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Joint Agency Staff Workshop on the Review of the Actions and Status of State-level Energy Roadmaps

June 13, 2017

California Public Utilities Commission

California Independent Systems Operator

California Energy Commission

Energy Storage Roadmap Update

Principles

- ✓ Expanding revenue opportunities.
- ✓ Reducing costs of integrating and connecting to the grid.
- ✓ Streamlining and clarifying policies and processes to increase market certainty.

Priority Tracks

1. Planning
2. Procurement
3. Rate Treatment
4. Interconnection
5. Market Participation

Energy Storage Roadmap Activity Update

- CPUC Activities Supporting the Roadmap

  - Distribution Resource Plans Proceeding (R. 14-08-013)

  - Integrated Distributed Energy Resource (R. 14-10-003)

  - Energy Storage Proceeding (R. 15-03-011)

  - Interconnection Proceeding (R.11-09-011) & Smart Inverter Working Group

  - DER Action Plan

  - Resource Adequacy Proceeding (R.14-10-010)

Energy Storage Roadmap Activity Update

- CAISO Activities Supporting the Roadmap

  – Energy Storage and Distributed Energy Resources (ESDER) Stakeholder Initiative, Phases 1 & 2

  – Expanded Metering & Advanced Telemetry Stakeholder Initiative

  – Storage Interconnection Stakeholder Initiative

  – Metering Rules Enhancement Stakeholder Initiative

Energy Storage Roadmap Activity Update

- CEC Major Activities

  - EPIC Research and Demonstration Grants

    - Ongoing Research Grant Activity

    - Focus is EPIC 2nd and 3rd Investment Plan is on integrated systems such as microgrids, zero-net energy facilities, combined solar/storage grants vs new technologies that have not reached prototype stage

  - Participate in the CPUC/CAISO Proceedings and Working groups

  - Active working relationship with DOE and NYSERDA

  - Evaluating the value and usefulness of public accessible energy storage valuations software tool—StorageVET (funded under EPIC)

Energy Storage Roadmap Activity Update

How to access the StorageVET tool online:

Steps to Become a StorageVET™ User
Latest info on www.storagevet.com

1. Join Energy Storage Integration Council and get Collaboration Site Access (contact info to esic@epri.com; instructions at www.epri.com/esic)

2. After ESIC enrollment, request Access to StorageVET™ via email to storagevet@epri.com

3. EPRI creates new user Analytica Cloud Player Account and shares via e-mail

4. Users can participate in ESIC StorageVET™ Subgroup (1 hour, biweekly) for ongoing familiarization and present cases for discussion

E-mail storagevet@epri.com with questions

Storage Roadmap – Planning

Action	Forum	Status
Describe distribution grid operational needs and required resource characteristics	Distribution Resources Plan (DRP) (CPUC)	Commenced in 2014
Facilitate clarification by IOUs of operational constraints that can limit the ability to accommodate interconnection on the distribution system	CPUC DRP Developing Integration Capacity Analysis (ICA); new interconnection OIR	ICA will inform Rule 21 streamlining
Examine and clarify opportunities for storage to defer or displace distribution upgrades	DRP, IDER & 2016 Storage RFOs (CPUC, IOUs)	DRP Tracks 2 & 3 Demonstration
Describe ISO grid operational needs and required resource characteristics	ESDER 1, 2 & 3 (CAISO)	Ongoing
Develop coordination process for transmission and distribution system planning	Joint Agency Steering Committee (JASC)	Ongoing
Clarify assessment of energy storage resources classified as transmission assets to defer or displace transmission upgrades	CAISO	FERC Order 792; TPP process

Storage Roadmap – Procurement

Action	Forum	Status
Consider refinements to the valuation methodologies used by IOUs to support CPUC decisions on storage procurement and make models publicly available	R.15-03-011 (CPUC)	Consultant RFP pending release
Clarify rules for energy storage qualification and counting in an evolving Resource Adequacy framework	R.14-10-010 (CPUC)	D.14-06-050
Consider "unbundling" flexible capacity RA counting		D.16-06-045
Prepare summary of efforts underway focused on developing models for energy storage valuation and plans public distribution	CEC	StorageVET

Storage Roadmap – Rate Treatment

	Action	Forum	Status
🟥	Clarify wholesale rate treatment and ensure that the ISO tariff and applicable business practices manuals and other documentation provide sufficient information.	CAISO Storage Interconnection Stakeholder Initiative and ESDER 3; CPUC R.15-03-011	Station power: ESDER 3 & IOU Advice Letters
🟥	Clarify and potentially modify net energy metering tariffs applicable to cases where energy storage is paired with renewable generators.	R.12-11-005 (CPUC)	D.16-04-020
🟧	Clarify rate treatment for customer sites with a mix of resources that help meet local consumption needs and do not result in the net export of energy, and want to provide wholesale grid services.	R.15-03-011, Phase 2 (CPUC)	Multiple Use Applications – under consideration.
🟧	Evaluate the need and potential to define distribution level grid services and products.	R.14-10-003 (CPUC)	IDER Competitive Solicitation Framework Pilot – October 2017
🟨	Consider a new proceeding to develop distribution grid services provided by distributed energy resources to the utility or other entities.		

Storage Roadmap – Interconnection

Action	Forum	Status
Clarify existing transmission and distribution interconnection processes, including developing integrated process flow charts and check lists	R.11-09-011 (CPUC)	Rule 21 flow charts approved in March 2017
Evaluate opportunities to coordinate between Rule 21 and Wholesale Distribution Access tariff (WDAT) to streamline interconnection processes and ability to efficiently move between processes	No state agency or CAISO jurisdiction over WDAT. New interconnection OIR may examine Rule 21 – WDAT transfer streamlining.	
Evaluate the potential for a streamlined or "fast track" distribution interconnection process for storage resources that meet certain use-case criteria	R.11-09-011 (CPUC)	D.16-06-052 – expedited process live July 2017
Evaluate defining and establishing a fee structure to interconnect non-exporting resources	R.11-09-011 (CPUC)	Fee approved in March 2017; may be reexamined in July 2018
Define and support entities collecting telemetry data from multiple facilities, to allow bulk submission of this data.	Expanded Metering & Advanced Telemetry (CAISO)	Virtual aggregated resources can provide a single telemetry point

Storage Roadmap – Interconnection, cont.

	Action	Forum	Status
	Review and potentially modify utility WDAT to incorporate applicable modifications consistent with the ISO interconnection tariff including adjustments that streamline requirements	State agencies do not have jurisdiction for WDAT.	
	Review ISO's procedure for testing and certifying resources for ancillary services	CAISO	AS testing methodology includes storage
	Evaluate expanding technology options for providing resource telemetry	Expanded Metering & Advanced Telemetry (CAISO)	Dispersive technology may be used
	Initiate and administer a working group to evaluate common telemetry framework and recommend actions to standardize resource telemetry requirements	CEC	
	Evaluate and consider refinements to ISO or IOU telemetry requirements	Proposals can be submitted for EPIC funds or to CAISO	
	Research and evaluate refinements to IOU telemetry requirements		
	Initiate and administer a working group to research and recommend a certification process for integrated device metering that can be used in place of the ISO or utility meter	CEC	

Storage Roadmap – Interconnection, cont.

	Action	Forum	Status
	Evaluate the rules for certifying sub-metering and third-party meter data collection and consider a process to validate, estimate and edit meter data to expand options for sourcing revenue quality meter data	CEC & CPUC	Not yet commenced
	Establish the value and develop a framework under which the ISO and utility can share metering and meter data	CAISO, CPUC & CEC	CAISO allows resource owners to share data
	Initiate and administer a working group to review existing fire protection codes and materials handling guidelines for various energy storage technologies and applications and identify best practices	CPUC	2015 SED convened two working groups
	Initiate and administer a working group to review and determine applicability, scope, and consistency of UL and other certification requirements for energy storage systems	CEC	
	Evaluate establishing rules for utility subtractive metering for behind-the-meter wholesale resources to improve resource granularity, visibility, and clarity in retail billing	Metering Rules Enhancement (CAISO) and CPUC	allows SC's to submit meter SQMD meter data to the ISO derived from an approved metering plan

Storage Roadmap – Market Participation

	Action	Forum	Status
🟥	Clarify existing & identify gaps in ISO requirements, rules and market products for energy storage to participate in the ISO market	ESDER (CAISO)	Ongoing
🟥	Where appropriate, expand options to current ISO requirements and rules for aggregations of distributed storage resources	ESDER (CAISO)	Ongoing
🟧	Define and develop models and rules for multiple-use applications of storage. Clarify rules for participation.	R.15-03-011 (CPUC) and ESDER (CAISO)	R.15-03-011 under consideration; ESDER 3
🟧	Identify and develop models of hybrid storage configurations for wholesale market participation	Technical Bulletin (CAISO)	Issued October 19, 2016
🟧	For configurations of greatest interest or likelihood of near-term development, clarify the requirements and rules for participation.	R.15-03-011 (CPUC) and ESDER (CAISO)	R.15-03-011 under consideration; ESDER 3

Energy Storage Roadmap Activity Update

Public Comment

Energy Storage Roadmap Activity Update

- Public Comment:

    – CESA presentation on value of energy storage guidelines for cities and local governments

    – Open Discussion