Planning and “Markets” for Distributed Energy Resources

Ron Nichols, SVP Regulatory Affairs

Harvard Electricity Policy Group
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# California’s Distributed Energy Resource Policy and Regulatory Landscape

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Distribution Resources Plan

Integration Capacity Analysis (ICA) → Available capacity across electric grid → Locational Net Benefit Analysis → Demonstration and Deployment

- Feeder protection limitations
- Feeder thermal analysis
- Identify system limitations and capabilities
- Release public information about system limitations and capabilities to facilitate interconnection
- Identify locations where DERs may provide grid benefits
- Test proposed planning methodologies and required operational capabilities of the future grid

Note: Other DRP topics include data sharing policy, recommendations to incorporate locational value into tariffs and contracts, safety, and barriers to DER deployment
Grid as DER Integration Platform

Grid Design

Robust, high capacity grid:
Enables customer choice, interconnection without little study, and significant provision of energy needs locally

and/or

Grid that enables DER locational benefits:
More opportunities for DERs to provide alternatives to traditional grid investment

Grid Functions

Provides the backbone distribution system

Ensures grid reliability and power quality

Modernized, “plug and play” system capable of two-way electricity flows

Permit streamlined DER interconnection
**Distribution DER “Markets”**

**Infrastructure Markets:**
Long-run markets for DER capital investment

- **Goal:** Incentives for investment in optimally-sited DERs

**“Dispatch” Markets:**
Short-run markets for the efficient use of DERs

- **Goal:** Incentives to appropriately optimize use of DERs

**Spectrum of “Dispatch” Markets**

- **“Tariff-Based Markets”**
  - Simple Retail Tariffs
  - TOU Rates

- **“Organized Markets”**
  - Real-Time Rates, Pass Through Wholesale
  - Bilateral Peer-to-Peer
  - Full LMP

**Prices Do Not Reflect Underlying Costs**

**Prices Locationally & Temporally Accurate**
Distribution Market Design Considerations

- Incremental value of price signals beyond wholesale prices / market complexity & implementation cost
- Direct bids to wholesale markets / “aggregator of aggregators”
- Customer efficiency / grid operator needs
- Prices reflect underlying costs / customer equity
- Extent of market / market power concerns
- Robust, high-capacity grid / many opportunities for grid services by DERs

Distribution markets for DERs will require balancing potentially competing objectives