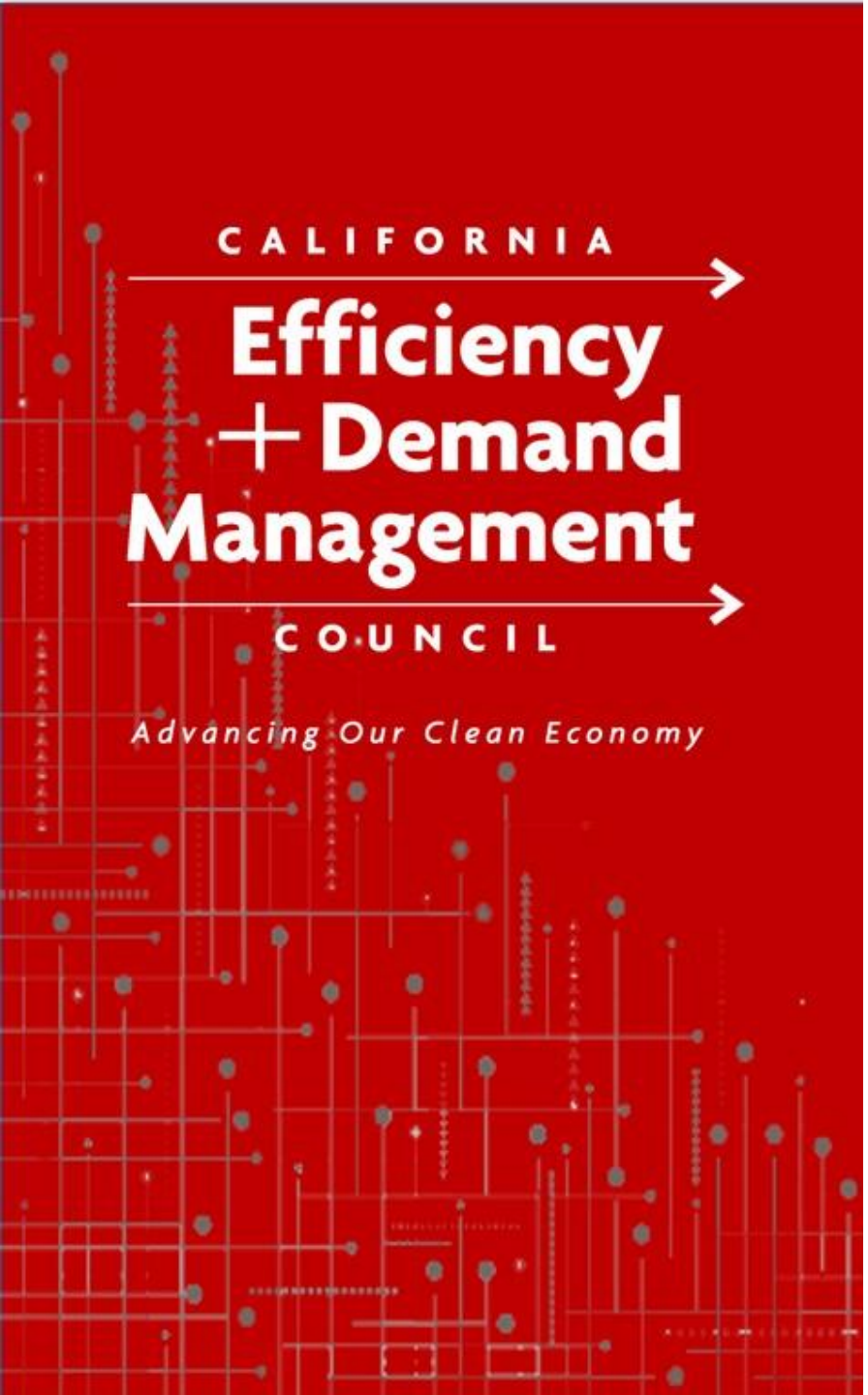

CALIFORNIA Efficiency + Demand Management COUNCIL

Device Level Measurement

April 7, 2025

Smart meters enabled CAISO market-integrated DR but the DR market has outgrown them

- Key benefits of smart meters for demand response (DR) included:
  - Enable customers to see their historical or real-time hourly (or sub-hourly) electric usage
  - Allow sharing of customer meter data with DR providers through Electric Rule 24/32
  - Enable CAISO market integration by providing meter data for SQMD
- DR performance in CAISO market is measured at the customer meter level
- However, as market-integrated DR becomes more widespread among more actors (e.g., IOU, DR provider, technology provider), several problems with measuring performance at the customer meter level have arisen
  - "Click-Through" Process associated with IOU Share My Data platforms is problematic due to high drop-out rates; this suppresses the number of DR participants which reduces available DR capacity
  - Complete customer meter data are sometimes difficult to get on a timely basis
  - CAISO has limited visibility of BTM devices; this reduces the accuracy of its short-term load forecasting (See CAISO presentation at 5/16/24 CEC workshop)
  - It limits customer enrollment a single DR provider; this can be problematic because some DR providers are technology-specific
  - The performance of BTM devices can be "drowned out" by other factors within a premise; this can result in less accurate performance measurement

Device-Level Measurement (DLM) can address these problems but some work is needed

- **Proposal:** Leverage the internal telemetry contained within smart devices, energy storage inverter, EVSE, etc. by utilizing their respective device-level data for performance evaluation and market settlement for Proxy Demand Resources (PDR)
- Key elements:
  - Modify the Demand Response Registration System (DRRS) to accommodate device type and telemetry data
  - Create a customer authorization process by which customers' devices can be added to the DRRS outside of any Share My Data processes
- Key barriers:
  - Device accuracy standards: Metering BPM, Attachment G sets DER device accuracy standard at 0.2% in the absence of LRA standards; CPUC adopted a 2% accuracy requirement for EVSE in D.22-08-024; recommend CAISO adopt the same for other devices
- Other elements can remain the same
  - Device-level data would be VEE'd consistent with the Metering BPM, Attachment H
  - Existing PEMs described in Section 4.13.4 of the CAISO tariff and the Demand Response BPM would continue to apply

DLM can have widespread benefits to all actors

- Potential to dramatically increase DR participation in CAISO market
- Faster and more accurate measurement of load curtailment
- Improved situational awareness for CAISO operators with visibility into the quantity and types of devices responding to market signals
- Allow multiple providers to serve devices across a premise, increasing customer choice of DR providers
- Dual participation by a device can be prevented b/c each device will be registered to a single provider

How this proposal fits into the DDEMI WG scope

- Working Group Topic: Expansion of current performance evaluation methodologies, including recognition of registration and metering alternatives
- Discussion Topic: Performance Evaluation Methodology – Explore the utilization of device-level measurement and creation of alternative baseline methodologies
- Adherence to Working Group Principles
  - **Efficiency:** Additional capacity from new resources would result in more efficient market outcomes
  - **Competition:** Additional DR providers will improve competition to the benefit of customers
  - **Feasibility:** Utilize existing assets (i.e., smart devices) while requiring modest changes to the DRRS, tariff, and the Metering BPM
  - **Simplicity:** Only changes the data used to measure performance without creating a new market product; it would also simplify the process by which DR customers share their data to settle wholesale market transactions
  - **Reliability/Compliance:** Increasing available DR capacity would support overall grid reliability; potential data accuracy implications can be accounted for
  - **Facilitate state public policies:** Supports Senate Bill 100 which targets 60 percent renewable energy by 2030 and 100 percent clean energy by 2045, and CEC's 7 GW Load Shift Goal

Discussion and Q&A

Thank You!

Please contact us if you have any questions.

Luke Tougas – l.tougas@cleanenergyregresearch.com
Joe Desmond – jdesmond@cedmc.org