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CPUC, Energy Division
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**Subject: Comments on Draft Resolution E-5150 – Adopting Updates to the
Avoided Cost Calculator for use in Demand-Side Distributed Energy
Resource Cost-Effectiveness Analysis.**

INTRODUCTION

In accordance with the policies adopted in Decisions (D.) 16-06-007 and D.19-05-19, Energy Division (ED) staff issued Draft Resolution E-5150 to adopt minor changes to the Avoided Cost Calculator (ACC). The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) hereby submits its comments on Draft Resolution E-5150. Cal Advocates supports the proposed changes (summarized in Table 1, below) and agrees that they are in accordance with prior Commission decisions, mathematically robust, and effectively represent current market conditions.

DISCUSSION

- 1. Cal Advocates agrees with Energy Division staff that the updates to the 2021 ACC listed in Draft Resolution E-5150 are minor in nature and in accordance with the update policies detailed in D.16-06-007 and D.19-05-019.**

D.16-06-007, adopted in the Integrated Distributed Energy Resource (IDER) Rulemaking (R.) 14-10-003, authorized annual updates to the ACC entailing minor changes, corrections, and data updates. Specifically, D.16-06-007 defines minor updates to include “data updates and minor corrections to the avoided cost calculator and, when appropriate, the inputs.”¹ By contrast, the same decision defines major updates as “changes to the *list* of data inputs, addition or deletion of categories or types of avoided costs, or changes to the list of data inputs, addition or deletion of categories or types of avoided costs...”² D.19-05-019 subsequently further defined

¹ *Decision to Update Portions of the Commission’s Current Cost-Effectiveness Framework*, D.16-06-007, issued in R.14-03-003, p. 26.

² D.16-06-007, p. 8.

minor updates as “changes to the modeling method that most parties can reasonably agree are minor in scope and impact.”³

Table 1, below, outlines the list of changes identified in Draft Resolution E-5150, sorted by the type of change that was made for the 2021 ACC. Each modification clearly falls under the type of changes allowed by D.16-06-007 and D.19-06-019. None of the changes fall within the categories designated as “major” by D.16-07-007.

Table 1: List of Changes Made to the 2021 Avoided Cost Calculator

	Change	Type of change
1	Updated to 2020 Integrated Energy Policy Report (IEPR) Gas Price Forecast	Data update
2	Incorporated IEPR updates made in Integrated Resource Proceeding (IRP), R.16-02-007, as feasible to meet ACC deadlines	Data update
3	Use of data from the final 2019 California Energy Commission (CEC) IEPR “Mid Demand - Mid AEE Case” results and other updates made since the Reference System Plan (RSP) used for the 2020 ACC was produced	Data update
4	Compare wind generation shapes in SERVVM to California Independent System Operator (CAISO) historical data to better match CAISO observed wind generation	Data update
5	Updated “No New DER” case with IEPR updates made in IRP	Input Update
6	Used daily gas prices at Pacific Gas & Electric (PG&E) Citygate and the Southern California Gas Company (SoCalGas) Citygate, and separated gas transportation costs for NP-15/NP-26 (from PG&E Citygate) and SP-15 (SoCalGas Citygate) when calculating historical heat rates. Those historical heat rates are used to calculate the volatility enhancement factors so they indirectly affect forecasts	Input update
7	Updated storage costs from IRP, using data from Lazard Levelized Cost of Storage Study 5.04, the data source that is used to provide the storage costs used as inputs in the IRP modeling	Input update
8	Update the baseline generation fleet with new additions identified in updated CAISO Master Generating Capability Lists since the development of the RSP in 2019, as well as any planned development or online resources identified by Load Serving Entities (LSEs) in their September 2020 IRP filings.	Input update
9	IRP has run new RESOLVE cases that form the basis for the NoNewDER case used for the ACC. RESOLVE outputs provide updated greenhouse gas (GHG) values, and SERVVM outputs provide	Input update

³ 2021 Distributed Energy Resources Avoided Cost Calculator Documentation. May 3, 2021. California Public Utilities Commission & E3 Economics, p. 21.

	Change	Type of change
	updated energy and ancillary services prices, as well as implied heat rates.	
10	IRP has provided SERVVM outputs, which were used to benchmark energy prices to provide stakeholders opportunity to review.	Input Update
11	Made minor adjustment for PG&E: set PG&E's secondary distribution system (voltage level < 4kV) marginal capacity costs input to zero, because secondary capacity costs are not time-differentiated costs and therefore not applicable to ACC.	Input Update
12	Updated Gas Transportation Rates from IEPR. The CEC June 2020 Gas Transportation Rate Forecast has removed the double-counting of GHG emissions previously embedded in the natural gas transportation rates	Input update, error correction
13	Increase Operating Reserve requirement to 6% from 4.5%, matching recent CAISO recommendations in IRP.	Minor Modeling Update
14	Investigate errors to make minor improvements in scarcity pricing adjustment. Evaluation should incorporate results from hourly price shape benchmarking and compare the original method to the 24-hourly algorithm proposed by Joint IOUs in 2020.	Minor Modeling update
15	Remove 5,000 MW import constraint during peak hours to better match CAISO energy prices	Minor Modeling update
16	Base market price on marginal dispatch cost including operating reserves in each hour, instead of total cost of the marginal electric generator in each hour. Results indicate this approach is a better match with CAISO historical prices.	Minor Modeling update
17	Produce price and dispatch reports for a single iteration, not average iterations as was done in the 2020 ACC update.	Minor Modeling update
18	GHG forecast is one year off in gas model and was adjusted.	Bugfix
19	Distribution Tab: \$AQ value changed to \$AS so that it updates properly as the selection of utility and climate zone change.	Bugfix
20	Fixed error reported by the IRP team that caused SERVVM to not include hourly prices for Regulation and Spin Reserves in the overall market price.	Bugfix
21	Fixes to DR Output Tab (various, errors)	Bugfix

Source: Staff Draft Resolution E-5150

2. Changes 1 through 12 in Table 1 are all updates to data and inputs, which are explicitly allowed by D.16-06-007.

Changes 1-12 in Table 1, above, are all updates to data and inputs. Each change is a modification or an update, and none fit the definition of a “major” change as defined by D.16-06-007.⁴ These modifications and updates maintain the same list of data inputs and categories of avoided costs. Change 9 applied an updated RESOLVE case, which was derived from the most recently available inputs and outputs developed in the 2019-2020 IRP proceeding, including the incorporation of results from the final 2019 CEC IEPR.⁵

Many of these updates better align ACC input values and results with CAISO data values and requirements to promote synergistic grid planning and evaluation. Failure to update these inputs would leave the ACC out of sync with the other state-level planning processes like the IRP. These data updates, corrections, and input updates may have a significant impact on results and still be classified as “minor” pursuant to D.16-06-007. D.16-06-007 does not rely on the impact of these types of changes to determine whether such changes are minor or major.

3. D.19-05-019 also allows for changes to the modeling method that are minor in scope and impact and would represent an improvement to the status quo. ACC changes 13-16 and described in Draft Resolution E-5150 meet this definition.

Energy Division staff incorporated several enhancements to SERVVM made in the IRP proceeding, which Cal Advocates agrees are minor in nature and impact, while bringing the ACC into alignment with grid conditions. For example, increasing the operating reserve requirement to 6% from 4.5% to match recent CAISO recommendations in the IRP is a minor modification of model parameters, not methodology. This modification to the model parameters constitutes a minor adjustment and improves the ACC’s ability to reflect grid conditions by better aligning with the grid planning efforts of the IRP.

Change 14, as listed in the table above, adjusts the scarcity pricing function within the ACC and is a clear “improvement to the status quo,” as it helps the production simulation better mimic market conditions.⁶ As noted in the 2021 ACC Documentation, simulated production models often fail to capture probabilistic real-world variables like forecasting errors or contingency events due to being over optimized or over simplified.⁷ The 2021 ACC’s application of the scaling coefficient to the implied heat rates within the model clearly mitigated the overshooting of SERVVM prices relative to historical data that occurred with the 2020 approach. The significant improvement in the alignment of SERVVM output with historical data is an

⁴ D.16-06-007, p. 26.

⁵ *2021 Distributed Energy Resources Avoided Cost Calculator Documentation*. May 3, 2021. California Public Utilities Commission & E3 Economics, p. 11.

⁶ 2021 ACC Documentation, Figures 10 and 11, p. 20

⁷ *2021 Distributed Energy Resources Avoided Cost Calculator Documentation*. May 3, 2021. California Public Utilities Commission & E3 Economics, p. 20.

improvement to the status quo as it makes the model more mathematically robust, aligning ACC energy prices with historical data.

Cal Advocates' review of the additional modeling changes did not reveal any additional concerns or basis for contest. The changes made to the model allow results to better reflect market conditions and historical data. The remaining changes (18-21 in Table 1) correct mathematical errors and mistakes in the model and should reasonably be considered non-controversial.

4. The updates to the ACC in Draft Resolution E-5150 are appropriate and necessary for synchronizing the 2021 ACC with other state planning proceedings.

The major updates to the ACC in 2020 included the integration of data from both the IRP and the Distributed Resource Plan (DRP) proceedings. Both the schedules and purpose of these proceedings necessitate frequent data updates into the ACC in order to keep demand side resource evaluation in sync with grid planning efforts. The 2019 RSP that was an input to the 2020 ACC has since been updated with resource costs and results from the Final 2019 CEC IEPR that was issued after the 2019 RSP was finalized. Many of the updates in the 2021 ACC incorporate this new data and help keep the new calculator aligned with the most recent information.⁸

Changes to the SERVIM and PLEXOS models are currently within the scope of the IRP proceeding. Therefore, any proposed changes to those models should be considered in those venues.

CONCLUSION

Cal Advocates requests that the Commission consider the comments included herein and adopt the Draft Resolution accordingly.

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⁸ 2021 ACC Documentation, p. 11.