

RA History



Purpose

- The use of Distributed Energy Resources (generally found behind the customer meter) has a long history in Resource Adequacy
- This presentation will walk you through some of that history as well as the difficulties encountered
- While this is not an insolvable problem, it is a difficult one

History Leading up to RA

- 1998 – California deregulates the generation component of the energy industry
 - In doing so sets a strong reliance on spot energy markets
 - States three Investor-Owned Utilities (IOU) to sell at least 50 percent of thermal generation and are to buy and sell all energy needs in the spot market with no forward contracts
- 2000 – Energy Crisis leads to rotating outages and significant cost increases
- 2004 – RA program enacted to ensure that sufficient capacity was under contract and obligated to provide energy to the California Independent System Operator (CAISO)

RA Design

- The RA program was designed under the premise that if only the RA fleet was available to serve customers, that it could do so reliably
 - This meant ensuring that not only Peak load was met but load in all hours could be met
- Two categories of resources met RA
 - Supply side – a generating resource that had an obligation to the CAISO
 - Metered resources that can be dispatched and operation validated to meet load in any hour
 - Load Modifying – a program that would reduce load on the system primarily used for Demand Response (DR) and Energy Efficiency (EE)
 - Generally not metered but the response can be reasonably accurately estimated to reduce the expected load during specific hours (DR) or throughout the day (EE)

Why Behind the Meter (BTM) Resources are Difficult for RA

- BTM resources are becoming resources capable of operation in differing hours and estimation of those hours is difficult as it is dependent on cost/benefit drivers
 - DR was moved from a load modifying to a supply side resource largely due to the ability to dispatch
 - Price signals in the CAISO market are a significant indicator of grid stress
 - Meeting RA therefore is largely an issue of dispatching to meet the CAISO grid needs
- BTM resources are used for more than just RA needs
 - Addressing retail billing incentives is a large driver
 - Providing DR can be a driver
 - Desire to aggregate resources and provide energy into the CAISO Market
- Equity has led to a desire to have such resources operate in the same way as a supply side resource including:
 - CAISO Offer obligations
 - Metering to validate operation
 - Needs to understand the points of injection to the CAISO grid and the impacts of energy flows
- In addition, the IOUs have identified potential issues with large changes and amounts of flow on a distribution circuit not designed for such purpose
 - The RA program uses a concept of “deliverability” which would likely need to capture constraints on distribution as well