California Public Utilities Commission

Briefing on Long-Term Procurement Planning and Bulk Storage

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Agenda

1. Long-Term Procurement Planning (LTPP) Overview
2. State of Affairs Regarding Storage
3. Existing Capacity by Source
4. Bulk Storage: Evaluating Needs & Barriers

LTPP Overview

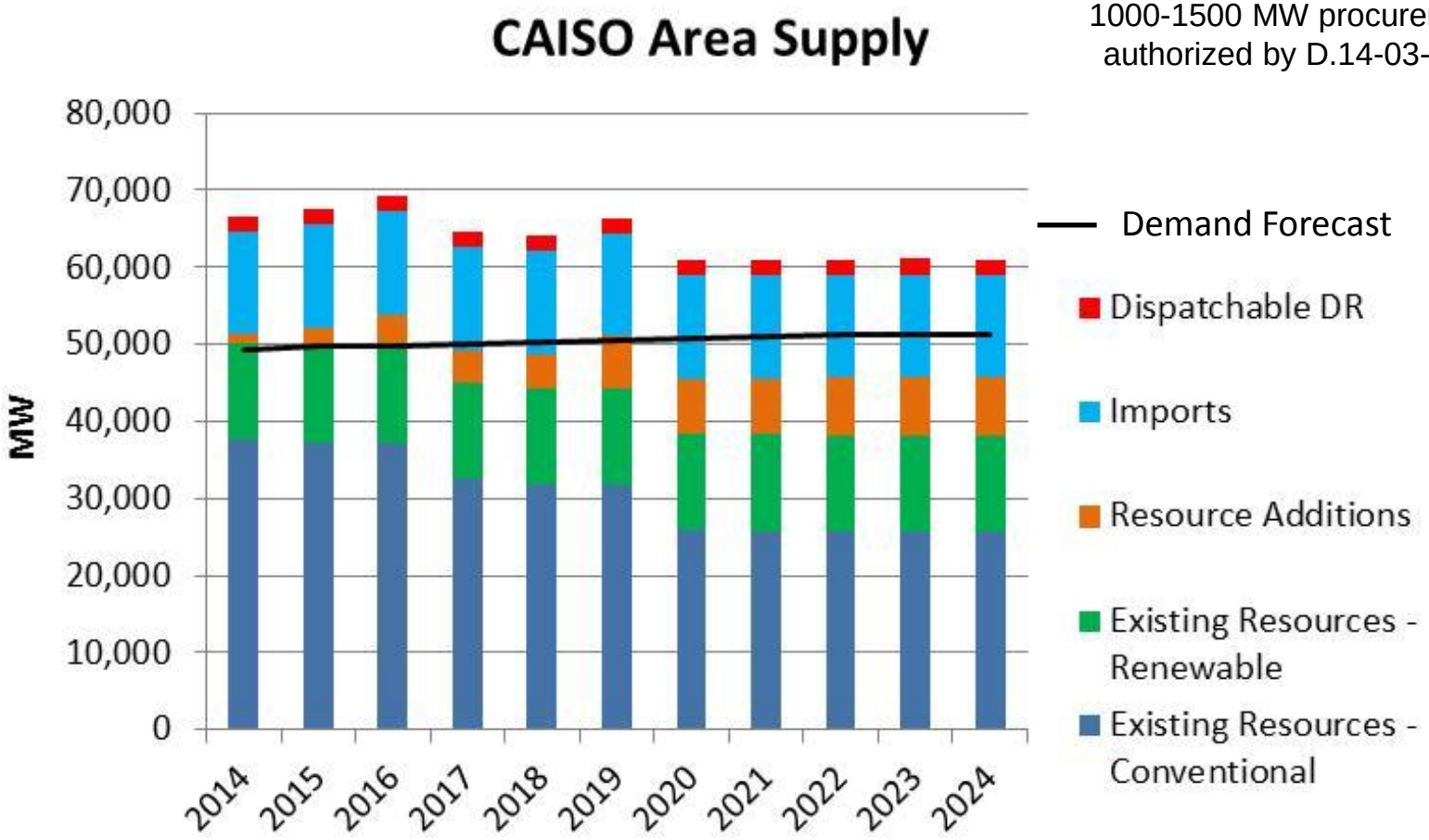
- LTPP is an umbrella proceeding where the CPUC considers all of its electric resource procurement policies and programs in an integrated manner
- Intent is to ensure safe, reliable, cost-effective electricity supply
- 10-year-ahead look at system, local, and flexible needs
- Three tracks
  - Evaluating need
    - If a need is identified, LTPP authorizes an IOU to hold an RFO to fill it according to least-cost, best-fit
    - If the LTPP does not identify a need, there is no authorization, and no RFO
  - Bundled procurement plans
  - Procurement rules

State of Affairs Regarding Storage

- LTPP 2014 Findings
  - Examined need for system capacity, over-gen mitigation, and flexible capacity, **but did not identify a need**
  - Specifically mentioned pumped storage as a resource to be considered if a need had been identified
  - Focused on improving modeling methodologies to better evaluate potential needs in the future
    - Six years experience developing models to evaluate integration needs is producing valuable information for policy makers
- Existing Storage Targets
  - D.13-10-040 set storage targets of 1325 MW, split between the three IOUs
  - Bulk storage projects can qualify, up to 50 MW

LTPP Capacity Assumptions by Source

** Does not reflect additional 1000-1500 MW procurement authorized by D.14-03-004



LTPP Authorizations & Applications

SCE LA Basin				
Resource Type	Track 1 LCR Resources	Additional Track 4 Authorization	Total Authorization	Pending Applications
Preferred Resources (Minimum)	150 MW	400 MW	550 MW	451 MW
Energy Storage (Minimum)	50 MW	--	50 MW	50 MW
Gas-fired Generation (Minimum)	1000 MW	--	1000 MW	1000 MW
Optional Additional From Preferred Resources/Energy Storage Only	Up to 400MW		Up to 400 MW	
Additional from any Resource	200 MW	100 to 300 MW	300 to 500 MW	382 MW
Total Procurement Authorization	1400 to 1800 MW	500 to 700 MW	1900 to 2500 MW	1883 MW

SDG&E Territory		
Resource Type	Total Authorization	Pending Applications
Preferred Resources (including energy storage) (Minimum)	175 MW	
Energy Storage (Minimum)	25 MW	
Additional from any resource	600 to 800 MW	500 MW
Total Procurement Authorization	800 to 1000 MW	500 MW

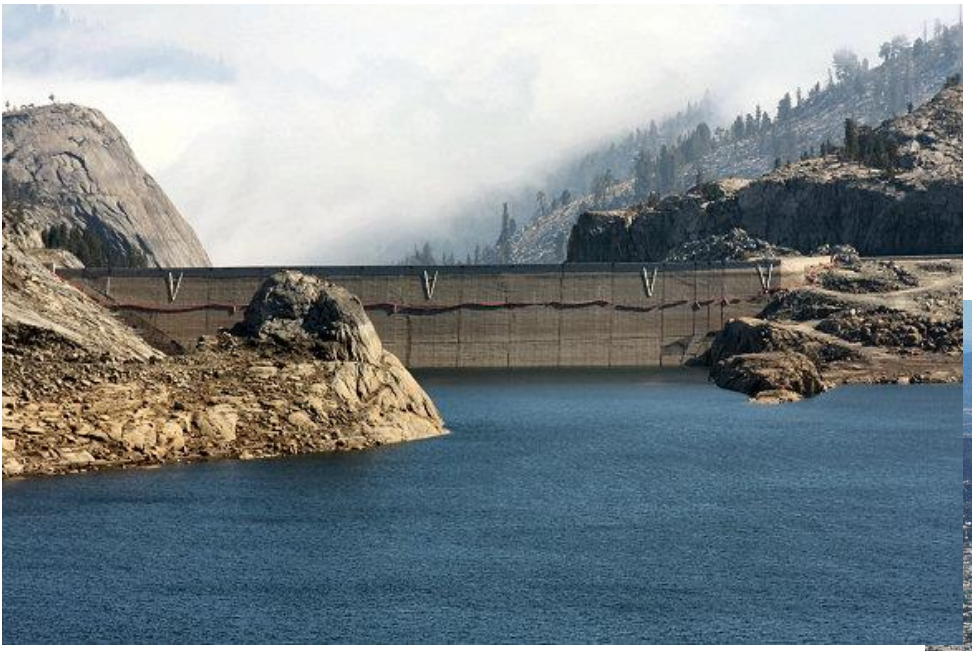
Bulk Storage: Evaluating Needs & Barriers

- Need for Bulk Storage has not yet been determined
  - On-going studies indicate that hourly ramping needs can be met with curtailment, imports, and sufficient load following reserves
- Barriers to Bulk Storage
  - Up-front cost and long lifetime requirements
    - Bulk storage projects may persist for much longer than typical contract terms, this presents a challenge: recovering all costs in the first contract term may place these projects at a disadvantage compared to shorter-lived assets
  - Land requirements & environmental screens
    - Site control must be established before participants can bid into RFOs, which increases costs that must be borne before any chance of recovery is know. Competing assets may be developed on smaller sites with fewer environmental restrictions, making them easier to develop.
  - Location requirements & access to transmission
    - Sites are very specific (e.g. enough head and available land), these sites may not be prevalent in local capacity areas.

Bulk Storage: Evaluating Barriers - 2

- Barriers to Bulk Storage
  - Uncertainty of need: study findings conflicted over whether there is a need for bulk storage in the 10-year timeframe
    - May result in higher perceived risk and financing costs
  - Cost allocation process unknown
    - How would costs be allocated between multiple utilities? This applies to IOUs as well as CCAs – which can now meet their own integration & reliability needs per SB 350.
  - Lack of institutional knowledge
    - Neither IOUs nor regulators have much recent experience in procuring this type of asset
  - Others?

From Source



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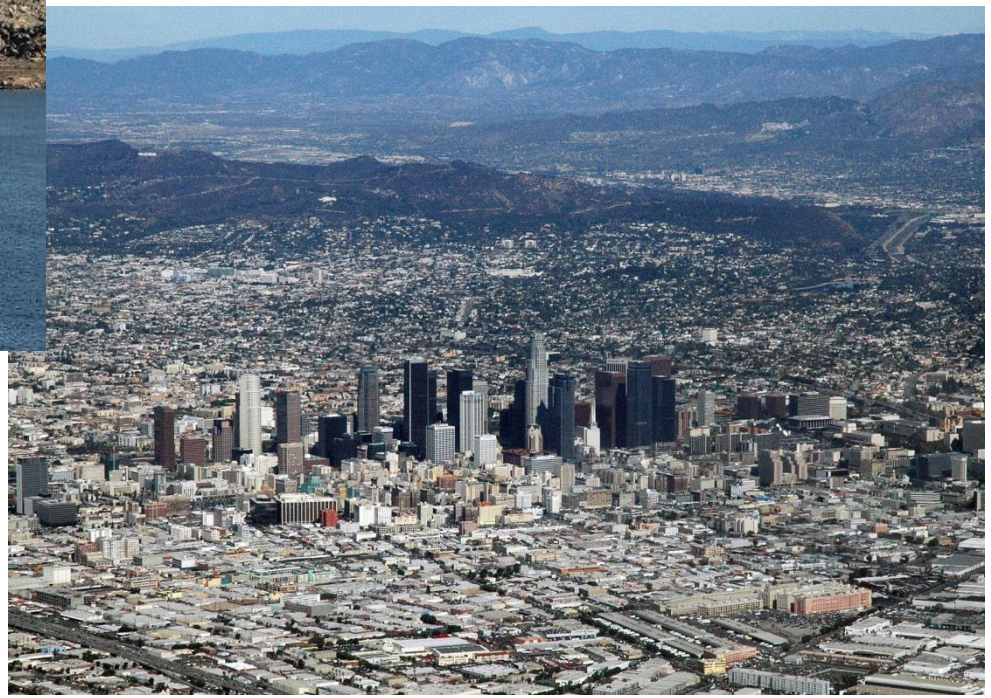

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