

State-Federal RPS Collaborative and ESTAP Webinar

California's Energy Storage Mandate

Hosted by
Warren Leon, Executive Director, CESA

November 19, 2013



Housekeeping

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- This webinar is being recorded and will be made available after the event on the CESA website at

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About CESA



Clean Energy States Alliance (CESA) is a national nonprofit organization working to implement smart clean energy policies, programs, technology innovation, and financing tools, primarily at the state level. At our core is a national network of public agencies that are individually and collectively working to advance clean energy.

State-Federal RPS Collaborative

- With funding from the Energy Foundation and the US Department of Energy, CESA facilitates the **Collaborative**.
- Includes **state RPS administrators, federal agency representatives,** and other stakeholders.
- Advances dialogue and learning about RPS programs by **examining the challenges and potential solutions** for successful implementation of state RPS programs, including **identification of best practices**.
- To sign up for the Collaborative listserve to get the **monthly newsletter** and announcements of **upcoming events**, see: www.cleanenergystates.org/projects/state-federal-rps-collaborative

ESTAP – Energy Storage Technology Advancement Partnership

Purpose: Create new DOE-state energy storage partnerships and advance energy storage, with technical assistance from Sandia National Laboratories

1. Disseminate information to stakeholders
2. Facilitate public/private partnerships at state level to support energy storage demonstration project development

See <http://www.cleanenergystates.org/projects/energy-storage-technology-advancement-partnership/>

Today's Guest Speakers

Arthur O'Donnell, Program Supervisor, Grid Planning and Reliability, California Public Utilities Commission

Aloke Gupta, Energy Analyst, California Public Utilities Commission



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RPS and ESTAP Webinar: California's New Energy Storage Mandate



November 19, 2013

Arthur O'Donnell

Aloke Gupta

Grid Planning & Reliability

Energy Division

California Public Utilities Commission



BAY

Now Playing D. 13-10-040

ENERGY STORAGE PROCUREMENT IN CALIFORNIA

Shows:	2014	2016	2018	2020
	200 MW	270 MW	365 MW	490 MW



**1,325 MW in
operation by 2024**





Summary of AB 2514 (Skinner, 2010)

- Directed CPUC to open a proceeding to:
 - Adopt procurement targets, *if appropriate*, for each LSE* to procure **viable & cost-effective** energy storage
 - To be achieved by EOY 2015 & EOY 2020
 - *Consider policies* to encourage deployment of energy storage ;
 - Deadline for CPUC decision by October 2013;
 - CPUC to re-evaluate its determinations every three years;
 - Future IOU Renewable Portfolio Standard (RPS) plans must comply w/ storage OIR decision.

*LSE = Load serving entity





Energy Storage OIR R.10-12-007

- Established framework of storage applications/Use Cases:
 - 21 end uses
 - Distinct types of storage to consider from policy perspective
- Identified regulatory barriers to storage deployment;
- Recognized distinct storage flexibility benefits;
- Developed specific Use Case descriptions;
- Preliminary cost-effectiveness analysis of selected use cases by EPRI & DNV KEMA.

- Throughout the process relied on collaboration among stakeholders: IOUs, Storage Industry, ORA and NGOs.





CPUC Decision Highlights

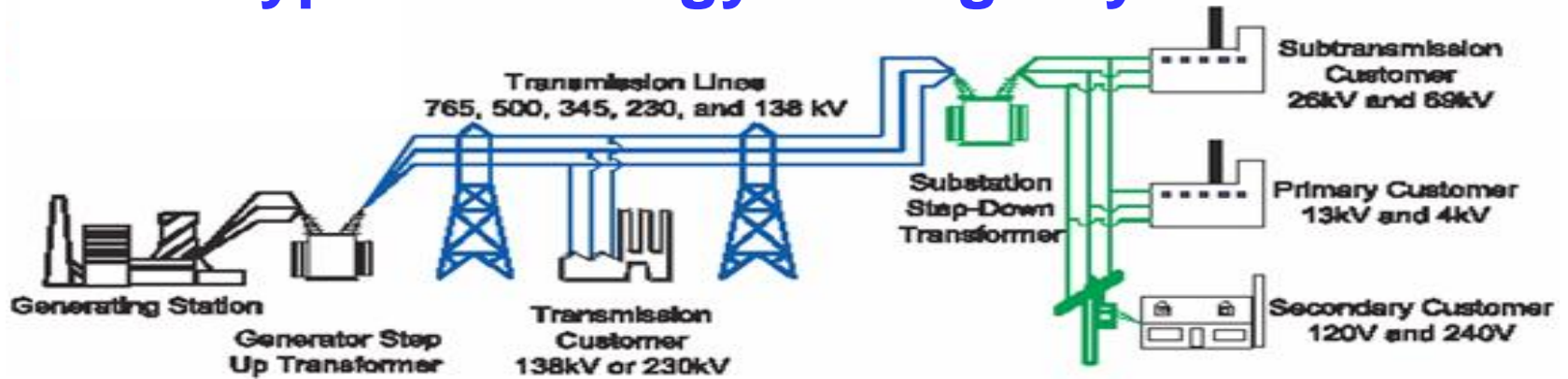
On October 17, 2013, the CPUC approved D. 13-10-040 to establish storage procurement targets and policies for load-serving entities (utility & non-utility):

- IOU targets: 1,325 MW (cum) of storage by 2020 in 4 biennial solicitations (starting December 2014), as follows;
 - PG&E 580 MW
 - SCE 580 MW
 - SDG&E 165 MW
- Above targets divided into three “storage grid domains”:
 - Transmission-connected,
 - Distribution-level and
 - Customer-Side of the Meter applications;
- Non-utility LSEs targets ~ 1% of peak load by 2020;





Types of Energy Storage Systems



Bulk Generation		Xmission	Distribution	Behind-the-Meter
Generation -Sited Storage	Transmission Connected Bulk Storage	Transmission Grid Storage	Distribution Grid Storage	Customer-Sited Storage
<ul style="list-style-type: none"> ▪ CSP ▪ Wind + Storage ▪ CCGT+ TES 	<ul style="list-style-type: none"> ▪ A/S ▪ Peaker ▪ Load following 	FERC Jurisdiction	<ul style="list-style-type: none"> ▪ Substation Level Storage ▪ Distributed Peaker ▪ Community ES 	<ul style="list-style-type: none"> ▪ Bill mgt / PLS ▪ Power quality ▪ EV charging

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←== Transmission-Connected ==→





Storage Procurement Targets: by Year and Utility

Energy Storage Procurement Targets (in MW)²²

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





Additional Directives in the Decision

- Implementation begins NOW! Developing procurement plans, evaluation protocols, and contract forms;
- Utility procurement applications due March 1, 2014, for the first *competitive* solicitation to be held in December 2014:
 - Updated procurement target table with adjustments
 - Proposed types of storage resources to be procured, including Quantities and Operational requirements
 - Proposed procurement details, including PPAs
 - Consistent bid evaluation protocol
 - Request for cost-recovery authorizations
 - Report on storage procured to date;
- Utility-owned storage limited to 50% of targets across all grid domains;
- No competitive solicitation required for distribution-connected storage for grid reliability.





Market Transformation Rationale for Targets

From D. 13-10-040:

“AB 2514 is silent on any requirement to conduct or apply a system need determination as a basis for procurement targets. As such, we are not prevented from establishing procurement targets, based on our expertise and authority, in the absence of a system needs determination.”

“To the extent that a storage device or technology is able to demonstrate it can meet the operational requirements, and provide benefits over its projected life, it could be considered having met a defined market need.”

Storage “fits within the spirit of the Loading Order” but the Decision declined to redefine the Loading Order to include Storage, in part because LO was adopted by a multi-agency process.





Flexibility Allowed in Meeting Targets (1)

- After a solicitation, IOU may request a deferment of up to 80 percent of targets with an affirmative showing of:
 - A) Unreasonable cost burden, or
 - B) Insufficient number of operationally viable project offers.
- Deferment request must be made within three months after receipt of offers in response to a solicitation.
- Deferments added back in for the next solicitation.
- Must make up delayed procurements by 2020.





Flexibility Allowed in Meeting Targets (2)

- Over-procurement in one year can be applied to subsequent RFO.
- IOU can shift up to 80% of targets between T & D grid domains;
 - No shifting of target into or out of the customer-side domain.
- No portion of the procurement targets can be traded among the IOUs.





Project Eligibility

Eligible storage projects must address one or more policy goals:

- Grid optimization, including:
 - peak reduction,
 - reliability needs, or
 - deferment of T&D upgrade investments;
- Integration of renewable energy; and
- Reduction of greenhouse gas emissions
 - CA goal: 80% below 1990 levels by 2050

To count against targets, projects must be:

- Installed and operational after January 1, 2010.
- In operation no later than December 31, 2024.

Projects procured in other proceedings can be counted.

Pumped Storage >50 MW not eligible





Program Evaluation

- \$500K/yr allocated for program evaluation activities, including refinement of cost-effectiveness methodology.
- Each IOU shall employ an independent evaluator (IE) to assess competitiveness and integrity of its solicitation.
- Energy Division Staff may recommend changes to procurement process based on results of first solicitation.
- A comprehensive program evaluation required by 2016 and 2019:
 - Whether storage resources procured by IOUs meet stated policy goals,
 - Progress toward market transformation,
 - Lessons gained from storage operational data,
 - Learning from project cost-effectiveness data,
 - Best practices for safe operation of storage technologies.





Next Steps and Timeline

Feb 2014	Standardized storage bid evaluation protocol
Mar 2014/ 16/ 18/ 20	IOU procurement applications due
Nov 2014/ 16/ 18/ 20	CPUC decision on procurement applications
Dec 2014/ 16/ 18/ 20	Solicitations
2Q 2015/ 17/ 19/ 21	Deferment requests
Dec 2015/ 17/ 19/ 21	Submissions of contracts for CPUC review
2016 / 2019	Program evaluation





CPUC Documents on Energy Storage

Formal proceeding documents are found using the Rulemaking number R. 10-12-007

Other documents, including workshop presentations, staff reports, cost-effectiveness analysis, and other background papers are on the CPUC web site:

<http://www.cpuc.ca.gov/PUC/energy/electric/storage.htm>





Current Status of Storage Deployment

- **Storage already existing**
 - 1200 MW Helms hydro pumped storage – PG&E
 - 200 MW Eastwood/Big Creek – SCE
 - 40 MW Hodges – SDG&E
 - Also LADWP (Castaic) and State Water Project (Gianelli & Thermalito)
 - Various commercial/muni projects in planning
 - 4 MW Battery / PG&E pilot/San Jose
 - 2 MW Battery / PG&E pilot/Vaca-Dixon substation
 - 6.5 MW SDG&E Borrego & various locations
- **Storage R&D projects in progress (some with ARRA funds)**
 - 8 MW Battery / SCE pilot/Tehachapi project
 - 300 MW CAES / PG&E feasibility study (may not get to completion)





Storage Approved & Pending at CPUC

Proceeding/Decision	Use Case Refer	Potential Capacity	Potential Cost	Status
Demand Response D. 12-04-045	Permanent Load Shifting No. 6	~35 MW	\$32 million	IOU incentives \$875/kW in Res. E-4586
LTPP D. 13-02-015	Distribution Nos. 2-4 or Transmission Connected, No. 1	50 MW	Unknown	Pending SCE solicitation
SDG&E GRC A.11-11-005	Distribution Substation & CES Nos. 3-4	Up to 40 MW proposed	\$26 million/yr	D. 13-05-010 Approved \$26 million for TY2012 and forward
Self-Generation Incentive Program (SGIP)	Customer-side No. 5	35 MW	\$70 million	Incentives set at \$2000/kW; little deployment due to interconnection cost issues and other factors
EPIC A.12-11-001; -002; -003; -004	Transmission Connected No. 1 Distribution Nos. 2-4 Customer-Side Nos. 5-6 EV Charging No. 7	Undetermined (research rather than commercial deployment)	Up to \$75 million: \$61 million in CEC plan ~\$14 million in IOUs' plans	Pending
Total Potential		160 MW	>\$231million	





Thank You!

For further information related to
Energy Storage Rulemaking R.10-12-007,
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