



# Introduction to the Integrated Resources Planning Modeling Advisory Group



Webinar #1  
10/20/2016

# Overview of IRP Implementation at CPUC

- Energy Division staff is developing a proposal for implementing Integrated Resource Planning required by SB350
- Staff proposal is anticipated to include:
  - Approach to developing a portfolio per PUC 454.51
  - Draft guidance to LSEs for filing their own IRPs per PUC 454.52
  - Draft approach to evaluating LSE IRPs per statutory requirement that CPUC “approve” or “certify” filed IRPs per PUC 454.52
  - Draft approach to procurement authorization and process alignment based on LSE IRPs per PUC 454.51(b-d) and 454.42
- Draft proposal was anticipated to be entered into the formal proceeding record in December 2016 (per joint scoping memo in R.16-02-007; may be delayed)
- Proposed Decision was anticipated in April 2016 (per joint scoping memo)

# Overview of Staff Activity on IRP Proposal Development

- Distributed IRP concept paper 8/11/2016
  - Included different possible approaches to IRP process
    - Option A: LSEs develop own LSE-specific plans
    - Option B: CPUC develops LSE-specific plans
    - Option C (hybrid): CPUC develops overall System plan that informs LSE development of LSE-specific plans
- Parties provided feedback 8/31/2016
  - **19/25 parties preferred Option C**
- Held public workshop on 9/26/16 to propose an analytical framework for how Option C would work
- Circulated draft charter for Modeling Advisory Group 10/5
- Received post-workshop comments on analytical framework and Modeling Advisory Group charter 10/14/16

# Approach to Developing a System Plan Is Divided Into Three Workpaths

- **Assumptions:** sources and values of inputs to be used in modeling work
  - list of assumptions and proposed sources to be circulated in near future
- **Scenario Development:** conceptual approach to planning under uncertainty
  - proposal to be circulated in near future; first webinar 10/27 10:30-12
- **Modeling:** the specific modeling tool(s) to be used, how they function, and how they should be configured
  - focus of the **Modeling Advisory Group (MAG)**

# Short-Term Focus of MAG is the Development of a Reference System Plan

- MAG Charter states that for Q4 of 2016, MAG is focused on development of Reference System Plan
  - Producing Reference System Plan is first step of proposed “Option C” process that received majority party support
- Analytical framework questions circulated by staff address on long-term conceptual approach to IRP and LSE plans
  - Staff intends to address in MAG in January of 2017

# IRP Process – 2017 Interim Analytical Framework

## 1. Develop Assumptions

### Load Forecasts

- Energy efficiency
- BTM PV
- Electric vehicles

### Generation Fleet

- Existing plants
- Planned additions
- Planned retirements

### Candidate Supply & Demand Side Resources

- Cost
- Potential
- Performance

### Policy Constraints

- RPS & storage target
- GHG planning target
- Communities & Air Q

### Futures

- Key uncertain inputs
- Input ranges

## 2. Evaluate Reliability Needs

*Rather than completing a full LOLP study, CPUC will assess system needs using a load-and-resources approach similar to that used historically in LTPP; the surplus of system capacity reduces the urgency of detailed LOLP analysis*

**PRM assessment**  
(CPUC)

**System needs**

**Transmission Plan**  
(CAISO)

**Local needs**

*Local needs will be based on the needs identified in CAISO's 2015/16 and/or 2016/17 Transmission Plans*

## 3. Develop Reference System Plan

**Capacity expansion modeling**  
(CPUC)

**Flexibility needs**

**Reference System Plan**

*To produce first Reference System Plan, CPUC will use RESOLVE model, building extensively upon data from the existing RPS Calculator and CAISO SB350 Study*

**Sept – Feb '16**

*CPUC will develop assumptions and futures for analysis and will provide a draft for stakeholder comment by December 2016*

**Sept – Feb '16**

*Due to schedule constraints, Step 2 will be compressed in the 2017 IRP, relying heavily on prior analysis, and will occur in parallel to Step 1*

**Jan – May '17**

*The Draft Reference System Plan will be developed and released by March 2017 for stakeholder comment; the Final Reference System Plan will be released by the end of May*

**Table 6. Types of Models that Could be Useful for Integrated Resource Planning.**

IRP Activity	Type of Model	Type of Output	Example Models <sup>2</sup>
<b>1. Develop Data</b> (develop inputs and assumptions needed for subsequent IRP activities)	Various	Resource production profiles, resource locations, forecasted load, load shapes, sectoral GHG targets	PATHWAYS (for electric sector GHG planning target); System Advisor Model (for Solar PV Production profiles);
	Capacity Expansion	Selected supply and/or demand resources	Aurora, PLEXOS, RESOLVE, Resource Planning Model, Strategist, SWITCH, System Optimizer
<b>2. Generate Portfolios</b> (generate mix of resources needed to serve load in future years)	Custom	Selected RPS resources, investment cost	RPS Calculator, RPS Scenario Maker
	<b>3. Evaluate Portfolios</b> (determine compliance with required standards and/or document performance according to certain metrics)	Production Cost Simulation	Operating Cost
Renewable Curtailment			
GHG Emissions			
Resource adequacy (reliability events)			
Loss-of-Load-Probability		Resource adequacy (e.g., LOLP, LOLE, EUE)	GE-MARS, RECAP, SERVM
Power Flow		Transmission constraints	CYME, PSLF, PSSE
Custom		Impact on disadvantaged communities	Cal Enviro Screen
Custom	Land use		

<sup>1</sup>Shaded area reflects type of modeling that was the focus of 2014 LTPP proceeding activity.

<sup>2</sup>Some models may have overlapping capabilities and therefore are mentioned more than once; not intended to represent a comprehensive list of all available models

# Energy Division Proposes to Use RESOLVE to Develop Reference System Plan in 2017

- IRP Concept Paper asked for feedback on a table of modeling types and options for developing a Reference System Plan in 2017
- Plurality of parties found the table of modeling types presented in the paper reasonable
- Most frequent responses for developing a Reference System Plan in 2017 were:
  - **Avoid excessive theoretical precision**
  - **Minimize scenarios**
  - **Use RESOLVE**
- Staff intends to revisit modeling approach for next IRP cycle in Summer 2017



# MAG Questions

- MAG Q1: Are there any additional specific modeling-related issues not listed under the scope section that Energy Division should be sure to address within the MAG in 2017?
- MAG Q2: Are any additions or modifications to the ground rules essential to the success of the group?
- MAG Q3: Are there any additional agenda items that you would like to see included in the first MAG meeting?