

Evaluating Electricity Sector Needs in 2030

California Energy Commission

DOCKETED

13-IEP-1D

TN 71920

AUG 26 2013



CEC 2013 IEPR
Lead Commissioner Workshop on Evaluating Electricity Sector Needs in 2030
August 19, 2013

Agenda

- Future Need Assessments
 - LTPP
 - SCR
 - TPP
 - DRECP
- Potential Future Industry Trends
 - Next 10 Years Local Area Reliability, Renewable Integration
 - 10 – 20 Years Distributed Resources, Electrification
 - 20 – 40 Years Decarbonization, MicroGrids
- Bridge to the Future -- Preferred Resource Pilot
 - Paradigm Shift Compliance to Reliability
- Future of Safe Reliable Electric Service
 - Investment
 - Compensation
 - Operation
 - Oversight
- Current Rate Structure

SCE is Involved in Many Future Need Assessments

- **CPUC's 2012 Long Term Procurement Plan (LTPP) proceeding**
 - Track 1 – Local Capacity Requirements (LCR) during 2013-22, including to mitigate the impact of once-through-cooling phase-out
 - Track 2 – System capacity requirements during 2013-22, including to integrate renewable resources pursuant to 33% RPS
 - Track 4 – Additional local reliability needs for SCE and SDG&E in light of SONGS retirement
- **Southern California Reliability Project**
 - Joint SCE/SDG&E internal effort to address reliability issues in Southern California in light of SONGS' retirement
- **CAISO Transmission Planning Process (TPP)**
 - Identifies system limitations and opportunities for reinforcements for reliability and efficiency
- **Desert Renewable Energy Conservation Plan (DRECP)**
 - SCE is coordinating on Transmission Technical Group analysis of infrastructure needs to integrate renewable energy resources in DRECP to meet GHG emissions reductions goals

Potential Future Industry Trends

- **Next 10 years**

- Focus on local area reliability and integration of renewable resources
 - OTC phase-out & aging plant retirement
 - SONGS retirement
 - Need for flexible resources
 - Transmission build-out

- **10-20 years**

- Higher levels of distributed energy resources
 - Increased focus on integrating intermittent resources at distribution level
- Increased transportation electrification, leading to higher load
- Increased adoption of advanced technologies such as energy storage

- **20-40 years**

- De-carbonization via 1) large central station renewable generation and bulk transmission and/or 2) a vast number of smaller localized preferred resources and demand side programs interconnected at distribution circuit level
 - Intermittency and over-generation has to be addressed in either scenario
 - Land use issues
- Distribution circuits might evolve into smart “micro grids”

SCE's Preferred Resources Pilot : Bridge to the Future

- The State is expecting local reliability needs to be increasingly met with ambitious levels of preferred resources
- A paradigm shift is needed - - from procuring preferred resources to meet individual compliance targets - to procuring to meet reliability needs
- To inform procurement of preferred resources, SCE is proposing a Preferred Resources Living Pilot program to provide greater certainty about ability and availability of Preferred Resources to perform when and where needed to meet local reliability
 - Living Pilot will allow measurement, assessment, and continuous improvement to create a better understanding of resource attributes and value of increased levels of preferred resources
 - Informs architecture to secure grid and facilitate energy transactions
 - Living Pilot to be designed in collaboration with CPUC CEC CAISO and stakeholders
- Allows SCE to develop a balanced portfolio of supply & demand resources, including EE and DR, that provides desired performance attributes while achieving societal objectives

Future of Safe Reliable Electric Service : Investment, Compensation, Operation, Oversight

- **Investments:** How will infrastructure investments occur and be paid for?
 - Are future infrastructure investments regulated, unregulated, or both?
 - Markets vs. mandates
- **Fair Compensation:** How will an IOU receive fair compensation for the grid services it provides to support localized resources?
- **Safe & Reliable Service:** How will an IOU provide safe and reliable service at the distribution service level when a significant number of “plug-n-play” preferred resources are added to the local circuit?
 - Would IOUs have to invest in costly and long lead time distribution circuit upgrades? If so, how would cost recovery work?
- **System Operation:** How will a future distribution system with high penetration of preferred resources be operated in a safe, reliable and orderly manner?
- **Bulk System Interface:** How will the distribution system interface with the bulk-power network, such that the CAISO can obtain the needed operational benefits without a need for investment in back-up flexible central-station capacity?
- **Oversight:** Who will ultimately oversee the bulk-power and distribution systems?

Current Rate Structure is Unsustainable

- Under current IOU rate design and Net Energy Metering (NEM) rules, an increasingly smaller number of customers are bearing the utility's incremental costs for providing reliable service - - a decidedly unsustainable outcome
 - NEM allows customers to avoid paying utility's fixed costs, including costs associated with reliably connecting the customer to the grid
 - Under the flawed tiered residential rate structure, NEM allows high usage customers to reduce their retail bill far above the actual avoided costs in wholesale energy markets
 - These differences are paid for by remaining customers
- Proposals for increased fixed charges and flattening of tiered rate structures are currently being examined in the CPUC Residential Rate Design Rulemaking (R.12-06-013).

Conclusion

- Need to develop balanced portfolios of supply & demand resources that provide desired performance attributes while achieving societal objectives
- Need to develop tools and metrics to assess the reliability of preferred resources
- Need to assess and discuss the reliability and safety risks involved in policy preferences related to future electricity infrastructure
- Need to ensure the industry framework and business models are sustainable and conducive to yielding desired policy outcomes

Grid of the Future!

