

Joint IOU Draft Framework Overview

April 17, 2017



Draft DER Assumptions and Framework Document Content

Filing Content

- Regulatory Context
- Trajectory Scenario Adoption Framework
- Distribution Planning Use-Cases for Granular Allocation
- Proposed Trajectory Scenario DER Adoption Scenario for 2017-2018 Distribution Planning Studies
- Load Forecasting at the Distribution Circuit Level 2017-2018
- Proposed Methodologies to Disaggregate the Trajectory Scenario to the Distribution Circuit Level for 2017-2018
- Proposed Vision and Principles for Future DER Forecasting and Granular Allocation

DER Trajectory Scenario Adoption Framework

Framework for Selecting Trajectory Scenario

1. Begin with *the most appropriate public document*.
 - CPUC Assumptions ACR issued via Integrated Resource Plan (IRP) / CAISO transmission planning process (TPP)
 - Adopted IEPR update, or
 - IOU IEPR submittal
2. IOU compares most appropriate assumptions to *alternatives*
3. IOU evaluates and determines whether there is good cause to propose adoption of alternative assumptions for the distribution planning studies.
4. If IOU determines there is good cause, then IOU proposes alternative assumptions subject to stakeholder review process
 - The IOUs recommend the Working Group discuss appropriate stakeholder review process that would be sufficient for the purpose of reviewing IOU proposals to use alternate/modified DER planning assumptions.

Distribution Planning Use-Cases for DER

Allocation Granular Allocation

Proposed Use-Cases

- Inform the **distribution planning process (DPP)** with respect to the need for and timing of future infrastructure
- Inform the **Integration Capacity Analysis (ICA)** to identify the locations on the distribution system where and when future DER adoptions may increase or decrease available distribution hosting capacity.
- Inform the **Locational Net Benefits Analysis (LNBA)** to inform indicative value or costs related to future DER adoptions.
- Inform the **Distribution Infrastructure Deferral Framework (DIDF)** and **DER Competitive Solicitation Framework (CSF)** regarding the estimated level DER adoptions that are sourced through existing tariffs, programs, or other solicitation processes

Load Forecasting

Distribution Circuit Level 2017-2018

PG&E: PG&E generally applies a top-down approach using LoadSEER software to allocate load to feeders. PG&E starts with the load growth assumptions proposed in the IRP Assumptions and Scenarios ACR and adopted for use in the 2017/2018 TPP.

1. Adjust annual peak load growth in MW from transmission area (CEC's 2016 Update of the California Energy Demand Forecast, 1in 2 recurrence, mid-case)
 - Remove transmission customer load growth
 - Remove embedded DERs (DERs added back in Step 7)
2. Scale distribution system peak forecast based on transmission peak growth
3. Allocate distribution system peak growth to customer class based on energy use
4. Apply local knowledge to distribution circuits modeled in LoadSEER
5. Allocate load by customer class to distribution circuits LoadSEER
6. Apply load shape based on customer class
7. Add DERs (from Step 1)

Load Forecasting

Distribution Circuit Level 2017-2018

SCE

- Utilize corporate forecast to extract econometric and demographic information
- Utilize local area knowledge to inform distribution planning efforts
 - 10-year forecast of demand factoring in known development plans and local economic conditions
 - Analyze historical substation load profiles and customer load growth by geographic region
 - Work with agricultural, commercial, industrial, and residential development plans to understand projected increases in demand on existing location specific distribution equipment
- Reconcile system-wide values with known future development plans

SDG&E

- Transitioning to a “top-down” approach utilizing LoadSEER software
- Apply system-wide forecast and disseminate the growth amongst feeders using geospatial analysis, peak loads, total customer consumption, along with traditional economic factors and weather.
- Remove known load additions from the system-wide forecast.
- System-wide forecast directly correlates to forecast used in IEPR for load growth at system peak.

Methodologies to Disaggregate the DER Trajectory Scenario

- 2017-2018 methodologies overview to be addressed in afternoon presentations
- Detailed discussion of methods and issues in future DER-specific working group sessions
- Example questions related to DER forecasting to be considered by working group:
 - What is the long term vision for disaggregating DER forecasts for distribution planning?
 - What principles should be followed to achieve this vision?
 - What are the primary challenges and potential solutions to disaggregate DER forecasts for distribution planning?
 - How best to manage the increasing levels of uncertainty as forecasts are disaggregated to increasingly precise areas?
 - How to maintain flexibility needed to integrate lessons learned?
 - Why are different DER allocation methods needed for different DERs?
 - How to access and integrate data from DER industry partners?

Long-Term Vision for DER Forecasting

Context

- Forecasting and allocation methods support the distribution planning objective of providing safe, reliable, affordable and clean energy services to customers
- IOUs currently employ different methods to forecast and allocate DERs due to differences in systems, analytic platforms and resource allocation to forecasting.
- Due to differences among DERs a single forecasting and/or allocation methodology is not appropriate

Vision

- DER forecasting and allocation methods evolve in response to DER data availability, market maturity, and utility analytic platforms to improve forecasting accuracy, increase transparency and alignment, and enhance the integration of DERs into distribution planning.

Principles

- Utilize statistically sound, data-driven methods for each DER, customer segment, and level of disaggregation
- Periodically re-assess the modeling approach for each DER as the landscape changes
- Employ approaches to manage high levels of uncertainty with granular allocation of DER
- Move toward consistent approaches for forecasting and allocation among the IOUs
- Maintain transparency with respect to methodologies and results
- Leverage learning process to continuously improve
- Integrate data from DER industry partners to enhance forecasting accuracy