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Topic 2: Energy Efficiency Program Approaches to Support SB 350

June 7, 2018

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Energy for What's Ahead[™]

Southern California Edison

• One of the nation's largest electric utilities

- 15 million residents in service territory
- 5 million customer accounts
- 50,000 square miles

Environmental Leadership

- Over 1 Billion kwh's saved annually and 1,300+ of peak reduction capacity
- Delivered over 15,000 GWh and 2,600 MW (cumulative) of energy and peak capacity savings over the last 10 years
- Leading the way in "transportation electrification" with new "charge ready" electric vehicle infrastructure program
- A National Leader in Demand Side Management (DSM)
 - 1st or 2nd in the nation for electric energy savings in each of the last 15 years



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SCE Service Territory

Business Plan Overview

- EE Business Plans approved for 2018-2025
- Achieve cost-effective energy savings:
 - Streamline number of customer offerings.
 - Utilize mid-stream and upstream delivery channels, where relevant and cost-effective.
 - Targeted customer offerings.
- Portfolio programmatic offerings and composition may change significantly.
 - Large composition of lighting is dramatically decreasing across the portfolio.
 - Increasing focus incorporating BRO offerings.
 - Cost effectiveness considerations impacting non-resource activities.
 - Additional customer changes for consideration such as Time of Use implementation.



Figure 1: Meeting California's GHG Reduction Goals (Source: California Air Resources Boord [CARB]

This paper presents Southern California Edison's integrated blueprint for California to reduce greenhouse gas emissions and air pollutants. Realizing the blueprint will reduce the threat of climate change and improve public health related to air quality. It is a systematic approach and each measure is integrated with — and depends upon — the success of the others. To be successful, California must approach implementation as an integrated package, applying resources across the board where most effective.

EXECUTIVE SUMMARY

Climate change and air pollution pose serious threats. Climate change effects, such as sea level rise and longer, more intense heat waves, are now occurring. In California, while significant progress has been made, too many communities continue to excerience asthma and other air-quality-related health issues.

California continues its leadership in addressing climate change and air pollution. The states greenbuise gas (C=C) goals call for a 40 percent reduction in GHG emissions from 1990 levels by 2000 and an 80 percent reduction by 2000 (Figure 1). Air quality goals include a 90 percent reduction in emissions of into ego oxides from 2010 levels in some of the state's most polluted areas by 2002. Meeting these ambitious clean energy and clean air goals requires fundamental changes over the next 12 years and expond.

The electric sector is at the forefrort of the fight against climate change in California and today accounts for only 19 bercent of the state's GHG emissions. The transportation sector (including fuel refining) and fossil fuels used in space and water heating now produce almost three times as many GHG emissions as the electric sector and more than 80 percent of the air pollution in California.

The Clean Power and Electrification Pathway is an integrated approach to reduce GHG emissions and air pollution by taking action in three California economic sectors: electricity, transportation and buildings, it builds on existing state policies and uses a combination of measures to produce the most cost-effective and feasible path forward among the options studied.

The Pathway will help California achieve its climate goals and significantly reduce today's health-harming air pollution in local communities. It also has strong potential to create highly skilled, middle income jobs.

- By 2080, it calls for:
- an electric grid supplied by 80 percent carbon-free energy;
 more than 7 million electric vehicles on California roads; and
- more than / million electric venicles on California roads; and
 using electricity to power nearly one third of space and water heaters, in increasingly energy-efficient buildings.

(Continued)

SCE's Clean Power and Electrification Pathways

Business plan overview and offerings (cont'd)

• Expand innovative solutions:

- 60% Third Party participation in design, delivery and implementation of programs.
- Increasing transition to pay for performance.
- Provide customers greater access and understanding to energy usage information.
- Expanding BROs interventions, where cost-effective.

• Additional upcoming anticipated changes:

- 25% Statewide administration for specific programs like Residential HVAC or Savings By Design.
- Full list of programs in BP in Appendix for review, likely to change based on EE Decision requirements.
- Focus on sector and end use coverage, as applicable and cost-effective.

• Increasing customer adoption and support market transformation, where feasible:

- Leverage cross-cutting resources such as Emerging Technology, Codes and Standards as well as Workforce Training and Education.
- Transition and sunset programs and approaches, as necessary.

Sector level overview

Sector	Example Strategies and Tactics				
Residential Sector (Single Family, Multifamily)	 Behavioral Pay for Performance (P4P) Targeted deployment Single Point of Contact (SPOC) Customer incentives 				
Commercial	 Strategic Energy Management (Industrial) Technical Assistance 				
Industrial	- Small Business Outreach				
Agriculture	 Intelligent Outreach Customer incentives (Deemed and Calculated) 				
Public	 Building Energy Benchmarking Data Access Customer Data Access Customer Incentives (Deemed and Calculated) 				
Cross-Cutting	 Codes & Standards Emerging Technologies Workforce Education & Training 				

Market Transformation

• SCE's Energy Efficiency Portfolio supports Market Transformation.

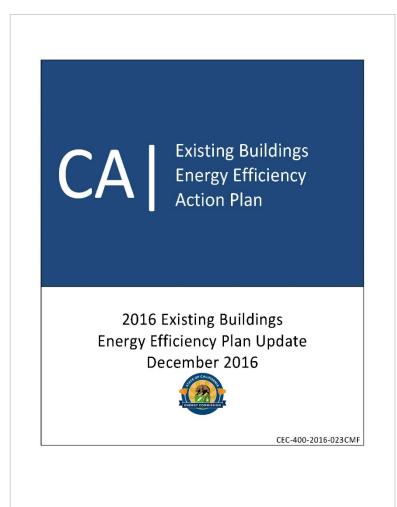
• Utilization of Emerging Technologies, programs to support mass adoption to eventually move to Codes and Standards.

• Market Transformation success has been achieved:

- Significant capture of "low hanging fruit"
- Changes in lighting programs and appliance recycling
- Increased measures and baselines built into Codes and Standards

• Challenges with MT with todays market conditions:

- Declining Avoided Cost benefits associated with EE measures
- Implementation ramp up with transition of Third Parties
- Growing pains as we shift to pay for performance models.
- Changes in the portfolio's GHG abatement impacts
- MT practices suggest market characterization studies should precede MT strategies and develop MT Indicators



Metrics discussion

- Utility Business Plans developed Metrics through the California Energy Efficiency Coordinating Council (CAEECC)
 - Vetting possible options with stakeholders and Energy Division Staff.
 - List of metrics in Appendix

• Leveraging best available data, where possible:

- Disadvantaged Communities participation rates to be developed
- Developing more progressive metrics, where possible, such as specific participation data of total square footage of participation, Energy Use Intensity of participants, etc.

• Disadvantages Communities in multiple proceedings

- Low Income Proceeding overlapping custom base.
- Demand Response Pilot for Low income
- San Joaquin Application



WORKING TOWARD CLEAN AIR AND HEALTHY COMMUNITIES

Southern California Edison (SCE) supports California's vital climate and air quality goals. In order to meet these ambitious targets, all Californians, regardless of neighborhood or income, must be able to participate in and benefit from the clean energy revolution. SCE is committed to lowering barriers to clean energy technology through infrastructure programs, rate design and innovative collaborations.

WHY THE SAN JOAQUIN VALLEY?

According to the Environmental Protection Agency, the San Joaquin Valley has some of the worst air quality in the country. Many people in these rural communities do not have access to stable, clean and affordable sources of energy, and therefore they use expensive wood or propane stoves for heating and cooking which unfortunately makes air quality problems worse.

State agencies in California, including the California Public Utilities Commission (EPUC), the California Energy Commission, and CalEPA have programs aimed specifically at improving air quality and economic conditions in disadentaged communities.

EARLY ACTION IN THE SAN JOAQUIN VALLEY

The CPUC is exploring ways to improve San Joaquin Valley community access to affordable and clean energy. SCE along with PG&E and SoCalGas, are all participating in this effort. Twelve cities have been identified as potential sites for pilot projects. SCE serves three of those cities: California City. Ducor and West Goshen.



Contact Information

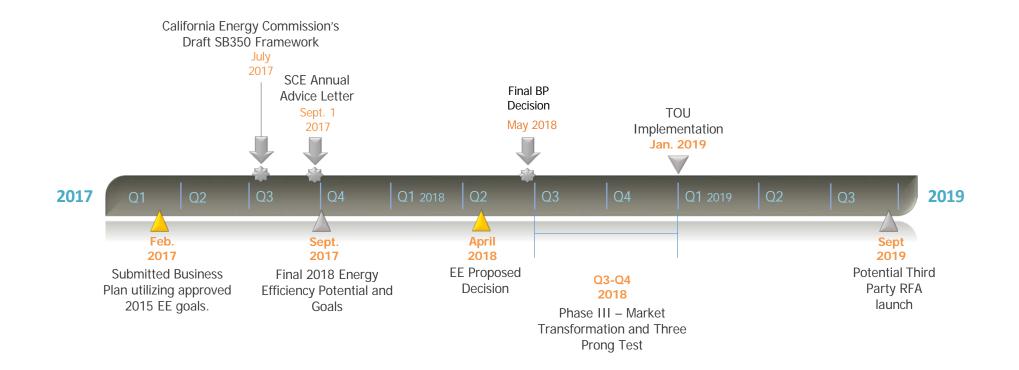
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Appendix



Energy for What's Aheadsm

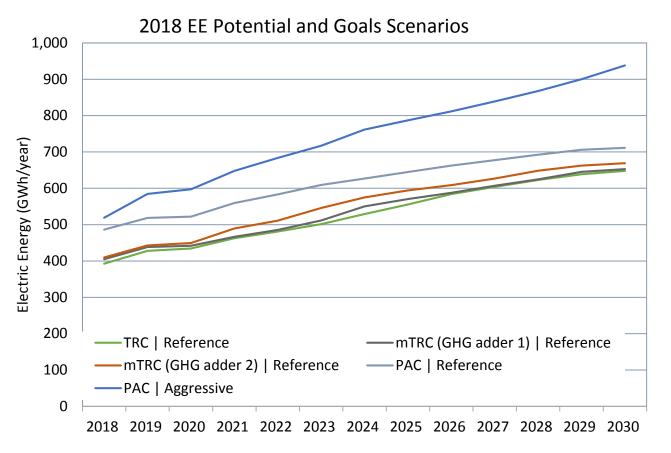
SCE Business Plan and SB 350 Timeline



IOU's contribution to SB350 through EE Goal setting

2018 Energy Efficiency Potential and Goals Attributes:

- Explored alternative assumptions beyond historical approach in line with SB350 guidance.
- Reviewed alternative cost-effectiveness test and forecasted Greenhouse Gas (GHG) values.
- Included savings beyond historical approaches such as stranded potential, behavioral, retrocommissioning and operational savings.
- Widget based savings increase 20% by 2030 while BROs savings increase 300% through the same time period.
- Anticipated to align with the Integrated Resource Plan outputs for GHG and Avoided Costs.



Sector	Prog	ram offerings*	Statewide Administrat	ion*	
Residential	 Energy Advisor Program Residential Direct Install Multifamily Energy Efficiency Comprehensive Manufactur Energy Upgrade California H Residential HVAC Program AB793 Pay-for Performance 	ed Homes: ome Upgrade:	 Primary Lighting Program Lighting Market Transformation (LMT) and Lighting Innovation (LI) Plug Load and Appliances (PLA): Residential New Construction Program (RNC): 		
Commercial	 Energy Advisor Services Calculated 	 Direct Install Healthcare EE Data Center EE Lodging EE Commercial Utility Building Efficiency Enhanced Retro-commissioning AB793 Pay-for Performance* 	 Nonresidential HVAC Savings By Design 	- Emerging Technologies	
Ag	- Deemed	- Pump test	- NA	 Codes and Standards 	
Industrial	 Continuous Energy Improvement (CEI) OBF 	 Comprehensive Chemical Products Comprehensive Petroleum Refining Oil Production Food & Kindred Products Primary & Fabricated Materials Non-Metallic Minerals & Products Mid-Size Industrial Customers Strategic Energy Management* 	- NA		
Public	PartnershipsCalculated/Deemed	Pump testTechnical AssistanceDirect install	 CSU/UC Partnership State of California Partnership CSD Partnership 		

*Offerings subject to change based on Final EE Decision

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Data Measures for Metrics Filed Colors denote level of data precision: green = available with high degree of confidence, yellow = assumptions made, red = unavailable

Data Measures	Unit of Measure	Portfolio	Res-SF	Res-MF	Commercial	Public	Industrial	Agricultural
EE Savings - Gross	kWh, kW	Total, DAC, HTR	Total	In Unit, Common Area, Master Metered	Total	Total	Total	Total
EE Savings - Net	kWh, kW	Total, DAC, HTR	Total	In Unit, Common Area, Master Metered	Total	Total	Total	Total
# EE Participants	Num		Total, HTR only DAC only	Total, HTR, DAC, Unit, Building, Property	Small, Medium, Large, HTR		Small, Medium, Large	Small, Medium, Large
# of EE Projects	Num			Total (property)	Total	Total (building)		
Eligible Population	Num		Total, HTR only DAC only	HTR, DAC, Unit, Building, Property	Small, Medium, Large, HTR	Total (building)	Small, Medium, Large	
Sqft of EE Participants	Sqft			Properties	Total	Total		
Sqft of Eligible Population	Sqft			Properties	Total	Total		
Levelized Cost (lifecycle PAC & TRC)	\$	Total	Total	Total	Total	Total	Total	Total
Sector Usage	kWh		Total	Total	Total	Total	Total	Total
Investment	\$				Total	Total		
# New EE Participants	Num						Small, Medium, Large	
Sqft Benchmarked	Sqft				Total	Total		
Sqft of Eligible Benchmark Population	Sqft				Total	Total		