



# California Energy Storage Policies

Carla Peterman

Commissioner, California Public Utilities  
Commission

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# California Storage Law and Policy

- California has supported energy storage through research and development, demonstration projects, and procurement mandates
- Assembly Bill 2514 (Skinner), signed into law in 2010, required the CPUC to consider whether to set procurement targets for electric storage by October 2013





# Storage Target: Guiding Principles

1. Optimization of the grid, including peak reduction, contribution to reliability needs, or deferment of transmission and distribution upgrade investments;
2. Integration of renewable energy;
3. Reduction of greenhouse gas emissions to 80 percent below 1990 levels by 2050, per California's goals.

Law requires storage to be “viable” and “cost-effective”





# California Storage Target Development

- Stakeholder working groups and consultants developed and evaluated energy storage use cases and costs
- Use cases identified where benefits outweighed costs
- CPUC establish framework for storage procurement and adopted biennial energy storage procurement targets for IOUs ( total of 1.325 GW)
- Allows for different ownership models, end uses, and technologies





# Procurement Targets

<b>Storage Grid Domain (Point of Interconnection)</b>	<b>2014</b>	<b>2016</b>	<b>2018</b>	<b>2020</b>	<b>Total</b>
<b>Southern California Edison</b>					
Transmission	50	65	85	110	310
Distribution	30	40	50	65	185
Customer	10	15	25	35	85
<b>Subtotal SCE</b>	<b>90</b>	<b>120</b>	<b>160</b>	<b>210</b>	<b>580</b>
<b>Pacific Gas and Electric</b>					
Transmission	50	65	85	110	310
Distribution	30	40	50	65	185
Customer	10	15	25	35	85
<b>Subtotal PG&amp;E</b>	<b>90</b>	<b>120</b>	<b>160</b>	<b>210</b>	<b>580</b>
<b>San Diego Gas &amp; Electric</b>					
Transmission	10	15	22	33	80
Distribution	7	10	15	23	55
Customer	3	5	8	14	30
<b>Subtotal SDG&amp;E</b>	<b>20</b>	<b>30</b>	<b>45</b>	<b>70</b>	<b>165</b>
<b>Total - all 3 utilities</b>	<b>200</b>	<b>270</b>	<b>365</b>	<b>490</b>	<b>1,325</b>

**ESPs/CCAs must procure 1 percent of their annual peak load by 2020.**





# Procurement Process

- Transmission and distribution storage must be procured via a competitive RFO
- Utilities may own up to 50 percent of storage across Transmission, Distribution and Customer grid domains
- Utilities may shift up to 80 percent of MW between Transmission and Distribution grid domains and 85 MW of customer storage to T&D





## Cost Containment

- Utilities include a cost-effectiveness analysis of all bids received in RFOs
- Utilities may defer up to 80 percent of MW to later periods with a showing of unreasonableness of cost or lack of operational viability
- Ongoing evaluation and analysis of progress, with opportunity for mid-course corrections, as needed





# Storage Procurement (1/3)

- 2014 RFO
  - PUC approved 87.3 MW of procurement (SCE-16.3MW, PG&E 71MW)
  - SDG&E used 2014 All Source RFO for compliance
  - IOUs were also able to use previously approved projects to meet target
  - Transmission and distribution connected
  - Mix of technologies including lithium ion batteries, zinc air batteries, flywheels







## Storage Procurement (2/3)

- 2016 Procurement Plan
  - 219.3MW Authorized for SCE and PG&E
  - TX (65MW), distribution (63.5MW), and customer side (10.8 MW) – third party and utility owned
  - Load following, ancillary services, substation deferrals, bill management, permanent load shifting
  - No SDG&E plan since planning to fulfill all procurement through their 2016 LCR





## Storage Procurement (3/3)

- 2013 Southern California Edison preferred resources RFO
  - 63 contracts executed; 23 energy storage
  - 50 MW storage min- 264.14MW procured (100 MW BTM)
  - Lithium-ion batteries, thermal storage
- 2016 Aliso Canyon expedited procurement
  - 5 projects totally 64.5MW; 3 year and 10 year terms
  - Lithium-ion batteries





## Storage – Customer Side Solutions

- On the customer side of the meter we see increased interest in storage technologies through our Self-Generation Incentive Program.
- Just this year the CPUC modified SGIP program rules to allocate 75% of the \$83 million annual program budget to energy storage technologies. Estimated additional installation of 218-261 MW
- AB2868 500 MW distributed and customer storage mandate





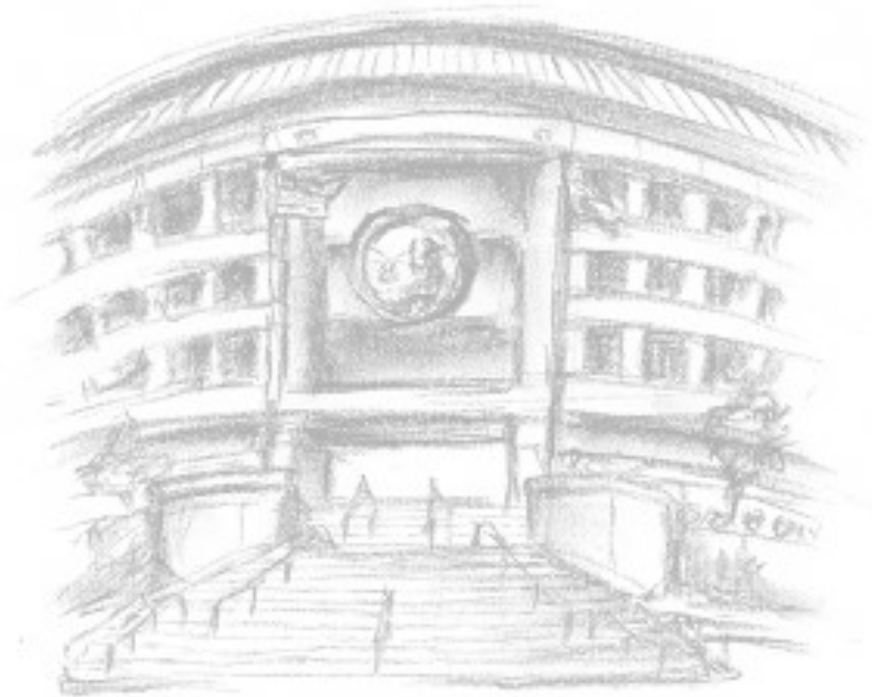
## Next Steps

- Evaluate 2016 RFO results
- Issue guidance on multi-use and stationary storage
- Implement AB2868 500 MW distributed and customer storage mandate
- Integrated Resource Plans





**Thank you!**  
**For Additional Information:**  
**[www.cpuc.ca.gov](http://www.cpuc.ca.gov)**





## CPUC Electric Vehicles Activities (1/2)

- California investing in electric vehicles– SB1275 target of 1 million ZEVs by 2023; Governor’s goal of infrastructure for 1 million ZEVs by 2020; SB350 directs filing of transportation electrification plans
- Activities include determining charging not a utility, EV specific rates, sub-metering pilots, R&D and VGI pilots, and infrastructure deployment





## CPUC Electric Vehicles Activities (2/2)

- Infrastructure pilots: SCE - \$22 million for up to 1,500 make-readies; SDG&E \$45 million for make ready and EVSE; PG&E proposal pending for \$130 million for 7,500 chargers
- MUD, workplace, disadvantaged community focus
- SB350 IOU multi-sector transportation electrification plans including proposals for rates, infrastructure investments, communications protocols

