CAISO’s Energy Storage and Distributed Energy Resource Stakeholder Initiative (“ESDER”)

Presented to the CPUC’s SB 350 Transportation Electrification Market and Policy Overview, and Application Guidance Workshop

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California ISO overview

- Nonprofit public benefit corporation
- Part of Western Electricity Coordinating Council: 14 states, British Columbia, Alberta and parts of Mexico
- 71,000 MW of power plant capacity
- 50,270 MW record peak demand (July 24, 2006)
- 26,000 circuit-miles of transmission lines
- ISO is governed by the Federal Energy Regulatory Commission, which has jurisdiction over transmission lines that cross state borders.
Background

• Distribution connected resources are becoming an increasingly important part of the resource mix.

• Integrating DER into CAISO wholesale markets is expected to help lower carbon emissions and add operational flexibility.

• CAISO has developed models for DER to participate in its markets today and is continuing to develop ways to help enable DER.
CAISO is lowering barriers and enhancing ability of storage and DER to participate in its markets

- **Energy Storage and DER initiative phase 1 (ESDER1)**
  - Enhancements to the non-generator resource (NGR) model
  - Enhancements to demand response performance measures and statistical sampling
  - Clarifications to rules for non-RA multiple-use applications

- **Energy Storage and DER initiative phase 2 (ESDER2)**
  - Additional NGR enhancements
  - Additional demand response enhancements (ability to increase load consumption; develop alternative baselines)
  - Multiple-use applications (joint effort with CPUC)
  - Distinction between charging energy and station power (joint effort with CPUC)
  - Allocation of TAC to load served by DER
CAISO is lowering barriers and enhancing ability of storage and DER to participate in its markets (continued)

- **DER Provider (DERP)**
  - Framework for aggregations of DER to participate in the CAISO market.
  - Aggregations of DER can provide energy and ancillary services
  - Proposed tariff amendments to implement this framework are presently before FERC
Several models exist for DER to participate in CAISO markets

- **Available today: Proxy Demand Resource (PDR)**
  - Supplier can aggregate multiple end-use customers to create a virtual DR resource
  - May involve other DER types behind customer meter, but cannot result in net energy injection to the grid
  - Additional enhancements in progress from ESDER1

- **Available today: Non-Generator Resource (NGR)**
  - Designed for a resource that can vary between consuming & producing energy
  - Additional enhancements in progress from ESDER1

- **In progress: DER Provider (DERP)**
  - New ISO structure for an entity to aggregate all types of DER into a virtual resource for ISO market participation