Modernizing the California Grid

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California Distribution Resource Plan Goals

• Modernizing the electric distribution system to accommodate two-way flows of energy and energy services throughout the IOUs’ network

• Enabling customer choice of new technologies and services that reduce emissions and improve reliability in a cost efficient manner

• Animating opportunities for DERs to realize benefits through the provision of grid services
Key Questions

• Is Plug and Play technically feasible?

• What are the benefits and burdens of Energy Services?

• What does it take to actively manage the distribution grid?

• What are the possible technology, process, and capability gaps?

• What are the customer and business implications of an actively managed grid?
Predict/Monitor/Control/Optimize

Distributed Control Systems
- Enabling, planning, forecasting, monitoring, controlling, and optimizing distributed resources
- Integrating with existing control systems, protocols, and business practices
- Transitioning to distributed control architecture and autonomous control algorithms

Advanced Telecommunications
- Increasing bandwidth and reducing latency across fiber and wireless networks
- Rationalizing communication protocols across customer and utility devices directly and through third parties
- Integrating advances with legacy systems

Advanced Analytics
- Increasing awareness of customer resource capabilities and demand characteristics
- Integrating customer technology adoption decisions with grid modernization planning
- Evaluating integration capacity and locational value
Demonstrations

Network Optimized Distributed Energy Systems - NODES

Integrated Grid Project

Distribution Resource Plan Demonstrations A-E
Coordination

• Utility/Customers/Providers/Regulators/Local Jurisdictions/Vendors/Standards

• Planning and Operations
  – People/Process/Technology

• Optimizing Grid and Customer Resources

• CAISO and Utility/DSO

• Utility/DSO and CPUC

• Safe/Reliable/Affordable
Questions