Real-Time Load Bidding

Demand and Distributed Energy Market Integration Initiative

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Date: 6/17/2025

Support for the Initiative

- California Department of Water Resources State Water Project (CDWR-SWP) supports exploring models to allow participating load resources to bid demand into the real-time markets under Enhancing Demand Flexibility Market Options, topic #6 in the Discussion Paper.

- CDWR-SWP looks forward to working with the stakeholders and CAISO

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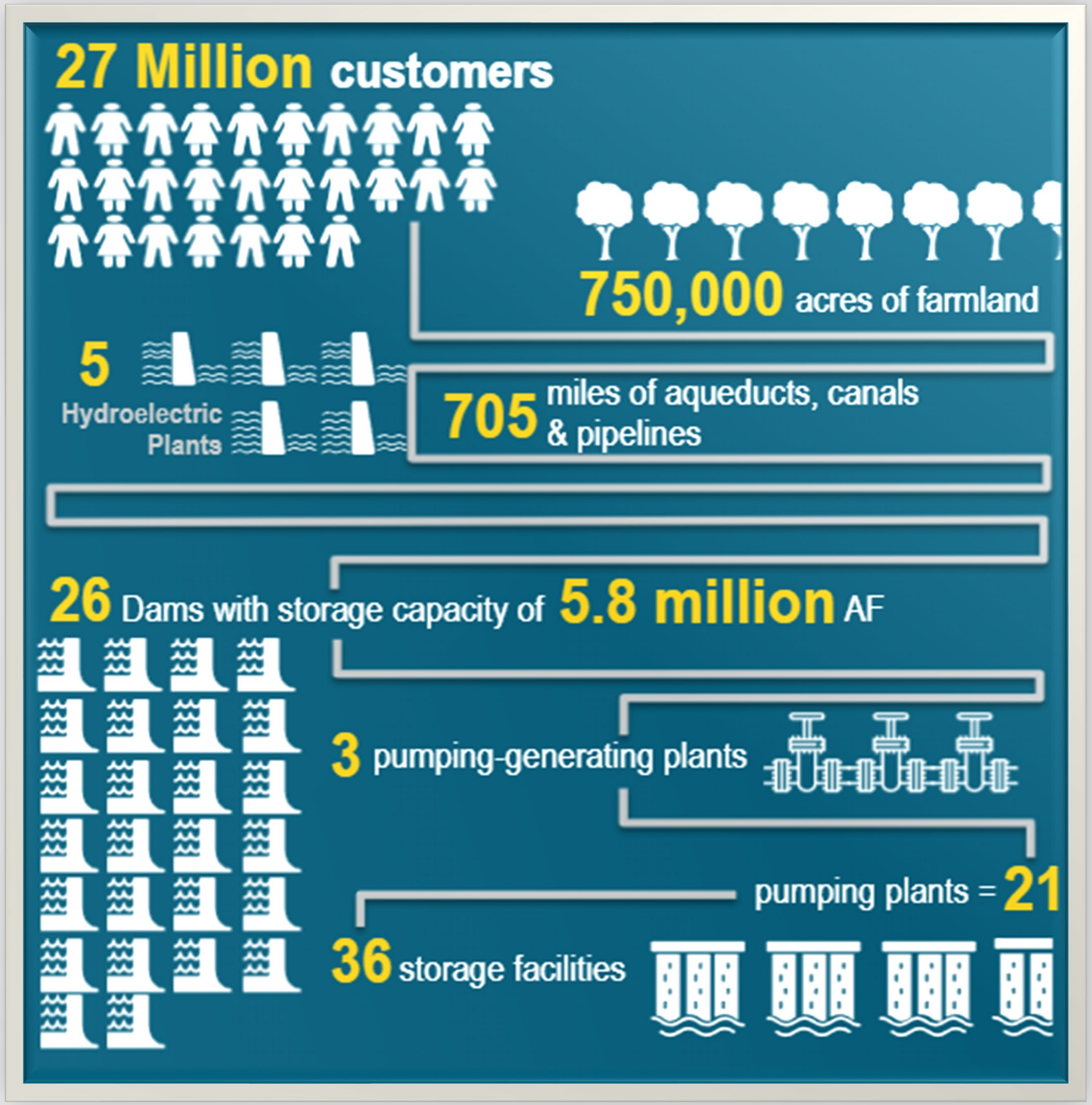
CDWR – SWP Background

- CDWR-SWP is the largest load within CA ranging from 6,000,000 megawatt hours (MWh) to 9,500,000 MWh depending on the type of water year.
- CDWR-SWP has 2900 MW of Participating Load (PL) capacity under Demand Response (DR).
- PL capacity depends on the water year.



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Participating Load

- PL is an additional DR model along with PDR, RDRR, and HDERA
- How we participate in DR today...
  - Under the Aggregated PL Model, CDWR-SWP submits two bids for the same trading day: one for a Day-Ahead Self-Schedule with an Energy Bid Curve and another for Non-Spinning Reserve.
  - Real-time participation is limited to Non-Spinning Reserve, i.e. demand reduction.
  - PL contributes a significant amount of available DR RA.
  - PL is a significant contributor and scheduled DRs.

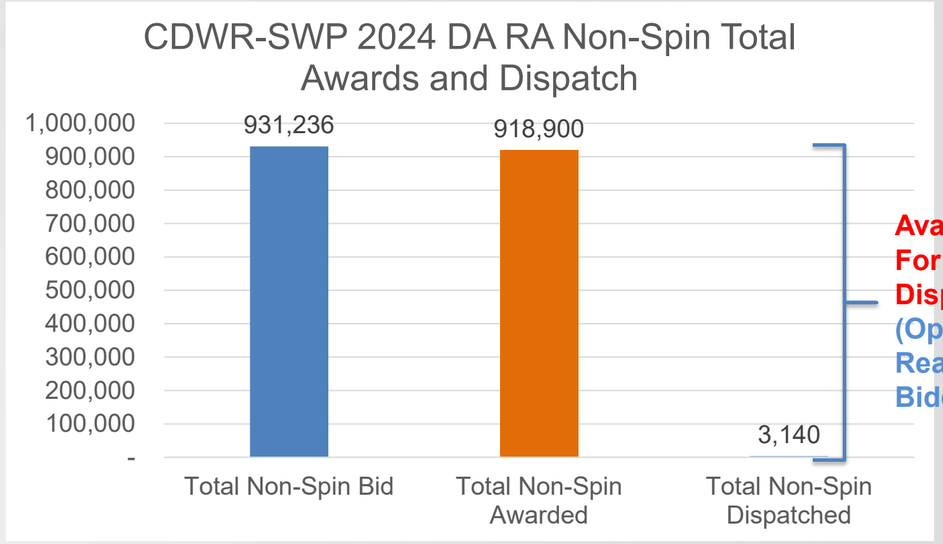
Summer 2024 Demand Response for Resource Adequacy for Top 20 Days on EEA Alert	
DR Type	MW
Utility PDR and RDRR	1064
Third Party PDR	252
Non-CPUC LSE	75
DWR PL	550+
Total	1951

Source: DR for 20 Days in the Summer of 2024 when the ISO Issues Restrictive Maintenance Operation Notice on Energy Emergency Alert (EEA) From DMM DR Issues and Performance Report and DWR Internal Data for PL

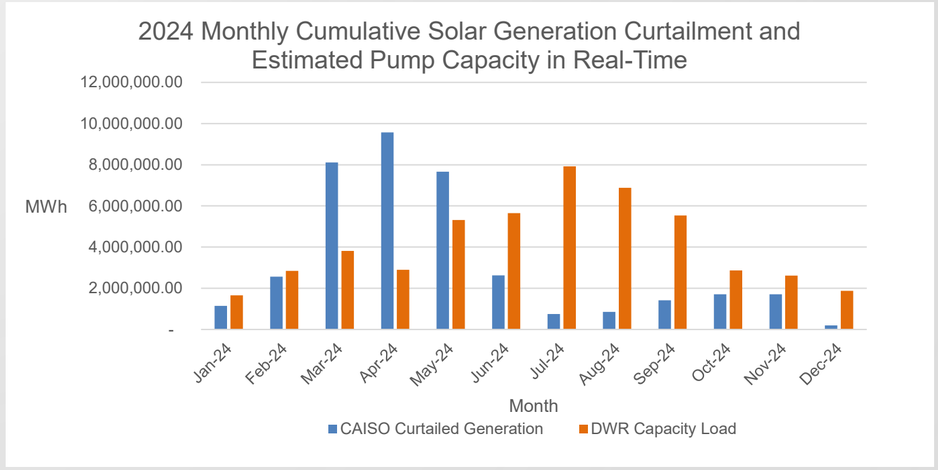
CADWR Data is based on average capacity from June to September 2024 for Net Qualifying Capacity.

Opportunities for Real-Time Load Bidding

- **Align Incentives with Real-Time Needs:** Similar to other models in DR, allowing PL to participate in RTM, shifts from relying solely on capacity payments in DAM. DWR-SWP's PL has capacity and flexibility to provide DR in RTM.
- **Optimize Resource Utilization:** Enabling PL participation in the real-time market allows for more efficient resource optimization. It enhances the ability of DR to true-up in real-time, aligning demand with supply and reducing reliance on less flexible, more expensive generation.
- **Reduce System Costs:** Real-time DR participation helps avoid triggering the dispatch of costly peaker units during high-demand periods, particularly in the summer. By leveraging DR instead, the system can avoid inefficient and expensive generation, lowering overall costs.
- **Improve System Reliability:** Real-time load bidding improves system reliability by managing inefficient demand before it gets scheduled. This ensures more effective use of existing capacity, reducing the need to procure additional or emergency power resources.
- **Support Seasonal Grid Efficiency:** During Spring and Fall, when load is typically lower than in Summer, increased DR participation can absorb excess solar generation. This provides a productive alternative to solar curtailment and helps integrate renewable energy more efficiently.



Source: CAISO Library Production and Curtailment - 2024



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Problem Statement: Real-Time Load Bidding

- Limiting PDR, RDRR, and PL to only bid load reduction is limiting a revenue stream that fosters competition. PDR, RDRR, and PL should be able to bid increasing load.
  - A mechanism for load to respond economically to increase load could provide for greater system flexibility by allowing uneconomical load to drop off – reducing the need for additionally supply.
  - Increased load consumption can help manage overgeneration and reduce curtailments.
  - Additional methods to participate in the market can increase availability of resources.
  - Provides additional revenue stream for RA.
- PL has no mechanism for bidding in the RTM. The PL model should be changed to allow bidding in RT.
  - Current market incentives limit PL to Non-Spinning Reserve and contingency events.
  - PL bidding into the real-time market allow optimization between the DA schedule and RT schedule.
  - Real-time load bidding can lower system cost by allowing the grid to avoid serving load that isn't cost effective, which reduces the need for higher-price generation.
- Seeking stakeholder input to further refine.

How the Real-Time Load Bidding Fits into the WG Scope

- Topic: Enhancing Demand Side Bidding Options
- Discussion: Explore models to allow PL resources to bid demand into the real-time markets.
  - Application to Working Group Principles:
    - **Efficiency:** PL is reliable and cost-effective, lowering system costs and reduces curtailment during low-load periods.
    - **Competition:** RTLB lets low-cost resources like PL, PDR, and RDRR compete, encouraging innovation and lowering overall market costs.
    - **Feasibility:** PL is already integrated into CAISO systems and has a proven track record in past markets.
    - **Simplicity:** PL can be easily implemented with minimal changes.
    - **Reliability:** PL consistently performs when scheduled. Bidding increases available capacity and supports grid reliability.
    - **Policy Support:** RTLB reduces curtailment of renewables, aligning with state goals like RPS.

Conclusion

- CDWR-SWP has 2900 MW of Participating Load (PL) capacity under Demand Response with available dispatchability.
- Limiting PDR, RDRR, and PL to only bid load reduction is limiting a revenue stream that fosters competition. PDR, RDRR, and PL should be able to bid increasing load.
- PL has no mechanism for bidding in the RTM. The PL model should be changed to allow bidding in RT.