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Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements.

Rulemaking 16-02-007
(Filed February 11, 2016)

COMMENTS OF THE
CENTER FOR ENERGY EFFICIENCY AND RENEWABLE TECHNOLOGIES
ON ADMINISTRATIVE LAW JUDGE'S RULING SEEKING COMMENTS ON INPUTS
AND ASSUMPTIONS FOR DEVELOPMENT OF THE 2019-2020 REFERENCE
SYSTEM PLAN

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Dated: January 4, 2019

Order Instituting Rulemaking to Develop an Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements.	Rulemaking 16-02-007 (Filed February 11, 2016)

**COMMENTS OF THE
CENTER FOR ENERGY EFFICIENCY AND RENEWABLE TECHNOLOGIES
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AND ASSUMPTIONS FOR DEVELOPMENT OF THE 2019-2020 REFERENCE
SYSTEM PLAN**

The Center for Energy Efficiency and Renewable Technologies (CEERT) respectfully

submits these Comments on the Administrative Law Judge's Ruling Seeking Comments on

Inputs and Assumptions for Development of the 2019-2020 Reference System Plan, issued

November 29, 2018 (ALJ Ruling). These Comments are timely filed and served pursuant to the

Commission's Rules of Practice and Procedure and the ALJ Ruling.

**I.
OVERVIEW**

By the ALJ Ruling, parties were invited to comment on the modeling inputs and

assumptions to be used in the development of the Reference System Plan (RSP) for the 2019-

2020 cycle of the Integrated Resource Planning (IRP) process. In addition, the ALJ Ruling

requested that the parties provide comments on Attachment A to the ALJ Ruling which is the

"Proposed Inputs & Assumptions: 2019-2020 Integrated Resource Planning" (Attachment A)

and Attachment B to the ALJ Ruling which is the "Estimation of Criteria Pollutant Emissions in

the 2019-2020 Integrated Resource Planning Cycle" (Attachment B). Lastly, the ALJ Ruling

requested that parties respond to several questions regarding Attachment A and Attachment B.

II.
CEERT COMMENTS ON THE ALJ RULING AND ATTACHMENTS A AND B

The ALJ Ruling is narrowly focused on the assumptions and inputs of the modelling to take place in the 2019-20 IRP. However, it is CEERT's view that as this cycle of the IRP begins, the Commission must take a step back and reevaluate how modelling is utilized to develop a "least regrets" plan to meet the State's climate goals while maintaining reliability and cost-effectiveness.

While there is value in using a capacity expansion model, as the ruling stated "...there may be advantages and disadvantages to the use of this particular model."[1] Given the enormity of changes occurring on the California electric grid and the aggressiveness of SB 100 and Executive Order B-55-18, CEERT believes the disadvantages inherent in the RESOLVE model warrant taking a step back and reevaluating approaches for the State and the Commission to take for system planning. If a narrow view hinged on a single scenario from a model with particularly low granularity is taken, as was done in the 2017-18 IRP cycle, the emissions targets will likely be missed. Cross sectoral dependencies will likely create a wide spectrum of futures for the power sector.

Effective planning needs to reflect risk, encompass uncertainty, and determine a path of least regrets. At the same time, planning requires a level of granularity to encompass the location value of resources, particularly on the distribution system. Given the complexity of the task at hand, CEERT is not convinced that hinging the Reference System Plan on RESOLVE will enable the State to meet its policy objectives. CEERT recommends that during Reference System Plan development, there should be additional modelling conducted, including a more granular "bottoms up" approach. CEERT also recommends at minimum, an en banc be held

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[1] ALJ Ruling, at p. 2.

with the Commission, the California Energy Commission (CEC), the California Independent

System Operator (CAISO), the California Air Resources Board (CARB), the load serving entities

(LSEs), and publicly-owned utilities to address a holistic strategy for Senate Bill (SB) 100

implementation and how the IRP process will reflect that strategy.

CEERT has concerns about how much the RESOLVE model simplifies CAISO grid

operations in order to reduce computational complexity. Validation of simplifications in

modelling is typically considered essential to establishing credibility of a model. CEERT is

hopeful that the iterative process with SERVM will reduce discrepancies, but would like more

clarification on the iterative process. In the 2017-18 IRP Cycle, the Commission conducted

analysis evaluating the greenhouse gas (GHG) emission discrepancies between the RESOLVE

model and the actual CAISO grid.[2] CEERT appreciates the time and effort invested in the

investigation and hopes to learn how the outcomes of this analysis are being integrated into this

cycle's Reference System Plan develop. CEERT also recommends that the Commission repeat a

similar exercise, to demonstrate the modelling updates have resolved the identified

discrepancies. Should there still be issues, CEERT recommends that the Commission set an

emission reduction goal instead of an absolute emission target.[3]

III.
CEERT RESPONSES TO QUESTIONS ON ATTACHMENT A

1. **Base case selection. Please comment on the recommended base case assumptions**
   outlined in Section 1 above. What assumptions would you modify and why?

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

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[2] Comparison of GHG Emissions Between CAISO 2017 and RESOLVE 2018, CPUC Modelling
Advisory Group, August 10, 2018.
[3] For example, if the real GHG target is 42 MMT and the model is showing 50 MMT emissions from the
CAISO footprint in 2018, but the actual CAISO footprint emits 56 MMT, then the GHG target in the
model should be 36 MMT, a net reduction of 14 MMT.

2. **Baseline resources.** **What changes would you make to the assumptions in Section 3 of Attachment A with respect to baseline resources? Explain.**

CEERT recommends that the quantity and load shape of imported hydro is based on monthly, rather than annual, averages and load shapes, as the availability and flexibility of the Northwest hydro system varies greatly by season.

3. **For planned resources with Commission- or CCA-board-approved contracts, for which the Commission may need to seek additional information as described in Section 3 of Attachment A, in the base case:**

   a. **Is the existence of an approved contract a reasonable determinant for inclusion in the baseline? Why or why not?**

CEERT does not have a response to this question at this time, but reserves the right to respond in Reply Comments.

   b. **Is it reasonable to assume a 15 percent failure rate for these approved contracts? If not, what are the sources of uncertainty for these types of resources and how should the Commission plan and account for that uncertainty?**

CEERT does not have a response to this question at this time, but reserves the right to respond in Reply Comments.

   c. **Provide data sources that speak to contract success rates.**

CEERT does not have a response to this question at this time, but reserves the right to respond in Reply Comments.

4. **For planned resources without approved contracts in the base case:**

   a. **What criteria should the Commission use to evaluate whether it is reasonable to assume that a planned resource will be completed?**

CEERT does not see the need to include planned resources as baseline resources in Reference System Plan development, unless they are scheduled to be procured within the two-year IRP cycle. The 2017-18 IRP has been referred to as a "test run" and many LSE IRPs

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appeared to be speculative for later years. While the LSE plans may be helpful for a "sanity check" in Reference System Plan development, there is no reason to think the planned resources are not subject to change.

b. Is it reasonable to assume a 50 percent failure rate for these types of resources? If not, what are the sources of uncertainty for these types of resources and how should the Commission plan and account for that uncertainty?

CEERT does not see the need to include planned resources within the baseline resources. It is unclear how the Commission would choose which resources would be subject to the failure rate, as little detail was provided about long-term resources in many of the LSE plans.

c. Provide data sources that speak to contract or project success rates.

CEERT does not have a response to this question at this time, but reserves the right to respond in Reply Comments.

5. As described in Section 3.1 of Attachment A, the 2019-2020 IRP version of RESOLVE will be capable of retiring baseline thermal resources economically within the optimization process. Fixed operations and maintenance costs of baseline thermal resources will be added to RESOLVE's optimization logic, such that existing thermal generators may be retired by the model, subject to reliability constraints, if it is cost-effective to do so. Provide suggestions for data sources that could be used for the fixed operations and maintenance costs of baseline/existing thermal resources.

CEERT is supportive of including a retirement functionality in the RESOLVE model, but has no suggestions at this time for operations and maintenance costs.

6. Candidate resources. Section 4 of Attachment A outlines the proposed candidate resources from which the model can choose for development of new resources beyond the baseline.

a. General: Comment on the appropriateness of all of the resource types proposed to be modeled.

CEERT recommends the Commission work in coordination with the CAISO to evaluate the feasibility of full capacity deliverability status (FCDS) and energy only (EO) resources. In

the Preliminary Policy and Economic Assessments of the 2018-19 Transmission Planning

Process, CAISO reported some discrepancies in the deliverability of resources selected for the 42

million metric ton (MMT) case in the 2017-18 IRP Reference System Plan.[4] CAISO also

reported significantly higher levels of curtailment of wind and solar, 40%, compared to the 4%

reported by RESOLVE and 10% reported by SERVM.[5] These results suggest there may need to

be an update of resource availability or a truing up of modelling assumptions.

> **b. <u>Storage:</u> Does the proposed approach for modeling energy storage in RESOLVE adequately reflect the latest available storage technologies? What energy storage technology types would require significantly different input values? Explain in detail how the inputs would vary.**

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

> **c. <u>Offshore Wind:</u> Public data about offshore wind cost and potential in California may be limited and/or outdated. Comment on what data is currently available regarding offshore wind development in California and its possible limitations. If you are aware of new data expected to become available in the next year or two, for example through the work of the California Intergovernmental Offshore Renewable Energy Task Force, provide specific reference to that information.**

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

> **7. Should large periodic maintenance costs to utility-scale generators be included in IRP modeling? If so, what data sources should be used to estimate these costs? Please refer to Section 3.1.1 of Attachment A for more discussion of this issue.**

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

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[4] CAISO 2018-19 Transmission Planning Process Preliminary Policy and Economic Assessments
Stakeholder Meeting, at p. 45.
[5] IRP Modeling Advisory Group Meeting Production Cost Modelling with the Reference System Plan and
the 2017 IEPR: Preliminary SERVM Model Results, at p. 46, and CAISO 2018-19 Transmission
Planning Process Preliminary Policy and Economic Assessments Stakeholder Meeting, at p. 89.

8. **IRP modeling in 2017 optimized investment and system dispatch for four representative years: 2018, 2022, 2026, and 2030. The number of representative years represents a balance between precision and model runtime. In modeling for the 2019-20 IRP cycle RSP, Commission staff again proposes to limit the simulation to four years, replacing the 2018 Year with 2020, but continuing to include Years 2022, 2026, and 2030. Then, in the next IRP cycle, study years would become 2022, 2026, 2030, and 2034, with the subsequent cycle addressing Years 2024, 2026, 2030, and 2034 (and so on). This allows for continuity and comparison of assumptions and results across IRP cycles, while continuing to focus between 10 and 12 years in the future. Do you support this approach or recommend a different distribution of study years (i.e., updating the study years with each IRP cycle)? Explain your answer.**

CEERT is supportive of this approach if it is determined that RESOLVE is the appropriate tool for further IRP development.

9. **In order to analyze the Senate Bill (SB) 100 goal of 100 percent of retail electricity sales being supplied by zero-carbon resources by 2045, Commission staff are also considering using RESOLVE to run a limited number of scenarios on years beyond 2030. Considering the significant amount of modeling and run-time cost of each additional planning year, as well as potentially limited availability of data for years beyond 2030, what year(s) should be studied (e.g., 2035, 2040, 2045) and why?**

CEERT recommends a broader conversation begin on SB 100 implementation. Given the complexity of the changes on the grid and changes in planning required to make deep reductions in GHG emissions, including challenges for a largely inverter-based grid, dispatch of largely zero-marginal cost resources, procurement of large infrastructure projects, long term transmission development, distribution system operation, and location value of resources, CEERT does not believe that RESOLVE is the appropriate tool to address SB 100 implementation. CEERT recommends a joint agency process to evaluate, develop solution recommendations, and identify venues for the challenges to be addressed to achieve a 100% clean energy grid.

10. **Voluntary procurement of in-front-of-the-meter renewables beyond statutorily-required levels could impact the development of new renewable energy facilities. For example, many LSEs have programs that allow customers to choose a higher portion of renewables in their electricity supply than required by the RPS, which could result in a need to build additional new renewable energy facilities. Should RESOLVE include projections of voluntary planned procurement (but not yet contracted) when developing future resource portfolios? If so, what are publicly available sources of information that could be used to forecast the volume of such procurement?**

CEERT does not have a response to this question at this time, but reserves the right to respond in Reply Comments.

11. **How should the utilization of the LSEs' current and forecasted REC banks be represented in RESOLVE? Which of the modeling options described in Section 8.3.2 of Attachment A are most appropriate for the base case? What additional options should be considered?**

CEERT does not have a response to this question at this time, but reserves the right to respond in Reply Comments.

12. **Provide any additional comments on the appropriateness of the draft inputs and assumptions proposed for the 2019 RESOLVE model runs for IRP purposes. What changes would you make and why? Please include references to the appropriate section number of Attachment A.**

CEERT has concerns about aggregating each local capacity requirement (LCR) area for a single LCR requirement. As gas retirements occur, replacing that capacity will require evaluating the load shape of the deficiency to determine what resource types could replace the retiring resource. If capacity is aggregated into a single need and simplified into four gas resource classifications, it is unclear how certain any outcome could be. CEERT does believe replacement of LCR capacity is important to reaching the State's decarbonization goals and recommends a bottoms-up approach to evaluating preferred resources for LCR, due to the location specificity required. CEERT recommends the Commission evaluate options presented

in the CAISO 2018-19 TPP LCR Reduction Study for cost-effectiveness and meeting policy

objectives.[6]

IV.
CEERT RESPONSES TO QUESTIONS ON ATTACHMENT B

1. **Are there any emissions factors that should be used instead of those listed in Tables 1 and 2, or sources already cited in party comments referenced, in Attachment B? Please provide the specific factor, category of unit to which it applies, data source, and the reason why it should be used.**

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

2. **Comment on the suggested steady-state emissions factors for biomass and diesel units in Table 3 of Attachment B. Propose factors for cold, warm, and hot starts, as well as sources for suggested values.**

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

3. **Suggest emissions factors for geothermal facilities and provide sources for suggested values.**

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

4. **Should out-of-state emission be accounted for as part of criteria pollutant emissions? Why? If so, how?**

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

5. **Suggest any methodologies to assist with understanding the impacts of system-level emission on the ambient air quality of local communities.**

CEERT does not have a response to this question at this time, but reserves the right to

respond in Reply Comments.

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[6] CAISO Local Capacity Requirements Potential Reduction Study as part of the 2018-2019 TPP.

6. Provide any other comments or suggestions on issues raised in Attachment B.

CEERT does not have a response to this question at this time, but reserves the right to respond in Reply Comments.

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V.
CONCLUSION

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In conclusion, given its concerns RESOLVE, CEERT recommends that the Commission reevaluate the approaches that it will take for system planning that are not entirely dependent on the RESOLVE model. Additional modeling should be conducted during the development of the Reference System Plan. In addition, the Commission, along with the CEC, CAISO, CARB, LSEs and publicly-owned utilities should hold an en banc to determine the best way to implement SB 100 into the IRP process.

Respectfully submitted,

January 4, 2019

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