabilitation or Pavement Maintenance

87% of California's Counties have an Average Pavement Rating of "At Risk" or "Poor"

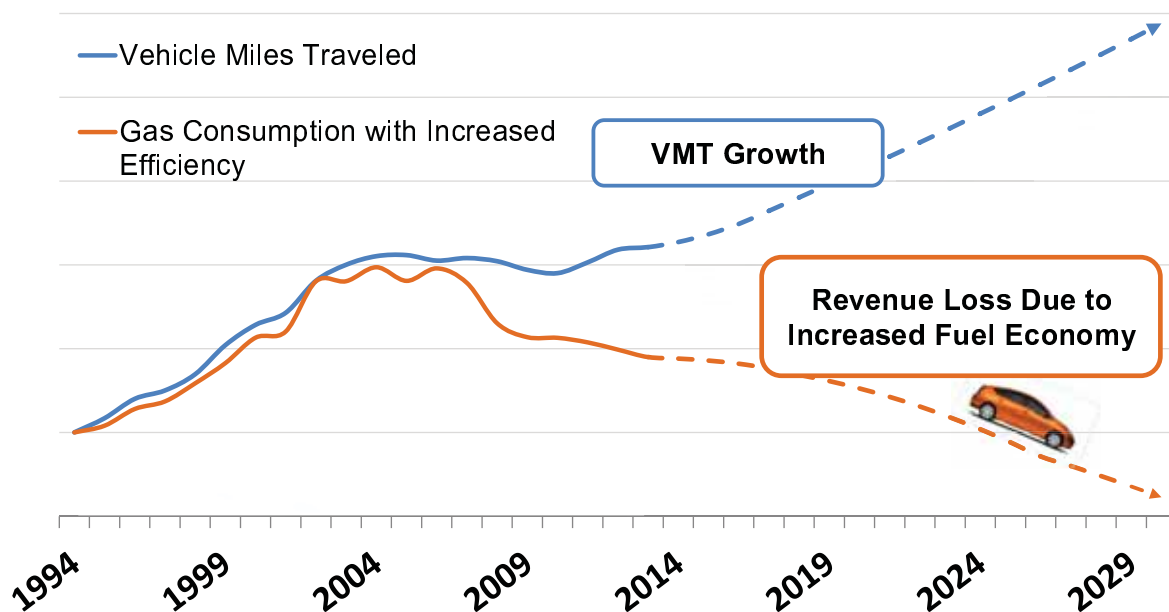
25% of Local Streets and Roads will be in "Failed" Condition by 2022 under our Current Funding Levels

6 of the Nation's 10 Worst Urban Area Pavement Conditions



10

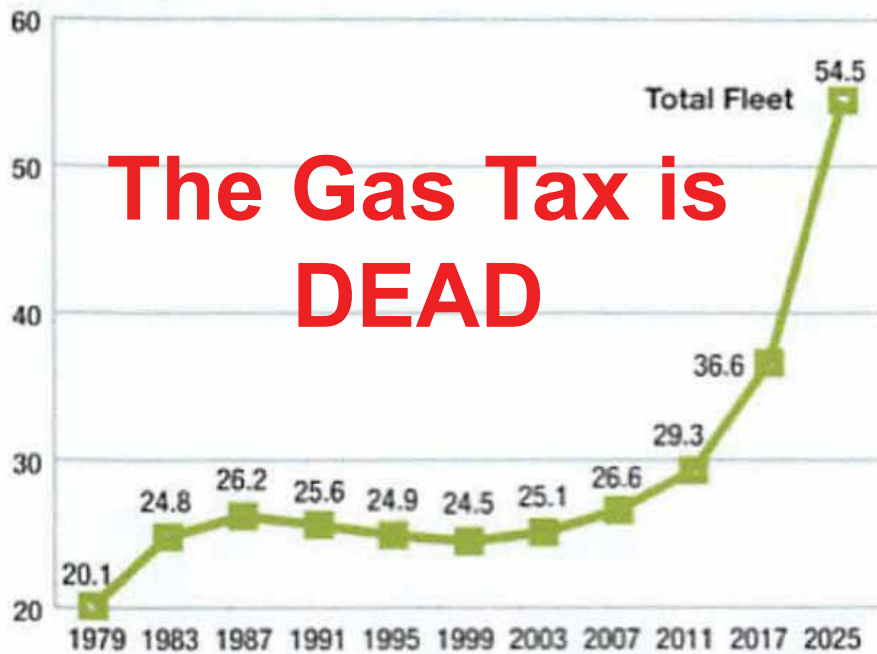
Our transportation system is in financial crisis



11

CAFÉ Standards

Rising Federal Fuel Efficiency Standards for Passenger Vehicles and Light Trucks



The Gas Tax is DEAD

Source: National Highway Transit Administration

June 12, 2015

California Road Charge Technical Advisory Committee

12

State Motorist Taxes and Fees

- Gasoline Excise Taxes
- Diesel Taxes
- Commercial Vehicle Weight Fees
- Motor Vehicle Fees

Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

Base Excise Tax (Gasoline)



\$2.8 Billion

36%
Local Streets & Roads

\$1.0 Billion

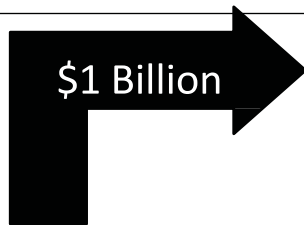
64%
State Highway Account

\$1.8 Billion

Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

1
4

Swap Excise Tax (Gasoline)



**Weight Fee
Revenue Backfill**

**OFF THE TOP
REMAINDER**



\$0.8 Billion

44%
Local Streets & Roads

44%
**State Transportation
Improvement Program**

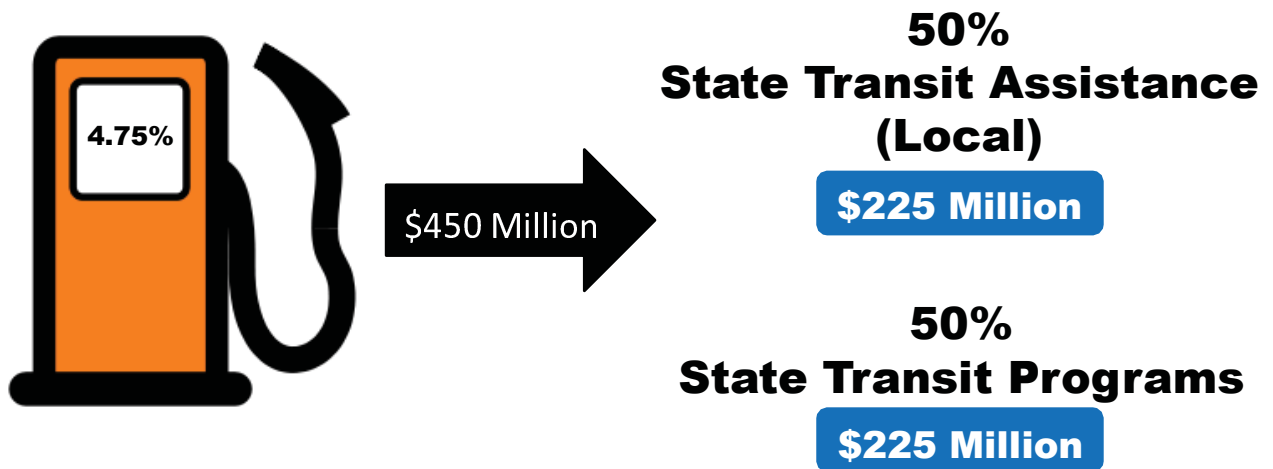
12%
**State Highway Operations
& Protection Program**

\$100 Million

Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

1
5
Page 49

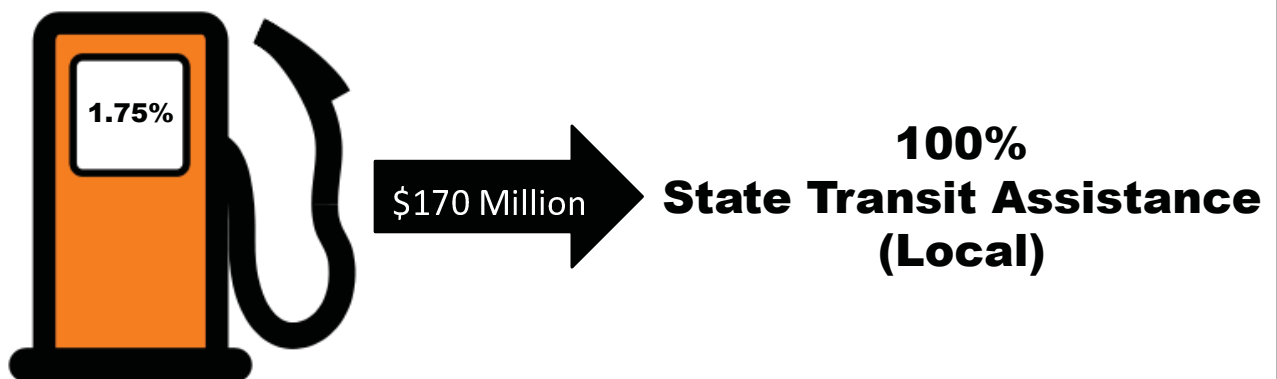
Base Sales Tax (Diesel)



Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

1
6

Swap Sales Tax (Diesel)



Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

1
7
Page 50

Excise Tax (Diesel)



52%
Local Streets & Roads

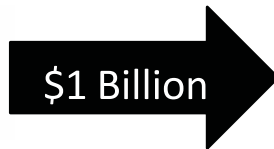
\$218 Million

48%
State Highway Account

\$202 Million

Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

Commercial Vehicle Weight Fees



100%
**State General Fund
for
Transportation Bond
Debt-Service**

Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

Motor Vehicle Fees

Driver's License



Vehicle Registration



\$3.1 Billion

California Highway Patrol

Department of Motor Vehicles

Other Agencies

~~Roads~~

Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

9

Motor Vehicle Fees (Continued)

**0.65%
Vehicle
License
Fee**

\$570 Million

Local Cities
& Counties

~~State Highways~~

Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget.

Summary

Total State Revenue	\$10.3 Billion
- Other State Agencies	\$3.7B
- Debt-Service	\$1.0B
- Transit	\$0.6B
- Capacity Increasing Projects	\$0.4B

Road Maintenance,
Rehabilitation, & Operations **\$4.6 Billion**

Note: The figures contained in this presentation are derived from the Fiscal Year 2015-16 Proposed Governor's Budget. Does not include federal funds, local measure funds, general sales tax that goes to locals, and reimbursements.

11

Revenue Solutions

- **Near-Term Solutions**

- Truck Weight Fees
- Excise Tax
- VLF/VRF
- Early Loan Repayments
- Cap & Trade
- New legislation . . . Speaker Atkins & Senator Beall



- **Long-Term Sustainable Solutions**

- Congestion Pricing/Tolling
- Public Private Partnerships (P3's)
- Road Charge Program (SB 1077)

23

Proposed Funding Legislation

Assembly Speaker Atkins Proposal:

- \$1 billion per year by returning truck weight fees.
- \$200 million per year by accelerating repayment of transportation loans.
- \$1.8 billion per year by establishing a new road user fee.
 - \$800 million for transportation.
 - \$1 billion to back fill the loss of truck weight fees to the general fund.

Senate Bill 16 (Beall)

- Increases gas excise tax: \$0.10/gallon.
- Increases diesel excise tax: \$0.12/gallon.
- Return approximately \$1 billion in weight fees over five years
- Vehicle License Fee: non-commercial vehicles .07% income each year until VLF is 1.00% by July 1, 2019.
 - Back fill the loss of truck weight fees to the general fund
- Vehicle Registration Fee: \$35 per vehicle plus an additional \$100 for zero emission vehicles.
- Repay transportation accounts for past year loans to general fund over three years beginning in 2016

California Road Charge Technical Advisory Committee

Proposed Funding Legislation

- **SCA 7 (Huff)** – Motor vehicle fees and taxes: restriction on expenditures
- **SB 321 (Beall)** - Motor vehicle fuel taxes: rates: adjustments
- **ACA 4 (Frazier)** – Local Government Transportation Projects: Special Taxes
- **AB 4 (Linder)** – Weight fees: transportation bond debt service
- **AB 194 (Frazier)** – High-occupancy toll lanes
- **AB 227 (Alejo)** – Transportation funding/weight fees
- **AB 1265 (Perea)** – Transportation projects: comprehensive development lease agreements (P3)

In 2014, Senate Bill 1077 was signed into law

- Directs the California Transportation Commission (CTC) to establish a Technical Advisory Committee
- TAC to report recommendations to the California State Transportation Agency (CalSTA)
- Requires CalSTA to implement a pilot program by January 2017
- Requires a report of findings and recommendations by June 2018

26

Road Charging is ...

- A policy whereby motorists pay for use based on the distance they travel on the roadway network.
- A “User Pays” principle – the more you drive, the more you pay.
- Similar to other utilities such as electricity, water, telephone.



27

Road Charge Technical Advisory Committee Composition

- 15 members:
 - Telecommunications Industry
 - Data Security & Privacy Industry
 - Privacy Rights Advocacy Organizations
 - Regional Transportation Agencies
 - Members of the Legislature
 - Highway User Groups
 - National Research & Policymaking Bodies
 - Other Relevant Stakeholders

28

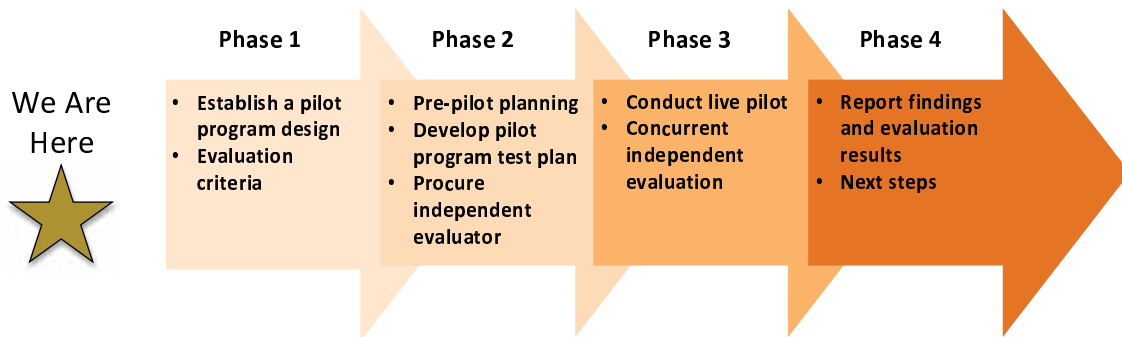
The Technical Advisory Committee is examining all dimensions of a Road Charge

- Revenue sustainability
- Privacy protection
- Equity implications
- Technology alternatives
- Environmental sustainability
- Out-of-state travelers
- Communications & public outreach
- Organizational framework



29

As we design the pilot test, we want the public to participate



30

Input from California residents and businesses is integral to our effort

- Focus Groups
- Telephone surveys
- Website
- Online Questionnaire
- Twitter
- Facebook
- Public Meetings



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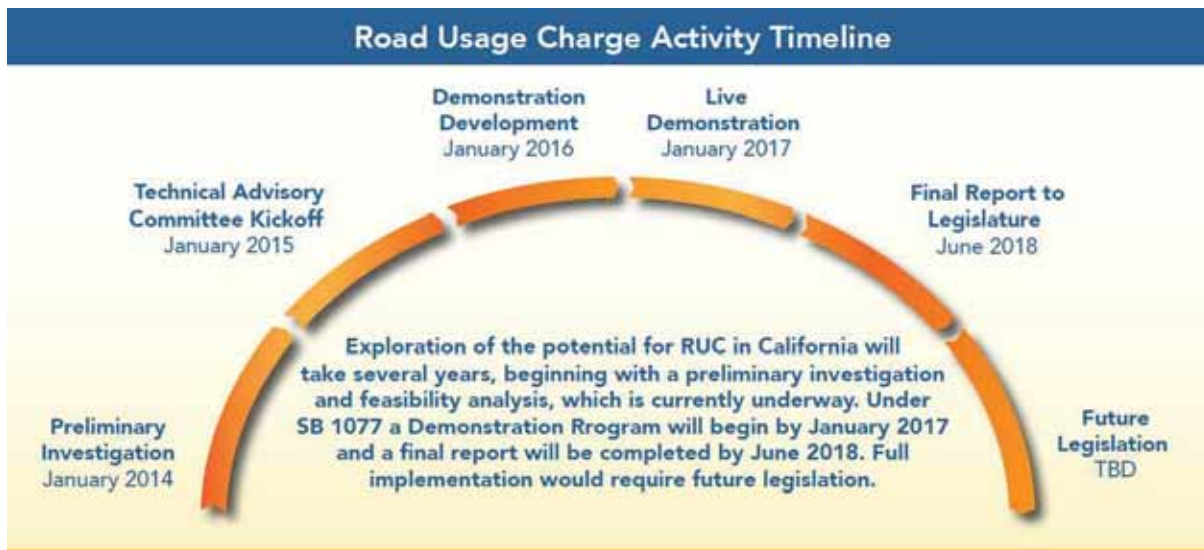
TAC monthly meetings around the state



Meeting Date	Meeting Location
April 24	Monterey
May 29	Fresno
June 26	Sacramento
July 24	Tahoe City
August 28	San Diego
September 25	North State
October 23	Bay Area
November 20	Los Angeles
December 11	Riverside

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Road Charge Pilot Program Timeline



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2007 DARPA Urban Challenge



'Boss' CMU Tartan Racing, 60 miles urban, 4h:10m

2008 Levandowski's Prius



Delivered pizza across SF Bay bridge

2010 Audi 'Pikes Peak'



12 mile hill climb, 156 turns, 27min (cf 11m48s)

2011 AutoNOMOS Labs Berlin drive



50 miles of autonomous driving on Berlin roads

2013 Vislab BRAiVE, Parma



Rural-urban demo, in real, complex traffic, vision

2013 Daimler/Mercedes Bertha Benz Road Trip



60 mile rural-urban demo, vision based

2014 Google 'mastering city street driving'



700k miles, cyclists signals, construction zones

2014-2016 Google Prototype 'Vehicle' (NEV)



25mph, 100 pilot project CA for 2yrs. 2017-2019?...

2015 Tesla 'Autopilot' (Autonomous 2023)



'will go from on-ramp to off-ramp autonomously'

2015 Mercedes Benz F 015 Concept



“Innovative perspective into the future of mobility.”



Mercedes Benz Future Truck 2025



Many technological elements already available

2020-2025 Nissan Autonomous Drive



Range of Commercially viable AVs on road



California PATH







New York City – April 2015











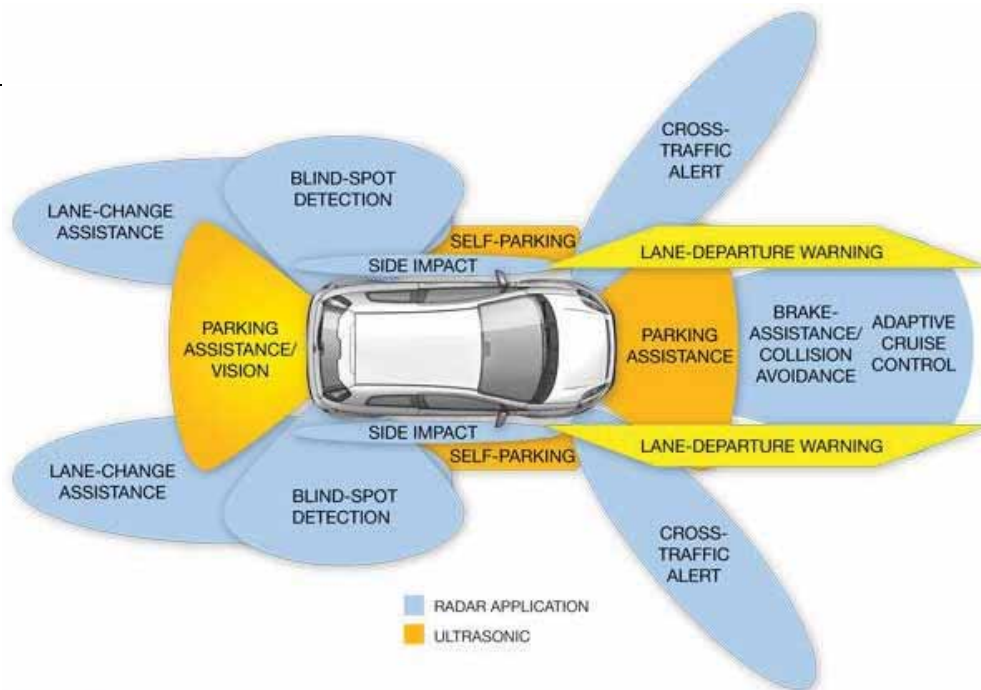


Figure 2 Several driver-assistance systems are currently using radar technology to provide blind-spot detection, parking assistance, collision avoidance, and other driver aids (courtesy Analog Devices).





ROAD CHARGE AND THE FUTURE OF TRANSPORTATION

*Southern California Association of Governments
2016 RTP/SCS
Joint Policy Committee
June 18, 2015*

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