

General Discussion of System-wide DER Forecasting Assumptions

April 17, 2017



Presentation Purpose/Overview

Purpose:

Explain how the IOUs arrived at the proposed framework and highlight the trade-offs between adopting IEPR, IRP & TPP assumptions and utilizing best available information

Overview:

- Review of Framework in Draft A & F Document for DPP
- Considerations when selecting the starting system level forecast
 - Changes since last ACR for statewide planning
 - Overview of IOU IEPR submittals
 - Timing considerations for Distribution Planning
- Demonstration of Updated Forecast Considerations

Guiding Principles for Selection of Assumptions

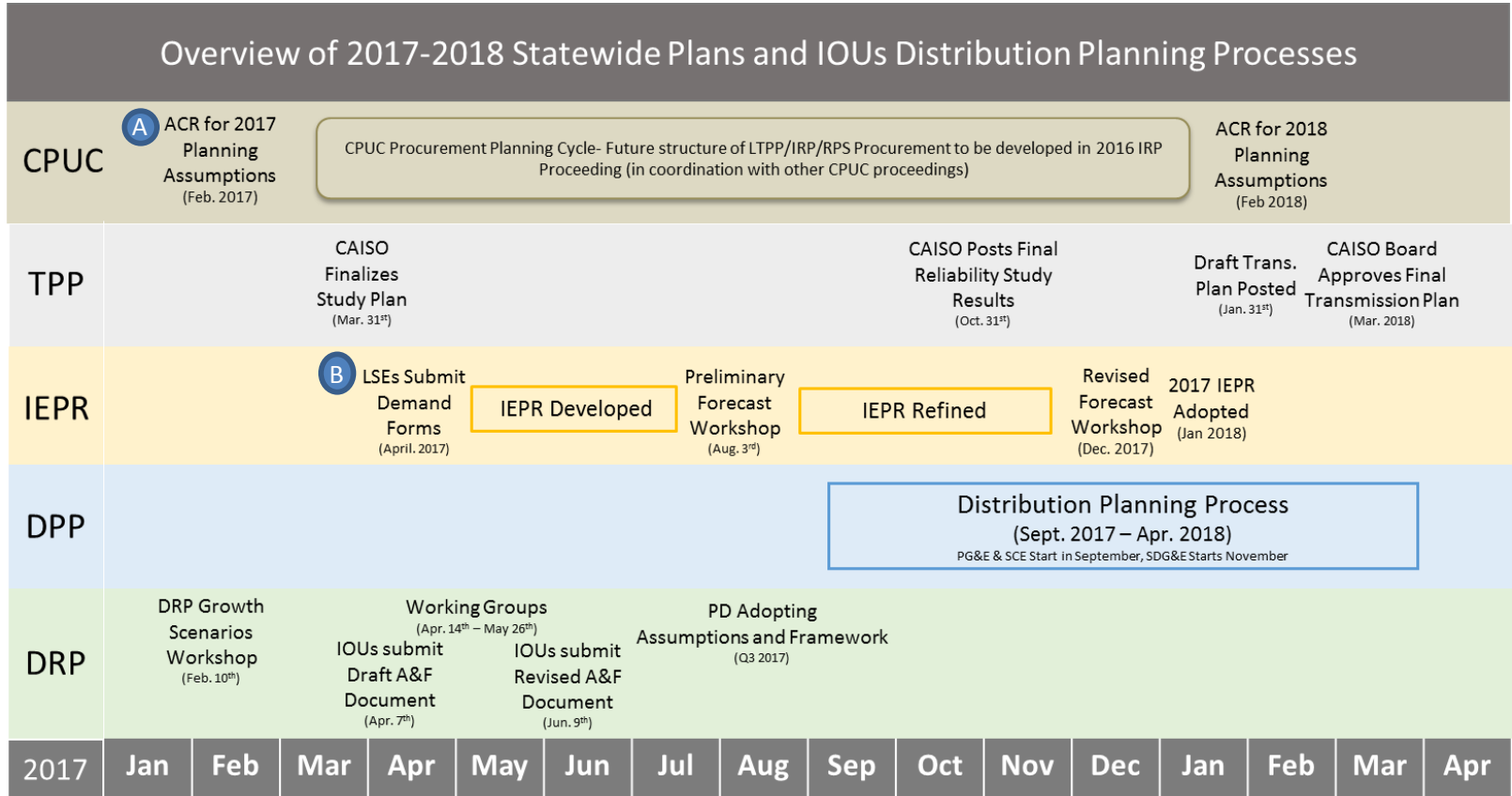
1. Scenarios need to be **coordinated** with IEPR, IRP and TPP processes on schedule and consistency of methodology and results
2. Scenarios **must support the primary distribution planning objectives** of providing safe, reliable, affordable, and clean energy
3. Input on known DER projects from distribution engineering staff is critical
4. Feedback from stakeholders representing the various DERs could be beneficial

Framework for Selecting Trajectory Scenario

1. Begin with *the most appropriate public document*. This could be CPUC Assumptions ACR issued via Integrated Resource Plan (IRP) process outlining preferred assumptions and scenarios for use in long term planning processes such as the CAISO transmission planning process (TPP), IOU IEPR submittal, or adopted IEPR update.
2. If an IOU wishes to deviate from the assumptions referenced in step 1, compare those assumptions to *the assumption proposed by the IOU*.
3. IOU determines whether there is good cause to adopt the IOU proposed assumption for the distribution planning studies.
4. 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.

Step 1: Begin with the Most Appropriate Public Document

Trade offs exist between the available documents

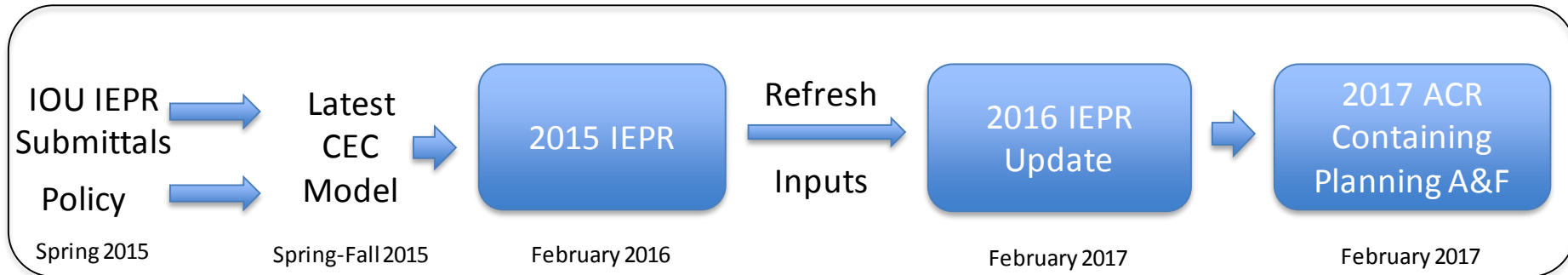


Document A: 2017 CPUC ACR for TPP
Document B: LSE Demand Forms

*Note: The demand side assumptions in the 2017 ACR are from the 2016 IEPR Update. The DER assumptions in the 2016 IEPR update are also largely based on the last full IEPR cycle (2015 IEPR).

Document A: ACR for 2017 Planning

The demand side assumptions in the 2017 ACR are from the 2016 IEPR Update. The DER assumptions in the 2016 IEPR update are also largely based on the last full IEPR cycle (2015 IEPR).



DER Assumptions in ACR

- Energy Efficiency:
 - Utilize IEPR Low AAEE Scenario for local reliability studies
- EV and LMDR
 - Implicitly included in underlying 2016 IEPR Demand
- Distributed Generation:
 - IEPR Mid Case
- Energy Storage (Not in 2016 IEPR)
 - Assumes each utility meets storage targets set in AB2510



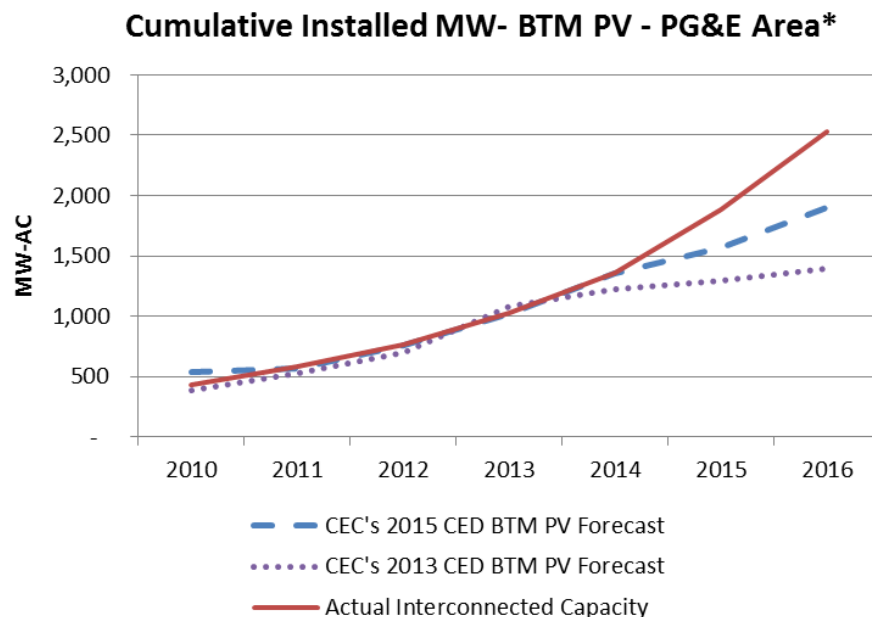
California Energy Demand Update Forecast (CEDU 2016)

- Update for California ISO Transmission Planning and CPUC procurement planning covering 2017-2027
- Incorporates more recent economic and demographic expectations
- Includes new historical data (2015 for consumption/sales and 2016 for peak)
- Additional Achievable Energy Efficiency (AAEE) estimated for 2027 by Navigant
- No updates for committed efficiency, distributed generation (DR), or climate change, except to rescale or extrapolate to 2027

CEC Slide from December 8th IEPR Commissioner Workshop on the 2016 CEDU Forecast Update

Changes in Key Drivers for Solar PV Forecast since 2016 IEPR Update

- Zero Net Energy (ZNE) mandate
- Federal Income Tax Credit (FITC) extension
- NEM 2.0 decision
- Default TOU rates
- Solar cost declines
- Potential new mandates
- Actual adoption significantly higher than 2015 IEPR



* Actual interconnected capacity is for PG&E's Service Area, CEC's forecast is for the PG&E Planning Area (includes other LSEs).

Changes to Transportation Electrification since 2016 IEPR

- IOUs submit Transportation Electrification Filings
 - Filed January 20, 2017
 - Together proposals amounted to \$1 Billion investment over an approximate five year period
- Charge-Ready programs
- Increasing policy support for EV
- Battery technology cost declines
- CARB Scoping Plan

Document B: IOU IEPR Submittals

- Have been/are being submitted to the CEC for use in developing the 2017 IEPR
- Based on IOU Corporate Forecasts
- Contain best available DER and load projections based on:
 - Latest economic and demographic data
 - Updated DER adoption/interconnections
 - New and anticipated DER policies
 - DER technology/market updates

IEPR Submittal Components

IOU submittals include 30+ forms containing a broad range of information for use by the CEC in preparation of the IEPR

Some forms containing DER include:

- Form 1.1a – Retail Electric Vehicle Projections (GWh)
- Form 3.2 – Energy Efficiency
- Form 3.3 – Distributed Generation
- Form 3.4 – Demand Response
- Form 4 – Report on Forecast Methods and Models

Trade offs Between Different Assumptions

- **Document A: ACR for 2017 Planning**

- + Provides an opportunity for stakeholder engagement and aligns source of assumptions across all IOUs.
- DER assumptions are potentially outdated for adoption in 2017/18 DSP as 2017 IEPR is in progress

- **Document B: IOU 2017 IEPR Submittals**

- + Reflects most recent technology, policy, economic and DER adoption data
- + Incorporates IOU-specific knowledge of trends in service territory
- + Publicly available as filing/input into the public IEPR process
- Differences in assumptions among IOUs
- May not reconcile to the TPP/transmission planning assumptions

Timing Considerations For Distribution Planning

- CEC's IEPR process supports the TPP and IRP processes which are focused on long-term planning horizon (years 2-10 and beyond)
- IOU Distribution Planning Process (DPP) is largely focused on the near-term planning horizon (years 1-3 with a look out to year 10)
- The DPP is more directly impacted by near-term changes in input assumptions and updated (and local) DER information is key to maintain stated objectives

Step 2-4: SCE Example of Deviation to Account for Best Available Information

- SCE has aligned its internal forecast development timeline to provide the most up to date information to its DPP
- Fundamental changes in methodology or approach (if any) will be coordinated with CEC via the ongoing IEPR and the DAWG
- The resulting system forecast is reviewed with stakeholders in detail via SCE's PRG

