



California's EE Policy Future

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Key Policy Drivers in California





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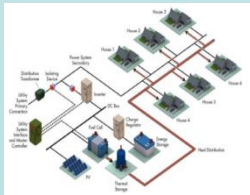
Carbon Reduction



Renewable Mandate



Double Energy Efficiency

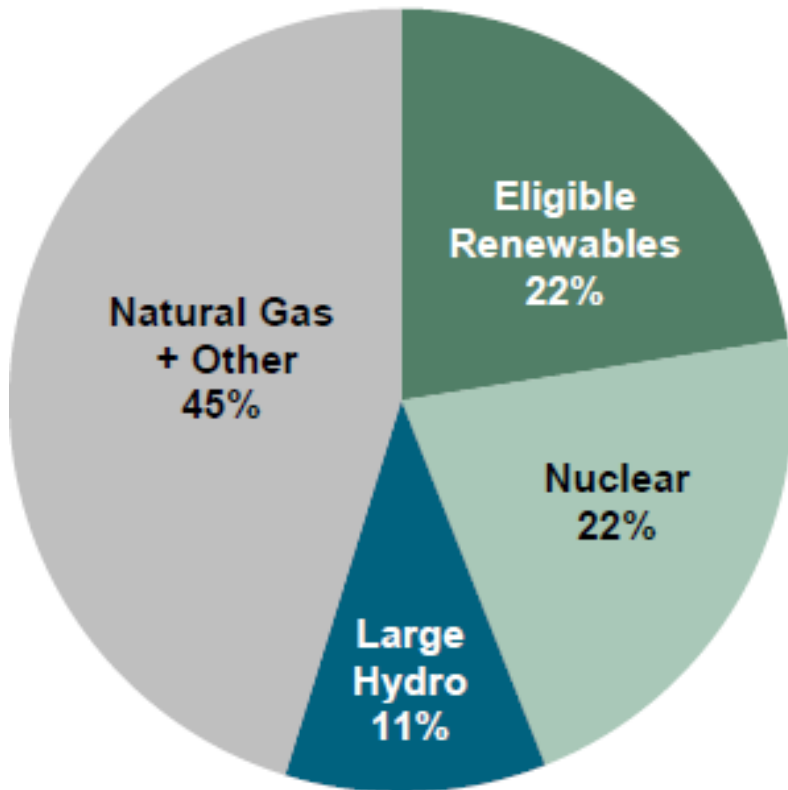


Distributed Energy Resources

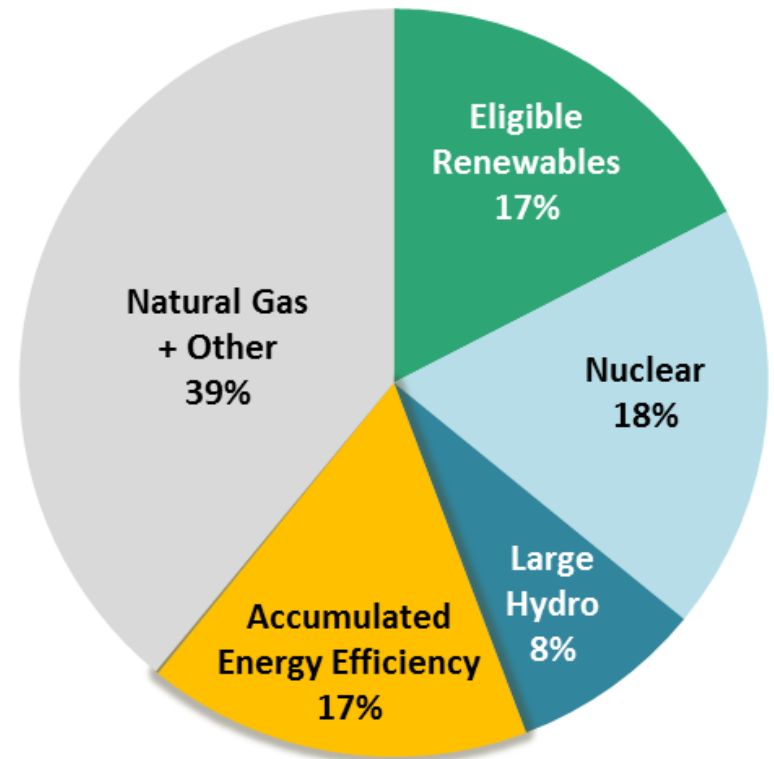


Changing Generation Mix

PG&E's Generation Mix (2013)



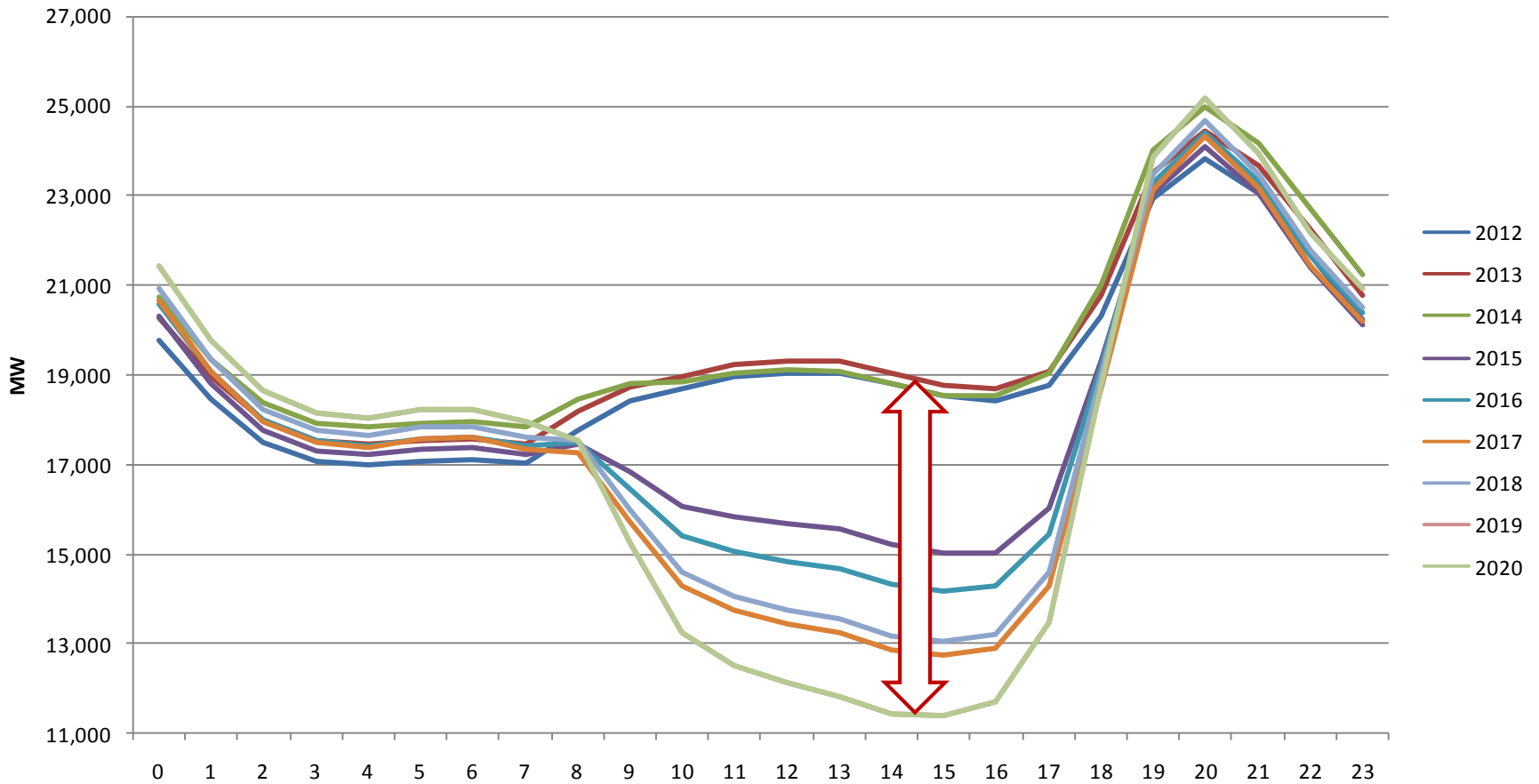
PG&E's Generation Mix (2013) with EE





Changing Dispatch Curve

CAISO Net Load --- 2012 through 2020





Changing Grid

Residential Rooftop PV



Electric Vehicles



Small Commercial PV



Distribution Level Energy Storage



Home Energy Storage



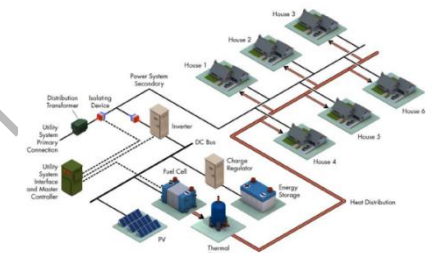
Community Energy Storage



Fuel Cells



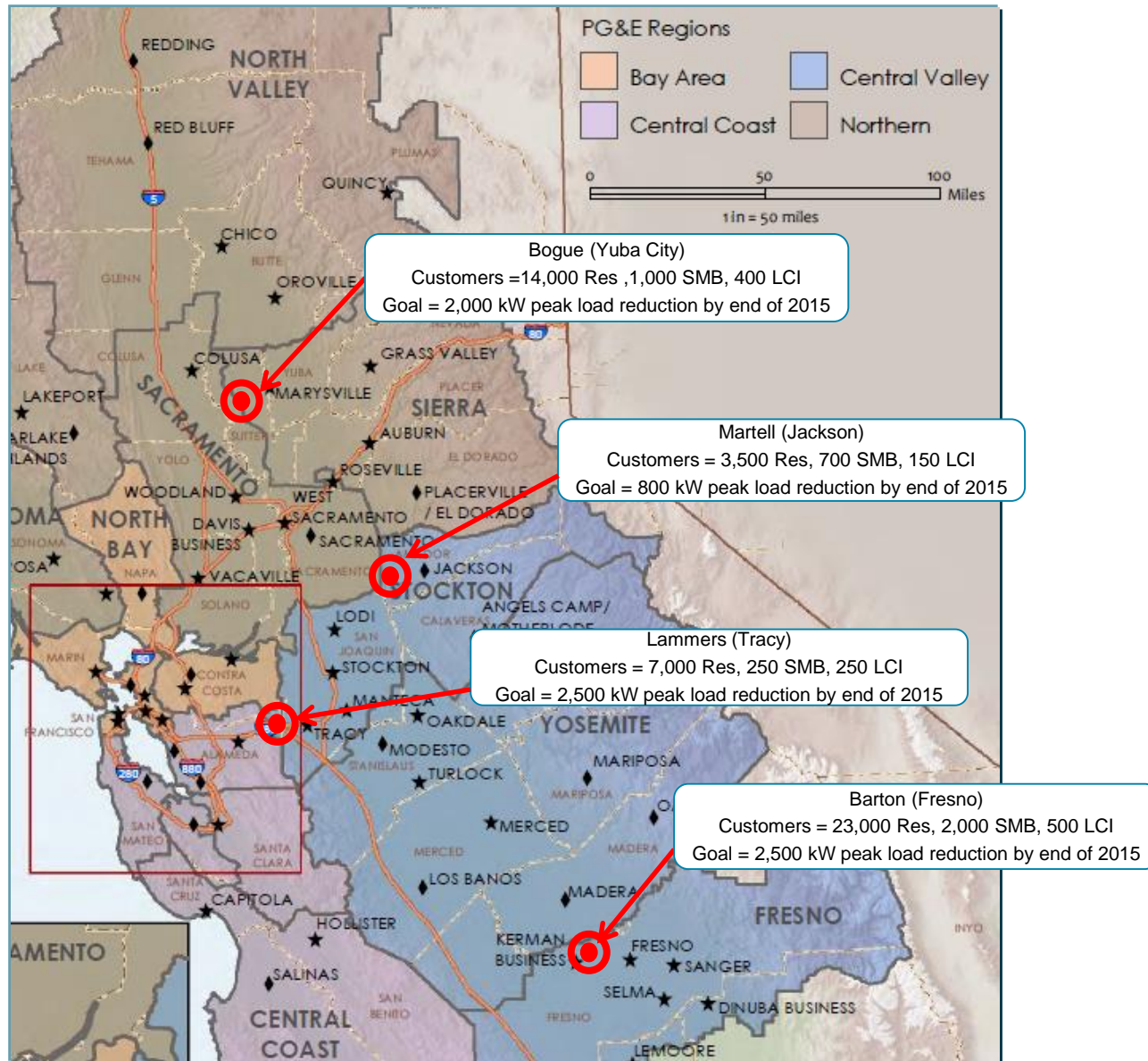
Demand Response & Energy Efficiency



Microgrids



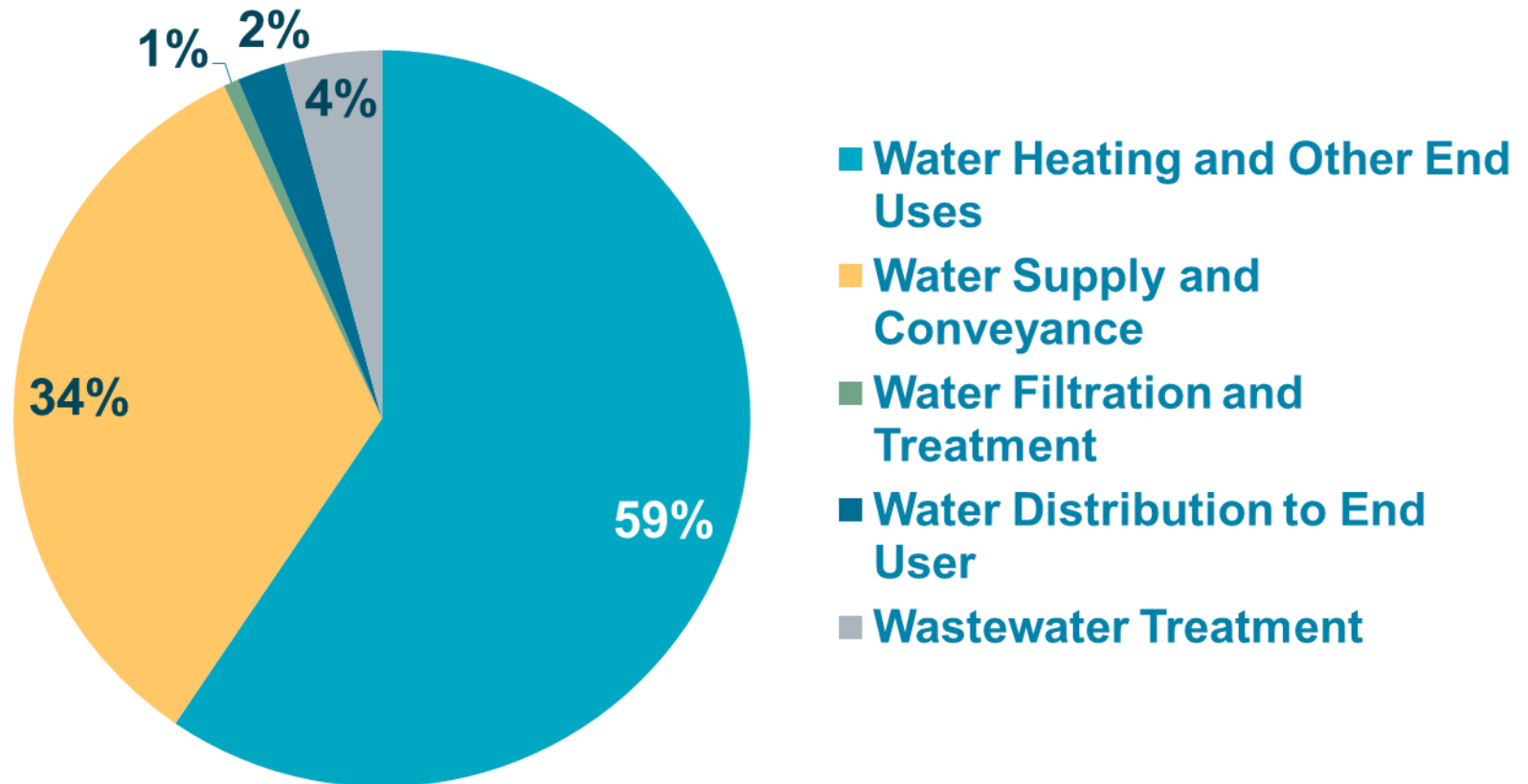
How Can EE Be Used As a DER?





How Can EE Address Critical Issues?

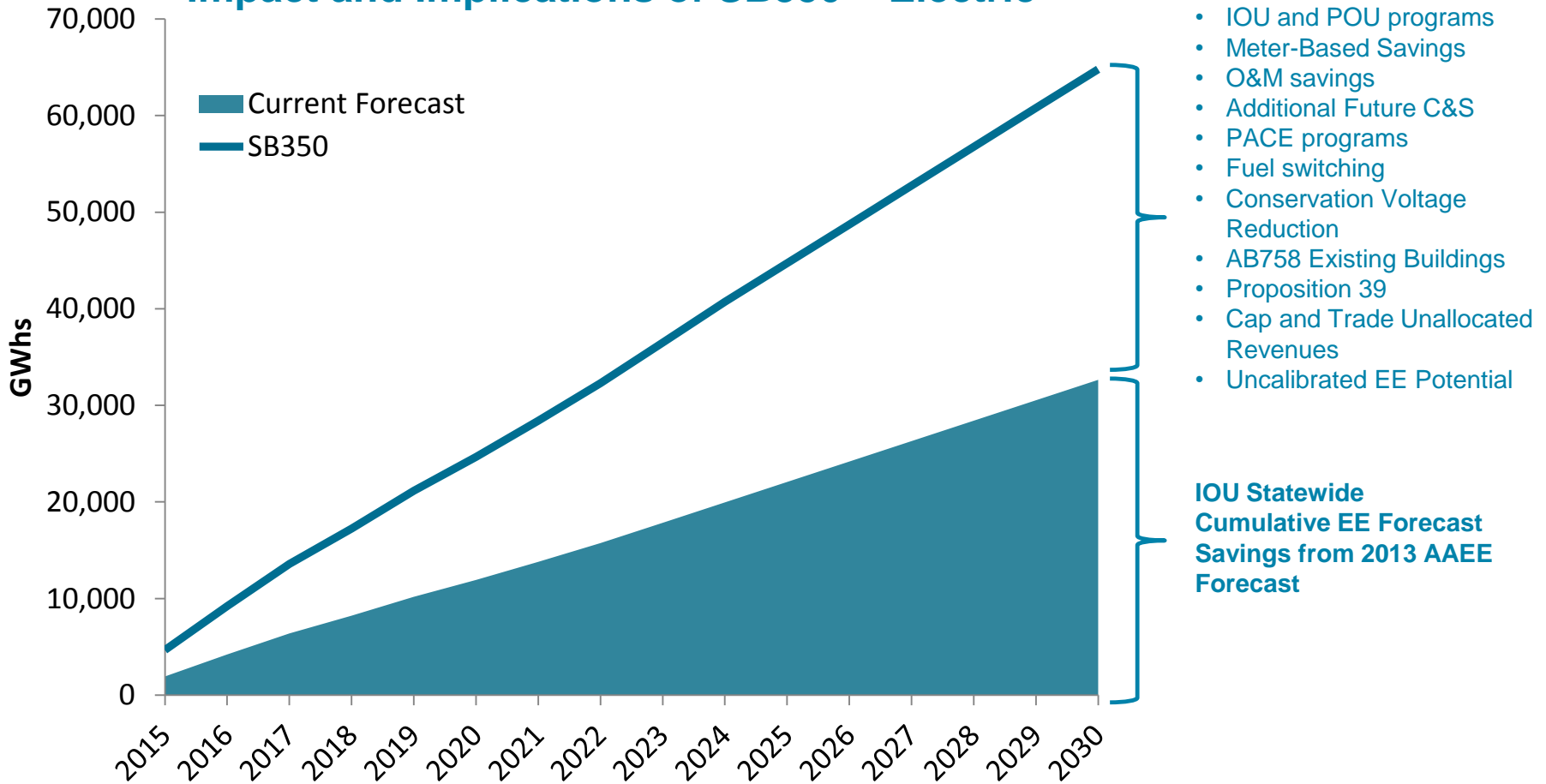
How is Water Related Energy Used in California?





How Can We Double EE?

Impact and Implications of SB350 – Electric



SB350 includes:

- IOU and POU programs
- Meter-Based Savings
- O&M savings
- Additional Future C&S
- PACE programs
- Fuel switching
- Conservation Voltage Reduction
- AB758 Existing Buildings
- Proposition 39
- Cap and Trade Unallocated Revenues
- Uncalibrated EE Potential

IOU Statewide Cumulative EE Forecast Savings from 2013 AAEE Forecast

Notes and assumptions:

- SB350 requires a doubling of the CEC’s Additional Achievable Energy Efficiency (AAEE) mid-case forecast by 2030, subject to what is cost-effective and feasible. SB350 also expands AAEE accounting for a number of efforts, as listed above, meaning IOUs goals may increase, but may not double.
- The above graph is statewide across all IOUs and is shown on a cumulative basis through 2030, which aligns with the requirements of AB350.
- The bill requires a doubling of the 2015 AAEE, which is forthcoming; the analysis above is based on the 2013 AAEE.
- AAEE is not identical to, but is based on the CPUC Potential Study.
- The AAEE forecast extends through 2024. The bill requires an average annual growth rate be applied to this period, but does not identify the rate or how to calculate it. This graph uses an average of the last available four years of savings 2021-2024.



How Can We Double EE?



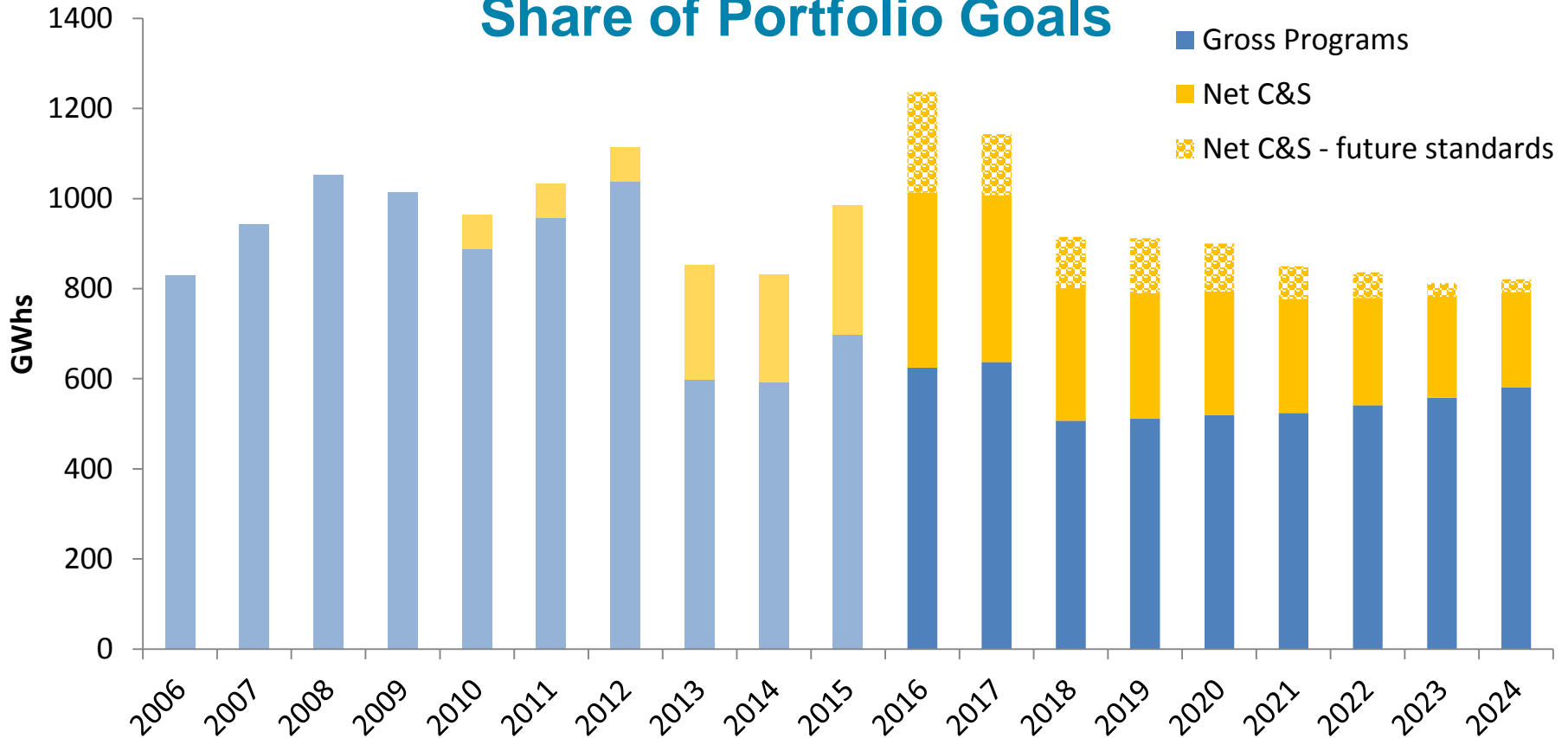
Notes and assumptions:

•Data from CPUC decision goals



How Can We Double EE?

Programs v. Codes and Standards Share of Portfolio Goals



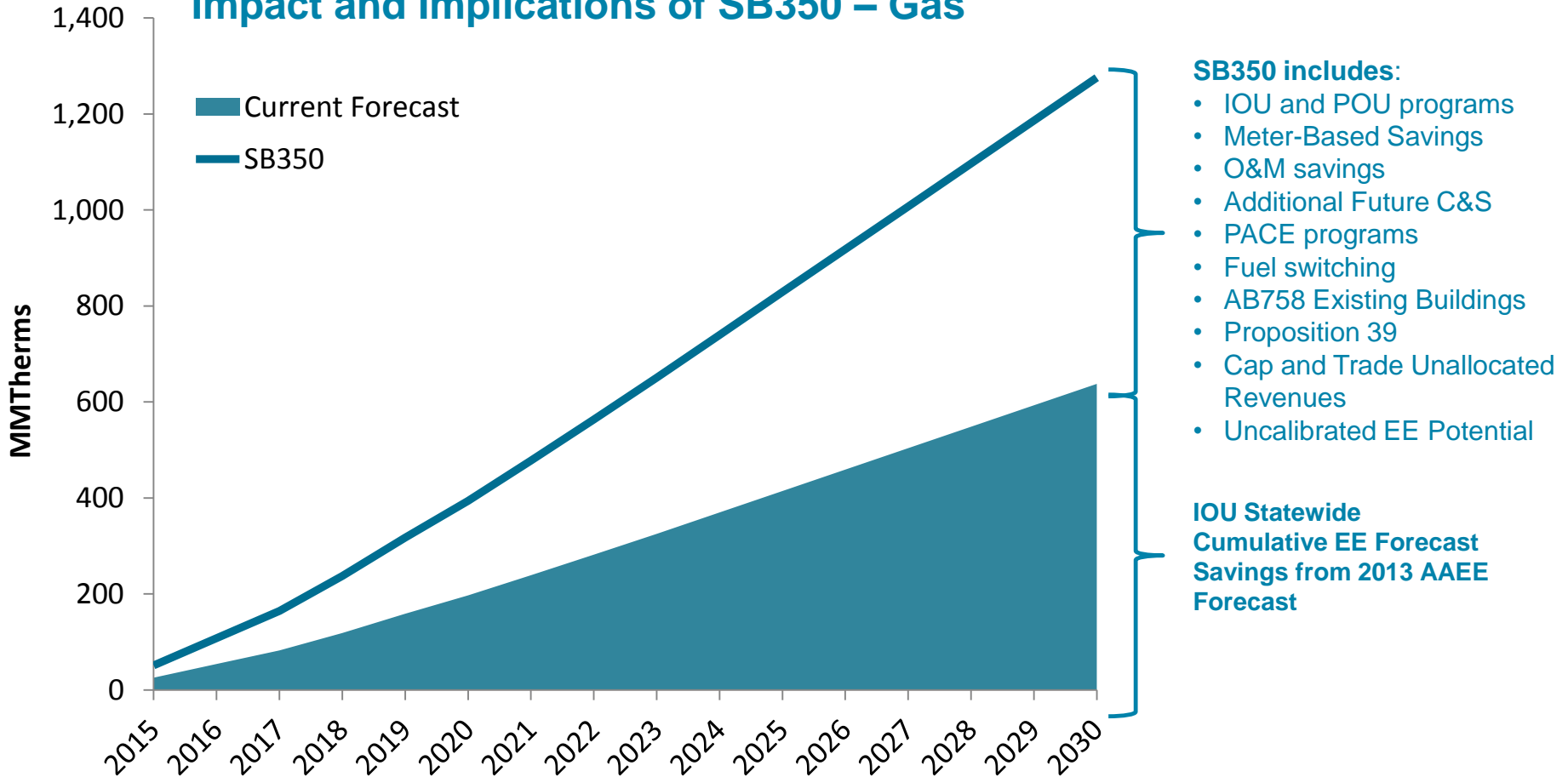
Notes and assumptions:

- Data from CPUC decision goals
- C&S goals for 2016+ are still under discussion
- C&S goals in 2010-12 were not specifically broken out in CPUC decisions. C&S savings is split out in the graph above for comparison purposes.



But What about Gas?

Impact and Implications of SB350 – Gas

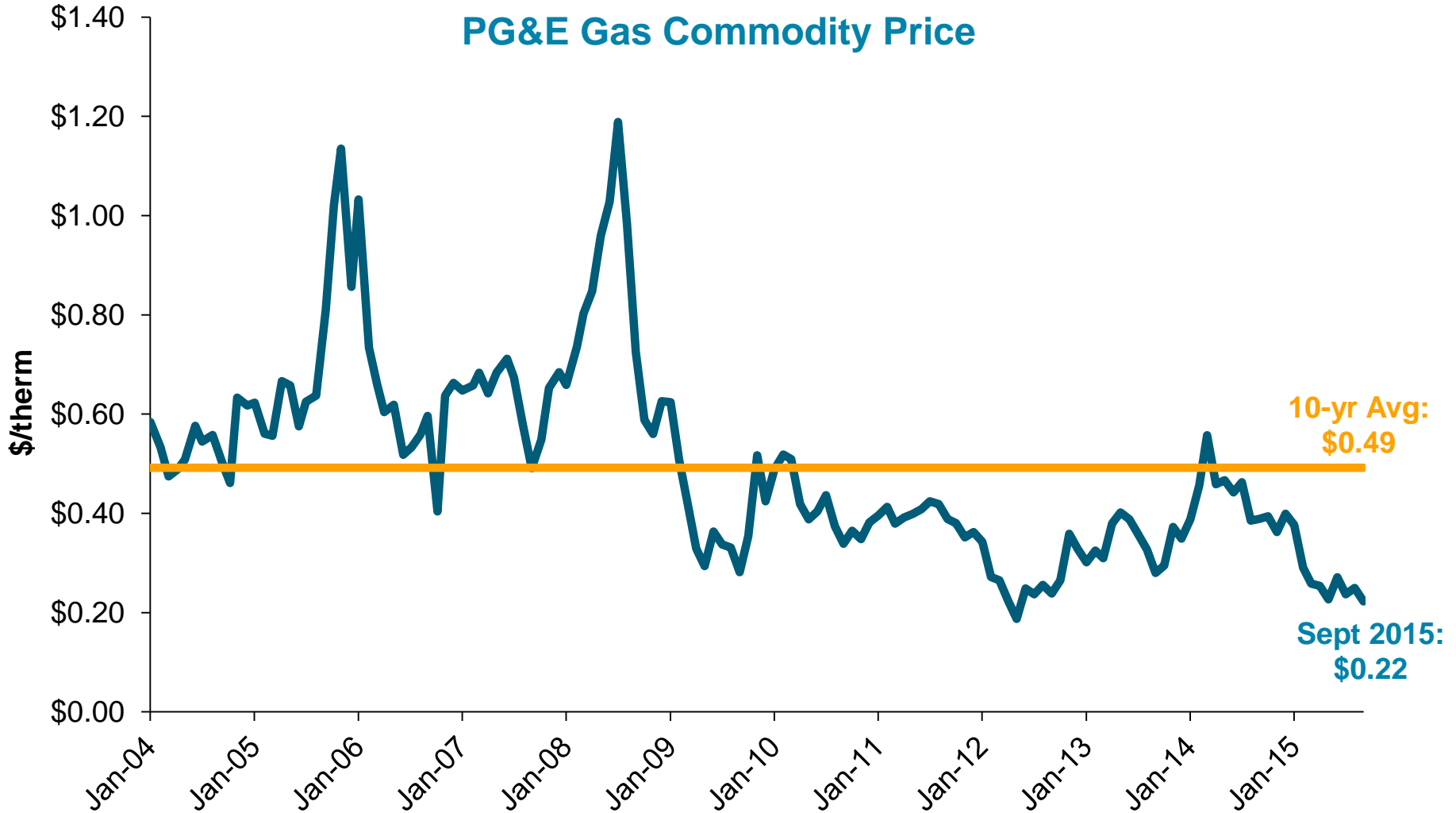


Notes and assumptions:

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But What about Gas?



Source:

PG&E Tariff Book: <http://www.pge.com/notes/rates/tariffs/rateinfo.shtml>. Weighted Average Cost Of Gas includes the weighted average cost of gas and interstate pipeline volumetric commodity charges. It does not include franchise fees, uncollectables, or any other procurement related charges.



How Should We Acquire EE?

Residential Low Income

Commercial Industrial Agricultural



Government



Academic



List of vendors is not exhaustive and is meant for illustrative purposes only

Thank You

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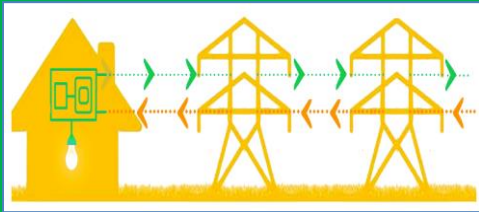


Appendix





PG&E's Distributed Resources Plan



Modernize distribution system to accommodate expected DER growth through two-way power flow



Enable customer choice of new electric DER technologies and services



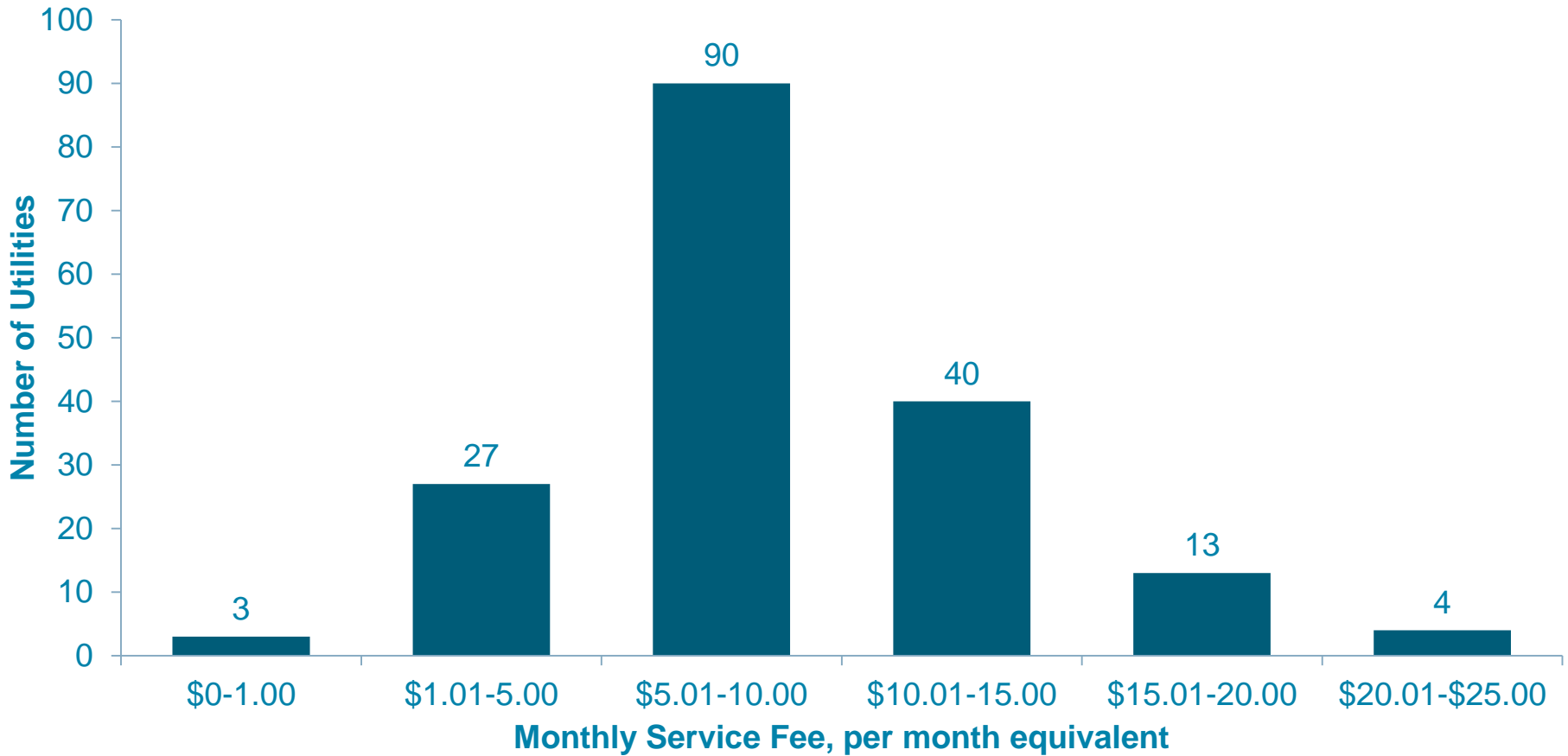
Identify and develop opportunities for DERs to realize grid benefits

Identify Optimal Locations for deployment of DERs



Rate Reform

Use of Monthly Service Fee by US IOUs



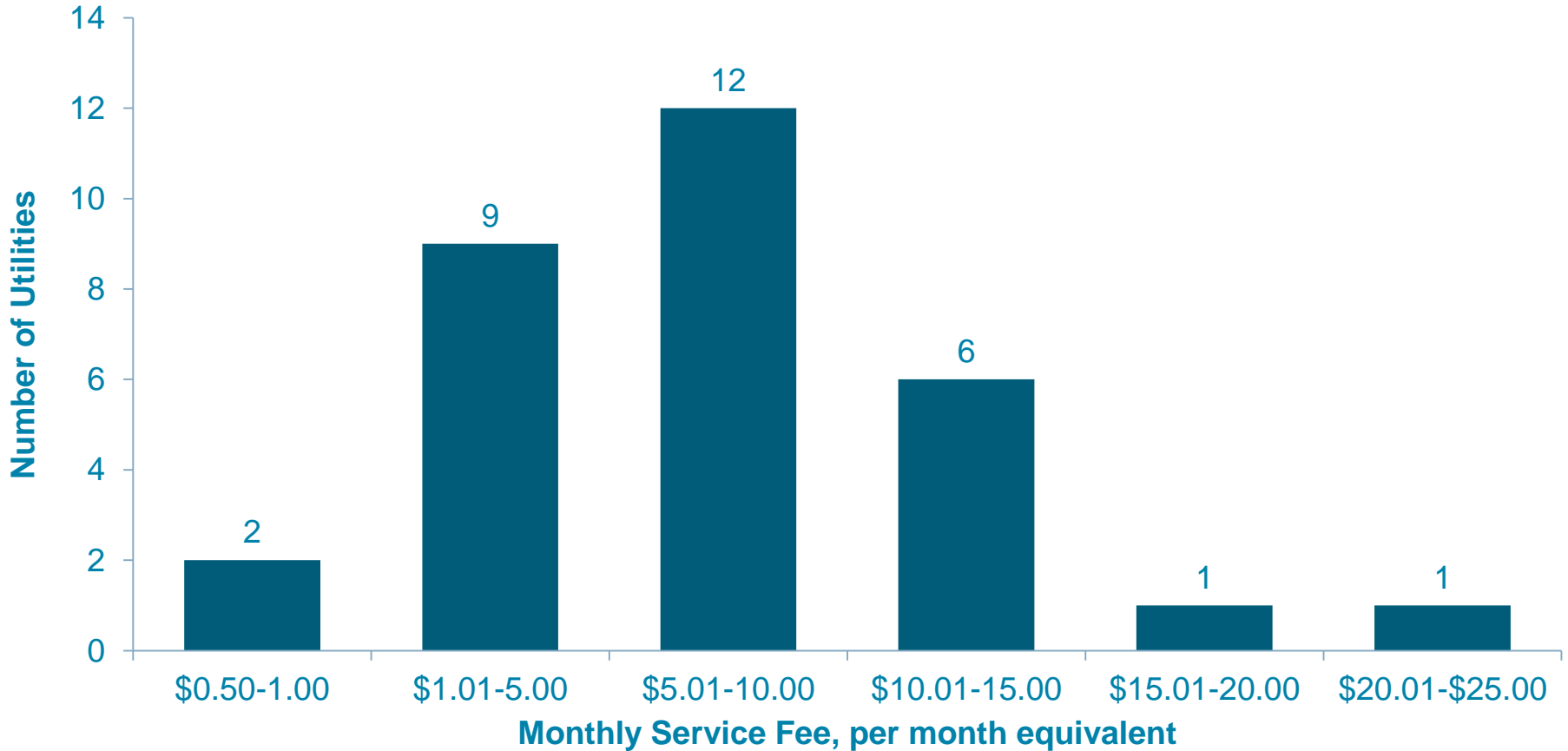
Notes: 183 Utilities studied. All except CA IOUs use some type of fixed charge: 174 use a Monthly Service Fee (shown here), and 6 use a Minimum Bill.. Average Monthly Service Fee is \$9.30

Source: CPUC Rulemaking 14-07-002, San Diego Gas & Electric Company (U 902 E) Reply Comments on Proposals for Successor Net Energy Metering Tariff and Disadvantaged Communities Program, Appendix A, Table A-4: California Electric Utilities (Excluding IOUs) - Residential Fixed Charge. Monthly Service Fee per month equivalent assumes 30 days



Rate Reform

Use of Monthly Service Fee by CA Electric Utilities

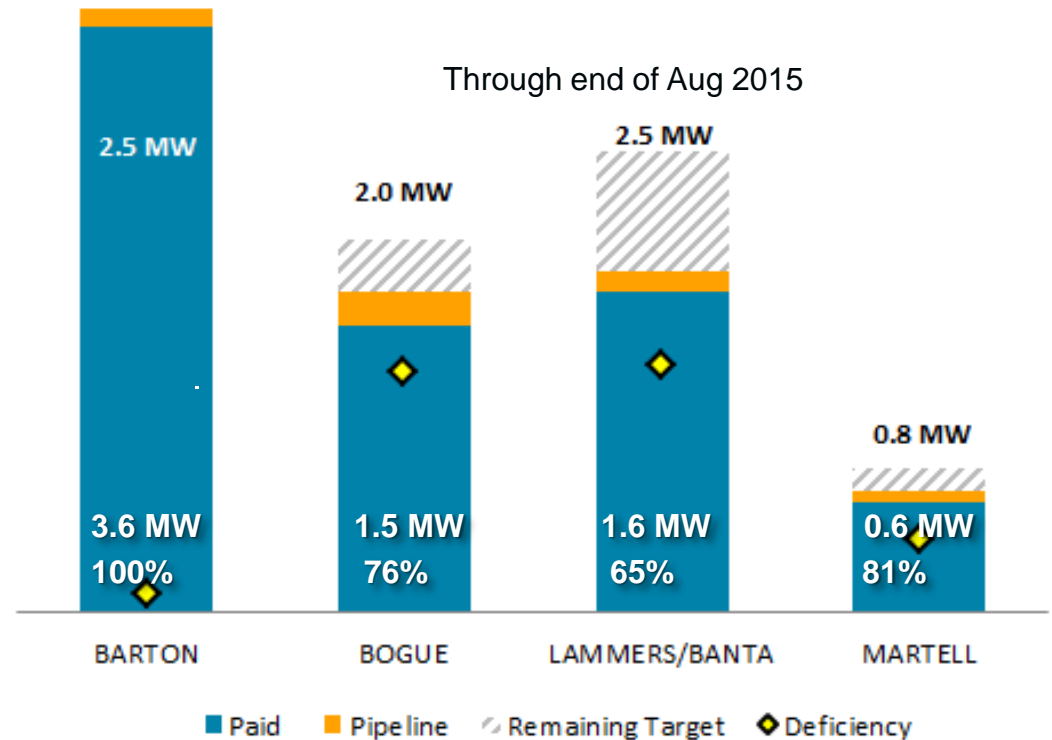
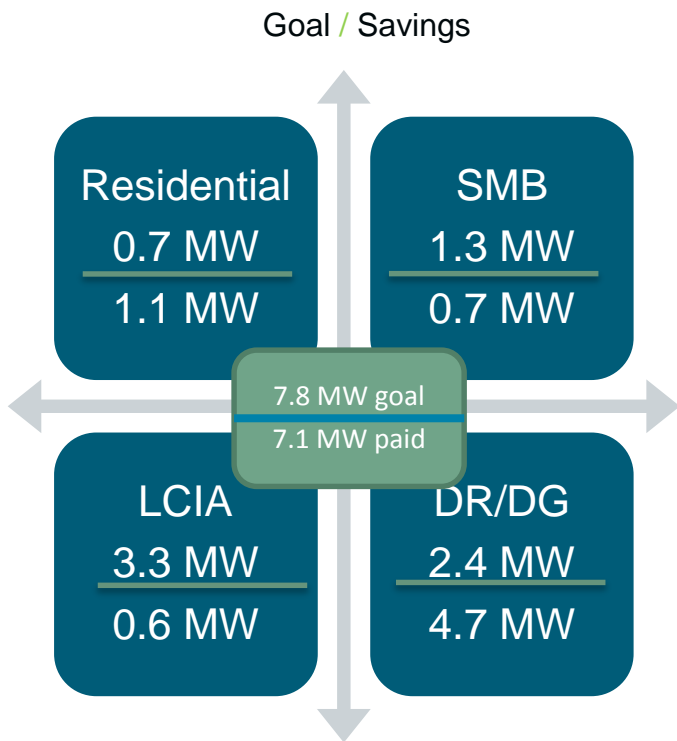


Notes: 40 Utilities studied. 31 (shown here) use a Monthly Service Fee and 8 use a Minimum Bill. Average Monthly Service Fee is \$7.74.
Source: CPUC Rulemaking 14-07-002, San Diego Gas & Electric Company (U 902 E) Reply Comments on Proposals for Successor Net Energy Metering Tariff and Disadvantaged Communities Program, Appendix A, Table A-4: California Electric Utilities (Excluding IOUs) - Residential Fixed Charge. Monthly Service Fee per month equivalent assumes 30 days.



TDSM Initiative Summary

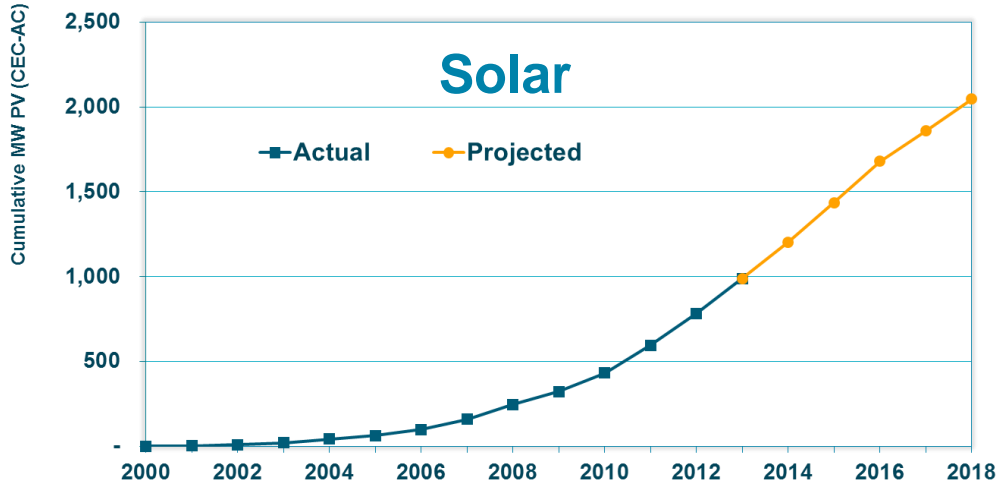
Mission: Develop a framework wherein customer-side programs can be integrated into a least cost planning framework to support distribution system reliability.



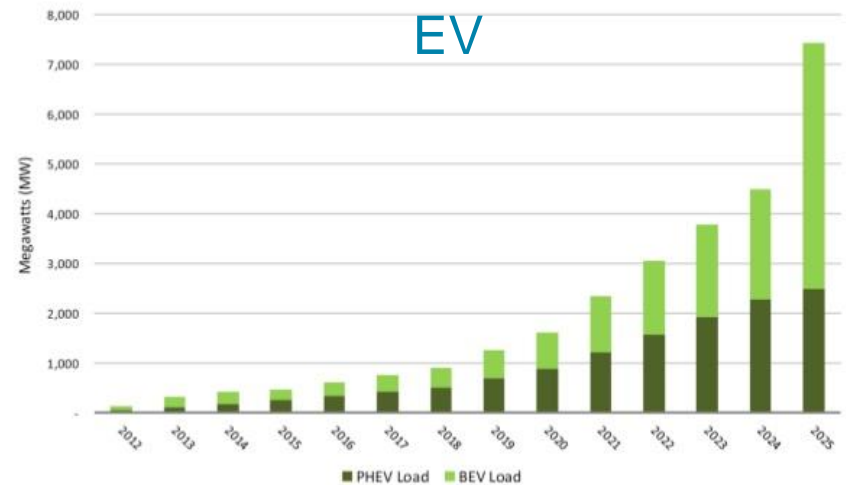


California's Solar and EV Trajectory

Capacity of Solar PV Interconnected with PG&E's Grid



Forecast Load Growth from Electric Vehicles in California

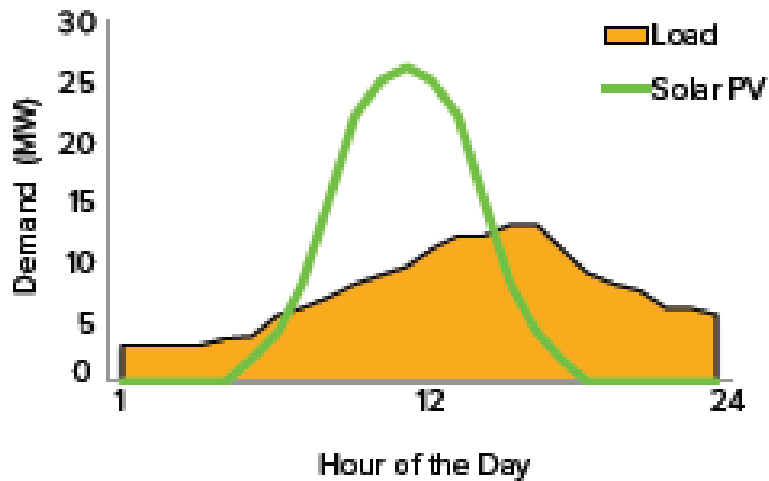




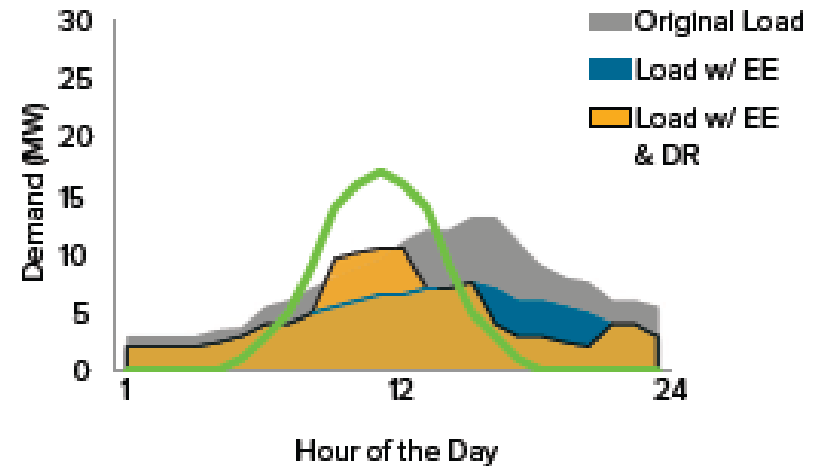
ZNE: A Tale of 2 Buildings



Solar PV



Energy Efficiency, Demand Response, then Solar PV

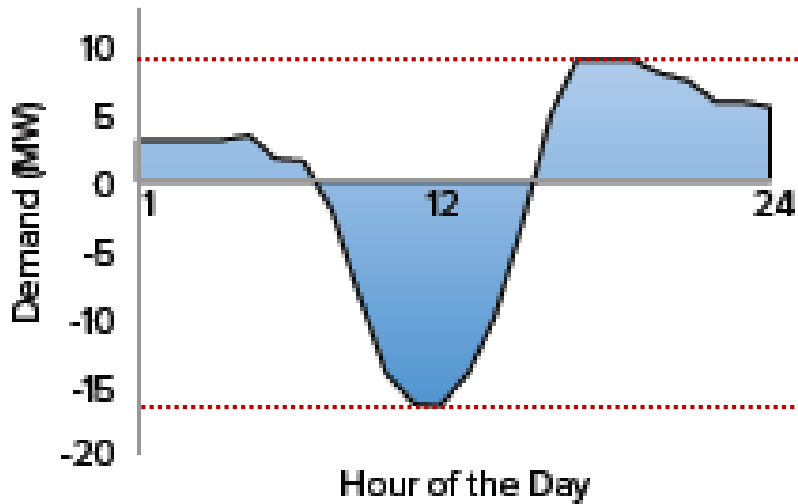




ZNE: A Tale of 2 Buildings



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