



Energy Storage at CPUC

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Summary of AB 2514

1. Required the Commission to open a proceeding to determine appropriate targets, if any, for each load-serving entity to procure viable and cost-effective energy storage systems.
2. By October 1, 2013, to adopt an energy storage procurement target, *if determined to be appropriate*, to be achieved by each Load Serving Entity (LSE) by December 31, 2015, and a 2nd target to be achieved by December 31, 2020.
3. Consider a variety of possible policies to encourage the cost-effective deployment of energy storage systems, including refinement of existing procurement methods to properly value energy storage systems.
4. The Commission shall reevaluate the determinations made pursuant to this subdivision not less than once every three years.





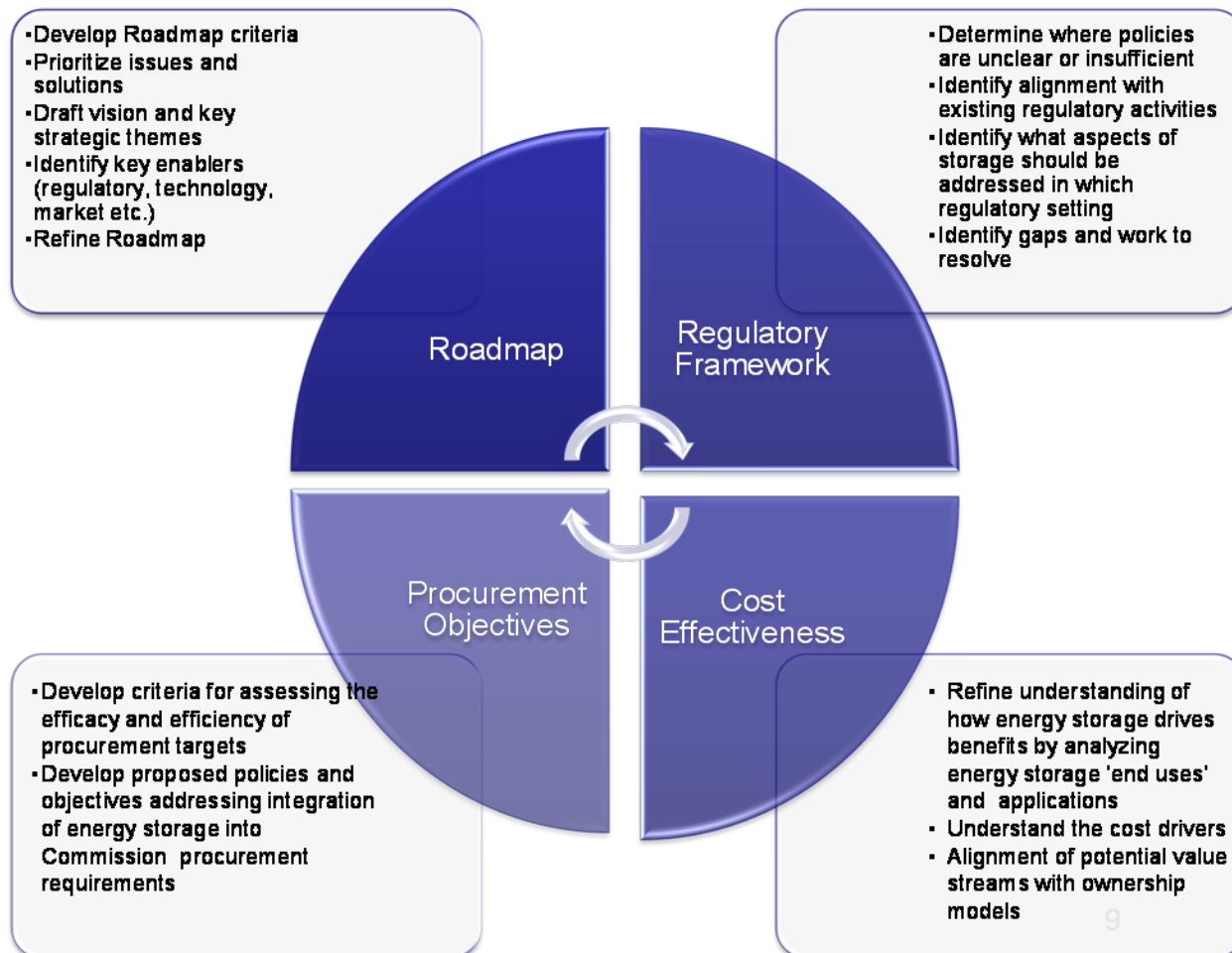
Storage Rulemaking Timeline

Phase 1	2010	July	White Paper
		Sept	Assembly Bill 2514
		Dec	Order Instituting Rulemaking 10-12-007
	2011	March	Workshop
		April	Pre-hearing conference
		May	Scoping memo
		June/July	Workshops: 1) Systems; 2) Barriers
		Dec	Staff proposal
	2012	Jan/Feb	Parties' comments, reply comments
		March 30	Final staff proposal
		2 nd Quarter	Decision
Phase 2	2013	Oct	Decision
	2015	Dec	Proposed 1 st procurement target
	2020	Dec	Proposed 2 nd procurement target





Energy Storage Analysis





Regulatory Framework

- Resource Adequacy – Flexible capacity needs
- Long-Term Power Procurement – SoCal OTC in 2017 and beyond
- Self-Generation Incentive Program – 147 applications in 2011, many Li-Ion with PV systems, up to \$2/watt incentive
- Demand Response Programs – \$32 million for Permanent Load Shifting = 49 MW by 2014
- RPS Evaluations – PPA between SoCal Edison and BrightSource
- Rate Design (TOU rates)
- CAISO Markets – Frequency Regulation
- FERC Rulemakings – Order No. 755





Summary of Staff Proposal

Revised Staff Report also identified several priorities for evaluating end-use applications:

- Storage to support renewable energy integration
- Storage to avoid/defer distribution system upgrades
- Storage to provide demand-side management (behind the meter) services
- Storage to provide ancillary services





Prioritized Use Cases

Use Case

Primary Benefit

- | | |
|----------------------------------|--|
| • Distribution Deferral | Avoids upgrades |
| • Community Energy Storage | Local service reliability |
| • Distributed Peaker | Energy cycling to meet peak |
| • Variable Energy Resource-sited | Renewables integration |
| • Bulk Generation | Electricity/Capacity |
| • Demand-Side Management | End-use bill management
(utility/3 rd party owned) |

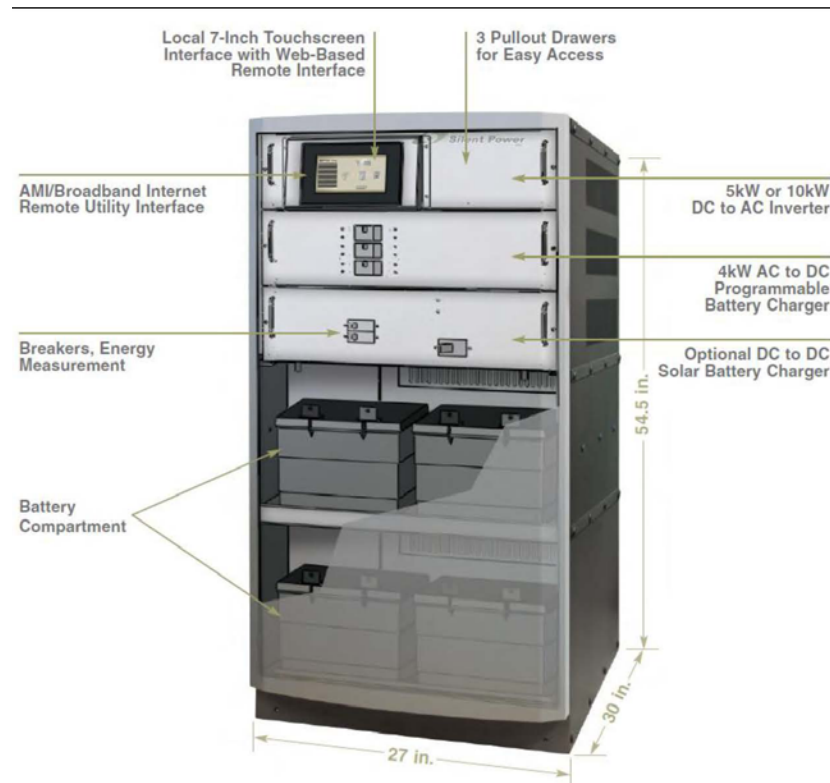
Expanded in the next slides





Use Case: Community Energy Storage

Purpose	Improve local reliability; integrate distributed renewable generation; provide voltage control
Location	Adjacent to load, on utility or customer property
Technology	Batteries: >25 kW, 2 hours
Example	SMUD "Smart Solar" in Anatolia neighborhood. Li-ion batteries: 15 units, 8.7 kW/8.8 kWh (residential) 3 units, 30 kW/kWh (pad- mount transformers, distribution feeders)



Residential Energy Storage

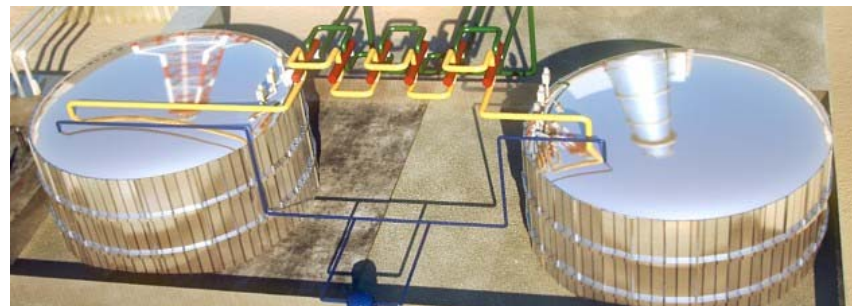
<http://www.advancedenergy.org>





Use Case: Variable Energy Resource-Sited

Purpose	On-site firming or shaping variable energy; ramping; voltage support
Location	With or near renewable energy generation, or elsewhere
Technology	Centralized Solar Power w/molten salt or other; generation sited thermal storage; batteries: >25 MW, >5 hours
Example	AES Laurel Mountain Li-ion battery: 32 MW (to back up 98 MW wind farm)
	BrightSource CSP with molten salt, 3 units, 200 MW, 6 hours



<http://www.brightsourceenergy.com/energy-storage>





Next Steps

- ALJ Yip-Kikugawa will prepare a Proposed Decision for Commission consideration this summer.
- Phase 2 Ruling will set out issues and timelines
- Workshops will refine Use Case analysis and issues -- cost-effectiveness, market needs, interaction with other proceedings
- Staff will identify potential for specified targets
- Develop Roadmap for long-term action





Thank you!

For further information related to R10-12-007

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