

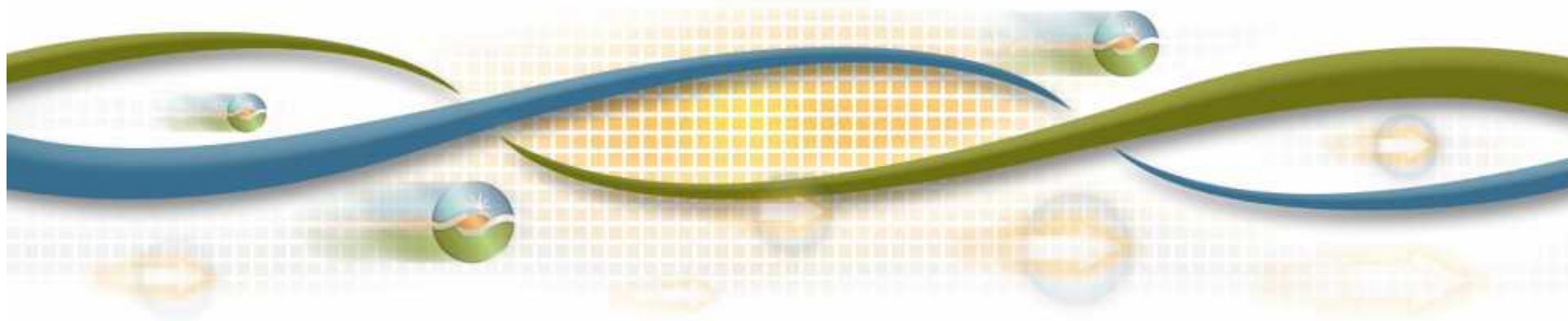


## CAISO's Energy Storage and Distributed Energy Resource Stakeholder Initiative ("ESDER")

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

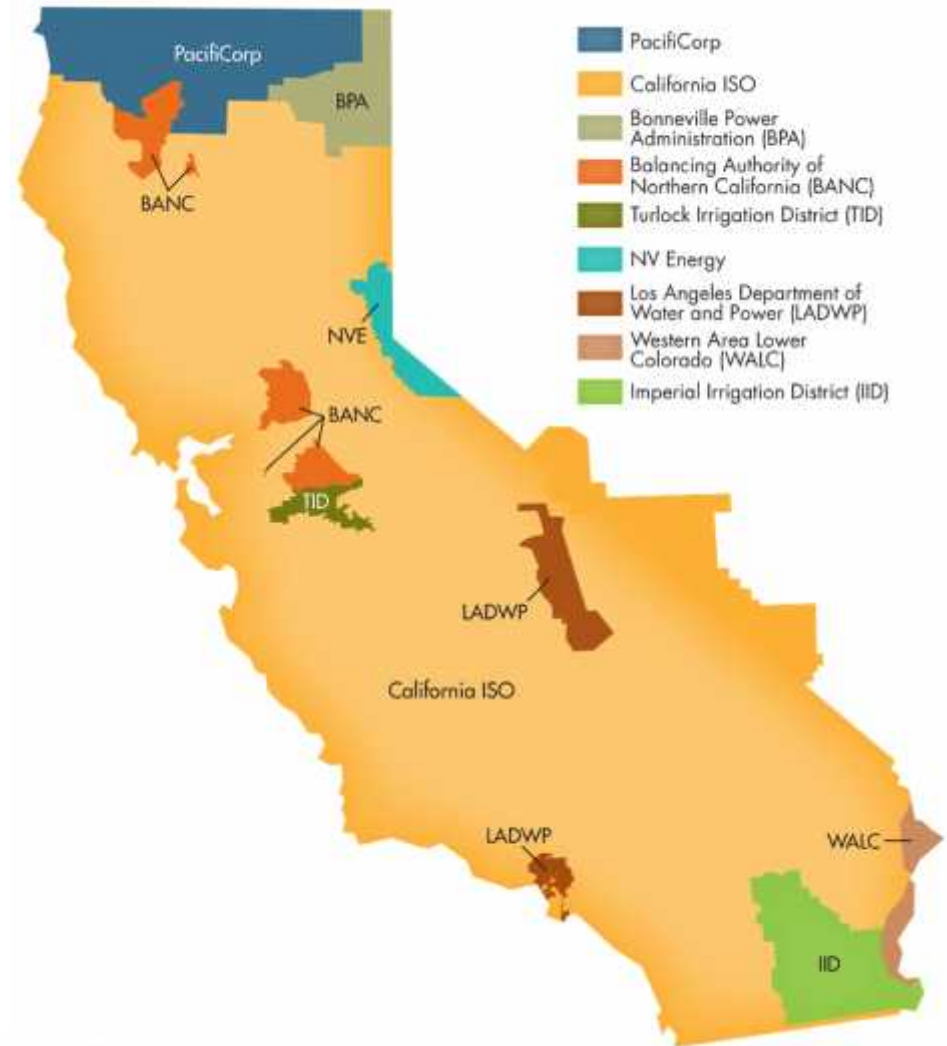
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# California ISO overview

- 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